SICB 2024

The Society for Integrative and Comparative Biology

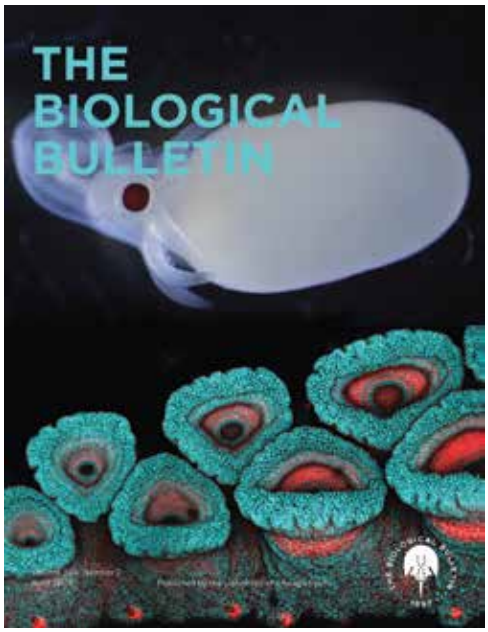
with the

American Microscopical Society,
Minorities in Shark Sciences, The Crustacean Society

Conference Program

Seattle Convention Center • Seattle, WA
2-6 January 2024

Life Science from Chicago



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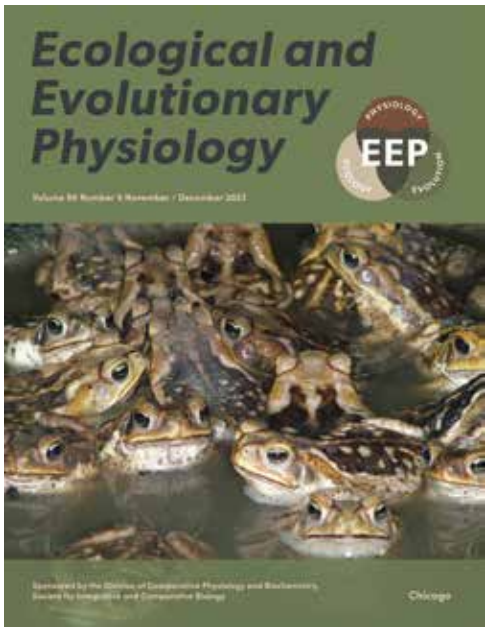

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***Physiological and Biochemical Zoology* is changing its name to *Ecological and Evolutionary Physiology* with the publication of volume 97 in January 2024!**

Ecological and Evolutionary Physiology primarily publishes original research in physiological ecology, ecophysiology, comparative physiology, and evolutionary physiology.

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The Society for Integrative and Comparative Biology

Conference Program

Seattle Convention Center

705 Pike St

Seattle, WA 98101

Future Meeting Dates

SICB 2025
Atlanta, GA • 3-7 January

SICB 2026
Portland, OR • 3-7 January

SICB 2027
Pittsburgh, PA • 3-7 January

SICB 2028
Los Angeles, CA • 3-7 January

The Society for Integrative and Comparative Biology

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Welcome to Seattle
Message from the President

Welcome everyone to beautiful Seattle for our largest SICB meeting ever! I think that it is safe to say that we are back and even bigger than our pre-pandemic numbers. This year we made a real effort to get the word out about our meeting, with a mind to revitalizing certain divisions that had had a drop in members, and given how many registered we seem to have succeeded. We are especially thrilled to be hosting Minorities in Shark Science (MISS) for the very first time. If you see MISS members around the hotel and conference center, please be sure to make them feel welcome. We would love to be the permanent home for this talented group of scientists.

Given our desire to make the meeting as accessible as possible SICB+ continues to evolve; this year we will be recording and uploading plenaries and SICB-wide symposia on the X-CD site after the meeting. These recordings will be available to all current members. We are hoping that many of our members will be able to use these presentations in teaching or to share with lab members not able to attend in person.

A meeting of this size requires an inordinate amount of planning and hard work from a dedicated group of volunteers. As our talented Program Officer (PO), Thom Sanger, details below we have 5 days full of excellent plenaries, posters, symposia, workshops, and several special events designed to appeal to our diverse community. Thank you to all of those that helped put together the program, especially our program committee comprised of all our divisional POs, staff at BAI, whose efforts were all overseen by our talented PO and PO-elect.

Meeting safety is important to us, thus we will once again be enforcing a meeting Code of Conduct. SICB's intention is to have a conference where all are free from any kind of harassment or discrimination. While scientific discourse does (and should) involve lively debate this should be done in a respectful manner, where all voices can be heard. During the meeting there will be several ways of reporting violations. While our safety officer (Paula Brantner) will not be onsite, she is accessible via email (SafeConferences@gmail.com). Moreover, she has helped train several Safety Allies who will be wearing badges to identify themselves. Any violations to the Code of Conduct can be reported at 703-592-9946 for an immediate response. There is also an anonymous reporting portal available (burkinc.ethicspoint.com). Please review our Code of Conduct on our website. Also, we have experienced seasonal spikes in Covid every year since 2020, and long-term members are very familiar with going home sick after our January meeting. I continue to mask during conferences and welcome others to do so as well.

An important part of updating and enforcing a rigorous Code of Conduct is our desire to be recognized as a safe and welcoming society for ALL members. Creating the most inclusive and welcoming scientific society is an important part of our long-term mission. Apropos these ongoing efforts, it is essential that we collect demographic data every single year so that we can assess our success in our DEIB efforts. If you have not yet filled out our demographic survey, please make the time to do so.

Finally, I would like to take a moment to thank all of our sponsors, especially our Platinum sponsor Sable Systems, as well as Silver sponsors Royal Society Publishing, Journal of Experimental Biology, and DataClassroom. Thank you so much for your continued support of our society.

L. Patricia Hernandez
SICB President

Welcome to Seattle
Message from the Program Officer

On behalf of the entire program committee, welcome to SICB 2024 in Seattle, WA! This meeting will be one of the largest for SICB ever. The program is packed with nearly 2000 presentations, 11 symposia, 7 plenaries, 22 workshops, and a range of social events for networking and catching up with old friends.

A special focus of this year's meeting is Evo-devo. Established in 2000, SICB was the first professional organization for this field. The first full day of the meeting, January 3rd, will be packed with Evo-devo. The DEDB Best Student Presentation Competition, filled with eight of exciting student presentations that represent the future of this field, will be held that afternoon at 1:30. Later that evening, the President's Select Plenary speaker will be Dr. Matthew Harris, speaking about the inherent capacity for change, specifically in regards to latent developmental potential of the fish skeleton. Even in a packed schedule, this is a not-to-miss presentation. Following the plenary, if you aren't yet exhausted, you can both meet new and established Evo-devo biologists at the DEDB, DVM, DCB social. Keep an eye out for other Evo-devo presentations, including BSP posters, scheduled throughout the week.

SICB has a long commitment to broadening participation in science. This commitment is reflected in the annual meeting program. This year, there are multiple program sessions dedicated around the theme of diversity in science and improving representation in the classroom. There are also a number of workshops spread across the week focused on mentoring people from diverse communities and making our education system more inclusive, including workshops being hosted by our 2024 partner, Minorities in Shark Science. The Science and Society Special Lecture is once again being organized by The Broadening Participation Committee and SICB officers. This year's speaker will be Dr. Chris Schell, who will address how our most monumental task as integrative biologists is to interrogate how our own academic and institutional structures operate. Dr. Schell will demonstrate how his research on urban ecology has been enhanced by embracing his intersectional identity. I encourage everyone to attend as many of these events as possible.

This is my last year as the SICB Program Officer. I hope that the last two post-pandemic meetings have been great experiences for everyone. From my perspective, I feel like the society is well-positioned to grow and further establish itself as the most exciting venue for comparative, experimental, and organismal biology. Later this month, Dr. Janet Steven takes over for me. If you have feedback about ways to continue to improve the meeting or society, please let us know.

Thomas Sanger
SICB Program Officer

2024 Officers

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Michele Nishiguchi
President-Elect

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Co-Sponsoring Societies

American Microscopical Society (AMS)

Minorities in Shark Sciences (MISS)

The Crustacean Society (TCS)

The co-sponsoring society presentations are integrated into the program to minimize the potential conflicts of similar presentations being scheduled at the same time.

Thank you to the following SICB Sponsors

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General Information

Conference Program

SICB does not assume responsibility for any inconsistencies or errors in the abstracts for contributed paper and poster presentations. We regret any possible omissions, changes and/or additions not reflected in this final program.

Speaker Ready Room

All presenters must visit the Ready Room, **Room 601, Seattle Convention Center**, at least one half day prior to their session time. It is highly recommended that you preview your presentation prior to your session to guarantee that it will work properly. Each presentation will be loaded onto a master file for each session. You may use your own computer, however, your fifteen minute time slot does not include time for set up and testing. There will be students and audio visual personnel to assist you and to check you in during the following hours:

Tuesday 2 January	2:30 PM – 7:00 PM
Wednesday 3 January	7:00 AM – 5:00 PM
Thursday 4 January	7:00 AM – 4:00 PM
Friday 5 January	7:00 AM – 4:00 PM
Saturday 6 January	7:00 AM – 10:00 AM

Registration

The SICB Registration/Information area is located in **Exhibit Hall 4A**. The Registration Desk will be open during the following hours:

Tuesday 2 January	3:00 PM – 7:00 PM
Wednesday 3 January	7:00 AM – 5:00 PM
Thursday 4 January	7:30 AM – 3:30 PM
Friday 5 January	7:30 AM – 3:00 PM
Saturday 6 January	7:30 AM – 2:00 PM

Pop Up Meeting?

Do you need a room for an unscheduled meeting, come to the registration desk and book your time.

Need a place to work?

If you need a place to plug in and work, there will be tables in the exhibit hall with power. They will be marked with signage that says “Work Here.”

Quiet Room

Feeling anxious and need a moment to decompress? A Quiet Room, **Room 306**, with low lighting is available for attendees to rest quietly and recharge before diving back into the fray.

Committee/Business Meetings

Please refer to the Schedule of Events for each day’s listing of committee/business meetings.

Employment Opportunities

The Employment Opportunity bulletin board will be located in the SICB Registration/Information area. The Employment Opportunity board will provide a place for attendees to post “Positions Wanted,” and learn about “Positions Available.” Interested attendees may schedule interviews in the room set aside for that purpose. See a registration desk attendant for assistance.

Coffee Breaks

Coffee break service is available each day of the meeting. There will be a morning service from 9:30 AM -— 10:30 AM, Wednesday through Saturday, and an afternoon service from 3:30 PM — 4:30 PM, Wednesday through Friday. The coffee breaks will be located in **Exhibit Hall 4A**.

SICB Childcare Room

This year, SICB is providing FREE onsite childcare through Taming Toddlers in the **Ravena Room, Sheraton**. Pre-registration was required, but there may be space for drop-ins. Stop by the Ravena Room to speak with Taming Toddlers to see if space is available.

Tuesday 2 January	7:30 PM – 10:00 PM
Wednesday – Saturday	7:30 AM – 5:30 PM

Family & Mother’s Respite Room

SICB recognizes that balancing a family and meeting attendance creates unique challenges for parents. There is a Mother’s room on the third floor in **Room 305** within quick access of talks. The Mother’s room is a private room equipped with comfortable chairs for nursing, chairs and tables for pumping, outlets, a refrigerator for milk.

High impact research from the Royal Society

The Royal Society journals *Interface* and *Interface Focus* publish research, reviews, reports, and topical theme issues in all areas of the cross-disciplinary sciences.

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Associate Professor Doug Altshuler,
University of British Columbia

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Image: A large hawkmoth (*Manduca sexta*) searching for a feeder with its semi-extended proboscis.

Meeting Highlights

Events take place in the Seattle Convention Center, unless otherwise noted

Tuesday 2 January

Student Worker Orientation & First Timer Orientation
5:00 PM – 6:30 PM, Ballroom BC
"How to get the most out of your SICB Meeting"
Required for students with Charlotte Mangum support

Welcome to Seattle Reception
8:30 PM – 10:00 PM, 6E Lobby
The Society for Integrative and Comparative Biology welcomes you to Seattle with a reception. The Welcome Reception will follow the Science and Society Special Lecture. Light snacks and cash bar will be provided.

Wednesday 3 January

Free Headshot Lounge
9:00 AM – 5:00 PM, Exhibit Hall 4A, Booth 206
Get your free headshot taken.
Register for your headshot using this link.

Poster Session 1
3:30 PM – 5:30 PM, Exhibit Hall 4A
Even # poster authors present from 3:30 pm-4:30 pm
Odd # poster authors present from 4:30 pm-5:30 pm

Thursday 4 January

Free Headshot Lounge
9:00 AM – 5:00 PM, Exhibit Hall 4A, Booth 206
Get your free headshot taken.
Register for your headshot using this link.

Poster Session 2
3:30 PM – 5:30 PM, Exhibit Hall 4A
Even # poster authors present from 3:30 pm-4:30 pm
Odd # poster authors present from 4:30 pm-5:30 pm

Friday 5 January

Primarily Undergraduate Institution Social
7:30 AM – 8:30 AM, Waterfall Suite
Preregistration and confirmation from the organizer required.

Poster Session 3
3:30 PM – 5:30 PM, Exhibit Hall 4A
Even # poster authors present from 3:30 pm-4:30 pm
Odd # poster authors present from 4:30 pm-5:30 pm

SICB Member Meeting
6:00 PM – 7:00 PM, Ballroom B
SICB Society Member Meeting & Awards Presentation

Saturday 6 January

SICB Closing Celebration
5:30 PM – 7:00 PM, 4th Floor Atrium
Come celebrate the accomplishments of our symposium organizers, divisional officers, student award winners, and an all around amazing meeting. This is a ticketed event ($25 for faculty and postdocs, $10 for students and other members). A drink ticket is included in the price. Include this option during meeting registration if you plan to attend or contact meetings@sicb.org if you already registered and missed the opportunity. Tickets are non-refundable.

SICB Society Member Meeting & Awards Presentation
Friday 5 January, 6:00 PM – 7:00 PM, Ballroom B

The Exhibits will open on Wednesday 3 January at 9:30 AM. Seattle Convention Center Exhibit Hall 4A will be the location for coffee breaks Wednesday through Saturday mornings from 9:30 AM – 10:30 AM, and 3:30 PM – 4:30 PM Wednesday through Friday during the poster sessions.

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EDITOR-IN-CHIEF: HEATHER F. SMITH, PH.D.
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The Anatomical Record: Advances in Integrative Anatomy and Evolutionary Biology, an official publication of the American Association for Anatomy, publishes new discoveries in morphological aspects of molecular, cellular, systems, and evolutionary biology.

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SICB and Divisional Business Meetings

Wednesday 3 January

- DAB Member Meeting
  5:45 PM – 6:45 PM, Room 606
- DCPB Member Meeting
  5:45 PM – 6:45 PM, Room 602
- DEDB Member Meeting
  5:45 PM – 6:45 PM, Room 604
- DEDE Member Meeting
  5:45 PM – 6:45 PM, Room 617
- DEE Member Meeting
  5:45 PM – 6:45 PM, Room 607
- DOB Member Meeting
  5:45 PM – 6:45 PM, Room 608
- DVM Member Meeting
  5:45 PM – 6:45 PM, Ballroom C

Thursday 4 January

- DCB Member Meeting
  5:45 PM – 6:45 PM, Room 607
- DCE Member Meeting
  5:45 PM – 6:45 PM, Room 602
- DIZ Member Meeting
  5:45 PM – 6:45 PM, Room 606
- DNNSB Member Meeting
  5:45 PM – 6:45 PM, Room 608
- DPCB Member Meeting
  5:45 PM – 6:45 PM, Ballroom C

Special Lectures

Science and Society Special Lecture: Dr. Christopher Schell
Tuesday 2 January, 7:30 PM – 8:30 PM, Ballroom BC
Breaking the Fourth Wall: Interrogating the obstacles to DEIJ efforts and scientific innovation

SICB President's Select Plenary: Dr. Matthew Harris
Wednesday 3 January, 7:30 PM – 8:30 PM, Ballroom B
Inherent capacity for change: latent developmental potential and the evolution of the skeleton

AMS Keynote Lecture
Thursday 4 January, 12:30 PM – 1:30 PM, Room 604
But I'm Not a Microscopist: How a Profession Became a Tool

Howard Bern Lecture: Dr. Marilyn Ramenofsky
Thursday 4 January, 7:30 PM – 8:30 PM, Ballroom B
Endocrinology of migration and role of the environment

George A. Bartholomew Lecture: Dr. Eleanor Caves, *sponsored by Sable Systems International*
Friday 5 January, 7:30 PM – 8:30 PM, Ballroom B
The promise of integrative biology in studying animal perception: lessons from mate choice and mutualism

The Carl Gans Award: Dr. Michael Granatosky, *sponsored by Journal of Experimental Biology*
Saturday 6 January, 1:30 PM – 2:30 PM, Ballroom C
Decoding behavioral innovation beyond anatomy

John A. Moore Lecture: Dr. David Shiffman
Saturday 6 January, 4:00 PM – 5:00 PM, Ballroom C
You're gonna need a bigger engagement strategy: Lessons learned from teaching the public about shark science and conservation

Symposia

Wednesday 3 January

S1: Feel the flow: how water movement shapes organisms and ecosystems
Organizers: Molly Womack, Bryan Juarez

S2: Immunity in the 'omics age: what can 'omics approaches tell us about immunity in natural systems?
Organizers: Lauren Fuess, Nikki Traylor-Knowles

S3: Moving in an uncertain world: Adaptive locomotion from organisms to machine intelligence
Organizers: Jean-Michel Mongeau, Kaushik Jayaram

Thursday 4 January

S4: Computational and physical models in research and teaching to explore form-function relationships
Organizers: M. Janneke Schwaner, S Tonia Hsieh

S5: Chordate origins, evolution, and development
Organizer: Billie J. Swalla

S6: The scale of resilience: mechanisms of recovery across biological systems
Organizers: Emily Le Sage, Corinne Richards-Zawacki

Friday 5 January

S7: Convergent evolution across levels of biological organization, organisms, and time
Organizers: Emily Lau, Jessica Goodheart, Rebecca Varney

S8: Modeling organismal responses to changing environments
Organizers: Kendra Greenlee, Dianna Padilla

S9: Evolution, physiology, and biomechanics of insect flight
Organizers: Lisa Triedel, Jon Harrison, Caroline Williams

Saturday 6 January

S10: What do trade-offs mean to reproducing females? An integrative look at whole-organism trade-offs
Organizers: Chloe C Josefson, Teri J. Orr

S11: Recent advances in the mechanistic understanding of avian responses to environmental challenges
Organizers: Alexander R. Gerson, Maria Stager, Cory Elowe

Special: Minorities in Shark Sciences
Organizer: Jasmin Graham

Social Events

Events take place in the Seattle Convention Center, unless otherwise noted

Tuesday 2 January

SICB Welcome Reception
8:30 PM – 10:00 PM, 6E Lobby
The Society for Integrative and Comparative Biology welcomes you to Seattle with a reception. The Welcome Reception will follow the Science and Society Special Lecture. Light snacks and cash bar will be provided.

Outgroup-In Sober Social
5:30 PM – 6:30 PM, Room 304
Outgroup-In (sober, all ages) is the sister event to our annual Outgroup Social event (Jan 4th, 21+, offsite). Come meet other LGBTQ+ friends, allies, colleagues, and conference buddies at Outgroup-In. Learn about LGBTQ+ programs and initiatives at SICB, discuss issues impacting LGBTQ+ folks in STEM, and meet great people. Light refreshments will be served.

Wednesday 3 January

DVM/DCB/DEDB Social
8:30 PM – 10:00 PM, 4th Floor Atrium

Thursday 4 January

DEE/DOB/DPCB Social
9:45 AM – 10:45 AM, Waterfall Suite

Broadening Participation Social
6:30 PM – 7:30 PM, Rooms 307-308

DCE, DEDE, DAB, DNNSB Social
8:30 PM – 10:00 PM, 4th Floor Atrium

Outgroup Social
8:30 PM – 10:30 PM, Offsite
Join us offsite for the annual LGBTQ+ happy hour and social (allies welcome!), 21+

Friday 5 January

AMS/DIZ/TCS Social
8:30 PM – 10:00 PM, Hotel-Cirrus Ballroom

DCPB/BART Social
8:30 PM – 10:00 PM, 4th Floor Atrium

Saturday 6 January

SICB Closing Celebration
5:30 PM – 7:00 PM, 4th Floor Atrium
Come celebrate the accomplishments of our symposium organizers, divisional officers, student award winners, and an all around amazing meeting. This is a ticketed event ($25 for faculty and postdocs, $10 for students and other members). A drink ticket is included in the price. Include this option during meeting registration if you plan to attend or contact meetings@sicb.org if you already registered and missed the opportunity. Tickets are non-refundable.

Workshops and Programs

Tuesday 2 January

MISS Grant Writing Workshop

9:00 AM – 10:30 AM, Sheraton Aspen

Chair: Jasmin Graham

Event hosted by Minorities in Shark Science. All meeting attendees are welcome, but space is limited. Preregistration and confirmation from the organizers is required.

MISS Media Training Workshop

10:30 AM – 12:00 PM, Sheraton Aspen

Chair: Jasmin Graham

Gyotaku, the Japanese Art of Fish Printing – Session 1

12:00 PM – 3:00 PM, 6E Lobby

Experience the Japanese art of Gyotaku or fish printing through a hands-on workshop at SICB-Seattle. The session integrates significant 1:1 interaction with the instructor, Bruce Koike. Bruce has been actively printing fish since the early 1990's. His works can be viewed at Brucekoike.com.

All of the necessary materials will be provided including real fish! Come with your spirit of adventure and discovery. Questions can be directed to koike.bruce@gmail.com. Pre-registration is required and class sizes are limited to 10 persons each. Don't miss this fun opportunity to create your own art!!

Introduction to Digital Morphology with SlicerMorph

1:00 PM – 5:00 PM, Off site

Chair: Murat Maga

This workshop will take place at the Building Cure of Seattle Children's Research Institute, a short 10 minutes walk from the Convention Center. We will cover basics of doing digital morphology and morphometrics data collection with 3D Slicer and SlicerMorph, and give hands-on demonstration of how to use NSF funded cloud to process large datasets; examples of training deep-learning for custom segmentation tasks, using 3D Slicer for Virtual Realty and other things. Preregistration is required.

MISS Introduction to R Workshop

1:30 PM – 3:00 PM, Sheraton Aspen

Chair: Jasmin Graham

Event hosted by Minorities in Shark Science. All meeting attendees are welcome, but space is limited. Preregistration and confirmation from the organizers is required.

MISS Culturally Responsive Mentoring Workshop

1:30 PM – 3:00 PM, Sheraton Aspen

Event hosted by Minorities in Shark Science. All meeting attendees are welcome, but space is limited. Preregistration and confirmation from the organizers is required.

MISS Figures and Illustrations Workshop
3:00 PM – 4:00 PM, Sheraton Aspen
Chair: Jasmin Graham
Event hosted by Minorities in Shark Science. All meeting attendees are welcome, but space is limited. Preregistration and confirmation from the organizers is required.

MISS Working Group Kickoff
4:00 PM – 5:00 PM, Sheraton Aspen
Chair: Jasmin Graham

Gyotaku, the Japanese Art of Fish Printing – Session 2
4:00 PM – 7:00 PM, 6E Lobby

Wednesday 3 January

Student Research Opportunities through the National Science Foundation: Undergrad and early Grad
12:15 PM – 1:30 PM, Room 612
Chair: Susan Renn
NSF has new programs targeting undergraduate students and early-stage graduate students. The new ETAP site makes it faster to find them and easier to apply for them. Come learn more about these programs and the ETAP site from an NSF Program Officer.

Mentorship and sponsorship: how to curate your support team and guide your successful career
12:15 PM – 1:30 PM, Room 603
Chair: Laura Mydlarz

How to start and produce your own podcast
12:15 PM – 1:30 PM, Room 602
Chair: Lynn Martin

Balancing Act: A discussion on navigating diverse academic careers with dependents – strategies, tips, and systemic change
12:15 PM – 1:30 PM, Room 604
Chair: Kristen Whalen

Peer mentoring in biomechanics and functional morphology: Benefits of peer mentor groups and help with forming your own group
12:15 PM – 1:30 PM, Room 606
Chair: Stacey Combes

Workshops and Programs

Continued

Thursday 4 January

Advancing accessibility, collaboration, and training in use of model-based and analytical tools in organismal biology

12:15 PM – 1:30 PM, Room 602

Chair: Monica Daley

This workshop brings together diverse scientists at the intersection of organismal biology, mathematics, physics, and engineering, with shared interests in using model-based approaches to address fundamental research questions. A key focus will be on how we can work together to improve education and training in use of computational tools, increasing accessibility across disciplines. All meeting attendees are welcome, but space is limited. Preregistration and confirmation from the organizers is required. Lunch will be provided.

Incorporating sex diversity and gender inclusivity in biology undergraduate classrooms

12:15 PM – 1:30 PM, Room 603

Chair: Chloe Josefson

NSF Program Officers: What's New in BIO and Q&A session

12:15 PM – 1:30 PM, Room 606

Chair: Julie Kellner

Program Directors from NSF's Directorate for Biological Sciences will present information on new and continuing programs of interest to SICB members and will be available to answer participants' questions.

DCPB/U Chicago Press/Ecological and Evolutionary Physiology workshop

5:45 PM – 7:15 PM, Room 304

This workshop is invitation only.

Friday 5 January

Fluid ART - Free pour painting workshop

12:15 PM – 1:30 PM, Room 602

Chair: Molly Womack

Want to take a QUICK MENTAL BREAK (about the timeframe of one SICB talk) to create a beautiful piece of art that requires no prior planning, very little time, and is an amazing practice in letting go of control and perfectionism? Come do a quick pour paint with us! Whether you have never painted, never pour painted, or know all about pour painting, you will have an excellent experience. The workshop is FREE, and you will have the option to take your art home or donate it to SICB's art raffle (which supports student travel) if you wish! This workshop is in collaboration with symposium 1 "Feel the Flow" and falls under the theme "Fluid: identities in science", which aims to highlight how our individual perspectives inspire us and our science.

We welcome anyone in the SICB community and would love to have folks from a diversity of career stages and artistic experiences join us. Preregistration is required.

Improving research by inclusion of indigenous people, culture and knowledge
12:15 PM – 1:30 PM, Room 602
Chair: James Murray

SPDAC Job Application Preparation Working Group - Introductory Workshop
12:15 PM – 1:30 PM, Room 611
Graduate students and postdocs that plan on (or are thinking about) applying to the academic job market starting the 2024-2025 cycle and have not developed any application materials. This workshop aids to assist those that are thinking about the job market in academia and how that may look on the horizon. The workshop will form long-term teams to support one another with writing accountability check-ins and identify connections from mentors with mentees and other members of SICB.

The workshop is not intended for graduate students or postdocs that have already submitted applications for permanent positions in academia and prepared their materials already. Space is limited. Preregistration and confirmation from the organizers is required.

2024 Tal-X Workshop: What is 'scaffolding' and how does it improve student outcomes?
7:00 PM – 9:00 PM, Room 611
Chair: Veronica Martinez Acosta

Saturday 6 January

Alternative career paths for scientists with a PhD in biomechanics, neuromechanics, or functional morphology
12:15 PM – 1:30 PM, Room 602
Chair: Stacey Combes

Organismal Systems Modeling: Modeling organismal reponses to changing environments
12:15 PM – 1:30 PM, Room 604
Chair: Kendra Greenlee

Evolution, Physiology, and Biomechanics of Insect Flight Workshop
12:15 PM – 1:30 PM, Rooms 619-620
Join us for an in-person interactive workshop at SICB 2024 that will follow up on the "Evolution, Physiology, and Biomechanics of Insect Flight Symposium"!

In small groups, we will discuss prompts and open-ended questions on topics requiring interdisciplinary efforts, including flight energetics, the evolution of diversity in flight systems, migratory phenomena, and climate change effects. Community members at all career stages are welcome and encouraged to attend! Free lunch will be provided to all participants. Preregistration and confirmation by the organizers is required.

2024 SICB Exhibitor Floorplan

Exhibit Hall 4A • Seattle Convention Center

View the latest floorplan and company profiles on your phone or tablet.
Scan the QR Code or visit **sicb2024.expofp.com**

Exhibit Hours

Wednesday 3 January
9:30 AM – 5:30 PM

Thursday 4 January
9:30 AM – 5:30 PM

Friday 5 January
9:30 AM – 5:30 PM

Coffee Breaks

WEDNESDAY
9:30 AM – 10:30 AM
Sponsored by Sable Systems International
3:30 PM – 4:30 PM

THURSDAY
9:30 AM – 10:30 AM
3:30 PM – 4:30 PM

FRIDAY
9:30 AM – 10:30 AM
Sponsored by SRE.college
3:30 PM – 4:30 PM

SATURDAY
9:30 AM – 10:30 AM

Drop in with the President and Executive Director

Booth 105

3:30 PM – 5:30 PM

Stop by and meet with the President and Executive Director.

DPCB Ask-An-Expert

Booth 302

Get phylogenetic and comparative methods support with an expert

Free Headshot Lounge

Booth 206

Wednesday & Thursday
9:00 AM – 5:00 PM

Come and get your free headshot taken. Register for your headshot using this link.

Journal of Experimental Biology

Silver Sponsor

Meet the Editors session

Ballroom B

Wednesday 3 January – 12:45pm

Join the Editors of Journal of Experimental Biology to chat about your research and find out more about the journal, including our travelling fellowship scheme and new grants for junior faculty staff, recent changes to our aims & scope, and new Theory & Modelling article type. You will also have an opportunity to pick up the 2024 'limited edition' JEB Tshirt (make sure you grab one before they run out!)

JEB Editors attending the meeting:

- Craig Franklin, Editor-in-Chief
- Sheila Patek, Deputy Editor-in-Chief
- Monica Daley, Monitoring Editor
- Matthew McHenry, Monitoring Editor
- Sanjay Sane, Monitoring Editor
- Patricia Schulte, Monitoring Editor
- Jarren Kay, Features & Reviews Editor

2024 SICB Exhibitors

3D Anatomy Studios — Booth: 306

224 Lowden St Ste 1
Pawtucket, RI 02860
3danatomystudios.com
401-354-2943

Founded by SICB members, 3D Anatomy Studios is a cooperative business advancing research, learning, and outreach of organismal structure and function. We design and manufacture active learning resources for organismal biology courses and we partner with researchers to develop grant outreach websites and open-source tools for research, education, and outreach.

American Microscopical Society — Booth: 202

www.amicros.org

The AMS is a society of scientists and educators organized to encourage the use of microscopy. It publishes the journal Invertebrate Biology, conducts annual meetings on research using microscopy, and organizes workshops on microscopical methods and on the biology of organisms studied by microscopy.

The Biological Bulletin — Booth: 101

1427 East 60th Street
Chicago, IL 60637
journals.uchicago.edu/BBL
773-702-8292

The Biological Bulletin disseminates novel scientific results in broadly related fields of biology in keeping with more than 100 years of a tradition of excellence. The journal publishes outstanding original research of general interest to biologists throughout the world.

The Biomimicry Institute — Booth: 100

PO Box 9216
Missoula, Montana 59807
biomimicry.org
406-880-7617

We are on a mission to help solve humanity's biggest challenges through the adoption of biomimicry in education, culture, and industry. For eons, nature has solved its problems with well-adapted designs, life-friendly chemistry, and smart material and energy use. We exist to shine a light on nature's genius, and bridge pressing design challenges with proven biological strategies for a better future.

Blue Beehive Studio & One Inch Squid Studios — Booth: 307

www.etsy.com/shop/oneinchsquidstudios
www.etsy.com/shop/bluebeehivestudio

Blue Beehive Studio and One Inch Squid Studios offer a variety of science-themed art. Enameled jewelry featuring phylogenetic trees and scientific illustrations, biology-themed tote bags, embroidered plankton, stickers, and watercolor prints and cards are all created with love (and an occasional slight amount of frustration) by these sisters-in-law.

The Company of Biologists — Booth: 309

Bidder Bld, Station Rd, Histon
Cambridge, Cambridgeshire CB249LF
United Kingdom
www.biologists.com
+44 (0) 1223 632850

The Company of Biologists is a not-for-profit publishing organisation dedicated to supporting and inspiring the biological community through scientific journals, meetings and grants. The Company publishes five specialist peer-reviewed journals: Development, Journal of Cell Science, Journal of Experimental Biology, Disease Models & Mechanisms and Biology Open.

The Crustacean Society — Booth: 304

950 Herndon Parkway, Suite 450
Herndon, VA 20170
www.thecrustaceansociety.org
703-790-1745

The Crustacean Society (TCS) achieves its mission by promoting the exchange and dissemination of information throughout the world by: 1) The Journal of Crustacean Biology (JCB) an SCI journal, with Editor-in-Chief Dr. Pedro Castro, published by the Oxford University Press; 2) Biannual, international meetings to gather the world's carcinologists for constructive interaction and collaboration, and by supporting other societies, meetings, and conferences that share our mission; 3) annual competitions for fellowship, scholarship, and travel awards for postdocs and both graduate and undergraduate students.

DataClassroom — Booth: 207

Silver Sponsor

1022 Cottonwood Road
Charlottesville, VA 22901
about.dataclassroom.com
434-882-8005

The web-based app lets students engage with data and do real analysis. Students can upload and visualize their own data, ask a question, and use a statistical test to form a conclusion. Your students will learn data analysis by doing data analysis.

Expert Digital Imaging — Booth: 205

193 Jefferson Ave, Suite 102
Salem, MA 01907
www.expertdigitalimaging.com
339-440-4423

Expert Digital Imaging is an independent distributor of high-speed and high-resolution camera equipment from various manufacturers, including the full NAC, Optronis, IOI, and Edgertronic camera lines. At EDI, we offer traditional high-speed camera systems as well as long-recording high speed systems with associated automatic image tracking software.

Gene Tools, LLC — Booth: 200

1001 Summerton Way
Philomath, OR 97370
www.gene-tools.com

Gene Tools manufactures Morpholino oligos for blocking translation, modifying splicing or inhibiting miRNA activity. Morpholinos are used in cell cultures, embryos or, as Vivo-Morpholinos, in adult animals. Morpholinos are effective, specific, stable and non-toxic. Backed by Ph.D.-level customer support, Gene Tools designs and synthesizes Morpholinos and offers cytosolic delivery options.

Journal of Experimental Biology — Booth: 311

Silver Sponsor

Bidder Bld, Station Rd, Histon
Cambridge, Cambridgeshire CB249LF United Kingdom
journals.biologists.com/jeb
+44 1223 632871

The leading journal in comparative animal physiology. Journal of Experimental Biology focuses on the form and function of living organisms at all levels of biological organisation – from the molecular and subcellular to the integrated whole animal. Authors and readers reflect a broad interdisciplinary group of scientists who study molecular, cellular and organismal physiology in an evolutionary and environmental context.

Lehigh University Biological Sciences

Bethlehem, PA 18015
www.lehigh.edu/~inbios/Grad/Grad_General.html
517-483-3338

Lehigh's Department of Biological Sciences provides a collaborative, interdisciplinary environment for pursing a Ph.D. in Biology, less than 1.5 hours from New York and Philadelphia. Choose from over 20 faculty research labs, and four concentrations: Evolution and Behavior, Neuroscience, Cell and Molecular Biology, and Biochemistry.

Little Pond Nature Prints — Booth: 106

332 SE Harney St
Newport, OR 97365
brucekoike.com
541-961-7567

You are invited to view examples of Japanese fish prints or Gyotaku created by West coast artist, Bruce Koike. Available for purchase are framed art, artwork done on rice paper and other fish print products. Art is typically executed with acrylic paint on rice paper. Looking forward to meeting you.

Loligo® Systems — Booth: 209

Toldboden 3
Viborg, DK-8800 Denmark
www.loligosystems.com
+45 6166 6929

Loligo® Systems develops research equipment for aquatic biology. Our products allow scientists all over the world to excel in the fields of swimming performance, respirometry, blood physiology and behavior analysis in a diversity of marine and freshwater organisms. We offer customized solutions as well as free scientific advice and support.

Minorities in Shark Sciences — Booth: 305

PO Box 10493
Bradenton, FL 34282
wwww.misselasmo.org
941-301-8271

MISS provides a community and funded opportunities for gender minorities of color who wish to enter the field of shark sciences. We aim to show that there are many gender minorities of color succeeding in and interested in this field.

Mote Marine Laboratory & Aquarium — Booth: 203

National Science Foundation — Booth: 208

2415 Eisenhower Avenue
Alexandria, VA 22314
www.nsf.gov
703-292-8420

The National Science Foundation, an independent federal agency created by Congress in 1950, supports non-medical basic research in all science and engineering fields with an annual budget of about $7 billion. NSF funds approximately 20% of all federally supported basic research conducted by US colleges and universities.

OSyM: Organsimal Systems-type Modeling Research Coordination Network

organismal-systems.org

The Organismal Systems-type Modeling Network (OSyM) research coordination network provides a forum where organismal biologists and modeling experts collaborate to deepen understanding and improve our ability to predict the impact of change on organismal structure and function.

OSyM provides funding and training needed to pursue new ways to explore cutting-edge questions in this emerging and vital area of research on how animals maintain stability while accommodating change.

Qubit Systems Inc. — Booth: 300

1573 John Counter Blvd.
Kingston, Ontario K7M 3L5 Canada
qubitbiology.com
613-384-1977

Qubit Systems Inc. specializes in the design and manufacture of instrumentation for the biological and environmental sciences from aquatic biology to plant physiology, to animal, insect, and human respirometry. Our aim is to provide educational establishments, research institutes, and companies with innovative, cost-effective equipment for research, teaching, and industrial applications.

RDI Technologies — Booth: 201

10024 Investment Drive
Knoxville, TN 37932
www.rditechnologies.com
865-606-1080

RDI Technologies developed Motion Amplification® technology to empower users to see and measure motion that is impossible to see with the human eye without using contact sensors. By turning complex data into easy-to-understand videos, we enable users to solve their toughest problems quickly and safely.

Royal Society Publishing — Booth: 107

Silver Sponsor

6-9 Carlton House Terrace
London, SW1Y 5AG
United Kingdom
royalsociety.org/journals

Royal Society Publishing has several journals of interest to the SICB community, including Journal of the Royal Society Interface, Proceedings B, Open Science and Biology Letters. We offer high quality peer review, rapid publication and open access options. Visit our booth to find out more about what we've been publishing in the field of integrative and comparative biology.

Sable Systems International

Booth: 308

Platinum Sponsor

3840 N Commerce Street
North Las Vegas, NV 89032
Sablesys.com
800-330-0465

World leader in precision metabolic and behavioral measurement, providing instrumentation and expertise that enable true scientific discovery and understanding. Our systems provide the most accurate, data-rich study results. We assist you at every step, including system configuration, setup, training, experimental design, service and support. Proud Sponsor of the George A. Bartholomew Award.

SICB Journals

Booth: 301

433 Fox Ridge Drive Southwest
Leesburg, VA 20175-2512
academic.oup.com/iob
academic.oup.com/icb
706-469-7057

Integrative and Comparative Biology (ICB) is SICB's flagship journal that consists of primarily symposia papers yet some invited groupings & Integrative Organismal Biology (IOB) is SICB's open access journal. We again have an art in biology focus with an art break in the 3rd fie attendees to design postcards of Seattle & local botany artist Maggie Burns showcasing her work in the am of January 5th as well as some of the scientists who are speaking in symposium showcasing their work that afternoon. Stop by for a daily variety of journal souvenirs as well.

University of Chicago Press

Booth: 103

1427 East 60th Street
Chicago, IL 60637
journals.uchicago.edu
773-702-7700

The University of Chicago Press publishes more than 90 scholarly journals that cover a wide range of disciplines, from the humanities and the social sciences to the life and physical sciences.

Xcitex Inc.

Booth: 211

Silver Sponsor

8 Cabot Road
Woburn, MA 01801
www.xcitex.com
617-225-0080

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Tuesday Schedule of Events

Events take place in the Seattle Convention Center, unless otherwise noted

EVENT	TIME	LOCATION
MISS Summit Registration and Kickoff	8:00 AM – 9:00 AM	Columbia Room, Sheraton
Registration	2:30 PM – 7:00 PM	Exhibit Hall
Speaker Ready Room	2:30 PM – 7:00 PM	Room 601
SPECIAL LECTURE		
Science and Society Special Lecture: Dr. Christopher Schell Breaking the Fourth Wall: Interrogating the obstacles to DEIJ efforts and scientific innovation	7:30 PM – 8:30 PM	Ballroom BC
COMMITTEE AND BOARD MEETINGS		
Finance Committee	11:30 AM – 2:00 PM	Jefferson Room, Sheraton
SICB Executive Committee Meeting	2:30 PM – 5:30 PM	Jefferson Room, Sheraton
Student Orientation & First Timer Orientation* "How to get the most out of your SICB meeting" **Required for students with Charlotte Mangum support*	5:30 PM – 6:30 PM	Ballroom BC
Student Support Committee	5:30 PM – 7:00 PM	Room 307
WORKSHOPS AND PROGRAMS		
MISS Grant Writing Workshop	9:00 AM – 10:30 AM	Aspen, Sheraton
MISS Media Training Workshop	10:30 AM – 12:00 PM	Aspen, Sheraton
Gyotaku, the Japanese Art of Fish Printing - Session 1	12:00 PM – 3:00 PM	6E Lobby
Introduction to Digital Morphology with SlicerMorph	1:00 PM – 5:00 PM	Offsite
MISS Culturally Responsive Mentoring Workshop	1:30 PM – 3:00 PM	Cedar, Sheraton
MISS Introduction to R Workshop	1:30 PM – 3:00 PM	Aspen, Sheraton
MISS Figures and Illustrations Workshop	3:00 PM – 4:00 PM	Aspen, Sheraton
MISS Working Group Kickoff	4:00 PM – 5:00 PM	Aspen, Sheraton
Gyotaku, the Japanese Art of Fish Printing - Session 2	4:00 PM – 7:00 PM	6E Lobby
SOCIAL EVENTS		
Outgroup-In Sober Social (LGBTQ+)	5:30 PM – 6:30 PM	Room 304
Broadening Participation Meet & Greet	6:30 PM – 7:30 PM	Room 308
SICB Welcome Reception	8:30 PM – 10:00 PM	6E Lobby

Wednesday Schedule of Events

Events take place in the Seattle Convention Center, unless otherwise noted

EVENT	TIME	LOCATION
Registration	7:00 AM – 5:00 PM	Exhibit Hall
Speaker Ready Room	7:00 AM – 5:00 PM	Room 601
Poster Session 1 Set Up	7:00 AM – 8:00 AM	Exhibit Hall
Coffee Break AM, *sponsored by Sable Systems International*	9:30 AM – 10:30 AM	Exhibit Hall
Exhibit Hall	9:30 AM – 5:30 PM	Exhibit Hall
Coffee Break PM	3:30 PM – 4:30 PM	Exhibit Hall
Poster Session 1 Even Numbers Authors Present	3:30 PM – 4:30 PM	Exhibit Hall
Poster Session 1 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Exhibit Hall
Poster Session 1 Teardown	5:30 PM – 6:00 PM	Exhibit Hall
SPECIAL LECTURE		
SICB President's Select Plenary: Dr. Matthew Harris Inherent capacity for change: latent developmental potential and the evolution of the skeleton	7:30 PM – 8:30 PM	Ballroom B
SYMPOSIUM ORAL PRESENTATIONS		
S1: Feel the flow: how water movement shapes organisms and ecosystems	8:00 AM – 3:15 PM	Ballroom B
S2: Immunity in the 'omics age: what can 'omics approaches tell us about immunity in natural systems?	8:00 AM – 3:00 PM	Rooms 619-620
S3: Moving in an uncertain world: Adaptive locomotion from organisms to machine intelligence	8:00 AM – 3:30 PM	Ballroom C
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Vertebrate morphogenesis and evolution	8:00 AM – 9:45 AM	Room 607
Schooling and swarming	8:00 AM – 9:45 AM	Room 606
Bioinspired engineering	8:00 AM – 9:45 AM	Room 617
Division of Invertebrate Zoology Best Student Presentation Mary Rice Award	8:00 AM – 10:00 AM	Room 611
Macroevolution	8:00 AM – 10:00 AM	Room 602
Vertebrate feeding	8:00 AM – 10:00 AM	Room 618
Movement: How animals move in their environment, Part 1	8:00 AM – 10:00 AM	Rooms 613-614
Speciation and species delineation	8:00 AM – 10:00 AM	Room 608
Division of Phylogenetics & Comparative Biology Best Student Presentation David and Marvalee Wake Award	8:00 AM – 10:00 AM	Room 612
Terrestrial locomotion on complex surfaces	8:00 AM – 10:00 AM	Room 604
Modeling and computational approaches	8:00 AM – 10:00 AM	Room 603
Global change: Community and species interactions	8:00 AM – 10:00 AM	Rooms 615-616
Division of Comparative Endocrinology Best Student Presentation Gorbman Award	8:00 AM – 10:00 AM	Room 609
Division of Comparative Biomechanics Best Student Presentation	10:00 AM – 12:00 PM	Rooms 615-616
Developmental gene expression: from novelty to plasticity	10:15 AM – 11:45 AM	Room 607
Bipedal terrestrial locomotion	10:15 AM – 11:45 AM	Room 611
Cellular and molecular physiology, Part 1	10:15 AM – 12:00 PM	Room 606
Digestion	10:15 AM – 12:00 PM	Room 609
Response to anthropogenic environmental changes	10:30 AM – 11:30 AM	Room 612
Challenges of conducting research in the global south: Confronting colonial science, Panel Discussion	10:30 AM – 11:30 AM	Room 618
Sexual selection	10:30 AM – 12:00 PM	Room 603

Epigenetics	10:30 AM – 12:00 PM	Room 604
Terrestrial locomotion in amphibians and reptiles	10:30 AM – 12:00 PM	Room 602
Vision underwater	10:30 AM – 12:00 PM	Room 617
Flying vertebrate biomechanics	10:30 AM – 12:00 PM	Rooms 613-614
Thermal physiology in ecotherms	10:30 AM – 12:15 PM	Room 608

AFTERNOON

Division of Phylogenetics & Comparative Biology Chair's Special Session: What bony fishes have taught us about organism-focused evolution	1:30 PM – 3:15 PM	Room 612
Molecular evolution	1:30 PM – 3:30 PM	Room 611
Reproductive and parental behavior, Part 1	1:30 PM – 3:30 PM	Room 608
Metabolism, Part 1	1:30 PM – 3:30 PM	Room 607
Fish feeding	1:30 PM – 3:30 PM	Room 602
Division of Vertebrate Morphology Best Student Presentation	1:30 PM – 3:30 PM	Rooms 615-616
Sensorimotor structure and integration	1:30 PM – 3:30 PM	Room 618
Division of Neurobiology, Neuroethology, & Sensory Biology Best Student Presentation	1:30 PM – 3:30 PM	Room 606
Division of Evolutionary Developmental Biology Best Student Presentation	1:30 PM – 3:30 PM	Rooms 613-614
Invertebrate biomechanics	1:30 PM – 3:30 PM	Room 603
Muscles and muscle action	1:30 PM – 3:30 PM	Room 617
Division of Ecology & Evolution Best Student Presentation Huey Award	1:30 PM – 3:30 PM	Room 609

COMMITTEE AND BOARD MEETINGS

Public Affairs Committee: Student Journalism Program	7:00 AM – 8:00 AM	Room 308
Division Chairs/President/President-Elect Meeting	12:00 PM – 1:30 PM	Room 304
ICB Editorial Board	12:00 PM – 1:00 PM	Room 307
TCS Board Meeting	5:30 PM – 10:30 PM	Boren Room, Sheraton
AMS Executive Committee	8:00 PM – 10:30 PM	Room 304

BUSINESS MEETINGS

DAB Member Meeting	5:45 PM – 6:45 PM	Room 606
DCPB Member Meeting	5:45 PM – 6:45 PM	Room 602
DEDB Member Meeting	5:45 PM – 6:45 PM	Room 604
DEDE Member Meeting	5:45 PM – 6:45 PM	Room 617
DEE Member Meeting	5:45 PM – 6:45 PM	Room 607
DOB Member Meeting	5:45 PM – 6:45 PM	Room 608
DVM Member Meeting	5:45 PM – 6:45 PM	Ballroom C

WORKSHOPS AND PROGRAMS

Balancing Act: A discussion on navigating diverse academic careers with dependents – strategies, tips, and systemic change	12:15 PM – 1:30 PM	Room 604
How to start and produce your own podcast	12:15 PM – 1:30 PM	Room 602
Journal of Experimental Biology – Meet the Editors	12:15 PM – 1:30 PM	Ballroom B
Mentorship and sponsorship: how to curate your support team and guide your successful career	12:15 PM – 1:30 PM	Room 603
Peer mentoring in biomechanics and functional morphology: Benefits of peer mentor groups and help with forming your own group	12:15 PM – 1:30 PM	Room 606
Student Research Opportunities through the National Science Foundation: Undergrad and early Grad	12:15 PM – 1:30 PM	Room 612

SOCIAL EVENTS

Free Headshot Lounge	9:00 AM – 5:00 PM	Booth 206, Exhibit Hall
DVM/DCB/DEDB Social	8:30 PM – 10:00 PM	4th Floor Atrium

Wednesday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 3:15 PM **Ballroom B**

S1: Feel the flow: how water movement shapes organisms and ecosystems

Chairs: Molly Womack, Bryan Juarez

8:00 am	*Bryan Juarez, Madison Lacey, Isaac Quintanilla-Salinas, Lauren O'Connell; Stanford University, California State University, Channel Islands*	Balancing my human experience and collaborative research on fluid homeostasis in tropical frogs
8:30 am	*Swanne Gordon, Yusan Yang, Caleb Axelrod, Andrés López-Sepulcre; Cornell University, University of South Florida*	Examining the role of diverse sexual behavior and conflict on eco-evolutionary dynamics
9:00 am	*Kelly Diamond, Heiko Schoenfuss, Richard Blob; Rhodes College, St. Cloud State University, Clemson University*	When to go against the flow: lessons from migrating fish
9:30 am	*Victoria Watson-Zink, Rachael Bay, Richard Grosberg, Joelle Lai; Stanford University, University of California, Davis*	Transcriptomic responses of gecarcinid land crabs to acute and prolonged desiccation stress
10:00 am	**Coffee Break**	**Exhibit Hall**
10:30 am	*Eric Riddell; University of North Carolina Chapel Hill*	How temperature decouples a universal trade-off between gas exchange and water loss in amphibians
10:45 am	*Jhan Salazar-Salazar; Washington University in St. Louis*	Shape of the water: lizards and the tropics
11:00 am	*Brooke Bodensteiner, Nathalie Alomar, Martha Munoz, Isabela Hernandez-Rodriguez, Miguel Landestoy, Saúl Domínguez-Guerrero; Yale University*	The evolution thermal and hydric physiology of Hispaniolan anoles.
11:15 am	*Kwasi Connor, Beck Wehrle, Daniel Rankins, Jonathan Lopez, Diana Nieves; University of California Irvine, Bryn Mawr*	The Effects of Diet and Acute Heat-Stress on Digestive Enzyme Activity in Mussels
11:30 am	*Kathleen Ferris; Tulane University*	Do spatially and temporally varying selection affect species boundaries in sympatric Monkeyflowers?
11:45 am	*Lawren Sack, Jeffrey Wood; University of California Los Angeles, University of Missouri*	Whole forest hydraulics influences growth, drought responses and the atmosphere under climate change
12:00 pm	**Lunch**	
1:30 pm	*Jackson Phillips, Molly Womack, Shane NGWENYA, Gary Nicolau; Utah State University, Utah State University - Biology, University of the Western Cape, Villanova University*	The effect of living in flow on evolved strategies for gas exchange in South African tadpoles.
1:45 pm	*Lauren Simonitis, Aubrey Clark, Elizaveta Barskaya, Tricia Meredith, Marianne Porter; University of Washington's Friday Harbor Labs, Florida Atlantic University*	Flowing Your Nose: correlation between sensory tissue and water flow in Chondrichthyan noses
2:00 pm	*Aubree Jones, Anabela Maia, Kevin Conway, Jacqueline Webb; University of Rhode Island, Rhode Island College, Texas A&M University*	The Silverjaw Minnow: An Extraordinary Lateral Line System and Its Contribution to Prey Detection
2:15 pm	*Dylan Wainwright, George Lauder, Bradford Gemmell; Purdue University, Harvard Univ, University of South Florida*	The slimy & scaly surfaces of teleost fishes: hydrodynamic function
2:30 pm	*Naoko Kurata, Liz Alter, Melanie Stiassny, Michael Hickerson; Cornell University, American Museum of Natural History, CSUMB, The City College of New York*	Impacts of paleoclimatic river flow change on the diversification and gene flow of lower Congo river
2:45 pm	*Emily Kane, Austin Garner, Lily Hume, Thomas Pesacreta; University of Louisiana at Lafayette, Syracuse University*	Fishy friction: Microscopic features on sculpin fin rays and their potential role in station-holding
3:00 pm	*Maya Gomez, Jenna Dilworth, Daniel Olivares-Zambrano, Anthony Insinilla, Daniella Leon, Sophia Lee, Marissa Fine, Carly Kenkel; University of Southern California & Perry Institute for Marine Science, University of Southern California*	Fine-scale morphological plasticity in staghorn coral as a function of flow, light and genotype

8:00 AM – 3:00 PM **Rooms 619-620**

S2: Immunity in the 'omics age: what can 'omics approaches tell us about immunity in natural systems?

Chairs: Lauren Fuess, Nikki Traylor-Knowles

8:00 am	*Lauren Fuess; Texas State University*	Facultatively symbiotic species as models for exploring immune-symbiosis interplay
8:30 am	*Katherine Buckley; Auburn University*	Echinoderms rely on rapidly evolving repertoires of immune receptor genes
9:00 am	*William Browne, Lauren Vandepas, Kevin Wong, Nikki Traylor-Knowles; University of Miami, Rosenstiel School of Marine, Atmospheric, and Earth Science*	Characterizing ctenophore phagocytes and their innate immune function role in Mnemiopsis leidyi
9:30 am	*Richard Meisel, Danial Asgari, Dana Nayduch; University of Houston, Vanderbilt University, USDA*	Expression and evolution of antimicrobial peptide genes in flies with expanded immune repertoires
10:00 am	**Coffee Break**	Exhibit Hall
10:30 am	*Esther Fernandez, Danielle Whittaker, Joel Slade*; California State University, Fresno, Oregon State University*	MHC and the genome: selection and population genetics vary between migratory and resident songbirds
11:00 am	*Ana Longo, David Rodriguez; University of Florida, Texas State University*	Real-time sequencing can facilitate studies of infection biology in wild amphibians and reptiles
11:30 am	*Kailey McCain, Elizabeth Sheldon, Roi Dor, Kim Mathot, Blanca Jimeno, Henrik Jensen, Kate Buchanan, Jim Briskie, Aaron Schrey, Massamba Thiam, Jorgen Soraker, Thinh Vu, Ho Thu Phuong, Gabriela Mansilla, Lynn Martin; University of South Florida, Georgia Southern University, Cheikh Anta Diop University*	Immune modulation in native and non-native house sparrows
12:00 pm	**Lunch**	
1:30 pm	*Lauren Vandepas, Kevin Wong, Frederick Goetz, Nikki Traylor-Knowles, Adam Lacy-Hulbert, William Browne; University of Miami, University of Wisconsin - Milwaukee, Benaroya Research Institute, University of Washington*	Transcriptomics inform immune cell type evolution in diverse metazoans
2:00 pm	*Kevin Wong, Natalia Andrade-Rodriguez, David Ehrens, Gabriela Hage, Ellyn Darke, Nikki Traylor-Knowles; University of Miami*	Characterizing dark gene functions in corals through microscopy and scRNA-seq approaches
2:30 pm	*Lauren Fuess; Texas State University*	Round table discussion: The future of immune 'omics

8:00 AM – 3:30 PM **Ballroom C**

S3: Moving in an uncertain world: Adaptive locomotion from organisms to machine intelligence

Chairs: Jean-Michel Mongeau, Kaushik Jayaram

8:00 am	*Kaushik Jayaram, Jean-Michel Mongeau; University of Colorado Boulder, Penn State University*	Introduction to moving in an uncertain world adaptively in biological and bioinspired systems
8:30 am	*Ignacio Escalante; University of Illinois - Chicago*	Recovering from voluntary bodily damage: Robust locomotion in Opiliones
9:00 am	*Nathaniel Hunt, Seongwoo Mun; University of Nebraska Omaha*	CANCELLED – Treading Through Change: Robust bipedal gait in a dynamic landscape
9:30 am	*S. Tonia Hsieh; Temple University*	Changing foot shape and function during locomotion on sand
10:00 am	**Coffee Break**	Exhibit Hall
10:30 am	*Adrienne Fairhall; University of Washington*	Neurons to movement in Hydra
11:00 am	*Terufumi Fujiwara; RIKEN*	Neural mechanisms of rapid, precise, and adaptive motor control
11:30 am	*Anna Stöckl; Konstanz University*	How vision guides proboscis movements for flower inspection in hawkmoths.
12:00 pm	**Lunch**	

1:30 pm	*Perrin Schiebel, Alyssa Hernandez, Robert Wood; Harvard University, Montana State University*	Mechanical design for improved foot-ground interactions in complex terrains
2:00 pm	*Josh Bongard*	AI-driven design of mobile robots and xenobots.
2:30 pm	*Xinyan Deng, Yiming Zhou; Purdue University*	Bio-Inspired Hummingbird Robot Navigating Environmental Disturbances
3:00 pm	*Jean-Michel Mongeau, Kaushik Jayaram; Penn State University, University of Colorado Boulder*	An engineering perspective to unravel adaptive organismal locomotion

Wednesday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:45 AM **Room 607**

Vertebrate morphogenesis and evolution

Chair: Gareth Fraser

8:00 am	*Collin Shinkle, W. James Cooper; Western Washington University*	The Fish Bites Back: A Developmental Analysis of Feeding Biomechanics in Danionin Minnows
8:15 am	*Gareth Fraser, Ella Nicklin, Karly Cohen; University of Florida*	Developmental and regenerative inconsistencies between tooth-like structures in sharks
8:30 am	*Ella Nicklin, Gareth Fraser; University of Florida*	Time heals all wounds: the effect of wounding on skin denticle development in cartilaginous fishes
8:45 am	*Wesley Dillard, Julia Bailey, Gareth Fraser; University of Florida*	Influence of Putative Developmental Networks on the Development of Dermal Armor in Armored Catfish
9:00 am	*Katelyn Mika, Julius Tabin, Cristian Molina, Atreyo Pal, Anindita Basu, Neil Shubin; University of Tulsa*	Characterizing Variation in Pectoral Fin Evolution and Development Using Single Cell Transcriptomics
9:15 am	*Neelima Sharma, Yara Haridy, Neil Shubin; University of Chicago*	Origin and development of synovial joints
9:30 am	*Stella Kyomen, Monique Simon, Tiana Kohlsdorf*; Max Planck Institute for Evolutionary Biology, Oklahoma State University, University of São Paulo*	Osteology of the autopodium of Tropidurinae lizards: modularity and phenotypic integration

8:00 AM – 9:45 AM **Room 606**

Schooling and swarming

Chairs: Yangfan Zhang, Ashley Peterson

8:00 am	*James Liao, Subhra Shankha Koley, Edwin Rajeev; University of Florida, Whitney Lab for Marine Bioscience*	Understanding three-dimensional flows in a fish school using wild menhaden and robots
8:15 am	*Ashley Peterson, Nathan Swanson, Matt McHenry; University of California Irvine*	The effect of school size and flow sensing on collective schooling behavior
8:30 am	*Nathan Swanson, Ashley Peterson, Christopher Martinez, Matt McHenry; University of California Irvine*	South American tetras display interspecific variation in schooling behavior kinematics
8:45 am	*Michael Calicchia, Rui Ni; Johns Hopkins University*	Navigating Turbulent Environments: Insights from Fish Schools
9:00 am	*Yangfan Zhang, Hungtang Ko, Michael Calicchia, Rui Ni, George Lauder; Harvard University, Princeton University, Johns Hopkins University*	Schooling fish save energy by filtering environmental turbulence
9:15 am	*Aishwarya Nair, Alejando Alvaro, Siddhartha Verma; Florida Atlantic University*	Optimal kinematics for individual and group-swimming using deep reinforcement learning
9:30 am	*Nina Mohebbi, Joonha Hwang, Matthew Fu, John Dabiri; California Institute of Technology, Georgia Institute of Technology*	Experiments and modelling of swarming induced fluid velocity

8:00 AM – 9:45 AM **Room 617**

Bioinspired engineering

Chairs: Brett Klaassen van Oorschot, Alyssa Hernandez

8:00 am	*Tianyu Wang, Nishanth Mankame, Anushka Bhumkar, Velin Kojouharov, Christopher Pierce, Daniel Goldman; Georgia Institute of Technology*	Physical intelligence aids limbless locomotion in cluttered aquatic environments
8:15 am	*Hungtang Ko, Brian Mmari, Di Ni, Radhika Nagpal; Princeton University*	Designing a miniature fish robot – an aquatic analog for hexbugs
8:30 am	*Brett Klaassen-van-Oorschot, Timo van-Leeuwen, Lara-Marie Jess, Guillermo Amador; Wageningen University, KU Leuven, Westphalian University of Applied Sciences*	Examining cuttlefish suckers using FEM and biomimetics: An open-source workflow for studying suction
8:45 am	*Sophia Sordill, Andrew Schulz*, David Hu, Claire Higgins; Brown University, Max Planck Institute for Intelligent Systems, Georgia Institute of Technology*	Collagen entanglement in elephant skin gives way to strain-stiffening mechanisms
9:00 am	*Alyssa Hernandez, Perrin Schiebel, Robert Wood; Harvard University, Montana State University*	Bioinspired spines on an insect-scale robot facilitate locomotion on diverse terrains

8:00 AM – 10:00 AM **Room 611**

Division of Invertebrate Zoology Best Student Presentation Mary Rice Award

Chair: Jonathan Allen

8:00 am	*Ariana Lee, Isabel Villafuerte, Sarah Kasem, Ethan Nguyen, Douglas Pace; California State University Long Beach*	Change for a dollar? Sand dollar larvae maintain food-induced plasticity throughout development
8:15 am	*Erik Etzler, Darryl Gwynne, John Ratcliffe, Hannah ter-Hofstede; University of Toronto Mississauga, University of Windsor*	Exposure to traffic noise changes baseline auditory neural activity and decision-making in crickets
8:30 am	*Callum Backstrom, Lisa Rodrigues, Jacqueline Padilla-Gamino; University of Washington*	Tracking heavy metals during bleaching stress and recovery in Hawaiian reef-building corals
8:45 am	*Jazcenya Gonzalez, Gretchen Hofmann, Kit Yu Karen Chan; Swarthmore College*	Reacclimation to normal temperature failed to restore gamete performance in heatwave-exposed urchins
9:00 am	*Caitlin BrabbleRose, Quinton Krueger, Paola López-Duarte; University of North Carolina at Charlotte, Portland State University*	It's About Time: Unraveling the Molecular Clocks of Fiddler Crab Embryos and Larvae
9:15 am	*Theo Po, Matt McHenry; University of California Irvine*	Directional control of phototactic behavior in sea stars
9:30 am	*Leonardo Tozetto, Julian Katzke, Gaurav Agavekar, Evan Economo; Okinawa Institute of Science and Technology*	Developmental divergence of trap-jaw and non-trap-jaw strumigenys ants during metamorphosis
9:45 am	*Brittany Cummings; University of Florida, Florida Museum of Natural History*	The silk road to skeleton shrimp and whale lice

8:00 AM – 10:00 AM **Room 602**

Macroevolution

Chair: Edward Burress

8:00 am	*Andrew Orkney, David Boerma, Brandon Hedrick; Cornell University, American Museum of Natural History*	Princes of Darkness: limb skeleton organisation and evolutionary dynamics in bats
8:15 am	*Bruno Frederich, Laurent Mittelheiser, Amandine Gillet, Vincent Laudet, Alex Dornburg; University of Liege, Museum of Comparative Zoology, Harvard University, Okinawa Institute of Science and Technology, University of North Carolina at Charlotte*	Exploring the diversity and the evolution of colour patterns in reef fishes
8:30 am	*Fabio Machado; Oklahoma State University*	The tempo of the invasion of new adaptive zones in mammals
8:45 am	*Edward Burress, Maya Stokes, Martha Munoz; University of Alabama, Florida State University, Yale University*	High Elevation is an ecological dead end for Appalachian salamanders

9:00 am	*Juliette Rubin, CJ Campbell, Ana Paula Carvalho, Ryan St.-Laurent, Gina Crespo, Taylor Pierson, Robert Guralnick, Akito Kawahara; Smithsonian Tropical Research Institute, University of Florida, Florida Museum of Natural History, Smithsonian National Museum of Natural History*	A multi-experiment investigation of an elaborate anti-predator trait in moon moths
9:15 am	*Michael Moore, Sarah Nalley, Dalal Hamadah; University of Colorado Denver*	A mating innovation facilitates niche expansion and buffers species against climate change
9:30 am	*Cody Howard; Oklahoma State University*	Morphological evolution across bulbous monocots

8:00 AM – 10:00 AM **Room 618**

Vertebrate feeding

Chair: Elska Kaczmarek

8:00 am	*Mason Laurin, Diego Sustaita; California State University San Marcos*	Malleable mouths: upper and lower beak kinematics of shrikes in relation to bite force and velocity
8:30 am	*Brian Richard, Meghan Spence, Mateo Rull-Garza, Yonas Roba, Daniel Schwarz, Jason Ramsay, J.D. Laurence-Chasen, Callum Ross, Nicolai Konow; University of Massachusetts Lowell, University of Massachusetts Amherst, Westfield State University, University of Chicago*	Rhythmic chew cycles with distinct fast and slow phases are ancestral to gnathostomes
8:45 am	*William Ryerson; Cornell University*	The interaction of tooth shape and strike kinematics in the feeding behavior of snakes
9:00 am	*Thomas Stroud, Kendall Steer, Chloe Edmonds, Khaled Adjerid, Johnson Gao, Kree Kerkvliet, Rebecca German, Christopher Mayerl; Northern Arizona University, Northeast Ohio Medical University, Tulane University, Northern Arizona University*	Modulation of feeding mechanics in the red-footed tortoise, Chelonoidis carbonarius
9:15 am	*Stephane Montuelle, Susan Williams; Ohio University*	Effects of post-weaning food texture modification on chewing behavior and kinematics in pigs
9:30 am	*Elska Kaczmarek, Kendall Steer, Max Sarmet, Hannah Shideler, Alexane Fauveau, Ani Smith, Skyler Wallace, Maressa Kennedy, Alex-Ann Velasco, Thomas Stroud, Morgan Blilie, Christopher Mayerl; Northern Arizona University, Northeast Ohio Medical University, University of Brasília*	Feeding biomechanics and physiology of infant pigs raised on standard and biomimetic bottle nipples
9:45 am	*Nikole Schneider, Christopher Anderson; University of South Dakota*	Muscle activation patterns of multiple feeding strategies in chameleons

8:00 AM – 10:00 AM **Rooms 613-614**

Movement: How animals move in their environment, Part 1

Chairs: Acacia Tang, Claire Wyart

8:00 am	*Claire Wyart, Noah Locke, Vincent Laudet, Olivier Mirat; Paris Brain Institute (ICM), Okinawa Institute of Science and Technology, Paris Brain Institute*	Fine kinematic analysis of anemonefish larvae reveals mechanisms enabling pelagic dispersal
8:15 am	*Madelyn Rupp, Lauren Simonitis, Bryan Gahn, Theresa Morris, Christopher Marshall; Texas A&M University at Galveston, University of Washington's Friday Harbor Labs, Florida Atlantic University, Texas A&M University*	Environmental Drivers of Movement for Marine Megafauna on the Upper Texas Coast
8:30 am	*Justin Jenkins, Iwo Gross, Molly Folkerts-Caldwell, Matthew Wolak; University of Miami, Auburn University*	Environmental impacts on freshwater turtle behavior across an urban-rural gradient
8:45 am	*Christopher Marshall, Madelyn Rupp; Texas A&M University*	Movement Patterns of Upper Texas Coast Loggerhead Sea Turtles
9:00 am	*Eric Price, Pranav Khandelwal*, Daniel Rubenstein, Aamir Ahmad; Institute of Flight Mechanics and Controls, University of Stuttgart, Princeton University*	A Framework for Fast, Large-scale, Semi-Automatic Inference of Animal Behavior from Monocular Videos

9:15 am	*Benjamin Seleb, Matt Bull, Saad Bhamla; Georgia Institute of Technology*	Sled dogs don't synchronize
9:30 am	*Alyssa Sargent, Ana Melisa Fernandes, Rosalee Elting, Samantha-Lynn Martinez, Aeris Clarkson, Laney Hansell, Alexandra Coenen, Talwekar Yash, Miguel Angel Muñoz-Amaya, Nicolás Téllez-Colmenares, Alejandro Rico-Guevara; University of Washington, University of Montana, Centro de Investigación Colibrí Gorriazul*	Tiny Backpacks: Experimentally Monitoring the Behavior of Radio-Tagged Hummingbirds in Colombia

8:00 AM – 10:00 AM **Room 608**

Speciation and species delineation

Chair: Remi Ketchum

8:15 am	*Remi Ketchum, Edward Smith, Whitney Leach, Leandra Toledo, Adam Reitzel, Joseph Ryan; University of Florida, University of Warwick, Stowers Institute for Medical Research, University of North Carolina Charlotte, The Whitney Laboratory for Marine Bioscience*	Speciation in the holopelagic ctenophore Mnemiopsis
8:30 am	*Sara Lipshutz; Duke University*	Sexual selection and speciation in socially polyandrous shorebirds
8:45 am	*Victoria Foe; Friday Harbor Laboratories, University of Washington*	Does the meiotic pachytene checkpoint drive sympatric speciation?
9:00 am	*Madeline Armstrong, Jessica Zehnpfennig, Kenneth Halanych, Andrew Mahon; Central Michigan University, University of North Carolina Wilmington*	Morphology and mitogenomic insights into the evolution of the sea spider genus Ammothea(Pycnogonida)
9:15 am	*Lan-Nhi Phung, Marcella Baiz, Daniel Pierce, Alan Brelsford, David Toews; The Pennsylvania State University, University at Buffalo, University of California, Riverside*	Admixture mapping of call variation in the yellow-rumped warbler (Setophaga coronata) hybrid zone

8:00 AM – 10:00 AM **Room 612**

Division of Phylogenetics & Comparative Biology Best Student Presentation David and Marvalee Wake Award

Chairs: Sam Price, Leigha Lynch

8:00 am	*Liam Taylor, Richard Prum; Yale University*	Discrete developmental phylogenetics and the evolution of plumage signals in young manakins
8:15 am	*Haley Heine, Shahan Derkarabetian, Rina Morisawa, Phoebe Fu, Nathaniel Moyes, Sarah Boyer*; Macalester College, Harvard University, American Museum of Natural History, University of British Columbia*	Machine learning approaches delimit cryptic taxa in a previously intractable species complex
8:30 am	*Alexus Roberts-Hugghis, Christopher Martinez, Katherine Corn, Peter Wainwright; University of Bern, University of California Irvine, Virginia Tech*	The modified pharyngeal jaw constrains the diversification of fish feeding kinematics
8:45 am	*Caleb Butler, Kira Turnham, Andy Hess, Todd LaJeunesse; The Pennsylvania State University*	Parallel Play: Convergent Evolution of Ecological Strategies By Separate Lineages of Coral Symbionts
9:00 am	*Sofia Piggott, Ghislaine Cárdenas-Posada, Mallory Tucker, Elizabeth Brainerd, Sharon Swartz, Matthew Fuxjager; Brown University*	Wing bone evolution in manakins—mitigating putative costs of sexual selection for bizarre traits
9:15 am	*Shih-Na Liu, Peter Wainwright, Michael Burns; University of California, Davis*	Diet drives varied rates of body shape evolution in reef fish
9:30 am	*Kennedy Agwamba; University of California, Berkeley*	On the demographic history of the Western European house mouse, Mus musculus domesticus
9:45 am	*Maria Vallejo-Pareja, Maya Victor, Jonathan Bloch, David DeMar, Gregory Wilson-Mantilla, David Blackburn; Florida Museum of Natural History, University of Florida, Burke Museum of Natural History and Culture*	How big were these old, dead frogs? Inferring mass and SVL for a Late Cretaceous community of frogs.

8:00 AM – 10:00 AM **Room 604**

Terrestrial locomotion on complex surfaces

Chairs: Charles Edwards, Baxi Zhong

8:00 am	*Ruiqi Wang, Glenna Clifton, Nick Gravish; University of California, San Diego, University of Portland*	The influence of terrain roughness on cockroach walking and limb collisions
8:15 am	*Charles Edwards, Henry Astley; University of Akron*	Head rotation impacts the force required for penetration in damp granular media
8:45 am	*Baxi Zhong, Juntao He, Kelimar Diaz, Tianyu Wang, Daniel Irvine, Daniel Soto, Yasemin Ozkan-Aydin, Grigoriy Blekherman, Daniel Goldman; Georgia Tech, Georgia Institute of Technology, University of Notre Dame*	Physical intelligence in centipede limbs facilitate reliable locomotion on rugose terrain
9:00 am	*Teresa Rose Osborne, Stephen Yanoviak, Alyssa Stark; Villanova University, University of Louisville*	Running hot: Neotropical ant running speed is independent of surface temperature
9:15 am	*Kaylee Velasquez, Keegan Lutek, Stephen Yanoviak, Alyssa Stark; Villanova University, University of Louisville*	Gait and Kinematics of a Tropical Arboreal Ant (Cephalotes atratus) on Wet Substrates
9:30 am	*Stacey Shield, Gavin Foster, Azraa Valley, Naoya Muramatsu, Ardian Jusufi, Amir Patel; University of Cape Town, African Robotics Unit at the University of Cape Town, EMPA - Swiss Federal Laboratories for Material Science and Technology*	Tail Use for Postural Stabilization in Captive Cheetahs during Routine Transportation
9:45 am	*Naoya Muramatsu, Sangyun Shin, Qianyi Deng, Amir Patel; University of Cape Town, University of Oxford, African Robotics Unit at the University of Cape Town*	WildPose: A Long-Range 3D Motion Capture System for Wildlife

8:00 AM – 10:00 AM **Room 603**

Modeling and computational approaches

Chair: Jacob Harrison

8:15 am	*Murat Maga, Sara Rolfe, Chi Zhang, Arthur Porto, Adam Summers, Steve Pieper, Andras Lasso; University of Washington, Seattle Children's Research Institute*	3D Slicer and SlicerMorph: A new frontier for 3D digital morphology
8:45 am	*Sara Rolfe, Murat Maga; Seattle Children's Research Institute, University of Washington*	DeCA: A Dense Correspondence Analysis Toolkit for Shape Analysis
9:00 am	*Rachel Roston, Sophie Whikehart, Sara Rolfe, Murat Maga; Seattle Children's Research Institute, University of Washington*	Simulating Morphology with SlicerMorph and Advanced Normalization Tools (ANTs)
9:15 am	*Miranda Margulis-Ohnuma, Armita Manafzadeh, Elizabeth Brainerd, Bhart-Anjan Bhullar; Yale University, Brown University*	Integrating GM and XROMM illuminates the role of the quadrate as a keystone of cranial kinesis

8:00 AM – 10:00 AM **Rooms 615-616**

Global change: Community and species interactions

Chair: Keith Sockman

8:00 am	*Nathan Duerr, Kimberly Sheldon; University of Tennessee*	The impacts of climate change on secondary seed dispersal in dung beetles
8:15 am	*Rachel Bockrath, Erin Questad, Eric Wood, Elizabeth Scordato; North Dakota State University, California State Polytechnic University Pomona, California State University Los Angeles*	Avian community nestedness and turnover differ between habitats in a complex urban-agroecosystem
8:30 am	*Lily Gowens, Caitlin Wells, Benjamin Freeman; Georgia Institute of Technology*	Evaluating climate disruption on avian species and communities in the southern Rocky Mountains

8:45 am	*Alanna Frick, Amanda Kirkland, T. Erin Cox; Tulane University, University of New Orleans*	Does global ocean change affect vulnerability of invertebrate prey to Gray Triggerfish predation?
9:00 am	*Keith Sockman; University of North Carolina Chapel Hill*	Escalating summer temperature-minima drive collapse of a mountain insect community

8:00 AM – 10:00 AM **Room 609**

Division of Comparative Endocrinology Best Student Presentation Gorbman Award

Chairs: Rachel Bowden, Jamie Cornelius

8:00 am	*Megan Freiler, G. Troy Smith; Indiana University*	Electrocommunication and steroid hormones covary with individual condition across knifefishes
8:15 am	*Kevin Pham, Haruka Wada; Auburn University*	Simulated night shift work alters physiology and metabolism in a model diurnal songbird
8:30 am	*Thomas Ryan, Conor Taff, Monique Pipkin, David Chang-van-Oordt, Maren Vitousek; Cornell University, Princeton University*	Corticosterone manipulation alters patterns of social interaction in breeding tree swallows
8:45 am	*Grace Curtis, Robyn Reeve, Erica Crespi; Washington State University*	Pleiotropic Roles of Leptin Signaling in Xenopus Tail Tip Regeneration
9:00 am	*Jalyn Devereaux, Jessica Karr, Thomas Hahn, Jamie Cornelius; Oregon State University, University of California-Davis*	Cold, wet winters: How climate change may impact reproductive investment in captive crossbills
9:15 am	*Jennifer Heppner, Jenny Ouyang; University of Nevada Reno*	Avian maternal hormone transfer is mediated by limited food in urban environments
9:30 am	*Emily Voelkner, Dan Crocker, Jane Khudyakov; University of the Pacific*	Transgenerational effects of stress on the plasma proteome of a marine mammal
9:45 am	*Kaja Arusha, Gurprince Attlas, Cassandra Carlson, Mallory Duprey, Paula Duarte-Guterman, Carolyn Bauer*; Swarthmore College, Brock University*	Markers of hippocampal plasticity vary with glucocorticoid levels in a rodent model (Octodon degus)

10:00 AM – 12:00 PM **Rooms 615-616**

Division of Comparative Biomechanics Best Student Presentation

Chair: James Liao

10:00 am	*Melody Young, Jon Gustafson, Edwin Dickinson, Michael Granatosky; New York Institute of Technology*	Climbing is hard (for literally everyone).
10:15 am	*Jeffrey Hainer, Emily Standen, Keegan Lutek; University of Ottawa, Villanova University*	Post-spinal Transection Muscle Activation In The American Eel (Anguilla rostrata)
10:30 am	*Eugene Lin, Yishun Zhou, Luke Moon, Andrew Gordus, Chen Li; Johns Hopkins University*	Robophysical modeling of how orb-weavers crouch legs to modulate prey vibration sensing
10:45 am	*Hendrik Beck, Fabian Plum, David Labonte; Imperial College London*	A planar omnidirectional treadmill to study insect locomotion
11:00 am	*Ananth Srinivas-Nurani, Arend von-der-Lieth, Jen Bright, Emily Rayfield, David Goldsby, Lauren Sallan; University of Pennsylvania, Polytec, Inc., University of Hull, University of Bristol, Okinawa Insitute of Science and Technology*	Finite element model validation in biomechanics using a 3D scanning Laser Doppler Vibrometer
11:15 am	*David Cuban, Yohanna Dalimunthe, Rauri Bowie, Steve Johnson, Alejandro Rico-Guevara; University of Washington, Indonesian Institute of Sciences*	Feeding efficiency of sunbirds and comparisons with other nectar-feeding birds
11:30 am	*Brian Woronowicz, Murtaza Hathiyari, Shahin Lashkari, Noah Cowan; Johns Hopkins University*	Tail-Assisted Climbing in Rats
11:45 am	*Kayla Lee, Erin Lee, Michael Rainbow; Queen's University*	The Human Shoulder's Dual Challenge: Maintaining Torque and Speed During a High Demand Task

10:15 AM – 11:45 AM **Room 607**

Developmental gene expression: from novelty to plasticity

Chair: Sarah McKay Strobel

10:15 am	*Karen Sears, Steve Horvath, Amin Haghani, Joseph Zoller, Ishani Sinha, Aidan Couzens, Clive Lau, Meghety Manoyan, Yadiamaris Ruiz, Annais Talbot; University of California Los Angeles, Altos Labs, Princeton University, Inter American University of Puerto Rico*	Shared epigenetic controls link post-natal development and aging in mammals
10:30 am	*Yolitzi Saldivar-Lemus, Saeid Panahi-Hassan-Barough, Caitlin Gabor; Texas State University*	The effect of indirect exposure to BPA during embryonic development in live-bearing fish
10:45 am	*Eleni Katsougia, Erik Ragsdale; Indiana University*	Testing the developmental role of nuclear receptors regulated by a plasticity switch
11:00 am	*Sarah McKay Strobel, Eva Fischer, Molly Womack; Utah State University, University of Illinois Urbana-Champaign*	CANCELLED – Developmental phenotypic plasticity varies between two distantly related anuran species
11:30 am	*Jessica Goodheart, Robin Rio, Rose Fiorenza, Deirdre Lyons; American Museum of Natural History, Stanford University, Scripps Institution of Oceanography, University of California, San Diego*	Identifying nematocyst sequestration genes in the nudibranch *Berghia stephanieae*

10:15 AM – 11:45 AM **Room 611**

Bipedal terrestrial locomotion

Chairs: Vikas Bhandawat, Christian Hubicki

10:15 am	*Jim Usherwood; The Royal Veterinary College*	The collisional geometry of economical walking predicts human leg and foot segment proportions
10:30 am	*Vikas Bhandawat, Tirthabir Biswas, Ali Tehrani-Safa; Drexel University, Janelia Research Campus, HHMI*	Towards a general model for legged locomotion
10:45 am	*Taylor Dick, Friedl De-Groote, Christofer Clemente; The University of Queensland, KU Leuven, University of the Sunshine Coast*	Selection for maximum speed explains patterns of posture and energetics across body sizes
11:00 am	*Noah Chernik, Reuben Jacobson, Melody Young, Stratos Kantounis, Samantha Lynch, Edwin Dickinson, Michael Granatosky; New York Institute of Technology*	Reducing locomotor costs in neuroatypical children through high-intensity training
11:15 am	*Christian Hubicki, Jacob Hackett, Tianze Wang, Jason White, Monica Daley; Florida State University, FAMU FSU College of Engineering, University of California Irvine*	Computational models of risk-aware bipedalism
11:30 am	*Yuting Lin, Jeffery Rankin, Mehran Moazen, John Hutchinson; Royal Veterinary College, Rancho Los Amigos National Rehabilitation Center, University College London*	How emus stand up: hindlimb kinematics, kinetics and muscle dynamics

10:15 AM – 12:00 PM **Room 606**

Cellular and molecular physiology, Part 1

Chair: Jason Podrabsky

10:15 am	*Emma Timmins-Schiffman, Tanya Brown, Brook Nunn, Rayhan Khanna, Lisa Rodrigues, Elizabeth Duselis, Miranda Mudge, Callum Backstrom, Mike Riffle, Jeremy Axworthy, Brendan MacLean, Jacqueline Padilla-Gamino; University of Washington, School of Aquatic and Fishery Sciences*	Trans-generational proteomic plasticity in coral response to thermal bleaching
10:30 am	*Kristen Whalen, Oscar Garrett, Maya Cheam, Elizabeth Harvey, Marta Wilbrink; Haverford College, University of New Hampshire*	CANCELLED – Impacts of Bacterially Mediated Chemical Interactions on Viral Success in Marine Ecosystems
10:45 am	*Jason Podrabsky, Amie Romney; Portland State University*	The Role of Vitamin D Provisioning in Regulation of Diapause in Annual Killifish
11:00 am	*Talia Head, Donald Mykles; Colorado State University*	Functional analysis of protein kinase G in in the decapod crustacean molting gland

11:15 am	*Jorge Perez-Moreno, Mihika Kozma, Neha Gandhi, Luisanna Hernandez-Jeppesen, David Durica, Tomer Ventura, Donald Mykles; Colorado State University, Queensland University of Technology, University of Oklahoma, University of the Sunshine Coast*	Out of the shell: In silico deorphanization of MIH/CHH neuropeptide GPCR candidates
11:30 am	*Zachary Bengtsson, Hollie Putnam, Steven Roberts, Sam White, Danielle Becker; University of Washington, University of Rhode Island*	Comparative analyses of long non-coding RNA activity in three coral species
11:45 am	*Aurora Alvarez-Buylla, Elicio Tapia, Dania Nanes-Sarfati, Nora Martin, Mabel Gonzalez, Luis Coloma, Lauren O'Connell; Stanford University, Centro Jambatu de Investigación y Conservación de Anfibios*	Toxin tales: alkaloid load correlates with gene expression differences in poison frogs
12:00 pm	*Aleksey Maro, Ammon Corl, Rauri Bowie, Jimmy Mcguire, Robert Dudley; University of California, Berkeley*	A survey of ethanol concentrations within floral nectars at a Mediterranean climate botanical garden

10:15 AM – 12:00 PM **Room 609**

Digestion

Chair: Kenneth Welch

10:30 am	*Amelia Christian, Charles Robbins, Troy Tollefson, Jessie McCleary-Smith, Chelsea Davis, Anthony Carnahan, Ellery Vincent, Heather Havelock, Perry Barboza; Texas A&M University, Washington State University, Mazuri® Exotic Animal Nutrition*	Protein metabolism limits mass gain in brown bears
10:45 am	*William Karasov, Enrique Caviedes-Vidal, Melisa Magallanes, Agustin Baricalla, Antonio Brun; University of Wisconsin-Madison, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), UNSL*	CANCELLED – Coordinated gene expression in intestinal oligo-peptide and -saccharide breakdown and absorption
11:00 am	*Kirsten Clerre Rafanan, Michelle Herrera, Caitlyn Catabay, Donovan German*; California State University Fullerton, University of California Irvine*	Diet shifts alter the activity and distribution of digestive enzymes in an herbivorous fish
11:15 am	*Jerrica Jamison, Kenneth Welch; University of Toronto*	Bats Show Variation in Sugar Metabolism Corresponding with Dietary Guild
11:30 am	*Andrea Bernal, Jasmin Camacho, Kexi Yi, Oscar Murillo-García, Nicolas Rohner; University of Washington, Stowers Institute for Medical Research*	To eat or not to eat sugar: A bat dilemma
11:45 am	*Emma Kordek, Amaya Yip, Alicia Horton, Hope Sohn, John Hatle; University of North Florida*	Impacts of dietary protein quality on reproduction and lifespan of lubber grasshoppers

10:30 AM – 11:30 AM **Room 612**

Response to anthropogenic environmental changes

Chair: TBD

10:30 am	*Adrian Fisher-Il, Jon Harrison, Jennifer Fewell, Brian Smith, Jun Chen, Cahit Ozturk, Kynadi Overcash; Arizona State University*	The effects of a commonly used fungicide on honey bee (Apis mellifera) health
10:45 am	*David Wethey, Weidberg Nicolas, Sarah Woodin; University of South Carolina, University of Oviedo*	ECOSTRESS 70 meter temperatures from space: a game changer for coastal/intertidal marine ecology
11:00 am	*Sarah Tanja, Steven Roberts, Jacqueline Padilla-Gamino; University of Washington*	CANCELLED – Corals in a hot plastic ocean: How heat and phthalates shift a Montipora capitata coral microbiome
11:15 am	*Caroline Fleming-Ianniello, Justin McAlister, Randi Rotjan, Grace Beery; Boston University, College of the Holy Cross*	Understanding the impacts of nutrient pollution on an urban coral in an era of global change

10:30 AM – 11:30 AM **Room 618**

Challenges of conducting research in the global south: Confronting colonial science, Panel Discussion

Chair: Jasmin Graham

10:30 AM – 12:00 PM **Room 603**

Sexual selection

Chair: Christine Miller

10:30 am	*Christine Miller, Michael Forthman, Rebecca Kimball; University of Florida, California State Collection of Arthropods, Plant Pest Diagnostics Branch*	The evolution of multi-component weapons in the superfamily of leaf-footed bugs
10:45 am	*James Boothroyd, Christine Miller; University of Florida*	Resource allocation trade-offs in male leaf-footed bugs
11:00 am	*Liam Dougherty, Faith Rovenolt, Alexia Luyet, Jukka Jokela, Jessica Stephenson*; University of Pittsburgh, ETH*	Ornaments indicate parasite load only if they are dynamic, or parasites are contagious
11:15 am	*Jacob Woods, Noah Leith, Kasey Fowler-Finn; University of South Florida, Saint Louis University*	Male water availability affects mating outcomes in wolf spiders
11:30 am	*Tyler Wittman, Rachana Bhave, Heidi Seears, Aaron Reedy, Robert Cox*; University of Virginia, DataClassroom*	Sex differences in the genetic basis of fitness and their implications for sexual conflict in anoles
11:45 am	*Jacquline Rich, Jonathan Cowart, Dara Orbach; Texas A&M University - Corpus Christi, University of Florida*	Dolphin Reproductive Evolution Explored Through In Vitro Semen Analysis
12:00 pm	*Chris Martine, Melody Sain; Bucknell University*	Is anyone even dioecious, anymore?: The preponderance of leaky males in Australian Solanum

10:30 AM – 12:00 PM **Room 604**

Epigenetics

Chair: Sylvain Giroud

10:30 am	*Christopher Peterson, Carly Scott, Rashin Rashin-Ghaffari, Groves Dixon, Mikhail Matz; University of Alaska Fairbanks, University of Texas at Austin, Corteva, Inc., Moderna, Inc.*	Patterns of intergenerational DNA methylation inheritance in Acropora
10:45 am	*Emma Strand, Shelly Wanamaker, Richard McBride, Andrea Bodnar, Tim O'Donnell; Gloucester Marine Genomics Institute, NOAA Northeast Fisheries Science Center*	Building an 'epigenetic clock': Utilizing DNA methylation patterns to predict age in fish
11:00 am	*Tiffany Hegdahl, Travis Robbins, Aaron Schrey; University of Nebraska Omaha, Georgia Southern University*	Epigenetic variation of periphery and core populations of Prairie lizard (Sceloporus consobrinus)
11:15 am	*Ethan Shealy, Aaron Reedy, Tonia Schwartz, Robert Cox, Benjamin Parrott; University of Georgia, DataClassroom, Auburn University, University of Virginia*	DNA methylomes reveal sex-specific epigenetic aging patterns in a squamate with dimorphic lifespan
11:30 am	*Samantha Bock, Kady Lyons, Lei Yang, Jennifer Wyffles, Gavin Naylor, Benjamin Parrott; University of Georgia, Georgia Aquarium, University of Florida, University of Delaware*	Development of DNA methylation-based age predictors in an elasmobranch
11:45 am	*Sylvain Giroud, Barbara Fux, Sebastian Vetter, Hanna Rauch-Schmücking, Johanna Painer, Steve Smith, Sabine Lagger, Gerda Egger, Caroline Gilbert; Northern Michigan University, Research Institute of Wildlife Ecology, Institute of Animal Welfare Science, Konrad Lorenz Institute of Ethology, Institute of Pathology, Medical University of Vienna, Veterinary National School Alfort*	Keep the Pace: Lifelong Effects of Torpor Use During Development in a Small Hibernator

10:30 AM – 12:00 PM **Room 602**

Terrestrial locomotion in amphibians and reptiles

Chairs: Calvin Riiska, Alyssa Head

10:30 am	*Alyssa Head, Princeton Vaughn, Logan Fraire, Emma Foster, Maya Moore, Emily Virgin, Eric Gangloff; Ohio Wesleyan University, Cincinnati Zoo and Botanical Garden*	"Come on Baby, Do the Locomotion": Male and Female Running Strategies in Podarcis muralis
10:45 am	*Masaya Iijima, Richard Blob, John Hutchinson; Royal Veterinary College, Clemson University*	Modeling hindlimb muscle activation in walking alligators across limb posture and body size
11:00 am	*Mizuho Sano, Shin-ichi Fujiwara; Nagoya University*	Relationship between volumic distribution and mode of undulatory locomotion in lizards

11:15 am	*Calvin Riiska, Michelle Lee, Joseph Mendelson, Jennifer Rieser; Emory University*	Climbing without Feet: Forces and Stability in Vertical Snake Locomotion
11:30 am	*Jake Socha, Jeffery Anderson, Beckett Socha, Amalia Moore, Taylor Mortensen, Amalia Moore, Josh Taylor, Emerson Torres Pacaya, Alex Marsh; Virginia Tech, Blacksburg High School, Project Amazonas*	Chironius: a new jumping snake from South America
11:45 am	*Michael Curran, Christopher Anderson; University of South Dakota*	The ups and downs of an arboreal lifestyle: the impact of variable inclines on the kinematics of cha
12:00 pm	*Anthony Cobos, Natalie Holt; University of California Riverside*	Can power amplification improve thermal robustness of muscle in the Western fence lizard?

10:30 AM – 12:00 PM **Room 617**

Vision underwater

Chair: Daniel Speiser

10:30 am	*Alexandra Kingston, Rebekah Hansen, Rebecca Lucia, Daniel Chappell, Daniel Speiser; University of Tulsa, National Academies of Sciences, Engineering and Medicine, Air Force Research Lab, University of South Carolina*	Orbital hoods protect snapping shrimp from shock waves without impairing their visual abilities
10:45 am	*Nicholas Steichmann, Daniel Speiser; University of South Carolina*	Four Eyes, One Vision: Shedding Light on the Function of Decapod Accessory Eyes
11:00 am	*Daniel Speiser, Alexandra Kingston, Daniel Chappell; University of South Carolina, University of Tulsa, National Academies of Sciences, Engineering and Medicine, Air Force Research Lab*	Decentralized visual processing in a chiton with shell eyes
11:15 am	*Judit Pungor, Jeremea Songco-Casey, Angelique Allen, Cristopher Niell; University of Oregon*	Molecular and functional organization of the octopus visual system
11:30 am	*Vanessa Moreno, Lorian Schweikert; UNCW*	Role of vision in dynamic camouflage of adult summer flounder (Paralichthys dentatus)
11:45 am	*Jacob Bolin, Vanessa Moreno, Lorian Schweikert; UNCW*	Humpback whale (Megaptera novaeangliae) visual acuity and the detection of anthropogenic threats

10:30 AM – 12:00 PM **Rooms 613-614**

Flying vertebrate biomechanics

Chairs: Girguis Sedky, Christina Harvey

10:30 am	*Jonas Bengt Carina Håkansson, Hamid Vejdani, Abigail Shultz, Sharon Swartz, Aaron Corcoran; University of Colorado, Lawrence Technological University, Brown University*	Kinematics of turning flight in bats of the Chiricahua Mountain Range
10:45 am	*Andrea Rummel, Olivia Li, Brandon Hedrick, Sharon Swartz, Richard Marsh; Rice University, Cornell University, Brown University*	Distal wing muscle activity in a small fruit bat
11:00 am	*Hannah Wiswell, Aimy Wissa, Girguis Sedky; Princeton University*	Hawk and Roll: Aerodynamics of Harris's Hawk-Inspired Wingtips In and Out of Ground Effect
11:15 am	*Christina Harvey, Rowan Glenn, Andrew Engilis-Jr.; University of California Davis*	Species-specific variation in avian airfoil morphology
11:30 am	*Md Zafar Anwar, Bret Tobalske, Suyash Agrawal, Haoxiang Luo, Bo Cheng; Pennsylvania State University, University of Montana, Vanderbilt University*	Roll stabilization of hummingbirds under external perturbation
11:45 am	*Girguis Sedky, Aimy Wissa; Princeton University*	A Dance of Feathers: The Fluid Dynamics of Feather-Inspired Flow Control Devices
12:00 pm	*Laura Mendez, Amanda Li, Iris Reed, Victoria Yan, Tyson Hedrick; University of North Carolina at Chapel Hill, Duke University, Carnegie Mellon University*	Weighing the risks: Foraging barn swallows decrease flight speed as they approach a water surface

10:30 AM – 12:15 PM **Room 608**

Thermal physiology in ecotherms

Chair: Kelly Wuthrich

10:30 am	*Alex Gunderson; Tulane University*	Thermal plasticity does not change with latitude
10:45 am	*Kelly Wuthrich, Albert Chung, Adam Rosso, Michael Logan, W. Owen McMillan, Christian Cox; Florida International University, Princeton University, University of Texas Arlington, University of Nevada Reno, Smithsonian Tropical Research Institute*	A thermoconforming lizard alters heat-shock protein network expression in response to thermal stress
11:00 am	*Kyle Moxley, Nathalie Alomar, Martha Munoz; Univeristy of Texas Austin, Yale University*	Integrating genetics, phenotype, and physiology in a hybrid population of Plethodon
11:15 am	*Nathalie Alomar, Eric Riddell, Martha Munoz; Yale University, University of North Carolina Chapel Hill*	Altitudinal Adaptations: Exploring Ecophysiology Diversity in Plethodon Salamanders
11:30 am	*Julie Rej, Alex Gunderson, Eric Riddell; Tulane University, University of North Carolina Chapel Hill*	Competition has greatest effect on behavioral thermoregulation in high quality thermal environments
11:45 am	*Riley Wood, Ryan Earley; University of Alabama*	Performance Variation in the Cold Across a Subtropical-Tropical Latitudinal Gradient
12:00 pm	*Zachary Lange, Brooke Bodensteiner, Daniel Nicholson, D Mahler, Martha Munoz, Luke Frishkoff; University of Texas Arlington, Yale University*	Species physiology, distribution limits, and population-level abundances

Wednesday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:15 PM **Room 612**

Division of Phylogenetics & Comparative Biology Chair's Special Session: What bony fishes have taught us about organism-focused evolution

Chairs: Sam Price, Leigha Lynch

1:45 pm	*Stacy Farina; Howard University*	Fish gill ventilation as a system for studying intraspecific biomechanical variation
2:00 pm	*Tal Perevolotsky, Karin Olsson, Tamara Gurevich, Peter Wainwright, Roi Holzman; Tel Aviv University, The Interuniversity Institute for Marine Sciences in Eilat, Marine Monitoring*	Pooling together: pulling from the substrate governs prevailing convergent morphologies of re
2:15 pm	*Kassandra Ford, L Patricia Hernandez; University of Minnesota Twin Cities, The George Washington University*	To Bite or Not to Bite: The Tongue-Bite-Apparatus in mormyrid fishes (Osteoglossiformes)
2:30 pm	*Kara Powder; Clemson University*	Lake Malawi cichlid fishes as model for the evolution of facial development
2:45 pm	*Michael Burns, Darien Satterfield, Nick Peoples, HoWan Chan, Anthony Barley, Michael Yuan, Alexus Roberts-Hugghis, Khalil Russell, Marta Hess, Sarah Williamson, Katherine Corn, Michalis Mihalitsis, Dylan Wainwright, Peter Wainwright; University of California, Arizona State University, University of Bern, Virginia Tech, Purdue University*	Functional feeding mode and diet underlie the exceptional oral jaw diversity of coral reef fishes
3:00 pm	*Kory Evans, April Hugi, Mayara Neves; Rice University*	Backing that Wrasse up to the Next Generation of Morphological Data Collection and Analysis

1:30 PM – 3:30 PM **Room 611**

Molecular evolution

Chair: TBD

1:30 pm	*Perla Achi, Simon Groen, Adler Dillman; University of California Riverside*	A molecular evolution facilitates nematode parasitism of prey carrying toxic cardiac glycosides

1:45 pm	*Gebrehaweria Reda, Ádám Lendvai, Levente Czeglédi, Sawadi Ndunguru, Brigitta Csernus; University of Debrecen*	Nutrient-sensing genes mediate resource allocation in Japanese quails
2:15 pm	*Zachary Dietz, Suzanne Estes, Vaishali Katju, Ulfar Bergthorsson; Portland State University*	Evolution of mitonuclear mismatched C. elegans: Effects of adaptedness, mating system and mitochondrial mutations
2:30 pm	*Sydney Birch, Adam Reitzel, Yehu Moran; University of North Carolina Charlotte, The Hebrew University of Jerusalem*	Connecting copy number variation to microbial and viral diversity in Nematostella vectensis
2:45 pm	*Joachim Surm, Sydney Birch, Jason Macrander, Adrian Jaimes-Becerra, Reuven Aharoni, Adam Reitzel, Yehu Moran*; The Hebrew University of Jerusalem, University of North Carolina Charlotte, Florida Southern College*	Animal venom shapes interspecific interactions, physiology and reproduction
3:00 pm	*Whitney Leach, Jeff Lange, Chris Wood, Brandon Miller, Kyle Weaver, Hannah Wilson, Stefanie Williams, Matt Gibson; Stowers Institute for Medical Research*	CANCELLED – Exploring the regulatory role of PAR-bZIPs in the circadian clock of Nematostella vectensis
3:15 pm	*Hannah McConnell, Jancee Lanclos, Nicholas Gjording, Genevieve Stockman, Julin Maloof, Andrew Plackett, Verónica Di-Stilio; University of Washington, University of California Davis, University of Birmingham*	Reconstructing the Origin of Reproductive Function for the Flower Development Gene LEAFY

1:30 PM – 3:30 PM **Room 608**

Reproductive and parental behavior, Part 1

Chairs: Daniel Goldberg, Amy Yanagitsuru

1:30 pm	*Stephanie Walsh, Morgan Benowitz-Fredericks; Bucknell University*	Males parents are more responsive to female chick behavior in a facultatively siblicidal seabird
1:45 pm	*Rikki Laser, Alexander Ophir, Laura Lee; Cornell University*	Hot parents in your area: Ambient temperature affects parental behavior in a biparental rodent
2:00 pm	*Amy Yanagitsuru, Thomas Hahn, John Wingfield, Haley Land-Miller, Amanda Spears, Mike Johns, Frédéric Angelier, Christopher Tyson, Rebecca Forney, Elisha Hull; University of Nevada Reno, University of California-Davis, McGill University, Point Blue Conservation Science*	Physiological and behavioral mechanisms underlying the mate familiarity effect in Cassin's auklet
2:15 pm	*Sarah Westrick, Eva Fischer; University of Illinois Urbana-Champaign*	Hormonal Variation and Parental Care Dynamics in the Dyeing Poison Frog
2:30 pm	*Juniper O'Leathlobhair, Daniel Goldberg*, Robert Jadin; University of Wisconsin-Stevens Point, Albion College*	Fledgling on board: over-water offspring ferrying behavior in waterfowl, grebes, and loons
2:45 pm	*Andrew Anderson, Suzy Renn; Reed College*	Who stays home? Parental role, plasticity, cross-sexual transfer, and hormones in a cichlid genus
3:00 pm	*Jasmine Kirchner, Jacob Lasala; Mote Marine Laboratory*	Ambient lighting effects on sea turtle nesting behavior on the Gulf of Mexico
3:15 pm	*Emily Elderbrock, Geoffrey Brown, Ned Dochtermann, Holland Galante, Michaela Hau, Timothy Greives; North Dakota State University, Indiana University*	Chronotype varies but is repeatable across the breeding season in a female songbird

1:30 PM – 3:30 PM **Room 607**

Metabolism, Part 1

Chair: Kenneth Welch

1:30 pm	*Michael Butler, Zachary Cullen, Jordan Lam, Brooke Weiss, Jon Wallace; Lafayette College*	Nestling circulating glucose and triglyceride levels predict juvenile presence at a field site
1:45 pm	*Derek Benson, Dale DeNardo; Arizona State University*	Effects of dehydration on oxidative stress and osmolality in a desert-adapted rattlesnake, Crotalus atrox
2:00 pm	*Perry Barboza, Nicolaas Deutz, Charles Robbins, Gabriella Ten-Have, John Thadden, Amelia Christian, Anthony Carnahan; Texas A&M University, Washington State University*	Grizzly bears (Ursus arctos horribilis) alter amino acid kinetics during their winter fast
2:15 pm	*Giulia Rossi, Kenneth Welch*; University of Toronto*	Amino Acids at the Races: Vampire Bats Rapidly Fuel Running with Blood Meal Protein

2:30 pm	*Etti Cooper, Madison McIntyre, Krystal Tolley, Christopher Anderson; University of South Dakota, South African National Biodiversity Institute*	Scaling of Metabolic Rate and Tongue Projection Performance in Chameleons
2:45 pm	*Jane Khudyakov, Anthony Chuang, Andrew Nguyen, Kari Tanji, Richard Zhao, Dan Crocker; University of the Pacific*	Blubber proteome response to prolonged fasting during postnatal development in seals
3:00 pm	*Jamie Cochran, David Buchwalter; NC State University*	How does oxygen availability affect ion transport in aquatic insects?
3:15 pm	*Sarah Britton, Goggy Davidowitz; University of Arizona*	Resource allocation costs of melanin pigmentation

1:30 PM – 3:30 PM **Room 602**

Fish feeding

Chairs: Mark Westneat, Peishu Li

1:30 pm	*Peishu Li, Nicholas Gidmark, Kaleb Sellers, Teresa Lever, Zhe-Xi Luo, Callum Ross; University of Chicago, Knox College, University of Missouri School of Medicine*	Kinematic mobility and modularity of integro-cornuate hyoids during mammalian feeding
1:45 pm	*Grace Johnston, Emily Volpe, Katrina Whitlow; Saint Mary's College*	Extreme temperatures reduce strike success in smallmouth bass feeding
2:00 pm	*Emily Volpe, Katrina Whitlow; Saint Mary's College*	Bowfin bite: XROMM analysis of prey processing in Amia calva
2:15 pm	*Mark Westneat, Samantha Gartner, Kory Evans; University of Chicago, Brown University, Rice University*	Biomechanics and Morphometrics: Computational 3D Modeling of Linkages in Labrid Fish Skulls
2:30 pm	*Richard Hoover, Olivia Hawkins, Joseph Heras, Kassandra Ford, Karly Cohen, Cassandra Donatelli; University of Minnesota, Tufts University, California State University, San Bernardino, University of Minnesota - Twin Cities, University of Florida, Chapman University*	Functional heterodonty of pricklebacks (Stichaeidae) across diet types
2:45 pm	*Michalis Mihalitsis, Peter Wainwright; University of California*	The feeding kinematics of a surgeonfish and the associated functional implications
3:00 pm	*Sam Van-Wassenbergh, Jana De-Ridder, Vincent Dujardin, Julia Camacho-Garcia, Peter Aerts, Hannes Svardal; University of Antwerp, Ghent University*	How different is suction kinematics in Malawi cichlid species that mainly feed on algae?
3:15 pm	*Erik Axlid, Tim Higham; University of California, Riverside*	The dynamics of aerial and aquatic feeding in largemouth bass (Micropterus salmoides)

1:30 PM – 3:30 PM **Rooms 615-616**

Division of Vertebrate Morphology Best Student Presentation

Chair: Andrea Ward

1:30 pm	*Marco Lopez-G, Vishruth Venkataraman, Michael Coates; University of Chicago*	Taking the Long Way Around: Ecology from Morphology in Chondrichthyan Cranial Lateral Lines Canals
1:45 pm	*Darien Satterfield, Bernice Yin, Sky Jung, Samantha Hodges-List, Michael Burns, Peter Wainwright; University of California, Davis*	Locomotion affects Patterns of Fin Integration in Coral Reef Fishes
2:00 pm	*Isaac Krone; University of California*	A network-based comparative method to study reptile scalation—and more!
2:15 pm	*John Lyons, Kathryn Kavanagh; University of Massachusetts Dartmouth*	Fish larvae trade-offs: Pelagic larval swimming may constrain body proportion in reef fishes.
2:30 pm	*Noraly van-Meer, Martin Lankheet, Johan van-Leeuwen; Wageningen University*	Quantification of three-dimensional architecture of axial muscle fibres in larval fish
2:45 pm	*Aaron Hardgrave, Richard Carter; East Tennessee State University*	Geometric morphometrics of the Eastern newt's vertebrae across polyphenic life stages
3:00 pm	*Ruben Tovar, Brittany Dobbins, Dana García, Tom Devitt, Paul Gignac, David Hillis; University of Texas, Texas State University, University of Arizona Tucson*	Evolution Underground: Sensory Compensation Parallels Eye Loss in Neotenic Salamanders (Eurycea)

3:15 pm	*Adrien Arias, Mary Pena, Manny Azizi; University of San Diego, University of Southern California, University of California Irvine*	Upright limb posture reduces muscle work during locomotion

1:30 PM – 3:30 PM **Room 618**

Sensorimotor structure and integration

Chairs: Delyle Polet, Michael Granatosky

1:30 pm	*Michael Granatosky, James Virga, Stratos Kantounis, Reuben Jacobson, Melody Young, Edwin Dickinson, Callum Ross; New York Institute of Technology, University of Chicago*	This Tongue is Made for Walking: The Parrot's Tongue Serves as a Mechanoreceptor During Climbing.
1:45 pm	*Delyle Polet, Christopher Richards; Royal Veterinary College*	A simple model to explore effects of age on reaching performance
2:00 pm	*Nicole Schapker, Judith Janisch, Lydia Myers, Taylor Phelps, Liza Shapiro, Jesse Young; Northeast Ohio Medical University, The University of Texas at Austin*	Effects of substrate height on arboreal locomotion in wild lemurs
2:15 pm	*Madison Wilson, EW Misty Paig-Tran, Petr Krysl, Ted Cranford; California State University Fullerton, University of California San Diego, San Diego State University*	Ear Me Out: The Role of the Mandible in Mysticete Auditory Reception
2:30 pm	*Adam Puchalski, Kostya Kornev; Clemson University*	Twist of Nature: The mechanical design of hawkmoth antennae helps to control flight
2:45 pm	*Benjamin Cellini, Stanley Stupski, Jaleesa Houle, Floris van-Breugel; University of Nevada Reno*	Sensorimotor strategies for wind direction estimation in flying insects
3:00 pm	*Marcos Georgiades, Rachel Tran, Joerg Albert, Simon Walker, Richard Bomphrey*; Royal Veterinary College, University of Leeds, Carl von Ossietzky University Oldenburg*	The effect of temperature on kinematics, aerodynamics and aeroacoustic communication in mosquitoes
3:15 pm	*Ellen Liu, Leo Wood, Izaak Neveln, Simon Sponberg; Georgia Institute of Technology*	Neuromechanical control centralizes as terrain complexity and speed increase in running cockroaches

1:30 PM – 3:30 PM **Room 606**

Division of Neurobiology, Neuroethology, & Sensory Biology Best Student Presentation

Chair: James Newcomb

1:30 pm	*Lan Lou, Karthikeyan Chandrasegaran, Shajaesza Diggs, Emilie Applebach, Sneha Sapkota, Adaline Bisese, Richard Rust, Dana Hamad, Zhijian Tu, Chloe Lahondere, Clement Vinauger; Virginia Tech*	Synchronization of Daily Rhythms in Human Odor Production and Mosquito Olfactory Preference
1:45 pm	*Madison Janakis, Daniel Speiser, Daniel Chappell; University of South Carolina, National Academies of Sciences, Engineering and Medicine, Air Force Research Lab*	Visual ecology of tidal creeks: how two types of crab approach a challenging light environment
2:15 pm	*Mia Kholy, Michele Johnson; Trinity University*	The Lizard's "Third Eye" and Its Impact on Reproductive Physiology
2:30 pm	*Viral Mistry, Evan Hill, William Frost; Rosalind Franklin University of Medicine and Science*	Distinct network-level strategies for different forms of non-associative learning in Tritonia
2:45 pm	*Shubham Gautam, Sean McKenzie, Julian Katzke, Francisco Garcia, Shûhei Yamamoto, Evan Economo; Okinawa Institute of Science and Technology, Oxford Nanopore Technologies, Center for Integrative Biodiversity Discovery Museum für Naturkunde Invalidenstr, Hokkaido University*	Evolution of odorant receptor repertoires across Hymenoptera
3:00 pm	*Hayley Smihula, Julian Wagner, Sheila Kitchen, Joe Parker; California Institute of Technology Caltech, Texas A&M University Galveston*	The role of rove beetle odorant receptors in the evolution of symbiotic lifestyles
3:15 pm	*Tanner Mierow, Kate Feller, Alexandra Kingston; University of Tulsa, Union College*	Amphibious compound eyes: ontogenetic shifts in eye morphology and function in Belostoma flumineum

1:30 PM – 3:30 PM **Rooms 613-614**

Division of Evolutionary Developmental Biology Best Student Presentation

Chair: Dave Angelini

1:30 pm	*Leah DeLorenzo, Kara Powder; Clemson University*	Epigenetic insights into the evolution of form using Lake Malawi cichlid fishes
1:45 pm	*Harsha Sen, Ricardo Mallarino; Princeton University*	Molecular evolution and development of the mammalian gliding membrane
2:00 pm	*Vasilios Nanos, Gabriel Zimbler, Michael Levin; Tufts University*	A new multi-scale frog-axolotl chimeric model system to study the algorithms of anatomical control
2:15 pm	*Erica Vong, Hélène Orfali, Shannon Parisien, Chloe Forrest, Rajendhran Rajakumar; University of Ottawa*	Evolutionary Decoupling of Dimorphic Scaling Patterns in Ants
2:30 pm	*Adriana Saliceti-Galarza, Greta Keller*, Marta Marchini, Ryan Cook, Tony Gamble, Thomas Sanger; Loyola University Chicago, Marquette University*	Both conserved and unique patterns of gene expression drive the development of lizard hemipenes
2:45 pm	*Erica Nadolski, Armin Moczek; Indiana University Bloomington*	Innovation and diversification of and through sexual dimorphism: insights from horned beetles
3:00 pm	*Hope Healey, William Cresko; University of Oregon*	Single Cell RNA Sequencing Gives Clues for the Developmental Genetic Basis of Syngnathid Adaptations
3:15 pm	*Robert Hall, Rachel Cosby, Todd MacFarlan; Stanford University, National Institute of Child Health and Human Development*	Uncovering Principles and Consequences of Recombination Hotspot Evolution by Mapping PRDM9 Binding

1:30 PM – 3:30 PM **Room 603**

Invertebrate biomechanics

Chairs: Ishant Tiwari, Olivia Walthaus

1:30 pm	*Ishant Tiwari, Vishal Patil, Saad Bhamla; Georgia Institute of Technology, Stanford University*	How a worm knots and why
1:45 pm	*Vishal Patil, Harry Tuazon, Emily Kaufman, Tuhin Chakrabortty, David Qin, Jörn Dunkel, Saad Bhamla; Stanford University, Georgia Institute of Technology, Massachusetts Institute of Technology*	Ultrafast reversible self-assembly of living tangled matter
2:00 pm	*Joost Daniels, Christine Huffard, Paul Roberts, Kakani Katija; MBARI*	Three-dimensional in situ measurements of octopus crawling reveals elements of simplified control
2:15 pm	*Amy Johnson, Olaf Ellers, Graham Lucas, Hank Marriott, Brady Nichols; Bowdoin College*	Froude number of the crawl-bounce gait transition in sea stars
8:00 am	*Jacob Harrison, Adrian Smith, Hungtang Ko, Baekgyeom Kim, Je-Sung Koh, Saad Bhamla; Georgia Institute of Technology, North Carolina Museum of Natural Sciences, Princeton University, Ajou University*	Controlling ultrafast jumps: how furca morphology affects jump dynamics in springtails and robots
2:45 pm	*Shengkai Li, Trung Phan, Robert Austin; Princeton University, John Hopkins University*	Bacterial Population Inversion Near a Hydrodynamic Black Hole
3:00 pm	*Laura Treers, Daniel Soto, Michael Goodisman, Daniel Goldman; Georgia Institute of Technology*	Substrate deposition and tunnel remodeling in fire ants S. invicta
3:15 pm	*Olivia Walthaus, Finn Wagner-Douglas, Lina Rhmari-Tlemcani, David Labonte; Imperial College London, Hochschule Bremen*	Linking mechanical constraints with foraging choices in Atta cephalotes leaf-cutter ants

1:30 PM – 3:30 PM **Room 617**

Muscles and muscle action

Chairs: Juri Miyamae, Lexi Moore Crisp

1:30 pm	*Dean Mayfield, Natalie Holt; University of California Riverside*	The activation dependence of optimal length: effect of added compliance and force depression

1:45 pm	*Nicholas Antonson, John Capano, Matthew Fuxjager; Brown University*	Muscle twitch kinetics set differential performance limits for elements of a multicomponent display
2:00 pm	*Juri Miyamae, Talia Moore; University of Michigan*	The Tail End of Things: Comparative muscular morphology and function of mammalian tails
2:15 pm	*Aleksandra Ratkiewicz, Edwin Dickinson, Cassidy Davis, Shruti Kolli, Ashley Deutsch, Michael Granatosky, Adam Hartstone-Rose; New York Institute of Technology, North Carolina State University*	Three-dimensional myological signals of dietary specialization in strepsirrhine primates
2:30 pm	*Cassidy Davis, Edwin Dickinson, Madison Manzo, Aleksandra Ratkiewicz, Ashley Deutsch, Adam Hartstone-Rose; New York Institute of Technology, North Carolina State University*	3D analysis of muscle microanatomy within the feeding apparatus of musteloids
2:45 pm	*Lexi Moore-Crisp, Jordan Fain, Madeline Stears, Michael Butcher; Cabrini University, Youngstown State University*	Forelimb Muscle Properties of Geomyid and Heteromyid Burrowing Rodents
3:15 pm	*Yordano Jimenez, Erik Anderson, Gina Kim, Martha Sutter, Eric Tytell; Providence College, Woods Hole Oceanographic Institute, Grove City College, Tufts University*	Tradeoffs between muscle output and body stiffness may help reveal the swimming strategy of scup

1:30 PM – 3:30 PM **Room 609**

Division of Ecology & Evolution Best Student Presentation Huey Award

Chair: Tonia Schwartz

1:30 pm	*John David Curlis, Karla Alujevic, Leah Bakewell, Sasha Bishop, Brian Bock, Albert Chung, Elissa Connolly-Randazzo, Guillermo Garcia-Costoya, Hayley Crowell, Akhila Gopal, Noah Gripshover, Molly Hirst, Jillian Myers, Daniel Nicholson, Renata Pirani, Noa Ratia, Daniel Romero, Brett Seymoure, Jessica Stapley, Claire Williams, Perry Wood, Kelly Wuthrich, Christian Cox, Michael Logan, W. Owen McMillan, Alison Davis Rabosky; University of Michigan, University of Nevada Reno, Florida International University, Universidad de Antioquia, Princeton University, Oregon State University, Smithsonian Tropical Research Institute, University of Texas Arlington, University of Texas El Paso, ETH Zurich*	Global change in the sensory landscape: Color signal evolution across changing light environments
1:45 pm	*Danielle Becker, Ariana Huffmyer, Lauren Zane, Pierrick Harnay, Terava Atger, Hollie Putnam; University of Rhode Island, University of Washington, University of Haifa, Te Pū ʻĀtitiʻa*	Impacts of marine heatwaves on coral environmental memory and cross-generational acclimatization
2:00 pm	*Morgan Muell, Kendall Jackson, Christian Cox, Daniel Warner; Auburn University, Florida International University*	Thermal developmental plasticity varies across geography in green anoles (Anolis carolinensis)
2:15 pm	*Yeraldi Loera; Princeton University*	Heavy metal contamination in bird feathers from natural protected areas in the Amazon
2:30 pm	*Maya Powell, Verena Schoepf, Sarah Solomon, Karl Castillo; University of North Carolina at Chapel Hill*	Symbionts to the rescue: Symbiodiniaceae facilitate coral survival in extreme bay environments
2:45 pm	*Emily Lau, Rebecca Varney, Todd Oakley; University of California, Santa Barbara*	Horizontally transferred genes are recruited in the evolution of lensed light-interacting organs
3:00 pm	*Troy Neptune, Michael Benard; Case Western Reserve University*	Longer days, larger grays: lasting effects of photoperiod on eastern gray treefrogs, Hyla versicolor
3:15 pm	*Annelise Blanchette, Alex Gunderson; Tulane University*	Lead exposure is associated with limited physiological effects in urban lizards

7:30 PM – 8:30 PM **Ballroom B**

SICB President's Select Plenary: Dr. Matthew Harris

Inherent capacity for change: latent developmental potential and the evolution of the skeleton

Wednesday POSTER SESSION P1

Exhibit Hall 4A • 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am • Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm • Odd # - Authors present from 4:30-5:30 pm

Biomaterials, biomimetics, and bioinspired design

P1-1	*Kiruthika Sundararajan, Duvall Dickerson-Evans, Rory Miller, Gal Ribak, Roi Gurka; Coastal Carolina University, Tel-Aviv University*	Wake dynamics of revolving beetle wings
P1-2	*John Michael Racy, Adam Summers, Ed Habtour, Carmen Escobedo, Bart Boom; University of Washington, Illimited Lab*	Stingray Wing Dynamics
P1-3	*Mitchell Alvord, Jenna McNally, Mark Jankauski; Montana State University*	The Influence of Turgor Pressure Dynamics of Poricidal Anthers: Implications for Buzz Pollination
P1-4	*Ferris Lee, Megan Vandenberg, Karly Cohen, Cassandra Donatelli, Shirel Kahane-Rapport; North Carolina State University, University of Washington, University of Florida, Chapman University, California State University Fullerton*	Splitting Hairs: The biomechanics of baleen in Gray Whales (Eschrichtius robustus)
P1-5	*Madeleine Hagood, Joseph Alexander, Marianne Porter; Florida Atlantic University*	The Mechanical Properties of Ray Skin
P1-6	*Owen Rosenbluth, Julian Davis*, Loranzie Rogers, Joseph Sisneros, Elijah Berger; University of Washington, University of Southern Indiana, Harvard University*	Impulse Response of Female Midshipman Swim Bladder
P1-7	*Megan Bishoff, Kostya Kornev, Adam Puchalski; Clemson University*	Lucky Break: Comparative biomechanics of insect antennae
P1-8	*Pervin Dincer, Nilufer Duz, Hasan Kilic, Erdem Goral, Yasin Gulsum, Waleed Odeibat, Harun Artuner, Ismail Uyanik*; Hacettepe University, Cankaya University*	Insights from a Novel Membrane-Based Stretching Device
P1-9	*Wei-Lin Chen, Ching-Wei Wang, Wen-Tau Juan, Kai-Jung Chi*; National Chung-Hsing University, China Medical University*	Shaping avian flight: Effects of morphology and flexural stiffness on feather deformation in wind
P1-10	*Corey Reese, Matthew Huang, Sunghwan Jung, Brian Lovett, Mary Salcedo*; Cornell University, USDA Agricultural Research Service*	An investigation into the physiology and ecology of the slug millipede, Petaserpes cryptocephalus
P1-11	*Lena Kaufmann, Andrew Schulz, Noémie Reveyaz, Cindy Ritter, Thomas Hildebrandt, Michael Brecht; Humboldt University of Berlin, Max Planck Institute for Intelligent Systems*	Elephants develop wrinkles through both form and function
P1-11A	*Maximilian McKnight, Adam Summers, Cassandra Donatelli, Arthur Porto; Pitzer College, University of Washington, Chapman University*	Gridfinder: A computerized method for efficient mass uCT scanning of otoliths and dense objects

Conservation biology

P1-12	*Matthew Mitchell, Amanda Trask, John Ewen, Ryan Felice; University College London, Institute of Zoology, ZSL*	Ecological & morphometric traits are linked to recovery of bottlenecked populations in birds
P1-13	*Nicholas Chang, Will Hutchinson, Carolyn Keogh; Emory University*	Patterns in habitat use of the newly-described Talladega seal salamander (Desmognathus cheaha).
P1-14	*Hassan Shaikh, Calandra Turner-Tomaszewicz, Jeffrey Seminoff; NOAA Southwest Fisheries Science Center, U.S. Department of Commerce*	Age and Growth Patterns of North Pacific Olive Ridley sea turtles: A Skeletochronological Approach
P1-15	*Logan Evans, Christine Mantegna; Duke University, University of Washington*	Comparing the Impacts of Human Disturbance and Marine Preserve Status in the Intertidal Community
P1-16	*Kimberly Stauffer, Meghan Holst, John Durand; University of California Davis, Aquarium of the Bay, Center for Watershed Sciences*	Examination of Age Class Niche Variation of Sevengill Shark Through Stable Isotope Analysis

P1-17	*Gene Glover, Mark Scherz, Andolalao Rakotoarison, Fandresena Rakotoarimalala; University of South Dakota, University of Copenhagen, School for International Training (SIT), University of Antananarivo*	Brookesia tuberculata population characteristics along an altitudinal gradient on Montagne d'Ambre
P1-18	*Karen Tuerk, Erika Iyengar*; Muhlenberg College*	Assessing the health of an impaired urban stream: Collaboration by a college and local government
P1-19	*Mackenzie Davidson, Heather Liwanag, Kathleen Curtis, Kate Riordan, Katie Saenger, Molly Murphy, Erin Schneider, Tess McIntyre, Paul Kessler, Elise Fiskum, Jenna Camargo, Avery Ancell, Brian Hatfield; California Polytechnic State University, San Luis Obispo*	Long-term population trends of the Piedras Blancas northern elephant seal breeding colony
P1-20	*Brian Helmuth, Fabien Cousteau, Mark Patterson, Angela Jones; Northeastern University, Proteus Ocean Group*	The PROTEUS Underwater Saturation Habitat: A case for an International Space Station of the Ocean
P1-21	*Jada Onwuta, Rachel Meyer, Brenda Larison, Janvier Uwayezu, Drew Bantlin, Beth Kaplin, Antoine Nsabimana; Wellesley College, African Parks, University of Rwanda*	CANCELLED – Environmental DNA to Guide the Re-wilding of Akagera National Park
P1-22	*Amanda Hornung, Andrea Ward; Adelphi University*	Scaling Upstream Barriers: Evaluating Eel Ladder Efficiency for Dam Crossing
P1-24	*Jennifer Kovacs, Sage Pasquale; Agnes Scott College*	CANCELLED – Using Science Sprints to teach research skills: How is biodiversity affected by urban development?
P1-25	*Katie Goldstein, Luis Arredondo, Mariel Dawson, Briana Munoz, Lisbeth Nicolas-Lopez, Esveidy Rodriguez, Erin Krier, Alicia Fox; Allan Hancock College*	Turning Over a New Leaf: Increasing Plant Diversity to Support California Native Bee Diversity
P1-26	*Sakib Tahmid Rishan, Richard Kline, MD Rahman; University of Texas Rio Grande Valley*	Opportunities and limitations of eDNA metabarcoding for detecting aquatic and terrestrial organisms
P1-27	*Esme Rosas, Cassidy Reynolds, Romi Burks, Matthew Barnes, David Christie; Southwestern University, Texas Tech University*	Looking for "a snail in a pond": Investigating how eDNA contributes to eradication efforts of the in
P1-28	*Briana Munoz, Luis Arredondo, Mariel Dawson, Katie Goldstein, Lisbeth Nicolas-Lopez, Esveidy Rodriguez, Erin Krier, Alicia Fox; Allan Hancock College*	Be Aware: Native Bee Diversity on a California Community College Campus and Local Reserve
P1-29	*Jamie Lau, Gerald Smith, Andrea Beverley, Kristina Stefaniak, Tara Pelletier; Radford University*	Don't Go Changing: Stability in the Mill Creek Ecosystem Pre-Pipeline Construction, Virginia
P1-30	*Rebecca Davis, Shawn McCracken; Texas A&M University Corpus Christi*	Birds in the Cacao: Examining How Agroforests Provide Habitat for Tropical Birds
P1-31	*Nathan Harness, Kenneth Hellmig, Haley Flowers, Erica Pearson; Francis Marion University*	Meadow Katydids as Habitat Indicators
P1-32	*Nattapat Karmniyanont, Jacob Lasala; MOTE Marine Laboratory*	Using Google Earth Engine (GEE) to Access Effect of Temperature on Sea Turtle Emergence Success Rate

Digestion

P1-33	*Erika Gordy, Gregory Grabowski, Kennedy Dunlap, A'Tearea Boggan, Jolani Perez; University of Detroit Mercy*	Carbonic Anhydrase Localization in Roach Ceca, as a Potential Source of Acidification.
P1-34	*Elissa Derrickson; Loyola University Maryland*	Impact of dietary protein on growth, body composition, and performance in Peromyscus californicus
P1-35	*Samantha Leigh, William Nguyen; California State University Dominguez Hills*	The Effects of Microplastic Ingestion on Zebrafish Physiology
P1-36	*Derek Benson, Dale DeNardo; Arizona State University*	Effects of thermophily-relevant temperature variation and sex on digestive performance in pythons
P1-37	*Alec John, Davida Smyth, G. Shelton, Charles Watson; Texas A&M University San Antonio*	Chitinase from the gut of a small lizard and its potential efficacy as an antifungal agent

Division of Comparative Biomechanics Best Student Poster

P1-38	*Aaron Omadutt, Kit Yu Karen Chan, Carr Everbach; Swarthmore College*	Robotic model barnacle nauplii
P1-39	*Citlali Ramirez, Laura Miller, Matea Santiago, Alexander Hoover; University of Arizona, Cleveland State University*	Seafaring with Added Cargo: Simulations of Swimming Blue Blubber Jellyfish with Prominent Oral Arms

P1-40	*Melody Young, Edwin Dickinson, Michael Granatosky; New York Institute of Technology*	Comparative grip strength across arboreal and non-arboreal tetrapods
P1-41	*Darmon Kahvazadeh, Kaushik Rahman, Dal Hyung Kim, Clint Penick; Kennesaw State University, Auburn University*	Unlocking the Mysteries Behind Ant Morphology using Ant in Motion
P1-42	*Sara Siwiecki, Alison Sweeney, Amit Datye; Yale University*	What is ctenophore jelly made of?
P1-43	*Haaris Asghar, David Labonte, Christopher Rowlands; Imperial College London*	A Selective Plane Illumination Microscope to Study Form-Function Relationships in Biological Needles
P1-44	*Raymond Fedrick, Martha Munoz, Henry Camarillo; Yale University*	Comparative Biomechanics of Feeding Performance in Dusky Salamanders
P1-45	*Lingsheng Meng, Parker McDonnell, Kaushik Jayaram, Jean-Michel Mongeau; Penn State University, University of Colorado Boulder*	A model of the cockroach antenna links tactile features to distinct motifs on a soft sensor
P1-46	*Denyelle Kilgour, Michael Reed, L. Michael Romero; Tufts University*	Feather corticosterone is lower in translocated populations of the endangered Laysan Duck
P1-47	*Holland Galante, Timothy Greives, Britt Heidinger, Jeffery Kittilson, Samuel Lane, Emily Elderbrock, Kendra Greenlee; North Dakota State University*	Does experimentally increased testosterone change metabolic rate via mitochondria in male songbirds?
P1-48	*Bradley Pedro, L. Michael Romero; Tufts University*	Artificial grass as a potential stress reducer while introducing wild birds to captivity
P1-49	*Nicholas Shankey, Rachel Cohen; Minnesota State University, Mankato*	Characterizing melatonin receptor expression in the green anole lizard brain
P1-50	*Emma Lam, Minseon Jung, Melody Salehzadeh, Kiran Soma; University of British Columbia*	Measuring 3β-HSD activity in microdissected songbird brain using mass spectrometry
P1-51	*Molly Connor, Zoe Butler, Thomas Pirtle; The College of Idaho*	T3 hormone does not upregulate beta-1 adrenergic receptors or increase heart rate in chick embryos.
P1-52	*Bernadette Igo, Taylor Grossen, Nicholas Shankey, Rachel Cohen; Minnesota State University, Mankato*	The effects of melatonin on seasonal behaviors and sex steroid hormones in green anole lizards
P1-53	*Devon Comito, Robin Hinks, Allegra Estrada, George Bentley; University of California, Berkeley*	The role of the spinal cord in the zebra finch (Taeniopygia guttata) reproductive stress response
P1-54	*Emily Brandow, Austin Swallow, Jason Davis, Hunter Rogers; Radford University*	“Sick” of stress? Interactions between neuroendocrine and immune response to social stress in finch
P1-55	*Claire Wasniewski, Kavita Sharma, Samjhana Pradhan, Devaleena Pradhan; Idaho State University*	A LC-MS/MS Concoction: Method Development for Steroid Hormone Quantification in Biological Samples
P1-56	*Lauren Merlino, Lin Lin, Faizy Ahmed, Daniele Piomelli, Deborah Lutterschmidt; University of California, Irvine*	Endocannabinoids vary with seasonal life-history transitions in a wild reptile
P1-57	*Chelsea Field, Jennifer Telish, Emma Timmins-Schiffman, Chris Monson, José Guzmán, Kristy Forsgren, Graham Young; California State University Fullerton, University of Washington*	Effects of gonadotropins and intraovarian growth factors on coho salmon ovarian follicles
P1-58	*Beverly Domschot, Paul Lukacs, Creagh Breuner; University of Montana*	Integrating Morphology, Environment and Glucocorticoids into Estimates of Reproductive Success
P1-59	*Lauren Acuff, Elizabeth Addis, Louis Nipp; Gonzaga University*	Evaluating the Impacts of Urbanization: Are Deer Mice Stressed?
P1-60	*Kourtnie Whitfield, Robyn Reeve, Grace Curtis, Erica Crespi; Washington State University*	Developing a stickier skin: A novel role of leptin in mucociliary epithelial homeostasis
P1-61	*Alyssa Alvey, June Lee, Abigail Parrish, Tessa Solomon-Lane; Pitzer College, Claremont McKenna College, Scripps*	Early-life cortisol responses to common lab stressors and associations with behavior in a cichlid

Division of Ecology & Evolution Best Student Poster Huey Award

P1-62	*Brooke Weiss, Michael Butler, Olivia Asher, Mae Maddox; Lafayette College*	Impact on House Sparrow Nestlings of Anthropogenic Materials in Their Nests
P1-63	*Sarah Carnes, Nathalie Alomar, Martha Munoz; Yale University*	A comparison of the rates of morphological and physiological evolution in woodland salamanders.
P1-64	*Megan Hemmerlein, Kathryn Wilsterman; Colorado State University*	Developmental origins of adaptation to high elevation in the deer mouse placenta

P1-65	*Jonathan Branco, Fabio Nascimento, Fabio Machado, Erika Hingst-Zaher; Oklahoma State University, Museu de Biologia, University of Sao Paulo, Instituto Butantan*	Persistence of the small Neotropical cats under climate change scenarios
P1-66	*Shantelle Bartley, Carsten Grupstra, Matthew-James Bennett, Maikani Andres, Kirstin Meyer-Kaiser, Annabel Hughes, Aden Nagree, Sarah Davies; Boston University, Woods Hole Oceanographic Institution*	Assessing Heat Resilience and Energy Allocation of Cryptic Coral Lineages in Palau
P1-67	*Fallon(Fang) Meng, Anthony Snead, Gaia Rueda-Moreno, Kristin Winchell; New York University*	Uncovering the Population Structure and Genetic Diversity of the Spotted Lanternfly
P1-68	*Niall Whalen; Florida State University*	Phylogenetic Investigation of Phytolith Hardness and its Ecological Significance to Dental Wear

Division of Vertebrate Morphology Best Student Poster, Part 1

P1-70	*Tate Linden, John Flynn, Chris Law; University of Washington, AMNH, University of Texas*	Quantifying skull shape convergence between Eupleridae and other feliform carnivorans
P1-71	*Narimane Chatar, Margot Michaud, Davide Tamagnini, Valentin Fischer; University of Liège, Sapienza University of Rome*	Craniomandibular integration patterns and evolutionary rates in cat-like carnivorans
P1-72	*Vaibhav Chhaya, Tim Smith, Abigail Curtis, Thomas Eiting, Sharlene Santana; University of Washington Seattle, Slippery Rock University*	The effect of multifunctionality on morphological diversity in the bat rostrum
P1-73	*Trevor Brewington, Victor Munteanu, Savannah Swisher, Richard Blob; Clemson University*	Effect of Tail Prehensility on Perturbation Resistance in Veiled Chameleons (Chamaeleo calyptratus)
P1-74	*Tyler Golbus, Leah DeLorenzo, Kara Powder; Clemson Univeristy, Clemson University*	Body and Craniofacial Shape Divergence Among Lake Malawi Cichlid Fishes
P1-75	*Daisy Xiong, Victoria Vang, Ramiro Barajas, Sofia Hernandez-Corona, Emily Spain, Bree Putman, Angela Horner; California State University San Bernardino*	Effects of urbanization on locomotion in Western Fence Lizards (Sceloporus occidentalis)
P1-76	*Noah Medina, Mareesa Islam, Siyang Hao, Ronan Gissler, Kenny Breuer*; Brown University, University of California Berkeley*	Variations in Starling flight behavior during wind tunnel experiments
P1-77	*Jacob George, Christopher Zobek, Susan Williams, Haley O'Brien, Casey Holliday; Ohio University, University of Missouri, University of Arizona*	Modeling Hyolingual Musculature of Anolis using Avizo XFiber
P1-78	*Sacha Sides, Kelsey Stilson, Josiah Guynes, Susan Williams, Erika Tavares, Anna Wolff, Elizabeth Brainerd; University of Florida, Brown University, Ohio University*	Pushing a system to the limit: Mus musculus mastication at the highest XROMM magnification
P1-80	*Alec Wilken, Austin Lawrence, Felippe Prado, Amanda Smith, Ana Rossi, Alexandre Freire, Zhe-Xi Luo, Callum Ross; University of Chicago, Pacific Northwest University of Health Sciences, University of Campinas*	The Mammal Jaw as a Web Flange Structure: Towards a New Paradigm of Mandible Function

Ecoimmunology and disease ecology, Part 1

P1-81	*Isabella Roeske, Joanna Reinhold, Chloe Lahondere; Mountain Lake Biological Station, Virginia Tech*	Exploring Culex territans mosquitoes role in trypanosome transmission to frogs
P1-82	*David Tevs, Justin Mukhalian, Emma Simpson-Wade, Christian Cox, Aaron Schrey, Lance McBrayer; University of Montana, Georgia Southern University, University of Iowa, Florida International University*	DNA methylation and pigmentation change following immune challenge in a small ectotherm
P1-83	*Alexa Dulmage, Robyn Reeve, Grace Curtis, Kourtnie Whitfield, Myra Hughey, Erica Crespi; Washington State University, Vassar College*	Salinity and diet influence ranavirus infection outcomes and gut bacterial communities in wood frogs
P1-84	*Louis Oviedo, Erin Borbee, Lauren Fuess; Texas State University*	Using a facultatively symbiotic coral to investigate immune regulation of host-symbiont dynamics
P1-85	*Gerardo Martinez, Francisco Ochoa-Corona; Oklahoma State Univirsity*	Pilot Electronic-Probe Diagnostic Nucleic-Acid Analysis (EDNA) For Early Breast Cancer Detection
P1-87	*Lauren Shaffer, Aidan Sullivan, Sarah Lower, Moria Chambers; Bucknell University*	Challenges and progress on rearing the common eastern firefly, Photinus pyralis

P1-88	*Lorraine Perez, Jailene Contreras, Katia Goldberg, Gabriela Mena, Alexandria Soldo, Jaime Chaves, Sarah Knutie; University of Connecticut, San Francisco State University*	Cigarette tobacco reduces the survival of invasive parasites that affect Darwin's finches
P1-89	*Ryan Walker, Aidan Sullivan, Sarah Townsend, Sarah Lower, Moria Chambers; Bucknell University*	Resistance vs Tolerance Response to Serratia marcescens Infection in the Common Eastern Firefly
P1-90	*Matthew Repke, Lisa Powers, Luis Víquez-R, Briston Bayle, Sara Talmage, Isabel Steinberg, DeeAnn Reeder, Ken Field; Bucknell University*	Thermoregulatory and Immune Responses to Ebola-like Particles in Thirteen-Lined Ground Squirrels
P1-91	*Ariel Tysver, Samantha Diedrich, Sarah Wanamaker, Ellen Ketterson; Indiana University*	Artificial Light at Night and Parasite Loads in the Dark-eyed Junco (Junco hyemalis)
P1-92	*Natalie Haydt, Lorin Neuman-Lee; Arkansas State University*	Examining Associations Between Skin Infection and Skin Microbiome in Arkansas Snakes
P1-93	*Rafael Baez-Segui, Kristin Winchell, Anthony Snead; New York University*	Effect of Breeding Site Characteristics on Gray Tree Frog (Hyla versicolor) Disease Dynamics

Evolution of developmental mechanisms, Part 1

P1-94	*Claire Fu, Gabrielle Jerz, Sophia Kelly, Nipam Patel; Marine Biological Laboratory, University of Chicago*	The expression of Hox genes in the flour beetle Tribolium castaneum
P1-95	*Paula Gonzalez, Yuichiro Suzuki; Wellesley College*	Tyrosine hydroxylase mediates hormonally-dependent plasticity in the melanization of Manduca sexta
P1-97	*Neil Khosla, Lauren O'Connell; Stanford University*	microRNA correlates of behavior in poison frog tadpoles
P1-98	*Tzu-Pei Fan, Yi-Hsien Su; Institute of Cellular and Organismic Biology, Academia Sinica*	Deep homology of the cis-regulatory code in brachyury enhancer predates the origin of notochord
P1-99	*Tessa Allan, Neva Meyer; Clark University*	Function of FGF signaling in neural and mesodermal specification in the annelid Capitella teleta
P1-100	*Kai Gurnoe-Brantley, Kathryn Wilsterman; Fort Lewis College, Colorado State University - Fort Collins*	Increased fetal blood space in the placenta protects fetal growth from hypoxia in adapted mice
P1-101	*Elizabeth Gavrilov, Mandy Game, Frank Smith; Bennington College, University of Connecticut, University of North Florida*	Resolving the embryonic origin of hindgut tissue in the tardigrade *Hypsibius exemplaris*
P1-102	*Tatiana Schmid, Neva Meyer; Clark University*	Characterization of the developing ventral midline in the bilaterian annelid Capitella teleta
P1-103	*Taylor Harrison, Frank Smith; University of North Florida*	Conserved and divergent aspects of segment polarity in the tardigrade *Hypsibius exemplaris*
P1-104	*Stephanie Amaya, Yuichiro Suzuki, Paula Gonzalez, Daniela Becerril; Wellesley College*	Genetic Accommodation of Temperature Dependent Color Changes in Manduca Sexta
P1-105	*Mandy Game, Frank Smith; University of Connecticut, University of North Florida*	Testing hypotheses for the origin of the tardigrade stylets using an evo-devo approach
P1-106	*Raul Chavarria, Frank Smith; University of North Florida*	*Shaggy* regulates elongation, polarity, and segmentation in Tardigrada
P1-107	*Brent Foster, Fredrik Hugosson, Cezar Borba, Dorothy Mitchell, Federica Scucchia, Cody Miner, Bailey Steinworth, Mark Martindale; Whitney Laboratory for Marine Bioscience, The University of Florida*	What do you do again? Developing new techniques in "unconventional" model organisms at Whitney Lab
P1-108	*Arvin Dayao, HaoWen Huang, Nischal Khatri, Lindsey Kim, Mallory Moratori, Dave Angelini; Colby College*	Parallel requirements for paralogs of transformer during sex determination of the milkweed bug
P1-109	*Lucas Guttieres, Mark Martindale, Joseph Ryan; Whitney Laboratory for Marine Bioscience, The University of Florida*	The ancestral function of β-catenin in ctenophores.
P1-110	*Natalia Padillo-Anthemides, Fredrik Hugosson, Mark Martindale, Joseph Ryan, Brent Foster; University of Florida, Whitney Laboratory for Marine Bioscience*	Reconstructing cell type specification trajectories in the last common animal ancestor
P1-111	*Erica Nadolski, Armin Moczek, Isabel Manley; Indiana University Bloomington*	Evolutionary novelties, segmental boundaries, and unexpected Hox gene expression in the insect head
P1-112	*Vannessa Valdez, Brian Tsukimura; California State University Fresno*	Investigating the Regulation of Life-cycle Metamorphosis in the Crystal Jelly, Aequorea victoria

P1-113	*Elsa Vieregg, Rachel Christensen, Unitas Vang, Haley Heine, Zade Alafranji, Prashant Sharma, Sarah Boyer, Sophie Neu, Ethan Laumer, Charlotte Wood; Macalester College, University of Wisconsin-Madison*	Is there a tradeoff between male weapon size and testis size in the common daddy long-legs?
P1-114	*Elizabeth Chou, Madeline Hoesel, Marie Tan, Lyanna Toh, Laura Park, Yuichiro Suzuki; Wellesley College*	Epigenetic Regulation of Aposematic Coloration in Oncopeltus fasciatus

Evolution of form and function

P1-115	*Mallory Tucker, Sofia Piggott, Matthew Fuxjager; Brown University*	Developing an open-source workflow for analyzing morphological traits in bones
P1-116	*Jane Chen, Bhart-Anjan Bhullar, Martha Munoz, Henry Camarillo; Yale University*	Comparative anatomy of feeding musculature between muscle-powered and spring-powered salamanders
P1-117	*Lauren Essner, Victor Munteanu, Andrew Orkney, Brandon Hedrick; Cornell University, Clemson University*	Astragalar and calcaneal shape predict locomotor mode in caniforms
P1-118	*Victoria Vang, Ramiro Barajas, Sofia Hernandez-Corona, Daisy Xiong, Emily Spain, Bree Putman, Angela Horner*; California State University San Bernardino*	Effects of urbanization on morphology in Western Fence Lizards (Sceloporus occidentalis)
P1-119	*Lisa Whitenack, William Ryerson, Amy Cheu, Vanessa Young*; Allegheny College, Cornell University, Saint Mary's College*	Soliciting SICB Community Feedback on a New Comparative Vertebrate Anatomy Text
P1-120	*Jaime Yockey, Danielle Taylor, Daisy Dan, Yiheng He, Gavin Svenson, Joshua Martin*; Colby College, University of Wyoming, Cleveland Museum of Natural History*	The Geometry of Prey Capture Across Diverse Praying Mantis Species
P1-121	*Kaelyn Gamel, Henry Astley, Brooke Flammang; DOD US Navy, University of Akron, New Jersey Institute of Technology*	Fish out of Water: Kinetics of Amphibious Transition
P1-122	*Timothy Arlowe, Russell Main, Worapat Sawatwong, Ruisen Fu, Haisheng Yang; Purdue University*	Tibial Bone Strains in the Green Iguana (Iguana iguana): In Vivo and Finite Element Analysis (FEA)
P1-123	*Aidan Smith, Brook Swanson; Gonzaga University*	Vibratory Signaling in Japanese Rhinoceros Beetles
P1-123-A	*Erin Brandt, Sarah Duke, Honglin Wang, Natasha Mhatre; University of Chicago, University of Western Ontario*	A baffling conundrum: why don't more crickets make acoustic tools?

Evolutionary genetics and genomics

P1-124	*Soumyadeep Chatterjee, Alan Brelsford, Chris Clark, Nadje Najar; University of California, Riverside*	Color and vision in hummingbirds - Insights from genes and behavior
P1-125	*Alexandra Hernandez, Laura Baldassarre, Sebastian Fraune, Adam Reitzel; University of North Carolina at Charlotte*	DNA methylation dynamics after long-term temperature acclimation in Nematostella vectensis
P1-126	*Zehua Zhou, Peter Sudmant, Runyang Nicolas Lou; University of California Berkeley*	LoCo-Pipe: an automated pipeline for population genomics with low-coverage whole-genome sequencing
P1-127	*Brendan Mobley, Andrew Anderson; Reed College*	Runaway chromosome evolution in a clade of freshwater fish
P1-128	*Joseph Ryan, Scott Santagata; The Whitney Laboratory for Marine Bioscience, The University of Florida, Long Island University*	SELECTINGS: A pipeline to detect positive Darwinian selection in large datasets
P1-129	*Summer Duba, David Collar; Christopher Newport University*	Diverse Anatomical Peak Shifts Underlie Body Elongation in Zoarcoid Fishes
P1-131	*Braedon Payne, Roi Gurka, Bryan Keller; Coastal Carolina University, NOAA*	Hydrodynamic Performance of Various Swim Modes of the Class Chondrichthyes
P1-132	*Randi Navarro;*	CANCELLED – Comparing Morphology, Kinematics, & Swimming Performance in Two Ctenophore Species
P1-133	*Sally Leys, Veronica Price, Anudi Nanayakkara, Caroline Rocher, Carole Borchiellini, Andre Le-Bivic, Emmanuelle Renard; University of Alberta, Universite Aix Marseille*	Exploring why homoscleromorph sponges have ciliated epithelia when other sponges do not

Evolutionary physiology

P1-134	*Sarah Friedman, Martha Munoz; NOAA AFSC, Yale University*	A latitudinal gradient of deep-sea invasions for marine fishes
P1-135	*Aida Mohd-Khairi, Martha Munoz, Nathalie Alomar; Yale University*	Thermal Limitations in Slimy Salamanders: Influenced by Latitude

P1-136 *Logan Fraire, Sierra Spears, Emma Foster, Alyssa Head, Maya Moore, Allison Litmer, Eric Gangloff; Ohio Wesleyan* — Which Factors Affect Thermoregulatory Decisions in Common Wall Lizards (Podarcis muralis)?

P1-137 *Kristal Lam, John Powers, Diane Campbell; University of California San Diego, University of California Irvine* — Plasticity in Ipomopsis floral traits over space and time in response to water availability

P1-138 *Clinton Warren, Madison Wilken, Hannah Warfel, Rachel Bowden, Ryan Paitz; Illinois State University* — The rapid time-course response to heatwaves by heat-shock protein genes in T. scripta embryos

P1-139 *Madison Wilken, Bert Foquet, Clinton Warren, Ryan Paitz, Rachel Bowden; Illinois State University* — Elevated Dazl expression is associated with warmer temperatures and estrogens in T. scripta embryos

P1-140 *Olivia Maule, David Rand; University of Florida, Brown University* — Flight and Climbing Performance Maps to Mito-Nuclear Interactions in Drosophila

P1-142 *Andreanna Schultz, Matthew Lattanzio; Christopher Newport University* — Beyond Thermoregulation: UV and Temperature Regulation by Tree Lizards along an Ecological Gradient

Genomics and proteomics

P1-143 *Jack Jurmu, Andrew Arsham, Riley Reed; University of Utah, Bemidji State University* — Evolutionary and Functional Characterization of a Chromatin Regulatory Gene Family in Drosophila

P1-144 *Jonathan Chiang, Ben Matthews; University of British Columbia* — De novo genome assembly and annotation of a saline-tolerant coastal rock pool mosquito, Aedes togoi

P1-145 *Yasmeen Erritouni, Alejandro Rico-Guevara; University of Washington* — Evidence for independent origins of avian iridescence

P1-146 *Janki Bhalodi, Adam Reitzel; University of North Carolina at Charlotte* — Variation in heat shock elements and its role in the evolution of Cnidarian heat stress response

P1-147 *Quinton Krueger, Remi Ketchum, Edward Smith, John Burt, Adam Reitzel; University of North Carolina at Charlotte, University of Florida, University of Warwick, NYU Abu Dhabi* — Genomic variation of the pearl oyster Pinctada radiata from the Arabian Peninsula

P1-148 *Devin Mendoza, Evan Forsythe, Darren Clavette; Oregon State University-Cascades* — Genomic simulations to explore allelic exchange via reciprocal introgression

P1-149 *Nickellaus Roberts, Michael Gilmore, Torsten Struck, Kevin Kocot*; University of Alabama, Natural History Museum University of Oslo* — Multiple Displacement Amplification Facilitates HiFi Genome Sequencing of Microscopic Animals

Life history evolution

P1-150 *Alexander Reyna, Sophie George; Friday Harbor Labs, University of Washington, Georgia Southern University, International Union for Conservation of Nature* — Abundant phytoplankton may mitigate impact of high temperature on growth of sea star larvae

P1-151 *Chloe Goodsell, George von-Dassow; College of William & Mary* — Macrophagous planktotrophy in actinotroch larvae of the marine horseshoe worm, Phoronopsis harmeri

P1-152 *Valentina Peña, Jasmin Camacho, Nicolas Rohner; Stowers Institute for Medical Research* — A Sugar-Proofed Lifestyle: Adaptations Underlying a Healthy REDOX State in Nectivorous Bats

P1-153 *Kendall Jackson, Morgan Muell, Daniel Warner; Auburn University* — Life history traits vary on the basis of phylogeny across seven species of Anolis lizards

P1-154 *Elise Hebert, George von-Dassow; Brown University, Oregon Institute of Marine Biology* — Polar Body Derived Chimeras in Patiria miniata

P1-155 *Jessika Bryant, Evan Forsythe, Bruce Seal; Oregon State University - Cascades, Oregon State University-Cascades* — Genome-guided development of domestic dog probiotics from gut microbes isolated from wild wolves

P1-156 *Kristin Marsh, Dominik Valdez, Leigha Lynch; Midwestern University* — Evaluating Sexual Dimorphism in Brain Morphology of Lontra canadensis

P1-157 *Jacob Tupper, Sam Miess, Victoria Roper, Andy Dzialowski; Oklahoma State University* — Quantifying sexual size dimorphism in a common marsh treader, Hydrometra martini

Metabolism and Energetics

P1-158 *Alex Le, Sierra Pete, Shannon Whelan, Morgan Benowitz-Fredericks; Bucknell University, Institute of Sea Bird Research & Conservation* — Triglycerides in seabird chicks, Black-legged kittiwakes (Rissa tridactyla)

P1-159	*Simran Bawa, Lauren Buckley, Sean Schoville, Caroline Williams; University of California Berkeley, University of Washington, University of Wisconsin-Madison*	Metabolic Variability Across Altitudinal Gradients: Exploring the Energetic Dynamics of Grasshoppers
P1-160	*Erick White, Virginia Weis; Oregon State University*	The Role of Symbiosis in Energetic Preparation for Asexual Development in Aiptasia
P1-161	*Be Eldash, Rudolf Schilder; Pennsylvania State Univerity, Penn State University*	Effects of body size on the energetics of weight-bearing roaches
P1-162	*Stephen Kinsey, Sarah Fausett, Dylan Orcutt; University of North Carolina Wilmington*	An evaluation of the relationship between energy state and protein synthesis in a nematode worm
P1-163	*Derek Somo, Grant McClelland, Graham Scott; McMaster University*	A multi-factor meta-analysis of the determinants of variation in thermogenic capacity in deer mice
P1-164	*Rafael Leon, Oliver Coyle, Jonathon Stillman; San Francisco State University*	Endoparasites, but not microplastics, influence metabolic rate of pacific mole crabs
P1-165	*Chelsi Marolf, David Swanson; University of South Dakota*	Effects of variable cold temperatures on metabolic rates and organ masses of house sparrows
P1-166	*Samantha Sierra-Martinez, Douglas Crawford, Marjorie Oleksiak; University of Miami, Marine Genomics Lab*	Exploring the Impact of Mitochondrial Haplotypes on Physiological Function
P1-167	*Nicole Joseph, Kayla Lichtner, Redeit Woldebirhan, Benjamin Haussmann, Tiffany Hegdahl, Travis Robbins, Mark Haussmann*; Bucknell University, University of Nebraska Omaha*	The effect of temperature on metabolism and oxidative damage in a lizard, Sceloporus consobrinus
P1-168	*Andi Delgado, Animaya Arkills, Wes Dowd; Washington State University*	The effects of heat waves and subsequent hypoxic 'reprieve' on mussel metabolism
P1-169	*Haley Peters, Kerri Conklin, Connor Clark, John Hatle; University of North Florida*	Dietary isoleucine restriction increases catabolic flux of leucine and valine in lubber grasshoppers
P1-170	*Justin Brasil, Nathan Rank, Elizabeth Dahlhoff; Sonoma State University, Santa Clara University*	Duplication of and variation in succinate dehydrogenase affects response to stress in willow beetles
P1-171	*Harvey Chilcott, Elizabeth Dahlhoff, Nathan Rank; Santa Clara University, Sonoma State University*	Between a rock and a hot place- genotype and environment alters physiology of a montane insect
P1-172	*Jordan Hopkins, Teresa Guerre, Sean Lema, Kristin Hardy*; California Polytechnic State University - San Luis Obispo*	Differences in skeletal muscle between desert pupfish populations from unique thermal habitats
P1-173	*Catherine Waggoner, Kayla Pehl, John Swallow, Jason Vance*; College of Charleston, University of Colorado, Denver*	Thoracic muscle mass increases with age and flight in the adult stalk-eyed fly, Teleopsis dalmanni
P1-173A	*Travis Bayer, María Camila Calderón-Capote, James Lee, Margaret Crofoot, Dina Dechmann, Teague O'Mara; Southeastern Louisiana University, Max Planck Institute of Animal Behavior, Radolfzell DEU, University of Konstanz, Smithsonian Tropical Research Institute, Bat Conservation International*	Energy Landscapes of Large Neotropical Bats: The Relationship Between Heart Rate and Accelerometry

Morphological evolution

P1-174	*Thaddaeus Buser, Olivier Larouche, Andres Aguilar, Michael Sandel, Brian Sidlauskas, Adam Summers, Kory Evans; NOAA Alaska Fisheries Science Center, University of Houston, Cal State LA, Mississippi State University, Oregon State University, University of Washington, Rice University*	Freshwater habitats promote rapid rates of phenotypic evolution in sculpin fishes
P1-175	*Birch Ambrose, Jason Davis; Radford University*	Digital Evolution: Genetic algorithms show emergence of complex color patterns and genes
P1-176	*Nathan Ong; Oklahoma State University Center for Health Science*	Dermal Bone of K/Pg Trionychids examined via Surface Topographic Analysis and Paleohistology
P1-177	*Olivia Ruffins, Caroline Williams, Kristi Montooth, Colin Meiklejohn; University of California, Berkeley, University of Nebraska Lincoln*	Creation of artificially selected cricket lines to investigate the basis of wing polymorphism
P1-178	*Kaitlyn Napier, Guillermo Garcia-Costoya, Akhila Gopal, Noa Ratia, Karla Alujevic, Madison Glenwinkel, Shea McKendree, Cody Chapman, Allison Dorny, Gillian Moritz, Michael Logan; University of Nevada Reno, Reno School of Medicine*	Why so blue? The potential roles of ventral coloration in the western fence lizard

P1-180	*Natalie Schroth, Maya Stokes, Jessica Arbour; Middle Tennessee State University, Florida State University*	Examining the relationship between habitat and color diversification in darter fishes
P1-181	*Annie Riffee, Birch Ambrose, Jason Davis; Radford University*	Digital Footprints: What Rapid Evolution of a Genetic Algorithm Reveals About Selectors
P1-182	*Lukyon Mendrin, Ulrike Muller*, Luz Gonzalez-Ponce; California State University Fresno*	Re-examining the functional morphology of bladderwort traps
P1-183	*Morgan Furze; Purdue University*	Using microCT imaging to explore woody plant structure-function

Morphology, phylogeny and character development

P1-184	*Amanda Redman, Kathryn Kavanagh; University of Massachusetts Dartmouth*	Investigating high morphological variation in the dermal skeleton of Lepidochelys kempii.
P1-185	*Cydney Even, Dakota John, Christopher Anderson; University of South Dakota*	Specializations of the chameleon pectoral and pelvic girdles to differing levels of arboreality
P1-186	*Jeanne Augustin, Andrew Orkney, Brandon Hedrick; Cornell University*	Bad to the bone: sternal morphology and ecological radiation in bats
P1-187	*Nicholas Wallis-Mauro, Leah Rubin, Elizabeth Sibert; University of Florida, SUNY ESF, Woods Hole Oceanographic Institution*	Building a modern denticle morphological and taxonomic database
P1-188	*Michael Ghedotti, Kandice Agudo, Flor Gonzalez, Kurt Riggin, Matthew Davis, W. Leo Smith, Benjamin Frable; Regis University, St. Cloud State University, University of Kansas, Scripps Institution of Oceanography*	Anatomy and Evolution of Bioluminescence in the Gulper Eels (Anguilliformes)
P1-189	*Anna Harner, Shirel Kahane-Rapport, Jonathan Huie, Cassandra Donatelli; Chapman University, California State University Fullerton, The George Washington University*	Fractals and Filters: Using fractal analysis to describe function in filter feeders
P1-190	*Emma Pawlik, Monique Oliveira, Markens Alerte, Sonoma Arnaldy, Jamie Knaub, Michelle Passerotti, Lisa Natanson, Tricia Meredith, Marianne Porter; Florida Atlantic University, NOAA Fisheries, Apex Predators Program, Northeast Fisheries Science Center*	Wedges have edges: Phylogenetic relationships in vertebral morphology of carcharhiniform sharks
P1-191	*Timothy Campbell, Stephanie Baker; Midwestern University, Texas State University*	Analysis of humeral robusticity in individuals with unilateral septal apertures
P1-192	*Angela Boyer, Dominik Valdez, Christopher Heesy, Leigha Lynch; Midwestern University*	Comparative brain morphology among Musteloids
P1-193	*William Hooker, Andrew Orkney, Brandon Hedrick; Cornell University*	Reshaping the past: geological deformation in Diictodon using 3D geometric morphometrics
P1-193A	*Bogdan Sieriebriennikov, Yuwei Zhong, Hunter Whitbeck, Sergio Cordoba, Maria Ahmed, Claude Desplan; New York University, University of Michigan*	Developmental changes underlying the evolutionary expansion of the mushroom body in ants
P1-193B	*Shanti Lindberg, Karen Sears; University of California Los Angeles*	Evolution of the marsupium in Didelphimorphia: Insights from development

Movement, migration, and dispersal

P1-195	*Sarah Heckmann, Kelly Diamond; Rhodes College*	The Effects of Age on Exploratory Behavior in Endler's Guppies (Poecilia wingei)
P1-196	*William Brooks; George Mason University*	Offshore vagrancy in migratory passerines
P1-197	*Daehyun Choi, Johnathan O'Neil, Pankaj Rohilla, Saad Bhamla; Georgia Institute of Technology*	Vortex mechanism in microvelia-Inspired water-walking for thrust optimization using robotic design
P1-198	*Sophia Cooper, Amy Cook; University of Washington*	A Field Study on the Relationship Between Temperature and Behavior Patterns in Oligocottus maculosus
P1-199	*Mariam Alsaid, Dawn Barlow, Kate Stafford, Holger Klinck, Leigh Torres; University of California Berkeley, Oregon State University, K. Lisa Yang Center for Conservation Bioacoustics*	Sei Whale, Say What? Acoustic Occurrence of a Rarely Observed Rorqual in Oregon Waters
P1-200	*Esmirna Cantu, MD Rahman; University of Texas Rio Grande Valley*	Effects of short-term exposure to pesticide mixtures on free-swimming behaviors in goldfish
P1-201	*Cara Webster, Michael Smotherman; Texas A&M University*	Seasonal species distribution modeling and migratory estimates in Tadarida brasiliensis

P1-202	*Magdalena Phillips, Jesse Granger, Sonke Johnsen; Duke University*	Collective Orientation of Talitrid Amphipods
P1-203	*Madison Chudzik, Benjamin Van-Doren, Jorge Garcia, Sara Lipshutz; Duke University, University of Illinois Urbana-Champaign, Openlands*	Evaluating the use of Machine Learning and Bioacoustics to Quantify Avian Migration in a Major City
P1-204	*Ben Osei-Tutu, Michael Frett, Allen Mensinger; University of Minnesota, The Marine Biological Laboratory*	CANCELLED – The Effects of Sound and Carbon Dioxide on Invasive Bigheaded Carp Upstream Migration.
P1-205	*Kaitlyn Tracy, Sarah Foltz; Radford University*	Usage of game trails vs. human and cow paths by wildlife
P1-206	*Kenneth Glynn, Jamie Cornelius; Oregon State University*	Drought conditions may influence body condition and fat deposition in an overwintering shorebird
P1-207	*Claire Molina; Scripps College*	Suburban Landscapes as Winter Habitat for Migratory Birds
P1-208	*Emily Fackler, Robert Fitak, Dmitry Kishkinev, Petr Prochazka; University of Central Florida, Institute of Vertebrate Biology*	Which Genes Influence the Migratory Timing of Great Reed Warblers?
P1-209	*Samantha Diedrich, Ellen Ketterson, Sarah Wanamaker, Alex Jahn; Indiana University*	Does exposure to artificial light at night (ALAN) affect spring migratory departure in a songbird?
P1-210	*Rachel Cuomo, Nicolas Walker, Isaac Ligocki*; Millersville University*	Sheepshead Minnow do not adjust swimming activity in response to varying salinity
P1-211	*Mitch Williams, Gina Ledermann, Miranda Miller, Isaac Ligocki*; Millersville University*	The behavioral effects of 17b-estradiol exposure on wood frog tadpoles
P1-212	*Rock Lim, Michael Benard; Case Western Reserve University*	Competitive environment selection in male Hyla versicolor
P1-213	*Alexis Trester, Page Klug, Jeffery Kittilson, Timothy Greives; North Dakota State University, USDA-APHIS-WS National Wildlife Research Center*	Are Neuroendocrine Mechanisms Related with Migratory Preparation in Red-winged Blackbirds?

Neurobiology and Neuroethology Part 1

P1-214	*Theresa Christiansen, Vishruth Venkataraman, Noel McGrory, Victoria Prince; University of Chicago*	Postembryonic Expansion and Innervation of the Zebrafish Anterior Lateral Line
P1-214-A	*April Arquilla, Kerianne Wilson, Jamiela Kokash, Jeffrey Rumschlag, Khaleel Razak, Wendy Saltzman; The University of California Riverside, Pomona College, Medical University of South Carolina*	Auditory brainstem responses and the ontogeny of pup vocalizations in California mice
P1-215	*Meilin Song, Veronica Martinez-Acosta*; University of Chicago, University of the Incarnate Word*	Glial cells in Lumbriculus variegatus nervous system regeneration
P1-216	*Theresa Steele, Katherine Nagel; NYU Langone, NYU Langone Medical Center*	Developing Parhyale hawaiensis as a comparative model of olfactory navigation.
P1-217	*Grace Smith, Daniel Bergman; Grand Valley State University*	Neurophysiological Alterations in Crayfish Using Common Inhibitory Drug
P1-218	*Clara Vicera, Cristian Andres Gutierrez-Ibanez, Andrew Iwaniuk, Douglas Wylie; University of Alberta, University of Lethbridge*	Neural correlates of seed husking in songbirds
P1-219	*Nina Alpers, Daniel Bergman, Tara Olen, Madelyn Mauer, Abby Niessink; Grand Valley State University*	CANCELLED – Serotonin and Its Effects on the Chronic Stress Response in Crayfish Following Nonylphenol Exposure
P1-220	*Jadyn Scott, Benjamin Cowley; Rhodes College*	Predicting Mouse Perception from Olfactory Neurons with Decision Trees
P1-221	*Julia Bowen, Cristian Andres Gutierrez-Ibanez, Andrea Gaede, Douglas Altshuler, Douglas Wylie; University of Alberta, The Royal Veterinary College, University of British Columbia*	The organization of retinal projections to the pretectum of the Anna's Hummingbird (Calypte anna).
P1-222	*Susan Deering, Sarah Lower; Bucknell University*	Annotation of two firefly genomes reveals diversification of ORs across 56 mya of evolution
P1-223	*Ariel Alonso, Kelly Boyle; University of New Orleans*	Proliferative abilities of saccular hair cells in Atlantic Croaker after exposure to noise
P1-224	*Alia Whiles, Christopher Brandon; Florida Southern College*	Daphnia devel-EYE-ment: A comparative analysis of compound eye size growth among Daphnia species
P1-225	*Kate Otter, Laurenzcia Cairo*, Cheyenne Tait, Paul Katz; University of Massachusetts Amherst*	State-dependence of neuronal gene expression for feeding-related peptides in a nudibranch

P1-226 *Roeskva Torhalsdottir, Aiden Masters, Benjamin Morris, Lydia Naughton, Gregory Pask, Amu Tawawalla, Lulu Wright; Middlebury College, University of North Carolina Wilmington*
Decoding social communication in a eusocial ant species, Harpegnathos saltator

P1-227 *Riley Adam, Elayna Griffaw, Gemma Hodgkiss, Zara Jadol, Mary Saylor, Maddie Wieringa, Ryan Earley; University of Alabama*
Does isotocin mediate fear learning in mangrove rivulus fish?

P1-228 *Abigail Trocinski, Alayna Mackiewicz, Kenneth Lohmann, Sabrina Burmeister; University of North Carolina at Chapel Hill*
Spontaneous Magnetic Orientation in Poison Frogs (Dendrobates auratus)

P1-230 *Rebekah Ayre, Jordanna Sprayberry; Muhlenberg College*
Odor Complexity: A Novel Paradigm for Quantifying Odor Discrimination in Bombus Impatiens

P1-231 *Putri Muhd-Haidzir, Ulmar Grafe, Samuel Kramer, Syafi'ie Su'eif; University Brunei Darussalam, Virginia Tech*
Species-specific Variation in Noseleaf and Pinna Movement of Echolocating Bats Using Deep-Learning

P1-232 *Stratos Kantounis, Reuben Jacobson, James Virga, Noah Chernik, Melody Young, Edwin Dickinson, Michael Granatosky; New York Institute of Technology*
Parrot "Reach-to-Grasp" Behaviors Mimic Mammalian Coordination Patterns

P1-233 *Greg Fahrner, Zhangyi Wu, Katie O'Connor, Yiyu Zheng, Nathan Peot, Sean Halloran, Jocelyn Millar, Douglas Collins, Gregory Pask*; Middlebury College, Bucknell University, University of California Riverside*
Discovering the Dark Side of Fireflies: Fishing Around for Pheromones

P1-234 *Jeremea Songco-Casey, Cristopher Niell; University of Oregon*
CANCELLED – A gene expression atlas of optic lobe cell type markers across the octopus central brain

P1-235 *Belle Brown, Krista Todd; Westminster University*
Encoding and Processing of Visual Information in the Leech

P1-235-A *Taryn Gustafson, Robert Fitak; University of Central Florida*
Characterizing the SLC17 gene family expansion in Cephalopoda: Insights into octopus intelligence

Outreach and partnerships

P1-237 *Sophie George, Monika Böhm, Amanda Vincent; Friday Harbor Labs, University of Washington, Georgia Southern University, International Union for Conservation of Nature, Global Center for Species Survival, Indianapolis Zoo, Project Seahorse, Institute for the Oceans and Fisheries, The University of British Columbia*
The International Union for Conservation of Nature (IUCN) SSC Marine Star Specialist Group

P1-237-A *Carrie Buo; Impact NW*
Science Outreach Partnerships 101: Making great outreach programs by partnering with local nonprofit

P1-238 *Carrie Buo; Impact NW*
Science with a smirk

P1-239 *Michael Granatosky, Melody Young, Noah Chernik, Stratos Kantounis, Reuben Jacobson, Matthew Cannata, James Virga, Jon Gustafson, Edwin Dickinson; New York Institute of Technology*
Are You Stronger Than a Lemur? Assessing the Efficacy of an International Outreach Program.

P1-240 *Dara Orbach, Katie Doyle, Larisa Ford; TAMU-CC, Flour Bluff Intermediate School, Friends of Redhead Pond*
Cross-Generational Place-Based Education to Facilitate Environmental Stewardship

P1-241 *Cassie Shriver, Audra Davidson, David Hu, Young-Hui Chang, Staci Wiech, Joseph Mendelson, Andrew Schulz*; Georgia Institute of Technology, Max Planck Institute for Intelligent Systems*
Zoo Biomechanics and Biomimicry Day: One event for thousands to learn about zoo research

P1-242 *Jonas Rubenson, Christopher Arellano, Adrien Arias, Monica Daley, Taylor Dick, Natalie Holt, Armita Manafzadeh, Christopher Richards, Gregory Sawicki, Andrew Schulz; Penn State University, University of San Diego, University of California Irvine, The University of Queensland, University of California Riverside, Yale University, Royal Veterinary College, Max Planck Institute for Intelligent Systems*
Comparative Neuromuscular Biomechanics (CNB): The Intersection of Comparative and Human Biomechanics

P1-243 *Islamiat Raji, Paul Preston, Alex Mutati, Dan Mennill, Lynn Martin, Massamba Thiam, Paul Robert Martin, Fran Bonier; Queen's University, National Museums of Kenya, University of Windsor, University of South Florida, Cheikh Anta Diop University*
Global Urban Bird Survey: An Innovative Community Science Approach

P1-244 *Jim Usherwood; The Royal Veterinary College*
Legs as linkages and lollipop sticks

P1-245	*Zaphillia Yost, Ashley Bowers-Macrander, Jason Macrander; Florida Southern College*	Improvements towards North Atlantic right whale science communication, outreach, and education.
P1-246	*Alyssa Sargent, June Pen, Caleb Stockham, Katharine Canning, Rachael Canaday, Andrea Rockwood, Andy Clark, Alejandro Rico-Guevara; University of Washington, Burke Museum of Natural History and Culture*	Learning Through Games: A Case-Study in Urban Outreach
P1-247	*Chelsea Bennice, Jeanette Wyneken; Florida Atlantic University*	SEA Scholars: Communicating Research through Science, Education, and the Arts
P1-248	*Sarah McAnulty; Skype a Scientist*	Communicating science via public art in Philadelphia

Reproductive and parental behavior

P1-249	*Chloe Connolly, Kerianne Wilson*; Pomona College*	Effect of prostaglandin inhibition on sperm quality and reproductive behavior in Acheta domesticus
P1-250	*Isabel Burger, Anna Parrott, Naomi Meurice, Kerianne Wilson*; Pomona College*	The effect of male prostaglandin on courtship and female reproductive allocation in house crickets
P1-251	*Joshua Rinehart, Courtney Grula, Joseph Rinehart, Julia Bowsher; North Dakota State University, USDA-ARS, Edward T. Schafer Agri Res Ctr*	Effects of cavity diameter on nesting preference in Megachile Rotundata
P1-252	*Kamau Braxton-Hall, Mackenzie Alderson, Jared Gladbach, Camilo Alfonso, Miguel Moreno-Palacios, Amalia Moore; Virginia Tech, Hollins University, Universidad de los Andes*	Nest Box Orientation in Cavity-Nesting Birds
P1-253	*Yichen Li, Christine Miller; University of Florida*	Living with males leads to more physical injuries in female leaf-footed cactus bugs
P1-254	*Manon Vezinet, Valerie Brewer, Dorothy Zahor, Jamie Cornelius, Suzanne Austin; Oregon State University*	Does experimentally increasing Felis catus exposure impact nestling growth in violet-green swallows?
P1-255	*Josephina Fornara, Ross Eggleston, Dustin Reichard; Indiana University, Ohio Wesleyan University*	Risk assessment guides nest defense behaviors in female house wrens (Troglodytes aedon aedon)
P1-256	*Josh Stueckle, Suzy Renn; Reed College*	An Effect of Dominance on Filial Cannibalism in an African Cichlid: Astatotilapia burtoni
P1-257	*Anna Kelson, Ellen Ketterson, Sarah Wanamaker; Indiana University*	A Comparison of Reproductive Metrics in Captive and Wild Dark-eyed Juncos
P1-259	*Carly Hawkins, Autumn Iverson, Jessica Malisch, Thomas Hahn, Gail Patricelli; University of California Davis, University of California Merced*	CANCELLED – Singing through time and space: spatial patterns of advertisement relative to neighborhood fertility
P1-260	*Nicolas Walker, Rachel Cuomo, Isaac Ligocki*; Millersville University*	Mate choice preferences in female Striped Killifish, Fundulus majalis
P1-261	*William Marquart, Zack Majd, Kerianne Wilson*; Pomona College*	Female house cricket acoustic environment and mate choice decisions

Sexual selection and dimorphism

P1-262	*Claire Boudreaux, Timothy Clay; Nicholls State University*	Changes in sex ratio and morphology of adult Diamondback Terrapin in a commercially crabbed system
P1-263	*Cindy Davis, Ajna Rivera; University of the Pacific*	Insight into a Sexually Dimorphic Ostracod Crustacean by Mass Spectrometry and Microtomography
P1-264	*Jessica Schaefer, Tessa Patton, Alexandra Juárez, Thomas Hahn, Gail Patricelli, Misha Blizard, Sara Lipshutz; University of California Davis, Loyola University Chicago, Indiana University, Duke University*	Does sexual dimorphism vary across multiple populations of a socially polyandrous shorebird?
P1-265	*Jay Falk, Georgy Semenov, Scott Taylor; University of Colorado, Smithsonian Institute*	The genetic basis of sexual dichromatism: hints from a female-polymorphic hummingbird

Speciation

P1-266	*Tanner Myers, Angelo Ruggieri, Riccardo Papa, Brian Counterman; Auburn University, University of Puerto Rico*	Does a lack of phenotypic variation reflect genomic variation in a widespread butterfly species?
P1-267	*Naomi Vliet, Norine Yeung, Kenneth Hayes, Peter Marko; Montana State University, University of Hawai'i Mānoa, Bernice Pauahi Bishop Museum, Pacific Center for Molecular Biodiversity*	Don't 'neglectum': DNA barcodes for an endemic Hawaiian nerite snail species

Thursday Schedule of Events

Events take place in the Seattle Convention Center, unless otherwise noted

EVENT	TIME	LOCATION
Poster Session 2 Set Up	7:00 AM – 8:00 AM	Exhibit Hall
Speaker Ready Room	7:00 AM – 5:00 PM	Room 601
Registration	7:30 AM – 3:30 PM	Exhibit Hall
Coffee Break AM	9:30 AM – 10:30 AM	Exhibit Hall
Exhibit Hall	9:30 AM – 5:30 PM	Exhibit Hall
Coffee Break PM, *sponsored by SRE.college*	3:30 PM – 4:30 PM	Exhibit Hall
Poster Session 2 Even Numbers Authors Present	3:30 PM – 4:30 PM	Exhibit Hall
Poster Session 2 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Exhibit Hall
Poster Session 2 Teardown	5:30 PM – 6:00 PM	Exhibit Hall
SPECIAL LECTURES		
AMS Keynote Lecture: But I'm Not a Microscopist: How a Profession Became a Tool	12:30 PM – 1:30 PM	Room 604
Howard A. Bern Lecture: Dr. Marilyn Ramenofsky Endocrinology of migration and role of the environment	7:30 PM – 8:30 PM	Ballroom B
SYMPOSIUM ORAL PRESENTATIONS		
S4: Computational and physical models in research and teaching to explore form-function relationships	7:45 AM – 3:00 PM	Ballroom B
S5: Chordate origins, evolution, and development	7:45 AM – 3:00 PM	Ballroom C
S6: The scale of resilience: mechanisms of recovery a cross biological systems	7:45 AM – 4:00 PM	Rooms 619-620
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Evolution of feeding mechanisms	8:00 AM – 8:30 AM	Room 603
Genetics of adaptation	8:00 AM – 9:45 AM	Room 604
Metabolism, Part 2	8:00 AM – 10:00 AM	Room 617
Invertebrates and flow	8:00 AM – 10:00 AM	Room 606
Foraging behavior	8:00 AM – 10:00 AM	Room 608
Comparative endocrinology of stress, Part 1	8:00 AM – 10:00 AM	Rooms 613-614
Fins and flukes in locomotion	8:00 AM – 10:00 AM	Rooms 615-616
Evolution of form and function, Part 1	8:00 AM – 10:00 AM	Room 602
Global change: Life history evolution	8:00 AM – 10:00 AM	Room 609
Magnetic and electrical sensation	8:00 AM – 10:00 AM	Room 607
Muscle mechanics	8:00 AM – 10:15 AM	Room 612
Complementary to S3: Moving in an uncertain world: adaptive locomotion from organisms to machine intelligence	8:30 AM – 9:30 AM	Room 618
Complementary to S2: Immunity in the 'omics age: what can 'omics approaches tell us about immunity in natural systems? Part 1	8:30 AM – 10:00 AM	Room 611
Complementary to S10: What do trade-offs mean to reproducing females? An integrative look at whole-organism trade-offs	9:30 AM – 10:00 AM	Room 618
Thermal physiology, Part 1	10:00 AM – 12:00 PM	Room 603
Development and evolution	10:15 AM – 11:45 AM	Room 606
Movement: How animals move in their environment, Part 2	10:15 AM – 11:45 AM	Room 604
Life history: Growth and reproduction	10:15 AM – 12:00 PM	Room 611
Complementary to S11: Recent advances in the mechanistic understanding of avian responses to environmental challenges	10:30 AM – 11:30 AM	Rooms 613-614
Evolutionary response to temperature changes	10:30 AM – 12:00 PM	Room 602
Genetics of behavior	10:30 AM – 12:00 PM	Room 608
Light and vision	10:30 AM – 12:00 PM	Room 607
Complementary to S2: Immunity in the 'omics age: what can 'omics	10:30 AM – 12:00 PM	Room 612

approaches tell us about immunity in natural systems? Part 2		
Aquatic neurobiology, Part 1	10:30 AM – 12:00 PM	Room 617
Mating and sexual dimorphism	10:30 AM – 12:00 PM	Room 609
Ecomorphology and feeding musculature	10:30 AM – 12:00 PM	Rooms 615-616
Swimming vertebrates	10:30 AM – 12:00 PM	Room 618

AFTERNOON

Evolution of form and function: Phenotypic plasticity	1:30 PM – 3:00 PM	Room 618
Armor and skin	1:30 PM – 3:00 PM	Room 607
Microbiome	1:30 PM – 3:15 PM	Rooms 615-616
Comparative endocrinology of stress, Part 2	1:30 PM – 3:30 PM	Rooms 613-614
Molecular evolution and genomics	1:30 PM – 3:30 PM	Room 617
Adaptation and ecomorphology in fluids	1:30 PM – 3:30 PM	Room 603
Division of Animal Behavior Best Student Presentation Marlene Zuk Award	1:30 PM – 3:30 PM	Room 608
Arthropod evo-devo	1:30 PM – 3:30 PM	Room 602
Global change: Thermal physiology and energetics	1:30 PM – 3:30 PM	Room 611
Neurobiology of flight	1:30 PM – 3:30 PM	Room 606
Division of Comparative Physiology & Biochemistry Best Student Presentation	1:30 PM – 3:30 PM	Room 609
Invertebrate swimming	1:30 PM – 3:30 PM	Room 604
Reproductive and parental behavior, Part 2	1:30 PM – 3:30 PM	Room 612

COMMITTEE AND BOARD MEETINGS

Advisory Committee	7:00 AM – 8:00 AM	Room 304
Membership Committee	7:00 AM – 8:00 AM	Alder & Ash Restaurant Lobby Level, Sheraton
Broadening Participation Committee	12:00 PM – 1:30 PM	Room 301
Educational Council	12:00 PM – 1:30 PM	Room 304

BUSINESS MEETINGS

DCB Member Meeting	5:45 PM – 6:45 PM	Room 607
DCE Member Meeting	5:45 PM – 6:45 PM	Room 602
DIZ Member Meeting	5:45 PM – 6:45 PM	Room 606
DNNSB Member Meeting	5:45 PM – 6:45 PM	Room 608
DPCB Member Meeting	5:45 PM – 6:45 PM	Ballroom C

WORKSHOPS AND PROGRAMS

Advancing accessibility, collaboration, and training in use of model-based and analytical tools in organismal biolog	12:15 PM – 1:30 PM	Room 602
Incorporating sex diversity and gender inclusivity in biology undergraduate classrooms	12:15 PM – 1:30 PM	Room 603
NSF Program Officers: What's New in BIO and Q&A session	12:15 PM – 1:00 PM	Room 606
DCPB/U Chicago Press/Ecological and Evolutionary Physiology	5:45 PM – 7:15 PM	Room 304

SOCIAL EVENTS

Free Headshot Lounge	9:00 AM – 5:00 PM	Booth 206, Exhibit Hall
DEE/DOB/DPCB Social	9:45 AM – 10:45 AM	Waterfall Suite
DEE Beer & Brains	5:00 PM – 7:00 PM	Cirrus Ballroom, Sheraton
Broadening Participation Social	6:15 PM – 7:15 PM	Rooms 307-308
DCE/DEDE/DAB/DNNSB Social	8:30 PM – 10:00 PM	4th Floor Atrium
Outgroup Social (LGBTQ+, 21+)	8:30 PM – 10:30 PM	Offsite

Thursday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:00 PM **Ballroom B**

S4: Computational and physical models in research and teaching to explore form-function relationships

Chairs: M. Janneke Schwaner, S Tonia Hsieh

7:45 am	*Marie Schwaner, S. Tonia Hsieh; University of California, Irvine, Temple University*	Computational and Physical Models in Research and Teaching to Explore Form-Function Relationships
8:00 am	*Aimy Wissa; Princeton University*	CANCELLED – A Robotic Model Organism to understand the Multi-medium Locomotion of Flying Fish
8:30 am	*Chen Li; Johns Hopkins University*	Robotic and physics modeling of ground self-righting
9:00 am	*Pasha van-Bijlert, Ineke Smit, Thomas Geijtenbeek, Anne Schulp, Karl Bates; Utrecht University, Naturalis Biodiversity Center, Delft University of Technology, University of Liverpool*	Investigating quadrupedal gaits in the horse (Equus ferus caballus) using musculoskeletal models
9:30 am	*Aja Carter, Diego Caporale, Daniel Koditschek; Carnegie Mellon University, University of Pennsylvania*	Towards Dynamic Gaits in Paleozoic Tetrapods: Damping Forces in the Axial Column
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Sandy Kawano, Johnson Martin, Emma Hsiao, Joshua Medina, Matthew Evans, Riley Lima, Jonathan Huie, Esther Langan, Kevin de-Queiroz, Matthew Carrano, R. Pyron, Duncan Irschick; George Washington University, University of Massachusetts at Amherst, Smithsonian National Zoological Park, National Museum of Natural History*	Applying 3D models of giant salamanders to explore form-function relationships in early tetrapods
11:00 am	*Suzanne Amador Kane, Chengpei Li, Theodore Bien, Aaron Xu, Benjamin Alexander, Natalie Goeler-Slough, Eric Beery, S. Tonia Hsieh; Haverford College, Temple University*	Combining pose estimation, rendering, and simulations to understand complex motions
11:30 am	**Lunch**	
1:00 pm	*Christopher Martinez; University of California Irvine*	Geometric kinematics: analyzing motions as shapes
1:30 pm	*Yu Pan, George Lauder; Harvard University*	Combining computational fluid dynamics and experimental data to understand fish schooling behavior
2:00 pm	*Nicole Xu, Kaushik Sampath, Jonathan Stocking, Jason Geder, Ravi Ramamurti; University of Colorado Boulder, KS Research Inc, U.S. Naval Research Laboratory*	Hydrodynamic and acoustic noise measurements of shark skin-inspired surfaces
2:30 pm	*Glenna Clifton; University of Portland*	Biorobotics reveals mechanisms underlying bird swimming and invertebrate walking

7:45 AM – 3:00 PM **Ballroom C**

S5: Chordate origins, evolution, and development

Chair: Billie J. Swalla

7:45 am	*Billie Swalla; University of Washington*	Introduction to Chordate Origins: Evolution, Development and Regeneration
8:00 am	*Billie Swalla; University of Washington*	Deuterostome Ancestors and Chordate Origins
8:30 am	*Alberto Stolfi; Georgia Institute of Technology*	Development of the central nervous system(s) of the solitary tunicate Ciona
9:00 am	*Keaton Schuster; New York University*	A Chordate Model for the Origins of Cardiac Regenerative Capacity

9:30 am	*Lenny Negrón-Piñeiro, Yushi Wu, Sydney Popsuj, Alberto Stolfi, Anna Di-Gregorio*; New York University, Georgia Institute of Technology*	Gene regulatory networks underlying notochord development and evolution
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Jennifer Fenner, Ryan Range; Auburn University*	The conserved role of integrated canonical and non-canonical Wnt signaling during anterior-posterior
10:30 am	*Bradley Davidson, C. J. Pickett, Joseph Ryan, Ipeknaz Icten; Swarthmore College, The Whitney Laboratory for Marine Bioscience, The University of Florida*	The evolution of reincarnation? - Acquisition of polymorphism in the chordate doliolids.
11:00 am	*José Andrade-Lopez, Laurent Formery, Lauren Lubeck, Chris Lowe*; Stanford University, Hopkins Marine Station*	Nervous system evolution in deuterostomes
11:30 am	**Lunch**	
1:00 pm	*Yi-Hsien Su; Academia Sinica*	Tracing the evolutionary origins of chordate mesoderm in ambulacrarians
1:30 pm	*Jr-Kai Yu; Institute of Cellular and Organismic Biology, Academia Sinica*	Molecular asymmetry in amphioxus embryos: implications for the early patterning events in chordates
2:00 pm	*Ferdinand Marlétaz, Elise Parey, Laura Piovani; University College London*	The evolution of chromosomal and regulatory architecture in deuterostomes
2:30 pm	*Henry Rodriguez-Valbuena, Tony De-Tomaso*; University of California Santa Barbara*	Emergence, assembly and evolution of an ascidian histocompatibility locus

7:45 AM – 4:00 PM **Rooms 619-620**

S6: The scale of resilience: mechanisms of recovery across biological systems

Chairs: Emily Le Sage, Corinne Richards-Zawacki

7:45 am	*Emily Le-Sage, Corinne Richards-Zawacki, Jamie Voyles, Cheryl Briggs; Skidmore College, University of Pittsburgh, University of Nevada Reno, University of California Santa Barbara*	Introduction to the symposium: the scale of resilience
8:00 am	*Chris Anderson, Alva Curtsdotter, Berry Brosi, Fernanda Valdovinos, Phillip Staniczenko; University of Washington, University of California Davis*	Contrasting Topology and Interaction Strengths Drive Stability in Mutualistic Networks
8:30 am	*Jeffrey Baguley, Elisa Baldrighi; University of Nevada-Reno*	Assessing the Scale of Deep-sea Benthos Impact and Recovery After the Deepwater Horizon Oil Spill
9:00 am	*Olivia Graham, Baylen Ratliff, Audrey Vinton, Tina Whitman, Jeff Gaeckle, Bart Christiaen, Catherine Harvell; Cornell University, University of Washington, Friends of the San Juans, Washington State Department of Natural Resources*	Health surveys as indicators for eelgrass meadow resiliency
9:30 am	*Emily Le-Sage, Jamie Voyles, Corinne Richards-Zawacki, Cheryl Briggs; Skidmore College, University of Nevada, Reno, University of Pittsburgh, University of California Santa Barbara*	Roundtable discussion: parallels among perturbations
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Mikhail Matz; University of Texas Austin*	Cross-ocean coral transplantation to restore resilience of Caribbean reefs
11:00 am	*Tina Cheng, Winifred Frick; Bat Conservation International*	Exploring resilience and recovery of bats from White-nose Syndrome
11:30 am	*Emily Le-Sage, Cheryl Briggs, Jamie Voyles, Corinne Richards-Zawacki; Skidmore College, University of California Santa Barbara, University of Nevada Reno, University of Pittsburgh*	Roundtable discussion: connecting scales
12:00 pm	**Lunch**	

1:30 pm	*James Adelman; The University of Memphis*	Tolerance of infection could support resilience at multiple levels
2:00 pm	*Patricia Schulte; University of British Columbia*	Resilience to high temperature and hypoxia in fish: view from the genome and epigenome
2:30 pm	*Hollie Putnam, Kevin Wong, Ariana Huffmyer, Hendrikje Jorissen, Eva Majerova, Antoine Puisay, Yann Lacube, Michael Henley, Claire Lager, Carmela Nuñez-Lendo, Caroline Dubé, Laetitia Hedouin; University of Rhode Island, University of Miami, University of Washington, Hawaii Institute of Marine Biology, Centre de Recherches Insulaires et Observatoire de l'Environnement CRIOBE USR3278, Smithsonian Institution*	Interplay of acclimatization and adaptation modulates resilience to climate change in marine inverts
3:00 pm	*Allie Byrne, Corinne Richards-Zawacki, Cheryl Briggs, Jamie Voyles, Roland Knapp, Erica Rosenblum; University of California Berkeley, University of Pittsburgh, University of California Santa Barbara, University of Nevada Reno*	What can frogs teach us about resilience?
3:30 pm	*Emily Le-Sage, Corinne Richards-Zawacki, Cheryl Briggs, Jamie Voyles; Skidmore College, University of Pittsburgh, University of California Santa Barbara, University of Nevada Reno*	Roundtable discussion: common currencies

Thursday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 8:30 AM **Room 603**

Evolution of feeding mechanisms

Chair: Ryan Felice

8:00 am	*Ryan Felice, Andrew Knapp, Taylor West; UCL, Natural History Museum London*	CANCELLED – Trade-offs among cranial soft tissues in avian evolution

8:00 AM – 9:45 AM **Room 604**

Genetics of adaptation

Chair: Katherine Martin

8:00 am	*Bradford Dimos, Michael Phelps; Washington State University*	CANCELLED – Using CRISP-Cas9 to test thermal tolerance genes in Rainbow Trout
8:30 am	*Kyle McElroy, Sivanandan Chudalayandi, Rick Masonbrink, Jorge Audino, Andrew Severin, Jeanne Serb; Iowa State University, University of São Paulo*	Arca zebra genome enables phylogenomic comparison of evolution and function in bivalve eyes
8:45 am	*Nathan Rank, Elliott Smeds, Abigail Keller, Caroline Williams, Elizabeth Dahlhoff; Sonoma State University, University of California Berkeley, Santa Clara University*	Identifying genes mediating local adaptation using targeted versus whole-genome approaches.
9:00 am	*Adam Rosso, Matthew Fujita; University of Texas Arlington*	Investigating DNA content of coding regions in Squamates
9:15 am	*Tom Iwanicki, Arianna Krinos, Erica Goetze, Harriet Alexander, Mireille Steck, Megan Porter; Georgetown University, Woods Hole Oceanographic Institution, University of Hawai'i at Mānoa*	Diel and vertical patterns opsin expression from zooplankton metatranscriptomes at Station ALOHA
9:30 am	*Katherine Martin, Jamie Adkins, Vipheaviny Chea, Anna Forsman, Erin Seney, Lisa Komoroske, Kate Mansfield, Anna Savage; University of Central Florida, University of Massachusetts, Dana-Farber Cancer Institute, Colby College*	Major histocompatibility complex immune gene evolution in four sea turtle species

8:00 AM – 10:00 AM **Room 617**

Metabolism, Part 2

Chair: Ariana Huffmyer

8:00 am	*Adi Domer, Eran Levin; University of California Berkeley, Tel-Aviv Uinversity*	The fa(c)ts that matter: Bees differentially allocate and modify common fatty acids in pollen
8:15 am	*Samantha Brieske, Brian Irving, Bernard Rees; University of New Orleans, Louisiana State University*	Relating whole-animal oxygen consumption to tissue-specific mitochondrial respiration in killifish
8:30 am	*Ariana Huffmyer, Jill Ashey, Eric Chiles, Emma Strand, Xiaoyang Su, Hollie Putnam; University of Washington, University of Rhode Island, Metabolomics Shared Resource, Rutgers Cancer Institute of New Jersey, Rutgers University, Gloucester Marine Genomics Institute*	Thermal stress reduces photosynthate metabolism and disrupts nitrogen cycling in coral larvae
8:45 am	*Jon Harrison, Craig Perl, Robert Johnson, James Haas, Meredith Johnson, Leland Graber; Arizona State University, Cornell University*	Affect of body size and colonial complexity on body and brain metabolic rates in Pogonomyrmex ants
9:00 am	*Alyssa Andres, Dean Grubbs; Florida State University*	Diversity in thermal tolerance, performance, stress and buffering in Northeastern GOM Fishes
9:15 am	*Max Carnes-Mason, Steven Beaupre; University of Arkansas*	The Metabolic and Temporal Effort of Ecdysis in Timber Rattlesnakes (Crotalus horridus)
9:30 am	*Kayla Earls, Shelby Jarvis, Susan Noh, Kennan Oyen; Washington State University*	Anaplasma marginale alters metabolic rate of adult male Dermacentor andersoni ticks
9:45 am	*Andrés López-Sepulcre, Jeferson Amaral, Nimisha Gautam, Amina Mohamed, Saismit Naik; Cornell University*	The eco-evolutionary dynamics of elemental homeostasis and nutrient cycling

8:00 AM – 10:00 AM **Room 606**

Invertebrates and flow

Chairs: Matea Santiago, Pankaj Rohilla

8:00 am	*Elizabeth Clark, Rodrigo Almeida; University of California Berkeley*	Extreme insect sap feeding illuminated with 3D imaging and computational fluid dynamics simulations
8:15 am	*Victor Ortega-Jimenez, Dongjin Kim, Je-Sung Koh, Saad Bhamla; University of Maine, Ajou University*	Capillary origami oars allow water striders to skim turbulent streams in a nonstop journey
8:30 am	*Pankaj Rohilla, Johnathan O'Neil, Victor Ortega-Jimenez, Prateek Sehgal, Chandan Bose, Saad Bhamla; Georgia Institute of Technology, University of Maine, University of Birmingham*	Small yet fast water-walkers: vortex interactions during water locomotion in Microvelia
8:45 am	*Christopher Pierce, Lucinda Peng, Xuefei Lu, Daniel Irvine, Hang Lu, Daniel Goldman; Georgia Institute of Technology*	Wavelength-frequency scaling for neuromechanical undulators in dissipative Environments
9:00 am	*Simon Anuszczyk, John Dabiri; Caltech*	Robotically Controlled Jellyfish: Biomechanics of Modified Bell Shapes
9:15 am	*Alexander Hoover, Kakani Katija, Joost Daniels, Janna Nawroth; Cleveland State University, MBARI, Helmholtz Zentrum München*	Modeling the mechanospace of larvacean pumping and swimming
9:30 am	*Matea Santiago, Alexander Hoover, Alyssa Connolly, Laura Miller; University of Arizona, Cleveland State University*	Active tension driven soft coral pulsing: Exploring emergent behavior through elasticity and tension
9:45 am	*Elio Challita, Pankaj Rohilla, Saad Bhamla; Georgia Tech*	Fluid ejections in Nature

8:00 AM – 10:00 AM **Room 608**

Foraging behavior

Chairs: Stephen Adolph, Yusan Yang

8:00 am	*Michael Louison, Molly Cannon, Isabel Montano, Preston Pennington, Anthony Dell; McKendree University, National Great Rivers Research and Education Center, Washington University in St. Louis*	Differential foraging response to multiple microplastic types by bluegill Lepomis macrochirus
8:15 am	*Michael Knabe, Jimena Aracena; Southwestern Oklahoma State University*	Foraging Behavior of Fruit Flies (Drosophila melanogaster) in a 3D Arena
8:30 am	*Elsie Cecilia Carrillo, Rita Mehta; University of California Santa Cruz*	Using diving performance to explain changes in foraging ecology over ontogeny in garter snakes
8:45 am	*Carey Kuhn, Rodney Towell, Jeremy Sterling, Rolf Ream; NOAA Fisheries*	Continued population growth of a fur seal colony results in increased localized resource depletion
9:00 am	*Katie Saenger, Tim Bean, Heather Harris, Lauren Campbell, Elizabeth Eby, Kate Riordan, Molly Murphy, Heather Liwanag; California Polytechnic State University, The Marine Mammal Center*	Movement of weaned northern elephant seal pups during their first at-sea foraging migration
9:15 am	*Stephen Adolph, Deniz Korman, Brennan Plassmeyer; Harvey Mudd College, University of Cincinnati, Serrano Systems, Inc.*	Optimal foraging height of arboreal lizards: the role of visual acuity
9:30 am	*Christofer Brothers, Stacey Combes; University of California Davis*	Leg-spur morphology predicts foraging behaviors in adult dragonflies (Odonata: Anisoptera)
9:45 am	*Yusan Yang, Swanne Gordon, Andrés López-Sepulcre, Eleanor Grant; University of South Florida, Cornell University*	Female foraging strategy co-evolves with sexual harassment intensity in the Trinidadian guppy

8:00 AM – 10:00 AM **Rooms 613-614**

Comparative endocrinology of stress, Part 1

Chairs: Fran Bonier, Creagh Breuner

8:00 am	*Fran Bonier, Emma Sinclair, Paul Robert Martin; Queen's University*	Is there an urban-tolerant endocrine phenotype?
8:15 am	*Conor Taff, Sabrina McNew, Leonardo Campagna, Maren Vitousek; Cornell University*	Corticosterone exposure causes long-term changes to methylation, physiology, and breeding decisions.
8:30 am	*Dan Costa, Rachel Holser, Birgitte McDonald, Sarah Peterson, Joshua Ackerman, Dan Crocker; University of California Santa Cruz, Moss Landing Marine Lab, U.S. Geological Survey*	Cumulative Effects Of Multiple Stressors On Marine Mammals– Elephant Seals As A Model System
8:45 am	*Hannah Beyl, Creagh Breuner*; University of Montana*	Total vs Free CORT in predicting nest abandonment across 6 passerine species
9:00 am	*Ursula Beattie, Lily Mikolajczak, Nina Fefferman, L. Michael Romero; Tufts University, University of Tennessee Knoxville*	Neophobia, but not perch hopping or corticosterone, is sensitive to the intensity of chronic stress
9:15 am	*Bridger Creel, Megan Fylling, Benjamin Colman, Creagh Breuner; University of Montana*	Using fecal glucocorticoid metabolites to assess the impacts of mining contamination on songbirds
9:30 am	*Taylor Miller, Kristen Navara; University of Georgia*	Eavesdropping embryos: How does prenatal exposure to alarm calls influence offspring phenotype?
9:45 am	*Ben Vernasco, Jamie Cornelius, Amalia Moore, Heather Watts; Whitman College, Oregon State University, Virginia Tech, Washington State University*	Intrinsic and extrinsic influences on glucocorticoids in red crossbills (Loxia curvirostra)

8:00 AM – 10:00 AM **Rooms 615-616**

Fins and flukes in locomotion

Chair: Valeria Saro-Cortes

8:00 am	*Haley Amplo, Brooke Flammang; Rutgers University - Newark, New Jersey Institute of Technology*	CANCELLED — Using DeepLabCut to Analyze the Walking Behavior of Frogfishes
8:15 am	*Vicky Fong, Sarah Hoffmann, Jessica Pate; Marine Megafauna Foundation*	Kinematic analysis of pectoral fin movements in manta ray resting behavior using drones
8:30 am	*Duncan Kennedy, Kelsey Lucas; University of Calgary*	Variation in pectoral fin shape relates to swimming performance in the chimaeras
8:45 am	*Andrew Clark, Eric Tytell; Tufts University*	The Tour de Fins: Bluegill brake like bikes
9:00 am	*Valeria Saro-Cortes, Brooke Flammang, Aimy Wissa; Princeton University, New Jersey Institute of Technology*	Forces of nature: flying fish taxi and takeoff mechanics
9:15 am	*Zachary Nopper, Kaelyn Gamel, Dan Bartlett, Henry Astley; University of Akron, DOD US Navy*	Calculating Joint Torques in Axolotls during Underwater Walking with Aquatic Force Plate
9:30 am	*Gabriel Antoniak, Enric Xargay, Joaquin Gabaldon, Kira Barton, Bogdan-Ioan Popa, Alex Shorter; University of Michigan, CSTAR Pte Ltd*	The importance of fluke geometry and stiffness on swimming efficiency in bottlenose dolphins
9:45 am	*Frank Fish, Duncan Irschick, Caitlyn Swiston, Sarah Kerr, Stefani Skrovan, Jenifer Zeligs, Megan Leftwich; West Chester University, Colorado State University, George Washington University*	Realistic drag coefficients based on accurate 3D geometries of swimming sea lions

8:00 AM – 10:00 AM **Room 602**

Evolution of form and function, Part 1

Chairs: Armita Manafzadeh, David Kay

8:00 am	*Mackenzie Gerringer, Werner Schwarzhans; State University of New York at Geneseo, Zoological Museum, Natural History Museum of Denmark*	Otoliths of the deepest-living fishes
8:15 am	*Roi Holzman; Tel Aviv University*	Biomechanics of prey capture in fish: exceptions to the suction feeding paradigm
8:30 am	*Savanna Wright, Rita Mehta; University of California Santa Cruz*	The Morphology and Function of Oral and Pharyngeal Teeth in the California Moray Eel
8:45 am	*Yara Haridy, Karma Nanglu, Neelima Sharma, Sam Norris, Javier Ortega-Hernandez, Neil Shubin; University of Chicago, Harvard University*	CANCELLED – Tooth Origins and the Convergent Evolution of Sensory Structures
9:00 am	*Henry Camarillo, Ruben Tovar, Dana García, Tom Devitt, David Hillis, Bhart-Anjan Bhullar, Martha Munoz; Yale University, University of Texas, Texas State University*	Evolution of cranial morphology in replicated transitions to subterranean environments in Eurycea
9:15 am	*Allyson Evans, L Patricia Hernandez, Josh Egan; George Washington University, University of Idaho*	Comparative Anatomy of Otomorphan Epibranchial Organs
9:30 am	*Armita Manafzadeh, Stephen Gatesy, Bhart-Anjan Bhullar; Yale University, Brown University*	Extreme long-axis rotation: the functional consequences of fibular reduction in theropod dinosaurs
9:45 am	*David Kay, Paul Gignac, Haley O'Brien; Oklahoma State University Center for Health Sciences, University of Arizona*	Tooth sockets drive molar cusp offset across Rodentia

8:00 AM – 10:00 AM **Room 609**

Global change: Life history evolution

Chair: Juliette Jacquemont

8:00 am	*Jack Litle, Emily Carrington; University of Washington*	Detecting Limiting Fitness Components in a Sensitive Early Life Stage as a Function of Reproductive

8:15 am	*Ayley Shortridge, Fredric Janzen; Michigan State University*	Heat waves and flash drought: interactive effects during embryonic development in the painted turtle
8:30 am	*Juliette Jacquemont, Katharina Alter, Paolo Domenici; University of Washington*	Hidden impacts of climate change on marine organisms
8:45 am	*César Nufio, Lauren Buckley*; Howard Hughes Medical Institute, University of Washington*	Insect size responses to climate change vary across elevations and life histories
9:00 am	*Monica Sheffer, Caroline Williams, Lauren Buckley, Sean Schoville; University of California Berkeley, University of Washington, University of Wisconsin-Madison*	Montane grasshopper fitness constraints in changing environments
9:15 am	*Shirley Serrano-Rojas, Lauren O'Connell; Stanford University*	Adapting to seasonal changes: A study of flexible breeding strategies in poison frogs
9:30 am	*Nadje Najar, Chris Clark; University of California Riverside*	Molt-imposed constraints on hummingbird migration ecology
9:45 am	*Robert Srygley; USDA-Agricultural Research Service*	Prolonged Diapause Enhances Insect Persistence in Microclimate Refugia

8:00 AM – 10:00 AM **Room 607**

Magnetic and electrical sensation

Chair: Catherine Kehl

8:00 am	*Alayna Mackiewicz, Kayla Goforth, Abigail Glazener, Catherine Lohmann, Kenneth Lohmann; University of North Carolina Chapel Hill*	Effect of a strong magnetic pulse on the map sense of loggerhead sea turtles
8:15 am	*Hazel Havens, Kenneth Lohmann; University of North Carolina Chapel Hill*	An integrative approach to studying magnetoreception
8:30 am	*Catherine Kehl; University of North Carolina Chapel Hill*	Bio-Inspired Magnetoreceptive Navigation In Space
8:45 am	*Julianna Martin, Robert Fitak; University of Central Florida*	Turtle tears? Characterizing the magneto-microbiome of the sea turtle lacrimal gland
9:00 am	*Dana Lim, Jadyn Sethna, Isabelle Sechrest, Catherine Lohmann, Kenneth Lohmann; University of North Carolina Chapel Hill*	Importance of early experience for sea turtle magnetic field responses
9:15 am	*Emin Yusuf Aydin, Onurcan Yilmaz, Sinan Topcakar, Ismail Uyanik; Hacettepe University*	Closed-loop Manipulation of Active Sensing Movements of Weakly Electric Fish During Refuge Tracking
9:30 am	*Alp Demirel, Selin Özel, Ismail Uyanik; Hacettepe University, Istek Acıbadem High School*	Modeling Multisensory Integration in Weakly Electric Fish in Relation to Sensory Salience
9:45 am	*Kenneth Lohmann, Roger Brothers, Vanessa Bezy, Catherine Lohmann; University of North Carolina Chapel Hill, Gulf of Maine Research Institute, Wildlife Conservation Association*	The Role of Olfaction and Magnetic Navigation in the Mass Nesting Behavior of Sea Turtles

8:00 AM – 10:15 AM **Room 612**

Muscle mechanics

Chairs: Natalie Holt, Jessica Tingle

8:00 am	*Jessica Tingle, Kelsey Garner, Henry Astley; University of Akron*	An in vivo examination of snake muscle shortening and vertebral column curvature using X-ray video
8:15 am	*Jenna Monroy, Siwoo Jeong, Madhusudhan Venkadesan, Kiisa Nishikawa; WM Keck Science Department Claremont Colleges, Northern Arizona University, Yale University*	Residual force enhancement along the descending limb in mouse muscles with different titin genotypes
8:30 am	*Kiisa Nishikawa, Jenna Monroy, Madhusudhan Venkadesan, Siwoo Jeong; Northern Arizona University, WM Keck Science Department Claremont Colleges, Yale University*	Stress relaxation after passive and active stretch in mouse soleus muscles with titin mutations.
8:45 am	*Natalie Holt, David Labonte, Nihav Dhawale; University of California Riverside, Imperial College London*	Determinants of, and constraints to, muscle performance in vertebrates and invertebrates

9:00 am	*Carissa Mallonee, Monica Daley, Kiisa Nishikawa, Caitlin Bemis; Northern Arizona University, University of California Irvine*	Dissecting the contributions of neural activation and strain trajectories to muscle force production
9:15 am	*Kelsey Garner, Jessica Tingle, Henry Astley; University of Akron*	Do repetitive locomotor trials lead to reduced muscle strain in snakes?
9:30 am	*Kavya Katugam-Dechene, Talayah Johnson, Stephen Piazza, Jonas Rubenson*; University of Massachusetts Lowell, University of Pennsylvania, Penn State University*	Locomotor and Musculoskeletal Adaptations to Growth-Period Load Stimulus
9:45 am	*Marie Schwaner, Kiisa Nishikawa, Monica Daley; University of California Irvine, Northern Arizona University*	Intrinsic factors –not activation– are main drivers of variation in muscle force and work in vivo

8:30 AM – 9:30 AM **Room 618**

Complementary to S3: Moving in an uncertain world: adaptive locomotion from organisms to machine intelligence

Chairs: Kaushik Jayaram, Jean-Michel Mongeau

8:30 am	*Harry Tuazon, Saad Bhamla; Georgia Institute of Technology*	Hanging on Duckweed Roots: Substrate Use and Cooperative Behavior in California Blackworms
8:45 am	*Holden Walker, Johnathan O'Neil, Pankaj Rohilla, Saad Bhamla; Georgia Institute of Technology*	Amphibious locomotion and meniscus climbing in Microvelia
9:00 am	*Sebastian Lee, Stanley Wang, Duyi Kuang, Justin Yim, Eric Wang, Nathaniel Hunt, Hannah Stuart, Robert Full; University of California Berkeley, University of Illinois Urbana-Champaign, University of Nebraska Omaha*	Free-ranging squirrels stabilize branch landing using nonprehensile, palmar foot grasps
9:15 am	*Stefan Popp, Anna Dornhaus; University of Arizona*	Ant search: coordinated, efficient, and not just random!

8:30 AM – 10:00 AM **Room 611**

Complementary to S2: Immunity in the 'omics age: what can 'omics approaches tell us about immunity in natural systems? Part 1

Chair: Lauren E. Fuess, Nikki Traylor-Knowles

8:30 am	*Grace Crandall, Alyssa Gehman, Catherine Harvell, Steven Roberts; University of Washington, Hakai Institute*	Immune response of Pycnopodia helianthoides to sea star wasting disease
8:45 am	*Grace Snyder, Anthony Bonacolta, Javier del-Campo, Benyamin Rosental, Nikki Traylor-Knowles; Ben Gurion University of the Negev, University of Miami*	Single-Cell Characterization of Coral Phagocytic Cells
9:00 am	*Jongbeom Park, Aellah Kaage, Mohamed Donia, Ricardo Mallarino; Princeton University*	Antimicrobial protection of immunologically underdeveloped marsupial neonates
9:15 am	*Ken Field, Sara Talmage, DeeAnn Reeder; Bucknell University*	Transcriptomic Responses to Coronavirus Infections in African and North American bats
9:30 am	*Vania R Assis, Kailey McCain, Allison Brehm, John Orrock, Lynn Martin; University of South Florida, University of Wisconsin*	Geographic variation in immune gene expression in wild rodent hosts of Borrelia burgdorferi
9:45 am	*Erin Borbee, Louis Oviedo, Lauren Fuess; Texas State University*	A multi-omics approach investigating regulation of symbiont state in a facultatively symbiotic coral

9:30 AM – 10:00 AM **Room 618**

Complementary to S10: What do trade-offs mean to reproducing females? An integrative look at whole-organism trade-offs

Chair: Chloe Josefson

9:30 am	*Andrew Pierce, Laura Jenkins, Lucius Caldwell, Lea Medeiros, Neil Graham, Douglas Hatch, James Nagler; University of Idaho, Four Peaks Environmental Science & Data Solutions, Columbia River Inter-Tribal Fish Commission*	Consecutive vs skip spawning in steelhead kelts: life history tradeoffs and physiological mechanisms

9:45 am	*Roxanne Beltran, Allison Payne, A. Marm Kilpatrick, Richard Condit, Conner Hale, Madison Reed, Elliott Hazen, Steven Bograd, Joffrey Jouma'a, Patrick Robinson, Emma Houle, Wade Matern, Alea Sabah, Kathryn Lewis, Samantha Sebandal, Allison Coughlin, Natalia Valdes Heredia, Francesca Penny, Sophie Dalrymple, Heather Penny, Meghan Sherrier, Ben Peterson, Joanne Reiter, Burney LeBoeuf, Dan Costa; University of California Santa Cruz*	Decadal variation in ocean productivity mediates life history trade-offs in an ecosystem sentinel

10:00 AM – 12:00 PM **Room 603**

Thermal physiology, Part 1

Chair: Jordan Glass

10:00 am	*Isabella Burger, Michael Itgen, Rob Denton, Eric Riddell; University of North Carolina Chapel Hill, Marian University*	Comparing thermal sensitivity and acclimation capacity between unisexual and sexual salamanders
10:15 am	*Mary Tucker, Daniella Biffi, Dean Williams;*	Thermal refugia and persistence of Texas horned lizards (Phrynosoma cornutum) in small towns
10:30 am	*Roger Anderson; Western Washington University*	A new model for lizard thermoregulation derived from field data on an intensive foraging lizard
10:45 am	*Thomas O'Leary, Emily Mikucki, Sumaetee Tangwancharoen, Sara Cahan, Seth Frietze, Brent Lockwood; University of Vermont*	Single nuclei sequencing reveals molecular basis of thermal acclimation in D. melanogaster embryos
11:00 am	*Tamara Tyner, Eric Riddell; Iowa State University, University of North Carolina Chapel Hill*	Thermal Acclimation as an Emergent Trait in Eusocial Bumblebees
11:15 am	*Alexander Mauro, Eric Riddell, Cameron Ghalambor; Norwegian University of Science and Technology, University of North Carolina Chapel Hill*	The Influence of Temperature and Humidity on Metabolic Rate Across Diverse Insect Species
11:30 am	*Jordan Glass, Nicholas Burnett, Stacey Combes, Ethan Weisman, Alina Helbling, Jon Harrison; University of Wyoming, University of California Davis, Arizona State University*	Hot bees adjust wing kinematics to conserve water and improve heat tolerance when lifting loads
11:45 am	*Kristi Montooth, Ibrahim ElShesheny, Omera Matoo, Maathir Basi, John DeLong; University of Nebraska-Lincoln, University of South Dakota*	Evolution of thermal sensitivity across levels of biological organization

10:15 AM – 11:45 AM **Room 606**

Development and evolution

Chair: Kathryn Kavanagh

10:15 am	*Lucas Pineiro, Theodore Garland; University of California Riverside*	Does heterozygote advantage maintain variation of a gene of major effect for muscle mass?
10:30 am	*Ceri Weber, Erica Gacasan, Alexander Weitzel, Talia Moore, Robert Sah, Kimberly Cooper; University of California San Diego, University of Michigan*	Growing a tail: cellular and genetic determinants that diversify tail proportion in mammals
10:45 am	*Megan Rothstein, Ricardo Mallarino; Princeton University*	Cis-regulatory evolution of bird beak morphogenesis
11:00 am	*Kathryn Kavanagh, Swapan Mallick; University of Massachusetts Dartmouth, Harvard Medical School*	Intrinsic Embryo Loss, Robustness, and Environmental Risk Among Vertebrates
11:15 am	*Christopher Smaga, Samantha Bock, Anthony Breitenbach, Benjamin Parrott; University of Georgia*	Investigating the influence of thermal fluctuations on developmental efficiency in a TSD species
11:30 am	*Nicole Nakata, Richard Emlet; Oregon Institute of Marine Biology, University of Oregon*	The brittle stars of the northeast Pacific with abbreviated development

10:15 AM – 11:45 AM **Room 604**

Movement: How animals move in their environment, Part 2

Chairs: Jeffery Anderson, Isaac Ligocki

10:15 am	*Acacia Tang, August Easton-Calabria, Madalyn Laskowski, James Crall; University of Wisconsin-Madison*	Not Too Big a Stretch: Unsupervised behavior classification in bumblebees using dynamic time warping
10:30 am	*Jeffery Anderson, Jake Socha, Amalia Moore, Joshua Pulliam, Jerry Wong, Collin Barnett, Ulmar Grafe, Salwa Khalid; Virginia Tech, University of Brunei Darussalam*	How does height influence perch-related locomotor behaviors in arboreal snakes?
10:45 am	*Kevin Neumann, Liam Hoeferlin, Saieshwar Chikoti, Grzegorz Buczkowski, Andrew Suarez; University of Illinois Urbana-Champaign*	Behavioral changes facilitate the spread into urban environments in odorous house ants
11:00 am	*Isaac Ligocki; Millersville University*	Range expansion and behavioral variation in two Gambusia fishes in the Susquehanna River watershed
11:15 am	*Jadyn Sethna, Dana Lim, Isabelle Sechrest, Catherine Lohmann, Kenneth Lohmann; University of North Carolina Chapel Hill*	Recalculating: Can Sea Turtles Account for Gradually Changing Geomagnetic Parameters?
11:30 am	*Kate Earle, Brett Hodinka, Joshua Allen, Tony Williams; Simon Fraser University*	Do nestling European starlings “exercise” in anticipation of fledging?

10:15 AM – 12:00 PM **Room 611**

Life history: Growth and reproduction

Chair: Victoria Coutts

10:15 am	*Raven Barbera, Tony Williams; Simon Fraser University*	Individual Variation and Seasonal Repeatability of Egg Size in the European Starling
10:30 am	*Aarcha Thadi; University of Minnesota Twin Cities*	Variation in egg-laying patterns of the Pacific field cricket, Teleogryllus oceanicus
10:45 am	*Stav Talal, Jon Harrison, Ruth Farington, Jacob Youngblood, Hector Medina, Rick Overson, Arianne Cease; Arizona State University, Southern Oregon University, SENASA*	Body mass and growth rates predict protein intake across animals
11:00 am	*Victoria Coutts, Kayci Messerly, Haruka Wada; Auburn University*	Developmental food restriction has long-term consequences on adult reproductive success
11:15 am	*Akhila Gopal, Guillermo Garcia-Costoya, Noa Ratia, Karla Alujevic, Madison Glenwinkel, Shea McKendree, Kaitlyn Napier, Cody Chapman, Allison Dorny, Michael Logan; University of Nevada Reno*	The Pace of Life in the Wild West: Lizards across an Elevational Gradient
11:30 am	*Anthony Gilbert, Sydney Wayne, Mike Norris, John Rodgers, Daniel Warner; Auburn University*	Temperature Stress as a Maternal Effect on Lizard Reproduction
11:45 am	*Guillermo Garcia-Costoya, Akhila Gopal, Noa Ratia, Karla Alujevic, Madison Glenwinkel, Shea McKendree, Kaitlyn Napier, Cody Chapman, Allison Dorny, Michael Logan; University of Nevada Reno*	Towards a general model for the evolution of reptile viviparity

10:30 AM – 11:30 AM **Rooms 613-614**

Complementary to S11: Recent advances in the mechanistic understanding of avian responses to environmental challenges

Chair: Alexander Gerson

10:30 am	*Emma Rhodes, Kang Nian Yap, Geoffrey Hill, Wendy Hood; Auburn University*	Mitochondrial capacity in two Mimidae species: a migratory and non-migratory comparison
10:45 am	*Davide Dominoni, Barbara Helm, Claire Branston, Pablo Capilla-Lasheras; University of Glasgow, Swiss Ornithological Institute*	Chronobiology of urban life: new insights from parallel recording of activity and body temperature

11:00 am	*Kevin Young, Morag Dick, Catherine Ivy, Christopher Guglielmo; University of Western Ontario*	Do n-3 polyunsaturated fatty acids reduce energy costs in western sandpipers (Calidris mauri)?
11:15 am	*Juan Zuluaga, Raymond Danner; University of North Carolina Wilmington*	Thermography and behavioral analyses reveal novel mechanisms of seasonal acclimatization in birds

10:30 AM – 12:00 PM **Room 602**

Evolutionary response to temperature changes

Chair: Juan Liu

10:30 am	*Juan Liu; University of California Berkeley*	Opening a Window to a Warm Earth: Age and Growth of Catostomid Fishes from the Eocene Okanagan Highl
10:45 am	*Mary Capossela, Kit Yu Karen Chan; Swarthmore College*	Marine heatwave influences life-history tradeoff of an intertidal gastropod
11:00 am	*Paola López-Duarte, Ruth Wright, Caitlin BrabbleRose; Portland State University, University of North Carolina Charlotte*	Timing is Everything: Effects of Temperature on Embryonic Development and Spawning in Fiddler Crabs
11:15 am	*Josh Yang, Katie Marshall; University of British Columbia*	Metabolic Consequences of Freezing in the Intertidal Mussel, Mytilus trossulus
11:30 am	*Anchal Padukone, Kimberly Sheldon; University of Tennessee*	Effects of fluctuating temperatures on fecundity and population growth in a widespread noctuid moth
11:45 am	*Caleb Krueger, Fredric Janzen; Michigan State University*	On the origin of patterns of temperature-dependent sex determination

10:30 AM – 12:00 PM **Room 608**

Genetics of behavior

Chairs: Frederic Silvestre, Amber Rice

10:30 am	*Michael Gilbert; University of Pennsylvania*	Neuropeptide specification of Cutter and Nurse behavior in Leafcutter Ants
10:45 am	*Susan Anderson, Andrea Liebl, Andrew Russell; University of South Dakota, University of Exeter*	The effect of developmental environments on methylation of DNMT3 in a cooperatively breeding species
11:00 am	*Amber Rice, Georgy Semenov, Joan Marie Spinelli, Austin Russell, Noel Martinez, Haley Kenyon, Alex Huynh, Robin Johnsson, Timothy Roth, Scott Taylor; Lehigh University, University of Colorado, Franklin and Marshall College*	Cognitive variation and its genetic basis in hybridizing chickadees
11:15 am	*Frederic Silvestre, Valentine Chapelle, Ryan Earley, Kristine Marson, Jerôme Lambert; University of Namur, University of Alabama*	Epigenetic variability in wild populations of mangrove rivulus exhibiting genetic diversity gradient
11:30 am	*Erica Westerman, Sushant Potdar, David Ernst, Gabrielle Agcoaili; University of Arkansas, Bigelow Laboratory for Ocean Sciences*	The neurogenomics of diversity in butterfly mate preference learning
11:45 am	*William Lampman, Theodore Garland, Thomas Nguyen; University of California Riverside*	Is wheel running a stereotypic behavior in mice selectively bred for voluntary wheel running?

10:30 AM – 12:00 PM **Room 607**

Light and vision

Chair: Sonke Johnsen

10:30 am	*Sophia Hanscom, Mireille Steck, Tom Iwanicki, Megan Porter; University of Hawai'i at Mānoa, Georgetown University*	Spiders got the blues: Rh2 prevalence in salticid secondary eyes with species specific localization
10:45 am	*Sonke Johnsen, Alexander Davis, Eleanor Caves, Matthew Zipple, Danae Diaz, Steve Nowicki, Susan Peters; Duke University, University of California Santa Barbara, Cornell University*	Putting color in context: backgrounds affect the perception and discrimination of color signals

11:00 am	*James Foster, Anna Stöckl; Universität Konstanz, Konstanz University*	Using environmental imaging to interpret and plan behavioural studies
11:15 am	*Kyle McCulloch, Hansen Stacey, Meghan Payne, Emma Lilly; University of Minnesota*	Evolution of phototransduction genes and implications for light sensing in the eyeless Anthozoa
11:30 am	*Amartya Mitra, Shubham Rathore, Annette Stowasser, Ruby Hyland-Brown, Augusta Jester, Elke Buschbeck; University of Cincinnati*	Deconstructing a Complex Lens
11:45 am	*Marisa McDonald, Daniel Chappell, Martin (Ric) Wehling; Air Force Research Labs/NRC, National Academies of Sciences, Engineering and Medicine/Air Force Research Lab, AFRL/RWTCA*	Investigating the spectral responses of insect ocelli

10:30 AM – 12:00 PM **Room 612**

Complementary to S2: Immunity in the 'omics age: what can 'omics approaches tell us about immunity in natural systems? Part 2

Chairs: Lauren E. Fuess, Nikki Traylor-Knowles

10:30 am	*Nikki Traylor-Knowles; University of Miami*	Coral eco-immunity in a disease landscape of unknowns
11:00 am	*Laura Mydlarz; University of Texas*	Leveraging coral disease 'omics datasets for disease classification and predictive modeling
11:15 am	*Madison Emery, Emily Van-Buren, Kelsey Beavers, Laura Mydlarz; University of Texas*	Identifying shared and host-specific transcriptomic characteristics of the cnidarian-algal mutualism
11:30 am	*Sheila Thornton, Valentina Melica, Xiangjun Liao, Tanya Brown; Fisheries and Oceans Canada*	The fecal metabolome in an endangered Killer Whale population reveals attributes of gut dysfunction
11:45 am	*Lynn Martin, Elizabeth Sheldon, Kailey McCain, Massamba THIAM, Jorgen Soraker, Henrik Jensen, Roi Dor, Kate Buchanan, Jim Briskie, Blanca Jimeno, Kim Mathot, Thinh Vu, Ho Thu Phuong, Cédric Zimmer, Aaron Schrey; University of South Florida, Cheikh Anta Diop University, Cornell University, Georgia Southern University*	Variation in Toll-like receptor expression in native and non-native house sparrow populations

10:30 AM – 12:00 PM **Room 617**

Aquatic neurobiology, Part 1

Chair: Kathleen Munley

10:30 am	*Alyx Elder, Robyn Grant, Elizabeth Evans; Manchester Metropolitan University, University of Manchester*	Using diceCT to describe the musculature of the mystacial pad in Harbour seals (Phoca vitulina)
10:45 am	*Daniel Chappell, Martin (Ric) Wehling, Daniel Speiser; National Academies of Sciences, Engineering and Medicine/Air Force Research Lab, AFRL/RWTCA, University of South Carolina*	Distributed visual-motor coordination in the bay scallop Argopecten irradians
11:00 am	*Paul Moore; Bowling Green Sate University*	Running away or running to? Do prey incorporate both fear and safety in their decision making?
11:15 am	*Elias Lunsford, Claire Wyart; Paris Brain Institute (ICM)*	Organization of medial octavolateralis nuclei activity during different flow stimuli in zebrafish
11:30 am	*Noah Doeden, Mireille Steck, Megan Porter; University of Hawai'i at Mānoa*	Determining the Expression Patterns of Ultraviolet Sensitive Opsins in Gonodactylaceus falcatus
11:45 am	*Kathleen Munley, Sarah Gawlik, Beau Alward; University of Houston*	Colocalization and aggression-induced neural activation of androgen receptors in an African cichlid

10:30 AM – 12:00 PM **Room 609**

Mating and sexual dimorphism

Chair: A Kristopher Lappin

10:30 am	*Rachel Keeffe, Bingyang Zhang, Philip Anderson, Patricia Brennan; Mount Holyoke College, University of Illinois Urbana-Champaign*	Evolutionary Morphology of Snake Hemipene Spines Informed by Puncture Mechanics
10:45 am	*Grace Thompson, Rachel Keeffe, Patricia Brennan; Mount Holyoke College*	Describing the Clitoris of Alpaca (Vicugna pacos) Using Comparative Anatomical Methods
11:00 am	*Catherine Paredes-Amaya, Rachel Keeffe, Brandon Hedrick, Patricia Brennan; Mount Holyoke College, Cornell University*	Investigation of Copulatory Structures in Spiny dogfish sharks using 3D Geometric Morphometrics
11:15 am	*Kayla Fennell, Adrianne Wu, Rachel Keeffe, Patricia Brennan*; Mount Holyoke College*	Evolution of the hymen in mammals: phylogenetic distribution, diversity and function
11:30 am	*Daniel Latorre, Magdalena Muchlinski, William Sellers, Georg Hantke, Andrew Kitchener, Charlotte Brassey*; Manchester Metropolitan University, Oregon Health & Science University, University of Manchester, National Museum of Scotland*	Uncovering the 3D anatomy of the primate clitoris
11:45 am	*A Kristopher Lappin, Karl H. Peterson, Anthony R. Powell, John D. Taylor, Jennifer Alexander, Gordon Schuett; California State Polytechnic University (Pomona), Chiricahua Desert Museum*	Intense female-female aggression in the Gila monster (Heloderma suspectum)

10:30 AM – 12:00 PM **Rooms 615-616**

Ecomorphology and feeding musculature

Chair: Kavya Katugam-Dechene

10:30 am	*Hartrich Zack, Alexa Wimberly, Jonathan Nations, Graham Slater; University of Chicago*	“Lions are extremely adept at doing nothing”: a new ecological categorization scheme for Carnivora
10:45 am	*Rachel Carrock, Keegan Lutek, Alyssa Stark; Villanova University*	Arnold’s Paradigm in the field: Morphology, performance, and behavior in Lepidodactylus lugubris
11:00 am	*Leandra Hamann, James Strother; University of Florida, Whitney Laboratory for Marine Bioscience*	Don’t Spill the Krill: Flow Patterns of Filter-Feeding in Mobula Rays
11:15 am	*Samuel Angelli-Nichols, Trushti Patel, Devin Jenness, Nicolai Konow; University of Massachusetts Lowell*	Rat superficial masseter operates differently during biting and chewing and across food hardness
11:30 am	*Samuel Angelli-Nichols, Trushti Patel, Devin Jenness, Nicolai Konow; University of Massachusetts Lowell*	Food hardness, activation, and architecture influence in vivo operating lengths of rat jaw muscles
11:45 am	*Jessica Arbour; Middle Tennessee State University*	Comparative anatomy of the cranial musculature of darter fishes: insights from diceCT

10:30 AM – 12:00 PM **Room 618**

Swimming vertebrates

Chair: William Gough

10:30 am	*George Lauder, Tess Avery, Dakota Law, Molly Gabler-Smith; Harvard University, University of Delaware, Smith College*	The hydrodynamic function of shark skin
10:45 am	*Phillip Sternes, Sam Van-Wassenbergh, Tim Higham; University of California Riverside, University of Antwerp*	Hydrodynamics of pelagic shark pectoral fins
11:00 am	*Makenzie Reed, Deeksha Seth, Devaleena Pradhan; Idaho State University, Villanova University*	Future of Fin Filmography: A novel system to record and analyze fin movements.
11:15 am	*Valentina Di-Santo, Xuewei Qi; Stockholm University*	Energetics and Biomechanics of Hovering in Fishes

11:30 am	*William Gough, Max Czapanskiy, Matthew Savoca, Elliott Hazen, William Oestreich, James Fahlbusch, Daniel Palacios, Lars Bejder, Jeremy Goldbogen; University of Hawaii, Manoa, Hopkins Marine Station, Stanford University, Monterey Bay Aquarium Research Institute, Oregon State University*	Optimal Migratory Speed of Large Oceanic Capital Breeders
11:45 am	*Kaaria Walker, Jaida Elcock, Stacy Farina; George Washington University, Massachusetts Institute of Technology, Woods Hole Oceanographic Institution, Howard University*	The Role of Habitat in Shaping Differences in Branchiostegal Morphology in Frogfishes
12:00 pm	*Samantha Trail, Jeanette Wyneken; Florida Atlantic University*	Analysis of frenzy swimming in three morphologically-distinct species of sea turtle hatchlings

Thursday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

12:30 PM – 1:30 PM **Room 604**

AMS Keynote Lecture: Dr. Elizabeth Davis-Berg

But I'm Not a Microscopist: How a Profession Became a Tool

1:30 PM – 3:00 PM **Room 618**

Evolution of form and function: Phenotypic plasticity

Chair: Diego Vaz

1:30 pm	*JoJo West, Rose Faucher, Elizabeth Miller, Guillermo Orti, Lily Hughes, Sandra Alvarez-Carretero, Giorgio Carnevale, Aintzane Santaquiteria, Samantha Gartner, Mark Westneat, Carole Baldwin, Ricardo Betancur-R, Dahiana Arcila, Kory Evans; Rice University, University of California Irvine, University of Oklahoma, Brown University, University of Chicago, Scripps Institution of Oceanography*	The Perks of Eupercaria: Rapid Skull Shape Evolution in a Massive Radiation of Bony Fishes
1:45 pm	*Michael Hanson, Helen James; Smithsonian Institution, National Museum of Natural History*	Ontogeny of anatomical and ecological adaptations in Hawaiian large-bodied flightless waterfowl
2:00 pm	*Emily Carr, Rene Martin, Jack Degnan, John Sparks; American Museum of Natural History, Connecticut College*	Totally tubular: exploring morphology in bioluminescent tubeshoulders (Platytroctidae)
2:15 pm	*Marguerite Butler, Allison Fisher, Diana Gao, Sato Kaitlyn, Ethan Hill, Claire Fraser; University of Hawaii*	Evolution of toepads, lifestyle, and clinging ability in Papuan microhylid frogs
2:30 pm	*Robert Burroughs, Natasha Vitek, Devin Ward, Emma Pomeroy, Malgorzata Martin-Gronert, Sue Ozanne; Stony Brook University, Nature Communications, University of Cambridge*	Poor nutrition induces phenotypically plastic changes in size, but not shape, of rat lower molars
2:45 pm	*Dale Stevens, Anna Gilmartin, Isabella Reichel, Sydney Macedo, Matthew Wund, Kaitlyn Mathis; Bucknell University, Clark University, The College of New Jersey*	Mixed evidence of evolved plasticity in threespine stickleback following northern pike invasion

1:30 PM – 3:00 PM **Room 607**

Armor and skin

Chairs: Megan Vandenberg, Cassandra Donatelli

1:30 pm	*Cassandra Donatelli, Eric Chier, Megan Vandenberg, Matthew Kolmann, Adam Summers; Chapman University, University of Washington*	How armor shape and arrangement affects the mechanics of a composite system

1:45 pm	*Megan Vandenberg, Olivia Hawkins, Eric Chier, Julia Cervone, Cassandra Donatelli, Adam Summers; University of Washington, Tufts University, Chapman University, Spring Street International School*	From Tip to Tail: A Story of Armor Diversity
2:00 pm	*Karly Cohen, Gareth Fraser; University of Florida*	Growing defenses: insights into the cellular development of lumpsucker armor
2:15 pm	*Adam Summers, Cassandra Donatelli, Matthew Kolmann, Megan Vandenberg; University of Washington, Chapman University*	Fish armor - evidence of assaults and conflicting demands.
2:30 pm	*Lucy Campbell, Bruce Jayne, Thomas Roberts, Jarrod Petersen*; Brown University, University of Cincinnati*	Mechanical properties of snake skin vary longitudinally and following large prey ingestion
2:45 pm	*Gianna Mitchell, Ella Nicklin, Steven Byrum, Gareth Fraser; University of Florida*	Shark skin denticle diversity

1:30 PM – 3:15 PM **Rooms 615-616**

Microbiome

Chair: Mae Berlow

1:30 pm	*Afagwu Rita-Nkem, Ciara Stewart, Avery Russell; Missouri State University*	How flower longevity and environmental conditions affect epiphytic bacterial abundance
1:45 pm	*Claire Williams, Carrie Alfonso, Karla Alujevic, Leah Bakewell, Samantha Fontaine, Jaden Keller, Yanileth Lopez, Nathaly Ponce, Alejandro Vivas, Kelly Wuthrich, W. Owen McMillan, Candace Williams, Christian Cox, Michael Logan; University of Nevada Reno, Smithsonian Tropical Research Institute, Florida International University, San Diego Zoo Wildlife Alliance*	The Anolis gut microbiome: environmental influences and impacts on host physiology
2:00 pm	*Jennifer Gresham, Levi Morran; Emory University*	Caenorhabditis elegans life history in a microbial world and the consequences for mating system evol
2:15 pm	*Shana Goffredi, Ralph Appy; Occidental College, Cabrillo Marine Aquarium*	Alliances between blood-feeding marine invertebrates and beneficial bacteria
2:30 pm	*Stephanie Caty; Stanford University*	Life in a toxic world: poison frog microbiomes are shaped by alkaloid toxins
2:45 pm	*Esther Okamoto, Jennifer Kovacs; Agnes Scott College*	The Dual Dynamics of Gut Microbes: Unpacking Maternal and Environmental Determinants
3:00 pm	*Mae Berlow, Katrina Dlugosch; University of Arizona*	Plant genotype drives rhizosphere microbial community assembly during invasion

1:30 PM – 3:30 PM **Rooms 613-614**

Comparative endocrinology of stress, Part 2

Chairs: Mattina Alonge, Breanna Harris

1:30 pm	*Mattina Alonge, Lucas Greville, Xuehao Ma, Paul Faure, George Bentley; University of Montana, McMaster University, University of California Berkeley*	Restraint stress rapidly impacts reproductive neuroendocrinology and gonads of big brown bats
1:45 pm	*Lydia Nixon, Erin Gillam; North Dakota State University*	Variation in physiological stress between big brown bats roosting in different roost types
2:00 pm	*Molly Simonis, Sarah Ciarrachi, Kristin Dyer, Meagan Allira, Riley Bernard, Matthew Chumchal, Catherine Haase, Jeffrey Foster, Daniel Becker; University of Oklahoma, Northern Arizona University, University of Wyoming, Texas Christian University, Austin Peay State University*	Extrinsic stressors impact North American bat cellular immunity during reproductive periods
2:15 pm	*Lisa Surber, Eva Fischer; University of Illinois*	Ontogeny of physiological stress response in poison frog tadpoles

2:30 pm	*Amanda Bryant, Caitlin Gabor; Texas State University*	Tadpoles cope similarly with organic and conventional agricultural environments
2:45 pm	*Emily Eet, Abigail Stevenson, Eva Fischer, Lisa Surber; University of Illinois*	Investigating glucocorticoid abundance across development in glassfrogs (H. fleischmanni)
3:00 pm	*Alex Shephard, Sarah Lagon, Kate Millar, Sydney Jacobsen, Cristina Ledón-Rettig; Indiana University*	Early life diet-induced corticosterone reprograms juvenile behavior in spadefoot toads
3:15 pm	*Breanna Harris; Texas Tech University*	Pandemic Impact Factors: COVID-19 as a chronic stressor for the endocrine community

1:30 PM – 3:30 PM **Room 617**

Molecular evolution and genomics

Chair: Siddharth Kulkarni

1:30 pm	*Dylan DeBaun, Frank Burbrink, Christopher Raxworthy; AMNH*	Using whole genome data to characterize introgression in Malagasy gemsnakes
1:45 pm	*Evan Forsythe; Oregon State University-Cascades*	Genome-wide coevolution networks point to frequent rewiring of plant plastid proteostasis systems
2:00 pm	*Toriann Molis, Utpal Smart, David Rodriguez; Texas State University*	Mitogenomic rearrangements and phylogenetic relationships among Pristimantis achatinus and relatives
2:15 pm	*Swapan Mallick, Matthew Mah, Adam Micco, Nick Patterson, David Reich; Harvard Medical School*	Reducing meta-analysis bias in ancient DNA studies
2:30 pm	*Ninh Le, Joseph Heras, Michelle Herrera, Donovan German, Lisa Crummett*; The University of Texas M.D. Anderson Cancer Center, California State University, San Bernardino, University of California Irvine, Soka University of America*	The genome of Anoplarchus purpurescens (Stichaeidae) reflects its carnivorous diet
2:45 pm	*Siddharth Kulkarni, Hugh Steiner, Erika Garcia, Hernán Iuri, Ryan Jones, Jesús Ballesteros, Guilherme Gainett, Matthew Graham, Danilo Harms, Robin Lyle, Andrés Ojanguren-Affilastro, Carlos Santibañez-Lopez, Gustavo Silva-de-Miranda, Paula Cushing, Efrat Gavish-Regev, Prashant Sharma; University of Wisconsin-Madison, Eastern Connecticut State University*	Neglected no longer: Phylogenomic resolution of higher-level relationships in Solifugae
3:00 pm	*Auston Rutledge, Adam Reitzel; University of North Carolina Charlotte*	De-novo Genome of the Edwardsiid anemone Edwardsia elegans
3:15 pm	*Alberto Rivera, Andy Baxevanis; National Human Genome Research Institiute NIH*	Deducing the Evolution of Allorecognition and Primordial Immunity in Cnidarians

1:30 PM – 3:30 PM **Room 603**

Adaptation and ecomorphology in fluids

Chairs: Kelsey Lucas, Patrick Green

1:30 pm	*Caleb Gordon, Christopher Griffin, Jacques Gauthier, Bhart-Anjan Bhullar; Yale University*	Aquatic amniote limbs converge on a common morphology beyond terrestrial morphospace
1:45 pm	*Linnea Lungstrom, Q.T. Elizabeth Van-Ha, Mark Westneat; University of Chicago, Yale University*	Ecomorphology and morphometrics of head, body, and fin shapes in parrotfishes (Scarini: Labridae)
2:00 pm	*Samuel Case, Alejandro Rico-Guevara; University of Washington*	Simulating bird-plant interactions in 3D to assess pollination loss in Hawaiian forests
2:15 pm	*Kate Riordan, Heather Liwanag, Nicole Thometz, Francesca Batac; California Polytechnic State University, University of San Francisco, California Department of Fish & Wildlife*	CANCELLED – Ontogenetic changes in southern sea otter fur morphology
2:30 pm	*Siti Fauziyah, Jessica Ware, Marianne Alleyne; University of Illinois Urbana Champaign, American Museum of Natural History*	Comparing wing venation patterns in non-migratory and migratory dragonflies

2:45 pm	*Kelsey Lucas, Kevin Wehrly, Karen Alofs; University of Calgary, Michigan Department of Natural Resources, University of Michigan*	Swimming biomechanics as a driver of temperate inland lake fish abundances
3:00 pm	*Patrick Green; University of California Santa Barbara*	Combining behavior and mechanics to understand how mantis shrimp withstand impacts
3:15 pm	*Sophie Hanson, Erica Staaterman, Mireille Steck, Thomas Claverie, Megan Porter, Sheila Patek; Duke University, Bureau of Ocean Energy Management, Centre Universitaire de Mayotte, University of Hawai'i at Mānoa*	Fast and forceful: comparative scaling analysis of mantis shrimp strikes

1:30 PM – 3:30 PM **Room 608**

Division of Animal Behavior Best Student Presentation Marlene Zuk Award

Chair: Avery Russell

1:30 pm	*Cory Berger, Ann Tarrant; Woods Hole Oceanographic Institution*	High-resolution tracking of zooplankton reveals metabolic control of diel vertical migration
1:45 pm	*William Kirkpatrick, Sarah DuRant; University of Arkansas*	CANCELLED – Thermal variation but not mean temperature affects nestling growth despite shifts in parental care
2:00 pm	*Tessa Patton, Sara Lipshutz, Kimberly Rosvall; Loyola University Chicago, Duke University, Indiana University*	Brain transcriptomics vary with sex and breeding stage in a socially polyandrous shorebird
2:15 pm	*Madison Schumm, Kerri Ackerly, Andrew Esbaugh; The University of Texas at Austin, Marine Science Institute*	Effects of temperature acclimation on metabolism and behaviour in sheepshead minnows
2:30 pm	*Maria Salazar-Nicholls, Corey Allard, Astrid Lisondro-Arosemena, Nicholas Bellono, Karen Warkentin; Boston University, Harvard University, Smithsonian Tropical Research Institute*	Neural control of hatching enzyme release enables rapid escape-hatching in red-eyed treefrogs
2:45 pm	*Kate Otter, Paul Katz; University of Massachusetts Amherst*	Distinct phases of nudibranch predatory behavior are differentially affected by hunger and prey cue
3:00 pm	*Miya Ball, Benjamin Titus, Dan Exton, Eleanor Caves; University of California, Santa Barbara, University of Alabama, Operation Wallacea, University of California Santa Barbara*	Hunger effects on the signaling and cleaning behaviors of the cleaner shrimp, Ancylomenes pedersoni
3:15 pm	*Moth Castagna, Jenny Burrow, Ciara Stewart, Avery Russell; Missouri State University*	Take it or Leaf it: Can Bees Learn to Use Leaf Shape to Find Flower Rewards?

1:30 PM – 3:30 PM **Room 602**

Arthropod evo-devo

Chair: Emily Setton

1:30 pm	*Isaac Hinne, Hailee Ciccotti, Ben Faustino, Carolina Alonso, Michael Pham, Monika Gulia-Nuss; University of Nevada*	Embryonic development in Ixodes scapularis
1:45 pm	*Erin Jezuit, George von-Dassow; Oregon Institute of Marine Biology*	Barnacles as a model for crustacean embryogenesis
2:00 pm	*Brian Counterman, James Ogilvie, Riccardo Papa; Auburn University, University of Puerto Rico*	Many functionally connected loci underlie a hybrid origin of novel butterfly warning colors
2:15 pm	*Dave Angelini; Colby College*	Genomic insights on the evolution of polyphenism in the soapberry bug, Jadera haematoloma
2:30 pm	*Vincent Ficarrotta, Brian Counterman, Fernando Rodriguez-Caro; Auburn University, UMT*	Homology of wing morphogenesis in flies and butterlifes
2:45 pm	*Benjamin Klementz, Grace Hareid, Hugh Steiner, Guilherme Gainett, Emily Setton, Sophie Neu, Ethan Laumer, Charlotte Wood, Isaac Hinne, Monika Gulia-Nuss, Austen Barnett, Georg Brenneis, Prashant Sharma; University of Wisconsin Madison, Cornell University, University of Nevada, DeSales University, Universität Wien*	Mistaken synapomorphy: The evolutionary developmental origins of the arachnid patella

3:00 pm	*Emily Setton, Benjamin Klementz, Hugh Steiner, Grace Hareid, Guilherme Gainett, Sophie Neu, Ethan Laumer, Charlotte Wood, Georg Brenneis, Prashant Sharma; Cornell University, University of Wisconsin Madison, Universität Wien*	Expression and function of Six3 supports the homology of the sea spider proboscis and the labrum
3:15 pm	*Guilherme Gainett, Benjamin Klementz, Pola Blaszczyk, Emily Setton, Rodrigo Willemart, Efrat Gavish-Regev, Prashant Sharma*; University of Wisconsin Madison, Cornell University*	Vestigial organs alter fossil placements in an ancient group of terrestrial chelicerates

1:30 PM – 3:30 PM **Room 611**

Global change: Thermal physiology and energetics

Chair: Wilco Verberk

1:30 pm	*Eleanor Caves, Kara Chatterton, Rebecca Varney; University of California Santa Barbara*	Thermal physiology in a 'nested' mutualism: CTmax in cleaner shrimp, host anemones, and client fish
1:45 pm	*Madison Milotte, Tyler Pereira, Anna Parker, Joel Kingsolver; University of North Carolina Chapel Hill*	*Population divergence in thermal reaction norms in an invasive butterfly, Pieris rapae*
2:00 pm	*Karla Alujevic, Carrie Alfonso, Leah Bakewell, John David Curlis, Samantha Fontaine, Jaden Keller, Yanileth Lopez, Daniel Nicholson, Renata Pirani, Nathaly Ponce, Noa Ratia, Adam Rosso, Alejandro Vivas, Claire Williams, Kelly Wuthrich, W. Owen McMillan, Christian Cox, Michael Logan; University of Nevada Reno, Smithsonian Tropical Research Institute, Florida International University, University of Michigan, University of Texas Arlington*	*Shifts in the thermal sensitivity of resting metabolic rate in transplanted Anolis lizards*
2:15 pm	*Donald Miles, Bryce Rager; Ohio University*	Long-term data reveals a breakpoint in buffering capacity of thermoregulation
2:30 pm	*Wilco Verberk, K. Hoefnagel, Ignacio Peralta-Maraver, Mathieu Floury, Enrico Rezende; Radboud University*	Long-term forecast of thermal mortality with climate warming in riverine amphipods
2:45 pm	*David Adams, Eric Riddell; University of Central Arkansas, University of North Carolina Chapel Hill*	How terrain impacts activity and energetics of salamanders and lizards in mechanistic niche models
3:00 pm	*Edita Folfas, Luke Frishkoff; University of Texas Arlington*	Precipitation gradient limits range of Texas spiny lizard though altered thermal environment
3:15 pm	*Jason Hodin, Fleur Anteau, Michael Brito, Brook Ashcraft, Fiona Curliss, Augustin Kalytiak-Davis, James Peng, Chloe Schwab, Vanessa Valdez, Willem Weertman; Friday Harbor Laboratory, University of Washington, Wageningen University and Research, The Exploratorium, Oregon State University*	Some Stars Like it Hot: Early life stage climate resilience in the endangered sunflower sea star

1:30 PM – 3:30 PM **Room 606**

Neurobiology of flight

Chair: Leo Wood

1:30 pm	*Simon Sponberg, Joy Putney, Brett Aiello, Usama Sikandar, Leo Wood; Georgia Institute of Technology, Seton Hill University*	Orchestrating a comprehensive, spike-resolved motor program for agile insect flight
1:45 pm	*Veronica Muzio-Crego, Jamie Theobald, Yash Sondhi, Elina Barredo; Florida International University, Florida Museum of Natural History, University of Florida*	Vision and flight behavior trade offs for undersized Greater Wax moths
2:00 pm	*Nicole Wynne, Karthikeyan Chandrasegaran, Richard Rust, Clement Vinauger*; Virginia Tech*	CANCELLED – A candidate Giant Fiber Neuron underlies mosquitoes' responses to visual threats
2:15 pm	*Leo Wood, Simon Sponberg; Georgia Institute of Technology*	Is the motor program of faster insects more precise?
2:30 pm	*Anthony Lapsansky, Douglas Wylie, Douglas Altshuler; University of British Columbia, University of Alberta*	Unlocking the Visual World of Free-Flying Pigeons: Insights from Head-Mounted Cameras

2:45 pm	*John Currea, Sarah Fatkin, Mark Frye, Giovanni Frighetto; University of California Los Angeles*	E-PG neurons are needed to balance spontaneous saccades in Drosophila
3:00 pm	*Emilie Applebach, Lan Lou, Richard Rust, Nicole Wynne, Zhijian Tu, Chloe Lahondere, Clement Vinauger; Virginia Tech*	Effects of the timeless gene's knockout in a new established mutant line of Aedes aegypti
3:15 pm	*Irving Upshur, Mikhyle Fehlman, Vansh Parikh, Clement Vinauger, Chloe Lahondere*; Virginia Tech*	CANCELLED – Sugar feeding by invasive mosquito species on ornamental and wild plants

1:30 PM – 3:30 PM **Room 609**

Division of Comparative Physiology & Biochemistry Best Student Presentation

Chair: Jon Harrison

1:30 pm	*Vanessa Bentley, Donald Mykles; Colorado State University*	The Methyl farnesoate mystery: investigating its role in crustacean ecdysteroidogenesis and molting
1:45 pm	*Ingrid Hyrycena, Amanda Pontes-Lopes, Isabel Quental-Willmer, Tatiana Dillenburg-Saint´Pierre, Natascha Wosnick, Rachel Ann Hauser-Davis; Federal University of São Paulo, Oswaldo Cruz Foundation (Fiocruz), Pontifical Catholic University (PUC-Rio), Federal University of Paranᡠ(UFPR)*	Don't you know you're toxic? Metals and metalloids in a Callorhinchus callorynchus specimen
2:00 pm	*Kelly Robinson, Haley Moniz, Chris Feldman, Amber Stokes; University of Nevada Reno, California Polytechnic State University, California State University Bakersfield*	Investigating toxicokinetics of newt (Taricha) tetrodotoxin (TTX) in garter snakes (Thamnophis)
2:15 pm	*Jessica Karr, Jalyn Devereaux, David Swanson, Jamie Cornelius; Oregon State University, University of South Dakota*	The effects of rain and cold temperature on thermogenic capacity and physiology in captive finches
2:30 pm	*Sophia Zhou, Fernan Perez-Galvez, Nick Teets; University of Kentucky, University of Florida*	Computational inference of thermal tolerance across insect taxa
2:45 pm	*Sarah Waybright, Michael Dillon; University of Wyoming*	Increased winter temperature variability has contrasting effects on cold tolerance and energetics
3:00 pm	*Kerryanne Litzenberg, Daniel Sasson, Fabio Casu, Jody Beers; College of Charleston*	Thermal physiology of the Atlantic horseshoe crab, Limulus polyphemus

1:30 PM – 3:30 PM **Room 604**

Invertebrate swimming

Chair: Arvind Santhanakrishnan

1:30 pm	*Mimi Koehl, Rachel Pepper; University of California Berkeley, University of Puget Sound*	Marine larvae respond to hydrodynamic signals they encounter near surfaces in turbulent wavy flow
1:45 pm	*Michelle DiBenedetto, Rémi Monthiller, Christophe Eloy, Karl Helfrich, Lauren Mullineaux; University of Washington, Aix Marseille Univ, CNRS, Centrale Marseille IRPHE, Woods Hole Oceanographic Institution*	Observations of planktonic gastropod larvae in turbulence indicate surfing behaviors
2:00 pm	*Ben Larson; University of California San Francisco*	Principles of cellular behavior: integrating cellular structure, dynamics, and decision making
2:15 pm	*Tom Hata, Mimi Koehl; University of California Berkeley*	Evolution of animals from protozoan ancestors: The ins and outs of colony design
2:30 pm	*Grace Zhong, Manu Prakash; Stanford University*	Individuality in captivity: Intercellular motility of a dinoflagellate symbiont in an acoel host
2:45 pm	*David Peterman, Margaret Byron; Penn State University*	Exploring the role of substrate curvature on fluid pumping with ctenophore-inspired artificial cilia
3:00 pm	*Mitchell Ford, Arvind Santhanakrishnan*; Oklahoma State University*	Hydrodynamic effects of varying number of coordinated appendages in metachronal paddling

3:15 pm	*Mitchell Ford, Arvind Santhanakrishnan*; Oklahoma State University*	Jumping in 3D: Flow characteristics of hybrid metachronal rowing used by escaping copepods

1:30 PM – 3:30 PM **Room 612**

Reproductive and parental behavior, Part 2

Chair: Arvind Santhanakrishnan

1:30 pm	*Hayden Dillon, Jake Roth, Heather Liwanag, Katie Saenger; California Polytechnic State University San Luis Obispo*	Characterizing male dominance behavior in a polygynous breeder, the northern elephant seal
1:45 pm	*Libby Tseng, Vikram Chandra, Marcela Bolaños, Mansi Srivastava; Harvard University*	Reproduction in the three-banded panther worm Hofstenia miamia
2:00 pm	*Claudineia Pereira-Costa, Natalie Fischer, Sarah Woodard; University of California Riverside, Southern Utah University*	Care-giver identity influences brood metabolism in bumble bees under starvation conditions.
2:15 pm	*Jennifer Grindstaff, Kiley Penwell, Angela Riley; Oklahoma State University*	Long-term effects of paternal deprivation in a biparental bird
2:30 pm	*Blanca Peto, Sarah Woodard, Claudineia Pereira-Costa; University of California Riverside*	Varying Reproductive Rates in Queen Bumble Bees: A Reevaluation of Behavior in Early-Stage Nests
2:45 pm	*Emily Levy, Elizabeth George, Kimberly Rosvall; Indiana University, Texas A&M University*	Maternal aggression, brain metabolics, and neurotransmission: Insights from a feisty female bird
3:00 pm	*Meghan Moore, Sarah Woodard; University of California Riverside*	Socially mediated reproductive development in incipient queen bumble bees
3:15 pm	*Hunter King; Rutgers University*	Bird nest construction as cognitive material science

7:30 PM – 8:30 PM **Ballroom B**

Howard Bern Lecture: Dr. Marilyn Ramenofsky

Endocrinology of migration and role of the environment

Thursday POSTER SESSION P2

Exhibit Hall 4A • 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am • Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm • Odd # - Authors present from 4:30-5:30 pm

Ventilation and circulation

P2-1	*David Blackburn, Jaimi Gray, Edward Stanley; University of Florida, Florida Museum of Natural History*	Looking for Lungs in All the Wrong Places: diceCT reveals lungs in the only “lungless” frog
P2-1A	*Kyra Amacker, Stacy Farina; Howard University*	Evolutionary Influence on Marine Actinopterygian Hearts: Chamber Landmark Morphometrics
P2-1B	*Sara Wilmsen, Sasha Zaslavsky*, Devyn Hopkins, Brock Palm, Saadbin Khan, Viktor Nikitin, Pasha Shevchenko, Anne Staples, Jake Socha; Virginia Tech, Argonne National Laboratory*	Scaling analysis of taenidia in beetle (Zophobas morio) tracheae
P2-1C	*Jazmine Harry, Jasmine Renteria, Jennie Jannssen, Stacy Farina; Howard University, National Aquarium*	Breathing Under Pressure: Gill Pumping Kinematics and Temperature in Teleost Fishes

Cell differentiation and morphogenesis

P2-2	*Daniela Flores, Viviana Toro-Ibacache, Alexander Vargas; University of Chile*	Influence of muscular mechanical forces in the hallux development of birds and its evolution.
P2-3	*Vishruth Venkataraman, Michael Coates, Victoria Prince, Marco Lopez-G, Theresa Christiansen; University of Chicago*	All lines lead to neuromasts- evolution and development of the vertebrate lateral line
P2-4	*Kelsey Kjosness, Sungdae Park, Sherrie Wallace, Sarah Doelp, Maria Biancaniello, Douglas Menke, Philip Reno; Philadelphia College of Osteopathic Medicine, University of Georgia*	Differential gene expression between growth plate and non-growth plate forming ends of bones
P2-5	*Gabriel Zimbler, Vasilios Nanos, Michael Levin; Tufts University*	The Frogolotl: A frog-axolotl chimeric model system to study multi-scale morphogenesis
P2-6	*Philip Reno, Sungdae Park, Kelsey Kjosness, Sherrie Wallace, Sarah Doelp, Maria Biancaniello, Douglas Menke; Philadelphia College of Osteopathic Medicine, University of Georgia*	Growth plate specific genes found using the unusual ossification of the metatarsal and pisiform
P2-7	*Elaine Kushkowski, Adam Kuuspalu, Victoria Prince; University of Chicago*	Quest for the crest: mapping the origins of the zebrafish neural crest during gastrulation
P2-8	*Freya Beinart, Kathy Gillen, Emily Banthin, Amanda Carroll, Sydney Buchman; Kenyon College*	Production of Reactive Oxygen Species Post-Amputation in L. variegatus Suggests Role in Regeneration
P2-9	*Iris Pardue, Kathy Gillen, Boyu Yang; Kenyon College, Washington University*	Assessing RNAi in Lumbriculus variegatus as a tool for reverse genetics
P2-10	*Jordan Chow, Lizzy Sullivan, Rachel Cotter, Alexandra Colombara, Brian Counterman; Auburn University*	Deciphering the Genetic Basis of Cell Complexity Evolution using Butterfly Wing Scales
P2-11	*Zachary Baker, Kathy Gillen, Seryne Rafique; Kenyon College*	Spatial Analysis of Gene Expression in Lumbriculus variegatus with Hybridization Chain Reaction

Cellular and molecular physiology

P2-12	*Jessica Rippamonti, Edward Dzialowski; University of North Texas*	Do Rho A pathways play a role in closure of the avian ductus arteriosus (Gallus gallus)?
P2-13	*Devan Duey, Chelsea Hughes, Riley Roth-Carter, Daniel Zajic, Jason Podrabsky; Linfield University, Portland State University*	GABA and lactate preconditioning increases cell division in annual killifish cell line during anoxia
P2-14	*Alexander Goodrich, Amalie Mattison, Joseph Covi, Meghan Ford; University of North Carolina Wilmington, Northeastern University*	Opsin expression indicates brine shrimp embryos see before developing eyes
P2-15	*Yekaterina Chmykh, Jason Podrabsky, Annie Lindgren; Portland State University*	Drifting in from Hell: Uncovering the Genome of the Vampire Squid

P2-16	*Keria Moritsugu-Vandehey, Isabel Henkes, Yekaterina Chmykh, Amie Romney, Jason Podrabsky; DCPB (Comparative Physiology & Biochem), Portland State University*	Guide RNA Design and Delivery for CRISPR/Cas9 Editing in Annual Killifish
P2-17	*Isabel Henkes, Keria Moritsugu-Vandehey, Yekaterina Chmykh, Amie Romney, Jason Podrabsky; Portland State University, DCPB (Comparative Physiology & Biochem)*	Examining Genotype and Developmental Phenotype from CRISPR/Cas9 Editing in Annual Killifish
P2-18	*Meranda Corona, Dietmar Kueltz; University of California Davis*	Protein and Histone PTM Alterations during Early Development in L. tenuis Due to Osmotic Stress
P2-19	*Reihane Eric, Joshua Shirazi, Amir Hosein Sanjari-Nia, Chidambaram Ramanathan, Yufeng Zhang; University of Memphis*	Oncogenic RasV12Induces Cellular Senescence in Avian Species
P2-20	*Celeste Valdivia, Alison Gardell, Baruch Rinkevich, Dietmar Kueltz; University of Washington, National Institute of Oceanography, Israel Oceanographic and Limnological Research, University of California Davis*	Application of a genotoxic stressor to primary cell cultures derived from a marine tunicate.
P2-22	*Ashlynn Madril, Jorge Perez-Moreno, Mihika Kozma, Neha Gandhi, Luisanna Hernandez-Jeppesen, Tomer Ventura, Donald Mykles; Colorado State University, Queensland University of Technology, University of the Sunshine Coast*	A Shellfish Journey: Characterizing an Inhibitory Receptor in the Crustacean Molt Cycle
P2-23	*Courtney Babin, Félix Leiva, Wilco Verberk, Bernard Rees*; University of New Orleans, Alfred Wegener Institute, Radboud University*	Evolution of oxygen-sensing genes parallels whole-animal hypoxia tolerance in fishes
P2-24	*Kendal Berasley, Jorge Perez-Moreno*, David Durica, Donald Mykles; Colorado State University, University of Oklahoma*	A Molting Mystery: LGRs Role in Limb Regeneration

Comparative biochemistry

P2-26	*Amir Hosein Sanjari-Nia, Rebecca Koch, Geoffrey Hill, Matthew Toomey, Chidambaram Ramanathan, Yufeng Zhang; University of Memphis, University of Tulsa, Auburn University*	Studying ketocarotenoid metabolism in cell culture
P2-27	*Michelle Vovsha, Moria Chambers, Sarah Smith; Bucknell University*	Visualizing the Activity of Photinus pyralis CecX Against Bacterial Strains
P2-28	*Kay Tweeten; St. Catherine University*	Protamine-like Molecules Compact Sperm DNA in the Annelids, Lumbriculus and Lumbricus terrestris

Development

P2-29	*Anouka Saha, Sara Ansari, Daniela Zurita-Paredes, Andres Romero-Carvajal, Becca Young*; University of Texas Austin, Escuela de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador*	Changes in gene expression and co-expression underlie heterochrony in poison frog embryogenesis
P2-29A	*Linjian Wang, Taylor-Roy Sanchez, Juris Grasis, Chris Amemiya; University of California Merced*	Towards rapid generation and ready access of monoclonal antibody reagents

Development of behavior

P2-30	*Sara Ghandour; University of Washington*	The Enrichment Act: The Base Level of Enrichment Needed for Captive Marine Mammals
P2-31	*Isabella Beasley, Jacob Lasala, Melissa Macksey; Mote Marine Laboratory*	Loggerhead (Caretta caretta) Hatchling Disorientations on Gulf of Mexico Beaches
P2-32	*Eman Khwaja, Kathryn Kavanagh; University of Massachusetts Dartmouth*	Behavioral Variation of Juvenile Humpback Whales (Megaptera novaeangliae) in the Gulf of Maine
P2-33	*Matthew Thompson, Michael Reichert; Oklahoma State University*	Impact of Temperature Variation on Color Polymorphism and Behavior in Grasshoppers
P2-34	*Jason Manzon, Emily Kuzmick; NOAA, ODNR Old Woman Creek National Estuarine Research Reserve*	Phenological Species Monitoring at OWC NERR: Integrating Programmatic Enhancements
P2-35	*Astrid Lisondro-Arosemena, Karen Warkentin, Maria Salazar-Nicholls; Smithsonian Tropical Research Institute, Boston University*	Elevated ammonia cues hatching in red-eyed treefrogs: a mechanism for escape from drying eggs

Division Invertebrate Zoology Best Student Poster Alan Kohn Award

P2-36	*Cheng Hsing Wu, Bruno Pernet; California State University Long Beach*	Segmentation and regeneration of the cauda of the sabellariid annelid Phragmatopoma californica
P2-37	*Kai Watkins, Emily Lancaster, Markus Frederich; University of New England, University of Maine*	Cultivating Solutions: Unraveling Biofilm-Mediated Larval Anchoring in Invasive Tunicates
P2-38	*Lauren Gill, Jessica Kennedy, Katie Marshall; University of British Columbia*	Mechanisms of Freeze Tolerance in the Intertidal Mollusc Mytilus trossulus
P2-39	*Nathaniel Moyes, Allan Bertram, Katie Marshall; University of British Columbia*	Bioprospecting British Columbia's Intertidal Zone for Novel Ice Binding Proteins
P2-40	*Meredith Anderson, Shallin Busch, Paul McElhany, Michael Maher, Danielle Perez, Kate Rovinski; University of Florida, NOAA Northwest Fisheries Science Center*	Response of larval Pacific krill (Euphausia pacifica) to ocean acidification and warming
P2-41	*Michelle Chen, Julia Stern, William Ballentine, Mimi Koehl, Kit Yu Karen Chan; Swarthmore College, Dauphin Island Sea Lab, University of California Berkeley*	Swept Away: Risk of dislodgement during barnacle cyprid surface exploration
P2-42	*Audrey Wong, Ethan Kahn, Christina Ellison, Irina Cherneva, Svetlana Maslakova; Oregon Institute of Marine Biology, University of Oregon, Lomonosov Moscow State University*	DNA-Barcoding Marine Invertebrate Diversity of Oman: phylum Nemertea
P2-43	*Ethan Kahn, Audrey Wong, Svetlana Maslakova; Oregon Institute of Marine Biology, University of Oregon*	DNA Barcoding Nemertean Diversity in the Red Sea
P2-44	*Helga Gonçalves, Kit Yu Karen Chan, Kathryn Riley; Swarthmore College*	Role of surface chemistry on the toxicity of polystyrene nanoparticles on larval sea urchin
P2-45	*Micah Bell; Gonzaga University*	Rhinoceros Beetles Carry Informational Chemicals About Body Size and Sex
P2-46	*Eden Anne Bauer, Jennifer McCarthy-Taylor, Stephen Senft, Carrie Albertin, Roger Hanlon; University of Chicago, Marine Biological Laboratory*	How Does Squid Skin Shine? Investigating reflectins with D. pealeii structural color and iridescence
P2-47	*Alaina Shepardson, Abigail Cahill; Albion College*	Effect of warming water temperatures on local gastropod growth, reproduction, and mortality
P2-49	*Gabrielle Johnson, Terence Leach; Swarthmore College*	Nearing the Max: Thermal Stress Decreases Larval Survival in Tortoiseshell Limpets
P2-50	*Adriana Halvonik-Sanchez, Daniel Speiser; University of South Carolina*	Effect of elevated temperature and air exposure on chiton behavior
P2-52	*Noelle Clark, Ricardo Hernandez-Espinoza, Lindsay Waldrop; Chapman University*	Does selection drive antenna morphology between reproductive signaling strategies in fireflies?
P2-53	*Rachel Showers, Adam Reitzel, Auston Rutledge; University of North Carolina Charlotte*	Nematostella vectensis Methylation Response to the Biotic Stress of Cell Free Supernatant
P2-54	*Ikatari Swope, Brian Lomeli-Garcia, Abigail Cahill; Albion College*	The Genetic Diversity of Aphis nerii
P2-55	*Sierra Joy Williams, Kirt Onthank; Walla Walla University*	Genetic Sex Determination in Octopuses
P2-56	*Makiko Hayashi, Hiroaki Nakano; Shimoda Marine Research Center, University of Tsukuba*	Post-settlement growth and staging of the sea slug Hypselodoris festiva
P2-57	*Julia Frees, David Hudson; Georgia Southern University, Remote Ecologist Inc*	Metabolism of ontogeny and biomedical bleed stress in Atlantic horseshoe crabs (Limulus polyphemus)
P2-58	*Layne Leggett, Robert Podolsky; College of Charleston*	The Potential for Increased Intake of Tributyltin Through the Ingestion of Microplastics
P2-59	*Joseph Alcuitas, Rachel Uhlig, Rickey Cothran*; Southwestern Oklahoma State University*	The effect of female mate choice on offspring sex ratios in a freshwater amphipod species
P2-60	*Rachel Uhlig, Joseph Alcuitas, Rickey Cothran*; Southwestern Oklahoma State University*	Effects of cultural eutrophication on the mating biology amphipods
P2-61	*Rylie Rogers, Dawsen Johnson, Christine Weilhoefer, Ryan Kenton, Rosa León-Zayas, Cecilia Brothers; Walla Walla University, University of Portland, Willamette University*	Spilling your guts: Eelgrass isopod gut contents and harmful algal blooms

P2-62	*Dawsen Johnson, Rylie Rogers, Ryan Kenton, Rosa León-Zayas, Christine Weilhoefer, Cecilia Brothers; Walla Walla University, University of Portland, Willamette University*	The effects of harmful algal blooms on isopods found in the Salish Sea
P2-63	*Mitchell Dyen, Robert Fitak; University of Central Florida*	A transcriptomic study of the lone star tick's eyes and mating behaviors for disease mitigation
P2-64	*Berenice Baca-Ceballos, C. Sarah Cohen; San Francisco State University*	Successful Rearing Methods for the Brooding Six-rayed Star Leptasterias
P2-65	*Stephanie Peak, Clara DiVincenzo, Tingting Xiang, Karl Castillo; University of North Carolina Chapel Hill, University of California Riverside*	Using Single-Cell RNA Sequencing Methods to Investigate Genes Involved in Cnidarian-Algal Symbiosis
P2-66	*Clara DiVincenzo, Stephanie Peak, Karl Castillo; University of North Carolina Chapel Hill*	Investigating drivers of trophic preference and symbiotic state across depth in a temperate coral

Division of Comparative Physiology & Biochemistry Best Student Poster

P2-67	*Hakeem Werra, Edward Dzialowski, Jessica Rippamonti; University of North Texas*	Actin Polymerization Increases in the DA During the Developmental Transition to Lung Ventilation
P2-68	*Abhi Kancherla, Alessandro Rizzi, Cameron Weller, Derek Wood, Gwendolyn Wood; Seattle Pacific University*	Mutations in a FMN reductase gene drive 5-Nitroimidazole resistance in Mycoplasma genitalium strains
P2-69	*Meghan Ford, Joseph Covi; Northeastern University, University of North Carolina Wilmington*	CANCELLED – Comparing RNA-Seq analyses in a novel evaluation of gene expression during zooplankton development
P2-70	*Asif Ahmed, MD Rahman; University of Texas Rio Grande Valley*	Effects of short-term exposure to pesticides mixture on tissue architecture in the American oyster
P2-71	*Trisha Panganiban, Laura Haefner, Gabriela Robles-Pérez, Natalie Herbison; California State University Los Angeles, National Science Foundation, University of Puerto Rico - Mayaguez, University of Kansas*	Dietary carbohydrates increase heat stress resistance of honey bees' foragers
P2-72	*Julia Kelso, Yaamini Venkataraman, Carolyn Tepolt; Cornell University, Woods Hole Oceanographic Institution*	Impact of individual plasticity and supergene genotype on C. maenas heat wave response
P2-73	*Nicole Whelpley, Kathryn Kavanagh; University of Massachusetts Dartmouth*	Developmental impacts of environmental hypoxia on embryonic anemonefish
P2-74	*Zoe Griffin, Bonnie Kircher, Richard Behringer; University of Texas MD Anderson Cancer Center*	CANCELLED – Skin Color Development and CRISPR Genome Editing in the Brown Anole Lizard (Anolis sagrei)
P2-75	*Isabel Carino-Bazan, Shuonan He, Hopi Hoekstra;*	CANCELLED – Exploring the Genetic Basis of the Tan Streak Mutation in Deer Mice
P2-77	*Anthony Carnevale, Vanya Rohwer; Cornell University*	Uncovering the Senses: Interspecific variation in filoplume morphology and numbers
P2-78	*Daniel Geldof; Louisiana State University*	Holey-Head-Fish-Friend: Inside the Bizarre Cranial pit of the Rockhead Poacher, Bothragonus swanii
P2-79	*Tyler Hunt; Florida State University*	The Ontogeny of Visual Fields in Alligator mississippiensis
P2-80	*Ollie Safford, Kayla Hinnen, Michelle Shafer, Megan Vandenberg, Kate Jackson; Whitman College, University of Washington*	Imaging snake cephalic glands and venom-delivery system components using diceCT
P2-81	*Kayla Hinnen, Ollie Safford, Megan Vandenberg, Michelle Shafer, Kate Jackson; Whitman College, University of Washington*	Duvernoy's gland and associated structures in rear-fanged snakes (Lamprophiidae and Colubridae)
P2-82	*Jennifer Hoeflich, Juan Liu; University of California Berkeley*	Linking Form and Function in the Weberian Apparatus of Noturus (Siluriformes: Ictaluridae) using Dyn

Ecoimmunology and disease ecology, Part 2

P2-83	*Andy Cabrera, Joel Slade, Daniel Baldassarre, Sonja Anderson; California State University, Fresno, SUNY Oswego*	Leukocyte profiles and bloodborne parasites as a predictor of condition in a songbird
P2-84	*Keegan Stansberry, Kaitlin Couvillion, Tosha Kelly, Allison Cannon, Melanie Kimball, Christine Lattin; Louisiana State University*	Ectoparasite infestation alters alpha and beta diversity in the skin microbiome of an altricial bird
P2-85	*Jesse Garrett-Larsen, Alexa Jordan, Annabel Coyle, Kate Langwig, Dana Hawley; Virginia Tech*	Effects Of Cold Temperatures on Avian Immune Responses to A Bacterial Pathogen

P2-86 *Anna Perez-Umphrey, Edan Tulman, Jeremy Miller, James Adelman, Grace Ozyck, Steven Geary, Dana Hawley; Virginia Tech, University of Connecticut, The University of Memphis*
Host-pathogen transcriptomics in an avian host with varying degrees of prior pathogen exposure

P2-88 *Chun (Jessica) Cheng, Gonzalo Vazquez-Prokopec; Emory University*
Effect of food availability and conspecific competition on Ae. aegypti with wAlbB infection outcome

P2-89 *Baylen Ratliff, Tina Whitman, Bart Christiaen, Olivia Graham, Audrey Vinton, Catherine Harvell, Brendan Rappazzo, Carla Gomes; University of Washington, Friends of the San Juans, Washington State Department of Natural Resources, Cornell University*
Identifying Resilience in Zostera marina Meadows in the San Juan Islands, Washington

P2-90 *Kenedi Lynch, Christine Lattin, Tosha Kelly; Louisiana State University*
Operation brainstorm: developing molecular biomarkers to detect the pathology of cerebral malaria in

P2-91 *Natalie Morris, Jennifer Houtz, Cédric Zimmer, Conor Taff, Daniel Ardia, Maren Vitousek; Cornell University, Allegheny College, Franklin and Marshall College*
A geographic comparison of gut microbial flexibility in tree swallows (Tachycineta bicolor)

P2-92 *Andrew Bailey, Jacob Lasala; Mote Marine Laboratory*
Effects of red tide on sea turtle hatching success on the Gulf of Mexico

P2-93 *Elizabeth Hoffman, David Lee Haskins, Matthew Hamilton, Devin Jones, Melissa Lech, Abigail Valachovic, Youn Choi, Linda Lee, Jason Hoverman, Kristina Meichner; Florida International University, U.S. Geological Survey, Purdue University, University of Georgia - Athens*
Sublethal effects of perfluorooctanesulfonate (PFOS) exposure on the immune systems of watersnakes

P2-94 *Sila Inanoglu, Sarah Knutie, Sydney Horan, Lorraine Perez, Hannah Brewer; University of Connecticut*
Effect of α-pinene on ectoparasite resistance in tree swallows

P2-95 *Micah Jay Strike, Erin Borbee, Sofia Diaz-de-Villegas, Lauren Fuess; Carleton College, Texas State University*
Immune response to temperature and light-induced bleaching in the model anemone Exaiptasia diaphana

Ecology, physiology, and life history evolution

P2-96 *Abigail Bickle, Benjamin Parrott; University of Georgia*
Investigating the role of epigenetic aging in the trade-off between development rate and lifespan

P2-97 *John Rodgers, Mike Norris, Daniel Warner; Auburn University*
Isolating the Effects of Individual Nest Characteristics on Offspring Phenotypes in the brown anole

P2-98 *Jamie Marks, Alex Sills, Elizabeth Addis, Luke Hoekstra, Fredric Janzen, Beth Reinke, Anne Bronikowski; Michigan State University, Gonzaga University, Oklahoma State University, Northeastern Illinois University*
Mitochondrial function exhibits sex-specific aging among painted turtle (Chrysemys picta)populations

P2-99 *Madison Glenwinkel, Guillermo Garcia-Costoya, Akhila Gopal, Noa Ratia, Karla Alujevic, Shea McKendree, Kaitlyn Napier, Cody Chapman, Allison Dorny, Michael Logan; University of Nevada Renox*
Parasitism and pace-of-life in western fence lizards (Sceloporus occidentalis)

P2-100 *Matthew McTernan, Christopher Parkinson, Michael Sears; Heritage at Riverwood, Clemson University*
Identifying genomic patterns that underlie life history in a widespread lizard

P2-101 *Gisele Lara, Michael Newbrey*, Ashley Desensi, Jennifer Newbrey; Columbus State University, Chattahoochee Riverkeeper*
CANCELLED – Age and growth characteristics of Spotted Bass exhibit only one response to a thermal gradient

P2-104 *Jesus Lopez, Ashley Teufel, Robert Page; Texas A&M University-San Antonio, Northwestern State University*
Understanding Amphibian Life Cycle Ecology and Evolution through Agent-Based Modeling.

P2-105 *Sara Crow, Beth Reinke; Northeastern Illinois University*
Geographic Variation in Optimal Egg Size in Chrysemys picta

P2-106 *Kent Winata, Jonathan Zhu, Jessyn Langguth, Chloe Davis, Micah Perry, Nadine Folino-rorem, Paulyn Cartwright; University of Kansas, Wheaton College*
Life Cycle Transitions in the Freshwater Jellyfish, Craspedacusta sowerbii

P2-107 *Gaia Rueda-Moreno, Kristin Winchell, Rafael Baez-Segui, Emerald Lin; New York University*
Creepy Crawlies in the Concrete Jungle: Invertebrate Diversity Across an Urbanization Gradient

P2-108 *Angelique Rea, Sora Kim, Jonathon Kuntz; University of California Merced*
Leopard Shark Teeth Series Reveal Life History Patterns with Stable Isotopes

P2-109 *Madeleine Strait, Janneke Hille-Ris-Lambers, Aji John, Manogya Chandar, Berry Brosi; University of Washington, ETH Zürich* — Novel co-flowering in subalpine plant communities at Mt. Rainier National Park

P2-110 *Mitdalia Alonso, Michael Newbrey, Ashley Desensi, Jennifer Newbrey; SWGA LSAMP, Columbus State University, Chattahoochee Riverkeeper* — Age and growth characteristics of smallmouth basses exhibit multiple responses to a thermal gradiet

P2-110A *Tyler Misraje; University of California, Berkeley* — Bird Hyperglycemia: The Effect of Dietary Glucose on Plasma Metabolic Profiles

Foraging behavior

P2-111 *Stella Gruenes, Siyear Redd, Riley Wincheski, Charles Abramson; NSF REU Program Student, SICB* — Effects of Scented Sucrose on Subsequent Choice in Honey Bees (Apis mellifera)

P2-112 *Sarah Kerr, Cory Williams, Carey Kuhn; Colorado State University, NOAA Fisheries* — Using video, accelerometry and machine learning to infer behavior of free-ranging northern fur seals

P2-113 *Halia Morris, Ashley Gendreau, Camille Boucaud, Sayre Rooney, Kenddra Buresch, Roger Hanlon; Marine Biological Laboratory, Hampton University, Université Côte d'Azur* — Investigating octopus arm recruitment during blind manipulation of prey

P2-114 *Ricarda Hill, Calandra Turner-Tomaszewicz, Jeffrey Seminoff, Tony Tucker, Scott Whiting; Oberlin College, NOAA Fisheries, U.S. Department of Commerce, Southwest Fisheries Science Center, Western Australia Department of Biodiversity, Conservation and Attractions* — Recreating Movement Patterns of Flatback Sea Turtles (Natator depressus) Using Stable Isotope Analysis

P2-115 *Jasausha Pope, Nigel Anderson, Doris Preninger, Matthew Fuxjager*; Brown University, Vienna Zoo* — Poison dart frogs use feature analyzers to detect prey items

P2-116 *Anna Bautista, Devin Johnson, Michael Henderson, David Anderson, Cory Williams; Colorado State University, U.S. Fish and Wildlife Service, Marine Mammals Management, The Peregrine Fund, Canopy Watch International* — Trophic discrimination of compound-specific stable isotopes in raptor nestlings

P2-117 *Nicolas Frasson, Keith Sockman; University of North Carolina Chapel Hill* — Body size is associated with over-wintering diet variation in a migratory bird

P2-119 *Lauren O'Rourke, Katie Dobkowski; Whitman College, Friday Harbor Labs, Everett Community College* — Delicious Desmarestia? Pugettia producta Dietary Preference Study

P2-120 *Lucy Hensley, Katie Dobkowski; Bates College, Friday Harbor Labs, Everett Community College* — Urchin Delicacies: A Dietary Preference Study of Green Sea Urchins, Bull Kelp, and Acid Weed

P2-121 *Emily Ogawa, Katie Dobkowski; Friday Harbor Labs, University of Washington, Everett Community College* — The role of kelp canopy detritus and food availability on zooplankton population growth

P2-122 *Victoria Coutts, Hannah Butterfield, Tonia Schwartz, Haruka Wada; Auburn University* — Food restriction during breeding has implications for telomere dynamics in zebra finches

P2-124 *Julia Smith, Lauren Buckley, Monica Sheffer; University of Washington, University of California, Berkeley* — Diel thermoregulation in grasshoppers: where to be, when to feed

P2-125 *Steven Jasinski, Sidney Hostetter; Harrisburg University, State Museum of Pennsylvania* — Megalodon's chipped tooth: What tooth damage can tell us about the behavior of megatooth sharks

Hormones and behavior

P2-126 *Yuqi Han, Gregory Demas, Matt Lansing; Indiana University* — Long-Term Melatonin Induces a Seasonal Switch in Aggression in Siberian Hamsters (Phodopus sungorus)

P2-127 *Isabella Strohmeier, Sarah Westrick, Eva Fischer; University of Illinois Urbana-Champaign* — Maternal Defense Strategies: Investigating Female Aggression in Dyeing Poison Frogs

P2-128 *Amber Singh, David Ensminger*; San Jose State University* — Heat vs. Humidity: novel methods for studying microhabitat use of small lizards in the lab

P2-130 *Callie Weidman, Neshima Vitale-Penniman, Doris Preininger, Lisa Mangiamele*; Smith College, Brown University, Vienna Zoo* — Arginine vasotocin influences androgenic effects on multimodal communication in foot-flagging frogs

P2-131 *Austin Swallow, Emily Brandow, Jason Davis; Radford University* — Ladies First: Sex Differences in Finches Influencing Cognitive and Behavioral Responses to Stress

P2-132 *Alyson Furstenau, Daniel Bergman, Megan Gasparaitis, Kayla Shields, Hannah Shull, Lauren Wilmore; Grand Valley State University* — The Effects of beta-estradiol on Crayfish Behavior and Gonadal Structure

P2-133 *Jay Walton, Matt Lovern; Oklahoma State University* — Winners don't keep winning, but alter signal use in secondary fights in brown anoles (Anolis sagrei)

P2-134 *Fiona Noble, Andrew Anderson, Suzy Renn; Reed College* — Hormonal Plasticity in Cichlid Fish

Intra- and inter-specific interactions

P2-136 *Caleb Hernandez, Loretta Roberson; California State University, Monterey Bay, The Marine Biological Laboratory* — CANCELLED – Investigating Mutual Interactions in Coral-Seaweed Cocultures

P2-138 *Zoe Reinhold, Brook Swanson; Gonzaga University* — Male competition signaling in Japanese rhinoceros beetles

P2-139 *Shayle Matsuda, Mariah Opalek, Raphael Ritson-Williams, Ross Cunning; Shedd Aquarium, Kaua'i Community College, California Academy of Sciences* — Tradeoffs of hosting heat tolerant symbionts: coral growth modulated by light and temperature

P2-140 *Matthew Gifford, David Adams; University of Central Arkansas* — Intraspecific interactions and refuge availability determine thermoregulatory costs in ectotherms

P2-141 *Rachel Haughton, Stephanie Crofts, Katie Dobkowski; Whitman College, College of the Holy Cross, Friday Harbor Labs, Everett Community College* — Salt, Fat, Acid, and Heat: the Impact of Acid Weed on the Green Sea Urchin

P2-142 *Amanda Getz, John Hranitz*, Victor Gonzalez; Commonwealth University of Pennslyvania Bloomsburg, University of Kansas* — Natural Habitats on Assateague Island Support a Diverse Plant-Pollinator Network

P2-144 *Valentina Gómez-Bahamón; Pennsylvania State University* — Ephemeral River Islands are Home to Transient Communities of Boreal and Austral Migratory Land-Birds

P2-145 *Liam Wrixon, Charles Abramson; Haskell Indian Nations University* — Exploratory Experiments of Cap Pushing in the Behavior of Messor Ants

Muscles and tendons

P2-146 *Nicole Danos, Adrien Arias; University of San Diego* — Muscle-tendon properties alter walking and running kinematics of pregnant and lactating rats

P2-147 *Joanna Baker, Ethan Wold, Leo Wood, Brett Aiello, Simon Sponberg; Stanford University, Georgia Institute of Technology, Seton Hill University* — Micro CT of hawkmoths and silkmoths uncovers parallels between muscle morphology and flight strategy

P2-148 *Tyler Whitacre, David Labonte, Natalie Holt; University of California Riverside, Imperial College London* — Effect of inertia on muscle force-velocity properties: Submaximal recruitment as a window to scale

P2-149 *Samantha Falcone, Samantha Gartner, Thomas Roberts; Brown University* — Investigation of muscle and nerve tissue resiliency in mice, Mus musculus

P2-150 *Danielle Taylor, Catherine Bevier, Joshua Martin*; Colby College, University of Wyoming* — Impact of competition level on knee ligament injuries in female alpine ski racers

P2-151 *Rubi Tapia-Rayo, Marie Schwaner*, Manny Azizi, Monica Daley; University of California Irvine* — Intrinsic muscle properties of intact versus reinnervated guinea fowl LG

P2-152 *Ofubofu Cairns, Samantha Falcone, Rachel Fleming, Thomas Roberts; Brown University* — Leg Jiggling - A Model for Understanding Biological Spring-Mass Systems

P2-153 *Sara Penuela, Rebecca Wells, Crystal Reynaga; Dickinson College, University of Pennsylvania* — Tendon mechanical structure varies across frog and toad species

P2-154 *Emily Yamauchi, Viktor Gevirtzman, Miles Valencia, Craig McGowan, Manny Azizi; University of California Irvine, Keck School of Medicine of USC* — The tale of two tails: material properties of kangaroo rat and lab rat tail tendon fascicles

P2-155 *Yu Zeng, Stephen Deban; University of South Florida* — Principles of muscular packaging

P2-155A *Caitlin Bemis, Nicolai Konow, Praneeth Abburi, Andrew Biewener, Monica Daley, Kiisa Nishikawa; Northern Arizona University, University of Massachusetts Lowell, Harvard University, University of California Irvine* — Ex vivo and in situ work loops capture function of rat medial gastrocnemius during locomotion

Ontogeny and scaling

P2-156	*Robert Cieri, Joshua Jevremov, John Capano, Christofer Clemente; University of British Columbia, University of the Sunshine Coast*	Geometric morphometrics analysis reveals that long bone morphology depends on habitat and body size
P2-157	*Edwin Dickinson, Melody Young, Michael Granatosky; New York Institute of Technology College of Osteopathic Medicine*	Ontogeny and ecological correlates of grip strength across lemurs
P2-158	*Thu Truong; Georgia Institute of Technology*	Developmental scaling of furca morphology affects ultrafast jump kinematics in springtails
P2-159	*Thu Truong, Jacob Harrison, Payton Bush, Saad Bhamla; Georgia Institute of Technology, Westover Comprehensive High School*	Developmental scaling of furca morphology affects ultrafast jump kinematics in springtails
P2-160	*Kylie Taylor, Samantha Martin, Sara Filler, Ioulia Bespalova, James Waters*; Providence College, Salve Regina University*	Metabolic rate allometry and collective behavior of needle ants
P2-161	*Shrika Ravichandran, Kelly Diamond, Amanda Palecek-McClung, Heiko Schoenfuss, Richard Blob; Clemson University, Rhodes College, St. Cloud State University*	Influence of waterfall-climbing style and ontogeny on fast-start performance in gobiid fishes

Reproduction

P2-162	*Meghan Laturney, Caroline Williams; University of California Berkeley*	Uncovering the molecular basis of state coordination in polymorphic crickets
P2-163	*Jenna McNally, Mitchell Alvord, Mark Jankauski; Montana State University*	Turgor Pressure Affects the Flexural Rigidity of Poricidal Anthers
P2-164	*MD Rahman, Esmirna Cantu; University of Texas Rio Grande Valley*	High temperature induces nitrative stress and DNA methylation in gonads of Atlantic sea urchin
P2-165	*Diamanda Zizis, Melody Sain, Tanisha Williams, Chris Martine*; Bucknell University, University of Georgia*	Heading for a breakdown: Assessing evolution through the hybridization of two sexual systems
P2-166	*Jennifer Newbrey, Michael Newbrey, Jaleesa Clarke; Columbus State University*	Variation in Yolk Carotenoid Concentrations of Carolina Chickadees in Response to Human Disturbance
P2-167	*Abraham Velazquez, Brian Tsukimura; California State University Fresno*	Thermal Stress Reduces the Effects of Methyl Farnesoate in the Porcelain Crab Petrolisthes cinctipes
P2-168	*Xylo Lazrinth, Evelyn Papalimberis, Kerstin Musolf, Anthony Wilson; Brooklyn College*	Investigating Parental Investment and Reproductive Behavior in Northern Pipefish (Syngnathus fuscus)
P2-169	*Isabella Montavon, Thomas Gerth, Agus Munoz-Garcia; The Ohio State University, Clemson University*	The effect of food quality and water availability on resource allocation in Diploptera punctata
P2-170	*Rich Hang, Brian Tsukimura; Fresno State, California State University Fresno*	Impacts of Competitive Interactions and Thermal Stress on the Reproductive and Stress Physiology of
P2-171	*Ashley Larson, Kylie Jewett, Lizzie Brisnehan, Kathryn Wilsterman; Colorado State University*	Hypoxia impacts maternal reproductive physiology, influencing early gestational events
P2-172	*Stefanie Williams, Matt Gibson, Scott Hawley; Stowers Institute for Medical Research*	Nematostella vectensis as a new meiosis research organism

Sexual dimorphism, sexual selection, and mating

P2-173	*Marzieh Asadi-Aghbolaghi, Md Moshiur Rahman, Levi S Lewis, Tien-Chieh Hung; University of California Davis*	Morphology and sexual dimorphism of Longfin Smelt (Spirinchus thaleichthys) in San Francisco Estuary
P2-174	*Miya M-Khoo, Peishu Li, April Neander, Bruce Patterson, Zhe-Xi Luo; University of Chicago, Field Museum of Natural History*	Science of Attraction: Investigating Sexual Dimorphism in the Vocal Organ of Fruit Bats
P2-175	*Adrian Lee, Elizabeth Cramer, Olivia Rataezyk, Patrick Wade-Wolfe, Erasmia Yager, Natalie Wright; Kenyon College*	Sexual Dimorphism in Size-Adjusted Keel Lengths of Some Birds and Not Others
P2-176	*Jordan Graves, Stacy Farina, Paola Correa-Alfonzo, Janine Ziermann-Canabarro, Jaquan Horton; Howard University*	Histological Analysis of the Uterus in Viviparous Shiner Perch (Cymatogaster aggregata)

Terrestrial locomotion

P2-179	*Eric McElroy, Christa Joby; College of Charleston*	Sustained, Steady, or Precipitous? Testing how sprint performance decreases with fatigue in a lizard
P2-180	*David Kramer, Frank Fish*, Anthony Nicastro, Matt Wileyto, Rebecca Bottiglio-Kramer; West Chester University*	Slow as it goes: Mechanical energetics of turtles and tortoises
P2-181	*Miriam Yushavaiev, Jasleen Kaur, Amanda Horung, Rita Mehta, Andrea Ward; Adelphi University, University of California Santa Cruz*	Role of substrate in terrestrial locomotion in young American eels
P2-182	*Chase Kinsey, Olivia McNelly, Richard Blob; Belmont University, Clemson University*	Jumping ability of aquatic frogs in a terrestrial habitat
P2-183	*Joshua Pulliam, Sydney Blacksten, Mason Dooley, Kamau Braxton-Hall, Julia Alexander, Scarlett Ewing, Jeffery Anderson, Jake Socha; Virginia Tech, Blacksburg High School*	Look Mom, No Hands: Effects of perch diameter on vertical gap crossing in arboreal snakes
P2-184	*Francis Chilel-Lopez, Noah Bressman*; Salisbury University*	Effects of Northern Snakehead (Channa argus) mucus and scales on terrestrial friction
P2-185	*Christofer Clemente, Robert Cieri, Taylor Dick, Peter Bishop, John Hutchinson; University of the Sunshine Coast, University of British Columbia, The University of Queensland, Museum of Comparative Zoology, Harvard University*	Locomotor joint moments in Varanid lizards and the scaling of locomotion in sprawling tetrapods
P2-186	*Cinnamon Pace; Le Moyne College*	Terrestrial locomotion of juvenile tidepool sculpins and the effects of size and substrate.
P2-187	*Cooper Kocon, Caitrin Eaton, Crystal Reynaga; Dickinson College*	Investigating the effects of compliant substrates on Cane toad jump take-off
P2-188	*Christian Brown, Craig McGowan, David Lin, Marie Schwaner; Washington State University, Keck School of Medicine of USC, University of California Irvine*	Jumping mechanics of desert kangaroo rats: the role of the midfoot joint
P2-189	*Yishun Zhou, Eleni Gourgou, Shai Revzen; University of Michigan*	Higher Phase Variation in Nematodes than in Cockroaches Implies CPG's Role as a State Estimator
P2-190	*Jim Usherwood, Zoë Self-Davies; The Royal Veterinary College, Harper Adams University*	The tripedal gaits of tripawds
P2-191	*Alex Melendez, Adin Sokol, Glenna Clifton; University of Portland*	Crab Walking Kinematics on Flat vs. Inclined Hemispherical Obstacles
P2-192	*Noah Chernik, Samantha Lynch, Melody Young, Edwin Dickinson, Stratos Kantounis, Matthew Cannata, Reuben Jacobson, Jon Gustafson, James Virga, Michael Granatosky; New York Institute of Technology College of Osteopathic Medicine*	High intensity running improves locomotor performance in neurotypical and neuroatypical children.
P2-193	*Matthew Cannata, Noah Chernik, Reuben Jacobson, Stratos Kantounis, Melody Young, Michael Granatosky, Edwin Dickinson; New York Institute of Technology College of Osteopathic Medicine*	Walk The Line: The Energetic Cost of Modulating Walking Speed Via Stride Frequency or Length
P2-196	*Natalie Flores, Diamond Rawlings, Apolo Ibáñez-Rincon, Theodore Garland, Angela Horner*; California State University San Bernardino, University of California Riverside*	Forelimb and hindlimb bone response to early life exercise training in High Runner mice
P2-197	*Lilian Jubb, Brandon Jackson; Longwood University*	Compensating for effects of autotomy on locomotion in stink bugs (Halyomorpha halys)
P2-198-A	*Suzanne Amador Kane, S. Tonia Hsieh, Willow Kohn, Syalomee Pradhan; Haverford College, Temple University, Bryn Mawr College*	How "toe" spacing and flexibility influence active and passive foot intrusions into granular media
P2-198	*James Virga, Stratos Kantounis, Reuben Jacobson, Melody Young, Edwin Dickinson, Callum Ross, Michael Granatosky; New York Institute of Technology College of Osteopathic Medicine, University of Chicago*	Removing mechanosensation in the parrot tongue influences limb-loading during tripedal locomotion

Undergraduate education, teaching, and research

P2-199	*Robert Thacker, Raisa Rizzieri, Jose Moscoso, Anita George, Sowad Karim, Urmi Poddar, Aasma Shafiq, Ryan Silver; Stony Brook University*	Marine invertebrate microbiomes provide an immersive course-based undergraduate research experience
P2-200	*Katherine Fiocca, Lauren O'Connell; Stanford University*	Using C. elegans chemotaxis to understand ant chemistry in an undergraduate laboratory course
P2-201	*Sara Lindsay, Judy Awong-Taylor, Fernando Nieto-Fernandez; University of Maine, Georgia Gwinnett College, SUNY-Old Westbury*	PULSE: Helping Departments to Transform Undergraduate Education
P2-202	*Patrick Mineo, Paul Arriola; Elmhurst University*	Rapid acclimation of heat tolerance in crayfish as a model for a CURE for first-year undergraduates
P2-203	*Rachelle Belanger, Elizabeth Roberts-Kirchhoff, Kendra Evans, Eric Krukonis, Jahzara Mayes, Tommie Smith; University of Detroit Mercy*	I-RISE with U-RISE at Detroit Mercy: Preparing Underrepresented Trainees for Research Careers
P2-204	*Alicia Fox; Allan Hancock College*	Bringing wildlife into the lab: Lower division Zoology students use camera traps to observe animals
P2-205	*Leigha Lynch, Eric Lynch, Timothy Campbell, Terrence Ritzman, Heather Smith; Midwestern University*	Web applications as a tool for highly collaborative, multi-institutional research initiatives
P2-206	*Jacob Harrison, David Hu, Geoffrey Gallice, Johana Reyes, Saad Bhamla; Georgia Institute of Technology, Pontifical Catholic University of Peru, Alliance for a Sustainable Amazon*	The Jungle Biomechanics Lab: interdisciplinary field research experience for early career scientists
P2-208	*Jonathan Dyhr, Joel Roberts; Metropolitan State University of Denver, Rocky Vista University*	Spying connections: using a word game to integrate concepts in physiology education.
P2-209	*Dimitri Smirnoff, Anita Schuchardt, Mary Guzowski, William Weber, Jessica Rossi-Mastracci, Alan Love, Ruth Shaw, Mike Travisano, Amanda Hund, Mark Borrello, Gillian Roehrig, Emilie Snell-Rood; University of Minnesota Twin Cities*	CANCELLED – "Tell me why": open-ended responses explain perceptions of biological statements used in biomimicry
P1-209-A	*Sara Lindsay; University of Maine*	Biology by Numbers: Scaffolding Data Literacy Learning in a Biology of Marine Organisms Course
P2-210	*Kari Taylor-Burt, Eric Gangloff, Jerry Husak, Michele Johnson, Rachelle Belanger, Ariel Kahrl, Jason Macrander, Thomas Sanger, Lisa Whitenack; Mount St Mary's University, Ohio Wesleyan University, University of St. Thomas, Trinity University, University of Detroit Mercy, Hamilton College, Florida Southern College, Loyola University Chicago, Allegheny College*	It Takes a Village: Mentoring Villages for Biologists at Primarily Undergraduate Institutions
P2-210-A	*Erika Iyengar, Karen Tuerk; Muhlenberg College*	Aquatic ecology, education, and regulators: Seeking meaningful long-term monitoring collaborations

Complementary to S11: Recent advances in the mechanistic understanding of avian responses to environmental challenges

P2-211	*Elizabeth Rogers, John Whiteman, Seth Newsome, Zachary Steele, Karen Caceres, Alexander Gerson; University of Massachusetts Amherst, University of New Mexico, Old Dominion University*	Using Δ17O to estimate metabolic and exogenous body water inputs in captive house sparrows
P2-212	*Maria Stager; University of Massachusetts Amherst*	Determining the causes of mass mortality events in Purple Martins
P2-213	*Atalanta Ritter, Emily Levy, Kimberly Rosvall; Indiana University*	Heat and repeat: Do wild birds habituate to consecutive thermal challenges?
P2-214	*Audrey Su, Jennifer Uehling, Conor Taff, Maren Vitousek; Cornell University*	Effects of Cold and Experimentally Elevated Glucocorticoids on Incubation Behavior in Tree Swallows
P2-215	*Duyi Kuang, Stanley Wang, Sebastian Lee, Hannah Stuart, Robert Full; University of California Berkeley*	Squirrel Paw Pad Stabilization of High-Impact Branch Landings Tested Using a Physical Model

Friday Schedule of Events

Events take place in the Seattle Convention Center, unless otherwise noted

EVENT	TIME	LOCATION
Poster Session 3 Set Up	7:00 AM – 8:00 AM	Exhibit Hall
Speaker Ready Room	7:00 AM – 5:00 PM	Room 601
Registration	7:30 AM – 3:00 PM	Exhibit Hall
Coffee Break AM, *sponsored by SRE.college*	9:30 AM – 10:30 AM	Exhibit Hall
Exhibit Hall	9:30 AM – 5:30 PM	Exhibit Hall
Coffee Break PM	3:30 PM – 4:30 PM	Exhibit Hall
Poster Session 3 Even Numbers Authors Present	3:30 PM – 4:30 PM	Exhibit Hall
Poster Session 3 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Exhibit Hall
Poster Session 3 Teardown	5:30 PM – 6:00 PM	Exhibit Hall
SPECIAL LECTURE		
George A. Bartholomew Lecture: Dr. Eleanor Caves The promise of integrative biology in studying animal perception: lessons from mate choice and mutualism *Sponsored by Sable Systems International*	7:30 PM – 8:30 PM	Ballroom B
SYMPOSIUM ORAL PRESENTATIONS		
S7: Convergent evolution across levels of biological organization, organisms, and time	7:45 AM – 4:00 PM	Ballroom B
S8: Modeling organismal responses to changing environments	7:45 AM – 3:00 PM	Ballroom C
S9: Evolution, physiology, and biomechanics of insect flight	7:45 AM – 3:30 PM	Rooms 619-620
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Animal communication	8:00 AM – 9:30 AM	Room 602
Comparative endocrinology of development, plasticity, and seasonality	8:00 AM – 9:30 AM	Room 612
Biological springs	8:00 AM – 9:45 AM	Room 608
Conservation biology	8:00 AM – 10:00 AM	Rooms 613-614
Surveying the land and sea	8:00 AM – 10:00 AM	Room 609
Spiralian development	8:00 AM – 10:00 AM	Room 606
Temperature, parasitism, and endocrinology	8:00 AM – 10:00 AM	Room 607
Functional vertebrate morphology	8:00 AM – 10:00 AM	Room 617
Energetics	8:00 AM – 10:00 AM	Room 604
Community ecology: Predators and competitors	8:00 AM – 10:00 AM	Room 603
Science communication and education	8:00 AM – 10:00 AM	Room 618
Adaptation	8:15 AM – 9:45 AM	Rooms 615-616
Jaws	8:30 AM – 10:00 AM	Room 611
Post-embryonic development and regeneration	10:00 AM – 12:00 PM	Room 612
Wings, limbs, and fins: Part 1	10:15 AM – 12:00 PM	Room 609
Complementary to S6: The scale of resilience: mechanisms of recovery across biological systems	10:15 AM – 12:00 PM	Rooms 613-614
Diversification, radiation, and speciation	10:30 AM – 11:45 AM	Room 618
Division of Ecoimmunology & Disease Ecology Best Student Presentation	10:30 AM – 11:45 AM	Room 608
Social behavior, Part 1	10:30 AM – 12:00 PM	Room 602
Neuroanatomy, Part 1	10:30 AM – 12:00 PM	Room 603
Population and landscape genomics	10:30 AM – 12:00 PM	Room 607
Terrestrial adaptations and ecomorphology	10:30 AM – 12:00 PM	Room 604
Skulls	10:30 AM – 12:00 PM	Room 611
Motion and vision	10:30 AM – 12:00 PM	Rooms 615-616
Aquatic neurobiology, Part 2	10:30 AM – 12:00 PM	Room 606

AFTERNOON

Morphogenesis and organogenesis	1:30 PM – 3:15 PM	Rooms 613-614
Hormones, behavior, and reproduction	1:30 PM – 3:15 PM	Room 611
Prey-predator interactions	1:30 PM – 3:15 PM	Room 608
Community ecology in a changing world	1:30 PM – 3:15 PM	Room 603
Biomechanics of creepy crawlies	1:30 PM – 3:30 PM	Rooms 615-616
Adjusting to a changing world	1:30 PM – 3:30 PM	Room 609
Thermal physiology, Part 2	1:30 PM – 3:30 PM	Room 604
Animal cognition	1:30 PM – 3:30 PM	Room 606
Spines and punctures	1:30 PM – 3:30 PM	Room 617
Ecology and evolution of coloration	1:30 PM – 3:30 PM	Room 618
Multisensory systems	1:30 PM – 3:30 PM	Room 602
Complementary to S4: Computational and physical models in research and teaching to explore form-function relationships	1:30 PM – 3:30 PM	Room 612
Host-microbe interactions	1:45 PM – 3:30 PM	Room 607

COMMITTEE AND BOARD MEETINGS

The Crustacean Society (TCS) Business Meeting	12:00 PM – 1:30 PM	Room 307
IOB Editorial Board Meeeting	12:00 PM – 1:30 PM	Room 308
Division Secretaries Meeting	12:00 PM – 1:30 PM	Room 304
2025 Symposium organizers meeting	12:15 PM – 1:30 PM	Room 604
Broadening Participation Mentor/Mentee Room	2:00 PM – 4:00 PM	Room 304

BUSINESS MEETINGS

SICB Society Member Meeting & Awards Presentation	6:00 PM – 7:00 PM	Ballroom B

WORKSHOPS AND PROGRAMS

Fluid ART - Free pour painting workshop	12:15 PM – 1:30 PM	Ballroom C
Improving research by inclusion of indigenous people, culture and knowledge	12:15 PM – 1:30 PM	Room 602
SPDAC Job Application Preparation Working Group - Introductory Workshop	12:15 PM – 1:30 PM	Room 611
2024 Tal-X Workshop: What is 'scaffolding' and how does it improve student outcomes?	7:00 PM – 9:00 PM	Ballroom C

SOCIAL EVENTS

Primarily Undergraduate Institution Social	7:30 AM – 8:30 AM	Waterfall Suite
AMS/DIZ/TCS Social	8:30 PM – 10:00 PM	Cirrus Ballroom, Sheraton
DCPB/BART Social	8:30 PM – 10:00 PM	4th Floor Atrium

Friday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 4:00 PM **Ballroom B**

S7: Convergent evolution across levels of biological organization, organisms, and time

Chairs: Emily Lau, Jessica Goodheart, Rebecca Varney

7:45 am	*Emily Lau, Jessica Goodheart, Rebecca Varney; University of California Santa Barbara, American Museum of Natural History*	Integrating convergent evolution across levels of biological organization, organisms, and time
8:00 am	*Gabriella Wolff; Case Western Reserve University*	Divergent evolution of learning and memory brain structures in Pancrustacea
8:30 am	*Aaron Griffing, Tony Gamble, Tim Higham, Greta Keller, Thomas Sanger; Princeton University, Marquette University, University of California Riverside, Loyola University Chicago*	Investigating the convergent evolution of adhesive pads in lizards through comparative embryology
9:00 am	*Nigel Anderson, Doris Preininger, Matthew Fuxjager; Brown University, Vienna Zoo, Brown University*	Perceptual bias and behavioral mechanisms set scene for convergent evolution in foot-flagging frogs
9:30 am	*Sarah Diamond, Ryan Martin; Case Western Reserve University*	Contemporary convergent evolution of physiological traits in response to urban heat islands
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*C.Tristan Stayton; Bucknell University*	When does phenotypic integration promote convergent evolution?
11:00 am	*Matthew Kolmann, Jack Rosen, Devya Hemraj-Naraine; University of Louisville*	Convergence in the feeding apparatus of freshwater characiform fishes
11:30 am	*Scott Edwards; Harvard University*	Using phylogenies to connect genomic and phenotypic variation under convergent evolution
12:00 pm	**Lunch**	
1:30 pm	*Becca Young; University of Texas Austin*	Replaying the tape of life: Comparative transcriptomics of phenotypic convergence
2:00 pm	*Aida Verdes; National Museum of Natural Sciences, Spanish Research Council*	The repeated evolution of animal venoms, from stinging cells to toxin structures
2:30 pm	*Patrick Edger; Michigan State University*	CANCELLED – Multiple origins of tuber formation - Evolution of a unique storage organ
3:00 pm	*Liz Alter; CSUMB*	Convergent evolution in adaptations to low-light environments across diverse fish clades
3:30 pm	*Todd Oakley; UCSB*	Convergent evolution and the three epochs of eye evolution

7:45 AM – 3:00 PM **Ballroom C**

S8: Modeling organismal responses to changing environments

Chairs: Kendra Greenlee, Dianna Padilla

7:45 am	*Kendra Greenlee, Dianna Padilla; North Dakota State University, Stony Brook University*	Introduction to the Symposium: Modeling Organismal Responses to Changing Environments
8:00 am	*Michael Dillon, D. M. Shayne Dodge, Jordan Glass, Ellen Keaveny, Sarah Waybright, Sabrina White; University of Wyoming*	The importance of winter microclimates for terrestrial ectotherms

8:30 am	*Emily Le-Sage, Brandon LaBumbard, Michel Ohmer, Laura Reinert, Karie Altman, Nina McDonnell, Ian Latella, Veronica Saenz, Mark Wilber, Jamie Voyles, Douglas Woodhams, Corinne Richards-Zawacki, Louise Rollins-Smith; Skidmore College, University of Mississippi, Vanderbilt University Medical Center, St. Bonaventure University, The Pennsylvania State University, University of Tennessee, University of Nevada Reno, University of Massachusetts Boston, University of Pittsburgh*	Corresponding host-pathogen-microbiome seasonal rhythms across a latitudinal gradient
9:00 am	*Liang Ma, Zhongwen Jiang, Shi-ang Tao, Cheng Wenda, Chu-yu Cheng, Dan-yang Wu, Wei-guo Du; Sun Yat-sen University, Institute of Zoology, Chinese Academy of Sciences, Fudan University*	Analysis of resting status reveals distinct elevational variation in energy dynamics of lizards
9:30 am	*Kit Yu Karen Chan, Wing-ho Ko; Swarthmore College*	Fertilization kinetics in a changing ocean
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Ashley Rohde; New Mexico State University*	Modeling the environmental drivers of genetic structure in continuously distributed species
11:00 am	*Haruka Wada, Wonil Choi, Victoria Coutts, Alex Hoffman, Todd Steury; Auburn University*	Modeling population persistence through increasing temperature and food restriction in zebra finches
11:30 am	*Ofir Levy; Tel Aviv University*	AI in Ecology: Refining Microclimate Predictions and Thermoregulatory Tracking
12:00 pm	**Lunch**	
1:30 pm	*Stacey Combes, Nicholas Burnett, Katherine Jordan; University of California Davis*	Behavioral and mechanical responses of flying pollinators to clutter and wind
2:00 pm	*Delyle Polet, David Labonte; Royal Veterinary College, Imperial College London*	Optimal gearing of dynamic musculoskeletal systems: maintaining physiological similarity
2:30 pm	*Dianna Padilla, Daniel Grunbaum; Stony Brook University, University of Washington*	Preparing the next generation of integrative organismal biologists

7:45 AM – 3:30 PM **Rooms 619-620**

S9: Evolution, physiology, and biomechanics of insect flight

Chairs: Lisa Triedel, Jon Harrison, Caroline Williams

7:45 am	*Lisa Treidel, Jon Harrison, Caroline Williams; University of Nebraska Lincoln, Arizona State University, University of California Berkeley*	Evolution, Physiology, and Biomechanics of Insect Flight: An Introduction to the Symposium
8:00 am	*Heather Bruce, Nipam Patel; Marine Biological Laboratory*	Cryptic Persistence of Abdominal Legs in Insects Enabled Diverse Outgrowths with Novel Functions
8:30 am	*Mary Salcedo; Cornell University*	An insect wing's living network: structure, evolution, and bioinspiration
9:00 am	*Kevin Deem, Jennifer Brisson; University of Rochester*	Enhancer evolution at follistatin paralogs underlying the genetic assimilation of winglessness
9:30 am	*Jacqueline Lebenzon, Tomas Diaz, Caroline Williams; University of California Berkeley*	Break it 'til you make it: Mechanisms of flight muscle histolysis in the variable field cricket
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Kristjan Niitepõld; Heureka The Finnish Science Centre*	Flight of the butterfly: Energetics of butterfly migration and dispersal
11:00 am	*Charles-Antoine Darveau; University of Ottawa*	Interindividual Variation and Developmental Plasticity in Insect Flight Energetics
11:30 am	*Sanjay Sane, Abin Ghosh, Tanvi Deora; National Center for Biological Sciences, Tata Institute of Fundamental Research, Shiv Nadar Institute of Eminence*	The mechanics of wings and halteres in flies
12:00 pm	**Lunch**	

1:30 pm	*Ethan Wold, James Lynch, Jeff Gau, Brett Aiello, Nick Gravish, Simon Sponberg; Georgia Institute of Technology, University of California San Diego, Seton Hill University*	The diversity of resonance in insects
2:00 pm	*Bradley Dickerson, Serene Dhawan; Princeton University*	A computational map of mechanosensory feedback for Drosophila flight control
2:30 pm	*Tyson Hedrick, Haithem Taha; University of North Carolina Chapel Hill, University of California Irvine*	Biomechanics of insect flight stability and maneuverability
3:00 pm	*Michael Dickinson; California Institute of Technology*	Unhinged: a futile obsession to uncover the mystery of insects' most essential innovation.

Friday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:30 AM **Room 602**

Animal communication

Chairs: Steve Nowicki, Jacob Lasala

8:00 am	*Steve Nowicki, Lauren Chronister, Jill Soha, Susan Peters, William Searcy; Duke University, University of Pittsburgh, University of Miami*	Syntactic rules alone can account for song type matching in a songbird
8:15 am	*Molly Murphy, Caroline Casey, Jenna Camargo, Gita Kolluru, Maddie Schroth-Glanz, Heather Liwanag*; California Polytechnic State University, San Luis Obispo*	Mom, is that you? A northern elephant seal pup's ability to vocally recognize its mother
8:30 am	*Emma Reinhardt, Keith Sockman; University of North Carolina Chapel Hill*	Syntax in the vocal communication of a wild songbird
8:45 am	*Katelyn Ray, Katharine Maurer, Mark Hauber, Sharon Gill; Western Michigan University*	Using linguistic analysis to assess anti-predator combinatorial calls in red-winged blackbirds
9:00 am	*Joshua Bowman, Jamie Cornelius, Mauricio Cantor, Jonny Armstrong, Taylor Chapple; Oregon State University*	When hunters become the hunted: an investigation of chemical alarm signaling in a cartilaginous fish
9:15 am	*Jacob Lasala, Beth Brady; Mote Marine Laboratory*	Vocalization comparison within nests of sea turtles on the Gulf of Mexico

8:00 AM – 9:30 AM **Room 612**

Comparative endocrinology of development, plasticity, and seasonality

Chairs: Melanie Richter, Cole Deal

8:00 am	*Yuzo Yanagitsuru, Edward Hayman, William Fairgrieve, J Luckenbach; University of Washington, NOAA Northwest Fisheries Science Center*	Physiological and morphological correlates of sexually dimorphic growth in sablefish (Anoplopoma fim
8:15 am	*Heather Ray, MadeLynn Anderson, Mahrissa Clark, Ian Curnutt, Zach Hawkins, Kai Park, Devaleena Pradhan*; Idaho State University*	Using a Vertically Integrated Project to characterize ovarian follicles in a sexually plastic fish
8:30 am	*Max Butensky; Washington State University*	Molecular mechanisms behind Sexual Dimorphism in Pacific Salmon
8:45 am	*Amirali Monshizadeh, John Tyson, Stanislav Shvartsman, Alexander Shingleton; University of Illinois Chicago*	A Dynamical Model of Growth and Maturation in Drosophila
9:00 am	*Cole Deal, Kathryn Wilsterman, Cory Williams; Colorado State University*	Sex-specific transcriptomics of seasonal adiposity gain and loss in the 13-lined ground squirrel
9:15 am	*Melanie Richter, Beth Roberts, Mark Sandfoss, Steve Reichling; Memphis Zoo, USGS*	Comparing fecal and circulating hormone levels in an endangered snake across its active season

8:00 AM – 9:45 AM **Room 608**

Biological springs

Chairs: David Lin, Stephanie Ross

8:00 am	*Alexa Cesari, Jesse Placone, Nicole Ramo, Michael Rosario, Danielle Adams, Frank Fish*; West Chester University, Clemson University*	Possible Mechanism for Energy Recovery from the Tendons of the Peduncle of Harbor Porpoise
8:15 am	*Jeffrey Olberding; California State University Fullerton*	The functional robustness of elastic recoil mechanisms
8:30 am	*Stephanie Ross, Christine Waters-Banker, Andrew Sawatsky, Timothy Leonard, Walter Herzog; University of Calgary*	The complex and variable behaviour of aponeurosis during dynamic contractions
8:45 am	*Miles Valencia, Emily Yamauchi, Viktor Gevirtzman, Manny Azizi; University of California Irvine*	Regional variation in tendon fascicle properties
9:00 am	*David Lin, Bertrand Tanner; Washington State University*	Power output increases in single muscle fibers with more compliant and nonlinear tendons
9:15 am	*Mark Ilton, Lucien Tsai, Paco Navarro, Siqi Wu, Taylor Levinson, Elizabeth Mendoza, M. Janneke Schwaner, Monica Daley, Manny Azizi; Harvey Mudd College, University of California Irvine*	Biological springs are most energy efficient when loaded and unloaded at equal rates
9:30 am	*Cheryl Wilga, Lara Ferry, Elizabeth Dumont; University of Rhode Island, Arizona State University, University of California Merced*	Bendy Hyoids: In-Vivo and Ex-Vivo Loading and Stiffness of the Hyoid Arch In Elasmobranchs

8:00 AM – 10:00 AM **Rooms 613-614**

Conservation biology

Chairs: Sarah Orr, Samantha Donohoo

8:00 am	*Reid Hyle, Rachel Grey, Jason O'Connor, Brittany Bankovich, Charles Hanlon, Steve Bousquin, Sam McPherson*, Arthur Bernhardt; Florida Fish and Wildlife Conservation Commission, United States Fish and Wildlife Service, New Mexico Fish and Wildlife Conservation Office, South Florida Water Management District*	Movement, Habitat Selection, and Survival of Largemouth Bass in the Restored Kissimmee River
8:15 am	*Samantha Donohoo, Paul Johnson, Nathan Whelan; Auburn University, US Fish and Wildlife Service*	Springs as Islands: Island Biogeography and Conservation Genomics of Two Endemic Pleurocerid Snails
8:30 am	*Phillip Oelbaum, Ronald Hall, Damion Whyte, Ronald Stewart, Susan Koenig, Elizabeth Dumont, Kenneth Welch; University of Toronto Scarborough, School of Natural Sciences, Jamaican Caves Organisation, Windsor Research Centre, University of California Merced*	Stable isotope ecology and conservation of cave-roosting bats in Jamaica
8:45 am	*Jonathan Schafer, Erica Crespi, Caren Goldberg, Jeff Manning, Robert Pearhill, Alexa Dulmage, Christina Kiepe, Emily Grabowsky, Adam Haines; Washington State University, Washington Department of Fish and Wildlife*	Washington Northern Leopard Frog Recovery: Post-release Monitoring of Behavior and Predator Threats
9:00 am	*Dorothy Zahor, Jamie Cornelius, Kenneth Glynn; Oregon State University*	You are what you eat: urban soil lead predicts Turdus migratorius blood lead in Flint, Michigan
9:15 am	*Sarah Orr, Michael Goodisman; Georgia Institute of Technology*	Hazard of an emerging pesticide on bumblebees
9:30 am	*Bryan Gahn, Karl Kaiser, Kevin Conway, Christopher Marshall; Texas A&M University*	Investigating the Occurrence of Plastic in Historic Fishes from Galveston Bay Estuary System
9:45 am	*Jennifer Phillips, Alfredo Llamas, Todd Jones; Washington State University, Texas A&M University San Antonio, Migratory Bird Center, Smithsonian's National Zoo and Conservation Biology Institute*	Resident, but not migratory, songbird eye size varies with urban-associated light pollution levels

8:00 AM – 10:00 AM **Room 609**

Surveying the land and sea

Chair: Eric Edsinger

8:00 am	*Eric Edsinger, Michael Kieras, Stacy Pirro, Leonid Moroz; University of Florida Whitney Laboratory for Marine Biosciences, Iridian Genomics*	Salish Sea Biodiversity Genomics: Over 100 species sequenced with outside genomes used in assembly
8:15 am	*Abigail Cahill, Jessica Garcia-Lopez, Alyvia Martinez, Miles Newman, Adrian Sanchez; Albion College, The Marine Biological Laboratory*	Macroinvertebrate community composition and diversity in wild rice beds
8:30 am	*Andrew Mahon, Madeline Armstrong, Kenneth Halanych, Christopher Jerde; Central Michigan University, UNCW, Marine Sciences Institute*	Environmental DNA metabarcoding of biodiversity in regions of the Antarctic continental shelf
8:45 am	*Calvin Rezac, Robert Ellwanger, Samantha Donohoo, Paul Harfield, Ashely Ruppel, Matthew Wagner, Nathan Whelan*; Mississippi Museum of Natural Science, Mississippi Department of Wildlife, Fisheries, and Parks, Auburn University, US Fish and Wildlife Service*	Surveys that prioritize many sites have better outcomes: a case on finding the Big Black Rocksnail
9:00 am	*Kyle Donnelly, Pamela Brannock, Candace Grimes, Andrew Mahon, Kenneth Halanych; University of North Carolina Wilmington, Rollins College, Central Michigan University*	Oh Me Oh Meiofauna! Analyzing Western Antarctic sediment community structure through meiofaunal DNA
9:15 am	*Stanton Belford; University of Tennessee Southern*	Combining molecular analyses with reef surveys: Monitoring benthic components on reefs located at To
9:30 am	*Emily Lancaster, Markus Frederich, Erin Grey; University of New England, University of Maine*	Chasing Squishy and Crunchy Invaders: eDNA for Dynamic Invasive Species Surveillance in Tide Pools
9:45 am	*Kenneth Halanych, Candace Grimes, Kyle Donnelly, William Farris, Sarah Gerken, Madison Gott, Coral Halanych, Conor Judge, Harrison Mancke, Nusrat Noor, Samantha Schrieter, Lindsay Uzarski, Damien Waits, Jessica Zehnpfennig, Andrew Mahon; University of North Carolina Wilmington, The University of Alabama, University of Alaska, Central Michigan University, University of Washington*	Antarctic marine benthic communities: Image transects reveal lower abundances in Eastern, than Weste

8:00 AM – 10:00 AM **Room 606**

Spiralian development

Chair: Neva Meyer

8:00 am	*Katharina Stracke, Andreas Hejnol; The University of Bergen, Friedrich-Schiller-University Jena*	Molecular characterization of the gastrotrich nervous system of Lepidodermella squamata
8:15 am	*Meghan Yap-Chiongco, Katharina Stracke, Aina Børve, Andreas Hejnol, Kevin Kocot; The University of Alabama, The University of Bergen, Friedrich-Schiller-University Jena*	Expression of Five Mineralization Genes in the Shell-less Wirenia argentea (Mollusca, Solenogastres)
8:30 am	*Chi Huang, Wenjun Yi, Jian Sheng, Wei Xu; Texas A&M University-Corpus Christi*	Calcium Flux in Early Shell Formation of Biomphalaria Glabrata from Trochophore to Veliger Stages
8:45 am	*Kaitlyn Abshire, Ethan Laumer, Sophie Neu, Charlotte Wood, Prashant Sharma; University of Wisconsin Madison*	The Developmental Genetic Basis of Appendage Patterning in the Brown Garden Snail, Cornu aspersum
9:15 am	*Stephan Schneider; Academia Sinica*	BMP signaling instructs dorsal vs. ventral cell lineages in a marine annelid
9:30 am	*Johnny Davila-Sandoval, Javier Tabima, Neva Meyer; Clark University*	A TALE of how a segmented worm makes its nerve cord: Capitella teleta and cell fate specification
9:45 am	*Nicole Webster, Allan Carrillo-Baltodano, Johnny Davila-Sandoval, B. Duygu Özpolat, Neva Meyer*; University of Saskatchewan, Queen Mary's University of London, Clark University, Washington University in St. Louis*	Dual autonomous and conditional neural specification in two species of annelids

8:00 AM – 10:00 AM **Room 607**

Temperature, parasitism, and endocrinology

Chairs: Craig Frank, Maren Vitousek

8:00 am	*Maren Vitousek, Conor Taff, David Chang-van-Oordt, Jennifer Houtz, Jennifer Uehling, Daniel Ardia, Thomas Ryan, Monique Pipkin; Cornell University, Princeton University, Allegheny College, Franklin and Marshall College*	Small changes in nest temperature have lasting effects on the sensitivity to stressors
8:15 am	*Sara Teemer, Edan Tulman, Alicia Arneson, Steven Geary, Dana Hawley; Virginia Tech, University of Connecticut*	Colder temperatures augment bacterial pathogen persistence on bird feeders
8:30 am	*Leah Bakewell, Carrie Alfonso, Karla Alujevic, Samantha Fontaine, Jaden Keller, Yanileth Lopez, Nathaly Ponce, Alejandro Vivas, Claire Williams, Kelly Wuthrich, W. Owen McMillan, Michael Logan, Christian Cox; Florida International University, Smithsonian Tropical Research Institute, University of Nevada Reno*	Parasite removal alters thermal tolerance in a tropical lizard
8:45 am	*Paradyse Blackwood, Emily Martin, Grace Schumacher, Catherine Searle; Purdue University, University of California, Irvine*	Temperature variability and salt pollution interact to alter parasite susceptibility in tadpoles
9:00 am	*Craig Frank, Joseph Laske, Carl Herzog; Fordham University, NY State Department of Environmental Conservation*	The role of skin temperature in the resistance to fungal infection during torpor
9:15 am	*Braulio de-Almeida-Assis, Eric Riddell; University of North Carolina Chapel Hill*	The role of melanin in driving physiological responses to temperature in a terrestrial salamander
9:30 am	*Hannah Hirsch, Laura Park, Yuichiro Suzuki; Wellesley College*	Body size and hormonal responses to temperature changes in the tobacco hornworm, Manduca sexta.
9:45 am	*Katherine Malinski, Christopher Willett, Joel Kingsolver; University of North Carolina Chapel Hill*	Heat waves and prior infection improve survival of Manduca sexta to Bacillus thuringiensis bacteria

8:00 AM – 10:00 AM **Room 617**

Functional vertebrate morphology

Chairs: Travis Hagey, David Labonte

8:00 am	*Stephanie Smith, Myleen Amendano, Saniya Patel, Kenneth Angielczyk, C.Tristan Stayton; Field Museum of Natural History, Bucknell University*	How does trabecular structure influence the mechanical properties of tiny mammalian vertebrae?
8:15 am	*Ivana Lezcano-Serra, Jeanette Wyneken; Florida Atlantic University*	The structure-function relationship of sea turtle shell bone across ontogeny
8:30 am	*Travis Hagey; Mississippi Univeristy for Women*	Effect of Formalin Preservation on Lizard Toe Pad Shape
8:45 am	*Kaitlyn Kern, EW Misty Paig-Tran; California State University Fullerton*	My, Those Head-Teeth Are Long!: Morphology of the Cephalic Tenaculum Through the Lens of Ecology
9:00 am	*Julia Bailey, Wesley Dillard, Gareth Fraser; University of Florida*	Morphological Development and Propagation of Odontodes in Ancistrus Armored Catfish
9:15 am	*David Labonte, Peter Bishop, Taylor Dick, Christofer Clemente; Imperial College London, Museum of Comparative Zoology, Harvard University, The University of Queensland, University of the Sunshine Coast*	Dynamic similarity and the unusual scaling of maximum running speed
9:30 am	*John Long, Harald Kryvi; Vassar College, University of Bergen*	The Notochord of Atlantic Salmon Continually Changes its Functional Morphology
9:45 am	*Todd Clardy, Allison Smith, Clay Pollock, William Ludt; Natural History Museum of Los Angeles County, University of Michigan, Occidental College*	CANCELLED – Symmetry/asymmetry in the stalked eyes of larval *Idiacanthus* (Stomiiformes: Idiacanthidae)

8:00 AM – 10:00 AM **Room 604**

Energetics

Chair: Linnea Pearson

8:00 am	*Allison Litmer, Morgan Pelley, Steven Beaupre; Ohio Wesleyan University, University of Arkansas*	Interactive effects of nighttime warming and prey availability on lizard energetics
8:15 am	*Linnea Pearson, Emma Weitzner, Lars Tomanek, Heather Liwanag; California Polytechnic State University*	Drivers of oxygen storage and development in dependent Weddell seal (Leptonychotes weddellii) pups
8:30 am	*KayLene Yamada, Kang Nian Yap, Natalie Harris, Shelby Zikeli, Vimala Kaza, Hippokratis Kiaris, Andreas Kavazis, Wendy Hood; Auburn University, University of South Carolina*	Comparison of mitochondrial performance of mice in laboratory, semi-natural, and wild populations
8:45 am	*Ryan Weaver; Iowa State University*	A call for studying mitochondrial bioenergetics of animal-infecting fungi
9:00 am	*Bernard Rees, Jessica Reemeyer, Samantha Brieske, Sandra Binning, Timothy Clark, Jeremy De-Bonville, Rachel Eisenberg, Graham Raby, Jodie Rummer, Yangfan Zhang; University of New Orleans, McGill University, Deakin University, Université de Montréal, University of British Columbia, Trent University, James Cook University, Harvard University*	Methods of estimating maximum oxygen uptake by fish– different results, biological bases, and uses
9:15 am	*James Gillooly; University of Florida*	Toward an Energetic Definition of Stress
9:30 am	*Emily Naylor, Jonathan Huie, R. Pyron, Sandy Kawano; James Madison University, The George Washington University*	Phylogeographic variation in the standard metabolic rates of dusky salamanders (Desmognathus)
9:45 am	*Brett Hodinka, Tony Williams; Simon Fraser University*	Including low-quality individuals reveals a physiological basis of cost of reproduction in starlings

8:00 AM – 10:00 AM **Room 603**

Community ecology: Predators and competitors

Chair: Madison Hattaway

8:00 am	*Gum Nau, Hannah McSwain, Kenzie Garrett, Sophie Heisner, Baine Craft, Eric Long, Ryan Ferrer*; Seattle Pacific University*	Trophic tinkle: Predator pee fails to frighten foragers and conifer chemistry depends on deer damage
8:15 am	*Madison Hattaway, Paul Chittaro, Li-Jung Kuo, Kim Parsons, Brad Hanson, Dawn Noren, Candice Emmons, Jonelle Gates, Lydia Staggs, Steve Osborn, Todd Schmitt, Karen Steinman, Todd Robeck; Lynker Technologies, NOAA NMFS Northwest Fisheries Science Center, SeaWorld Florida, SeaWorld Texas, SeaWorld California, SeaWorld Parks and Entertainment*	Killer whale chemical tracers and trophic enrichment factors
8:30 am	*HyeJoo Ro, Robin Trayler, Daniela Kalthoff, Anmol Sanghu, Sora Kim; University of California Merced, Swedish Museum of Natural History*	A century long perspective on grey wolf ecology: comparing within and between individual diet.
8:45 am	*Sneha Sil, Flo Visconti, Sharlene Santana; University of Washington*	Characterizing Ecological Interactions Between Fruit Bats and Piper Plants Across Different Habitats
9:00 am	*Paul Robert Martin, Cameron Ghalambor; Queen's University*	The 'Competitive exclusion – tolerance rule' explains species turnover along environmental gradients
9:15 am	*Perla Gonzalez-Moreno, Michele Nishiguchi, Shelby Matsumoto; University of California Merced*	A Double-Edged Sword: Type VI secretion system (T6SS) competition in the Euprymna-Vibrio Symbiosis
9:30 am	*Daravuth Cheam, Isabella Ma, Miranda Magdaleno, David Real, Michele Nishiguchi; University of California Merced*	Elucidating Effects of Predation on Biofilms by Transcriptomics in the Squid-Vibrio symbiosis
9:45 am	*Lillian Para, Maëlle Lefeuvre, Elizabeth Derryberry; University of Tennessee Knoxville, Jagiellonian University*	Sizzling Strategies: How High Temperatures Modify Anti-Predator Behaviors in Tree Swallows

8:00 AM – 10:00 AM **Room 618**

Science communication and education

Chair: Brian Helmuth

8:00 am	*Brian Helmuth, John Coley, Alegra Germain, Daria Healey, Jessica Holstein, Benjamin Dittbrenner; Northeastern University*	Human Exceptionalism hinders Socio-Ecological Systems Perspective in Environmental Science Education
8:15 am	*Margaret Zhang, Cassie Shriver, Jonathan Erickson, Joseph Mendelson, Andrew Schulz; University of Michigan, Georgia Institute of Technology, Zoo Atlanta, Max Planck Institute for Intelligent Systems*	Creating successful zoo-academic collaborations through education, enrichment, engagement
8:30 am	*Gregory Pask, Alexis Mychajliw, Gabriel-Philip Santos; Middlebury College, Raymond M. Alf Museum of Paleontology*	Poké Pop-Up Museum: A Cosplay for Science Community Outreach Project Centered on Organismal Biology
9:00 am	*Sam Sharpe; Kansas State University*	The Urgent Responsibility of Biologists to Defend Intersex Variation and Human Rights
9:15 am	*Dimitri Smirnoff, Anita Schuchardt, Mary Guzowski, William Weber, Jessica Rossi-Mastracci, Alan Love, Ruth Shaw, Mike Travisano, Amanda Hund, Mark Borrello, Gillian Roehrig, Emilie Snell-Rood; University of Minnesota, Twin Cities*	CANCELLED – A Quest for Biological Accuracy and Design Utility in Biomimicry Frameworks: a quantitative study
9:30 am	*Meghana Binraj; Species and Spaces Foundation*	Flipping Fins & Feeding Curiosity: Unconventional Marine Science Communication, Indian Fish Markets
9:45 am	*Eron Higgins, Aimee Mendoza; Project Malu, Minorities in Shark Sciences, New College of Florida*	CANCELLED – Of Humans and Horseshoe Crabs

8:15 AM – 9:45 AM **Rooms 615-616**

Adaptation

Chair: Pamela Hart

8:15 am	*Colin Anthony, Bastian Bentlage, Rebecca Helm*; Marine Laboratory, University of Guam, Georgetown University*	CANCELLED – Rising to the top: Animal evolution at the ocean's air-sea interface
8:30 am	*Bernd Steklis, Todd Blackledge; University of Akron*	Dew or Die: Unraveling the Wet vs. Dry Adhesive Performance of Diving Bell Spider Attachment Discs
8:45 am	*Joseph Sardina, Cameron Currie; UW-Madison*	Protecting the Farm: Widespread Biomineral Armor in the Fungus-Farming Ants
9:00 am	*Pamela Hart, Melissa Rincon-Sandoval, Ricardo Betancur-R, Jonathan Armbruster, Matthew Niemiller, Dahiana Arcila; The University of Alabama, University of Oklahoma, Auburn University, Scripps Institution of Oceanography*	Vertebrate evolution in the face of extreme conditions: Cavefishes (Percopsiformes)
9:15 am	*Michelle Gilbert, Alexandra Kwiatkowski, Yara Haridy, Sofia Piggott, Brett Aiello, Craig Albertson, Thomas Stewart; Pennsylvania State University, University of Chicago, Brown University, Seton Hill University*	Feeding affects fins: plasticity in the pectoral fin skeleton of Satanoperca daemon reflects foraging
9:30 am	*Samuel Gurr, Shannon Meseck, Meghana Parikh, Lisa Guy, Genevieve Bernatchez, Gabriella Panayotakis, Chen Yin Walker, Chris Pearce, Gary Wikfors, Dianna Padilla, Katherine McFarland; National Research Council, NOAA, National Research Council, Fisheries and Oceans Canada, Stony Brook University*	Developmental mismatch of pCO_2 levels in a second generation of northern bay scallops

8:30 AM – 10:00 AM **Room 611**

Jaws

Chair: Molly Dobrow

8:30 am	*Annie Wang, Peishu Li, Shelby Nathan, Hannes Prescher, Callum Ross, Russell Reid; University of Chicago*	Impact of mandibular distraction on hyoid position in humans with Pierre Robin Sequence
8:45 am	*Savannah Olroyd, Suresh Singh, Adam Huttenlocker; Yale University*	A 3D geometric morphometrics approach to identifying regionality in the tooth rows of squamates
9:00 am	*Isaac Magallanes, Peishu Li, Zhe-Xi Luo; University of Chicago*	Tooth root shape/orientation and its relationship to bite force in the jaws of two therian mammals
9:15 am	*Molly Dobrow, Maria Laura Habegger, Mason Dean, Stephen Stagon; University of North Florida, City University of Hong Kong*	The mechanics of spoke regions in tesserae and their role in energy absorption in shark cartilage.
9:30 am	*Jack Stack, Michelle Stocker; Virginia Tech*	A 300-million-year-old ray-finned fish evolved maxillary mobility independently of extant clades
9:45 am	*Matt Friedman, Sam Giles, Rodrigo Tinoco-Figueroa; University of Michigan, University of Birmingham*	Feeding innovations during the first actinopterygian adaptive radiation

10:00 AM – 12:00 PM **Room 612**

Post-embryonic development and regeneration

Chair: Nagayasu Nakanishi

10:00 am	*Md Shazid Hasan, Jorge Audino, Kyle McElroy, Jeanne Serb; Iowa State University, University of São Paulo*	Opsins are differentially expressed during larval development in pteriomorphian bivalves
10:15 am	*Isabela Hernandez-Rodriguez, Carlos Rodríguez, Martha Munoz, Marcell Pacheco; Yale University, Universidad Autónoma de Santo Domingo*	Characterization of the nervous system in larvae of Osteopilus dominicensis (Anura: Hylidae)
10:30 am	*James Nowotny, Alexandra Bely; University of Maryland*	Wound innervation coincides with cell proliferation and dedifferentiation in annelid regeneration
10:45 am	*Joseph Mack, Alexandra Bely; University of Maryland College Park*	Aerobic and anaerobic metabolism after injury in regenerative and non-regenerative annelids
11:00 am	*Catriona Breen, Mansi Srivastava; Harvard University*	A spreading, multi-tissue wound signal initiates regeneration in the acoel Hofstenia miamia
11:15 am	*Katy Loubet-Senear, Mansi Srivastava; Harvard University*	Cellular contexts and regulatory logic underlying shared features of development and regeneration
11:30 am	*Dorothy Mitchell, Allison Edgar, Joseph Ryan, Mark Martindale; University of Florida, The Whitney Laboratory for Marine Bioscience*	Dissecting the wound response from the onset of regeneration in the ctenophore Mnemiopsis leidyi
11:45 am	*Nagayasu Nakanishi; University of Arkansas*	On cell type diversity, connectivity, and developmental origin of cnidarian mechanosensory neurons

10:15 AM – 12:00 PM **Room 609**

Wings, limbs, and fins: Part 1

Chair: Mikayla Struble

10:15 am	*Richard Blob, Kelly Diamond, Elpidio Buelecope-Sepa, Joshua Cullen, Takashi Maie, Heiko Schoenfuss; Clemson University, Rhodes College, Bioko Biodiversity Protection Program (BBPP), Florida State University, St. Olaf College, St. Cloud State University*	Grazing kinematics and the evolution of waterfall climbing in gobiid fishes
10:30 am	*Jacquelyn Galvez, Paolo Domenici; University of California Berkeley*	Wall obstacles impact escape response kinematics in Pacific staghorn sculpin (Leptocottus armatus)

10:45 am	*Mikayla Struble, Cameron Hernandez, Sydney Vickers, Cassandra Donatelli, Emily Standen, Baxi Zhong, Alice Gibb; Northern Arizona University, Chapman University, University of Ottawa, Georgia Tech*	Sediment grain-size influences burial mechanics in Xiphister mucosus, a Pacific Northwest intertidal fish
11:00 am	*Nithil Nagappan, Ishant Tiwari, Jacob Harrison, Saad Bhamla; Georgia Institute of Technology*	Interfacial Run-and-Tumble Dynamics of the Water-Strider Rhagovelia
11:15 am	*Victor Munteanu, Richard Blob, Savannah Swisher, Trevor Brewington; Clemson University*	Lizards in the Trees: Substrate Integrity and Behavioral Responses in Arboreal Lizards
11:30 am	*Brandon Reder, Nicolai Konow, Andrew Biewener; University of Massachusetts Lowell, Harvard University*	Elastic swing initiation during locomotion
11:45 am	*Liyuan Zhang, Teagan Mathur, Aimy Wissa, Marianne Alleyne; University of Illinois Urbana-Champaign, Princeton University*	Bugs and Robots: Investigate the External Reaction from Clicking Mechanics Using Dynamic Simulation

10:15 AM – 12:00 PM **Rooms 613-614**

Complementary to S6: The scale of resilience: mechanisms of recovery across biological systems

Chair: Corinne Richards-Zawacki

10:15 am	*Cheryl Briggs, Michel Ohmer, Emily Le-Sage, Mark Wilber, Corinne Richards-Zawacki, Joe DeMarchi, Louise Rollins-Smith, Jamie Voyles; University of California Santa Barbara, University of Mississippi, Skidmore College, University of Tennessee, University of Pittsburgh, Vanderbilt University Medical Center, University of Nevada Reno*	Resilience of amphibian systems in the face of disease
10:30 am	*Corinne Richards-Zawacki, Allie Byrne, Caren Goldberg, Justin Kitzes, Sam Lapp, Jamie Voyles; University of Pittsburgh, University of California Berkeley, Washington State University, Pullman, University of Nevada Reno*	Striking gold: successes in rare species detection using eDNA, acoustics, and visual surveys
10:45 am	*Jakub Zegar, Carolina Lambertini, Michael Logan, Jamie Voyles, Michel Ohmer; University of Mississippi, University of Nevada Reno*	Disease and temperature synergistically impact the thermal biology of a critically endangered frog
11:00 am	*Joe DeMarchi, Mark Wilber, Cheryl Briggs, Roland Knapp, Thomas Smith; University of Tennessee, University of California Santa Barbara*	Demographic resilience and host evolution shape diverse recovery paths under different disturbances
11:15 am	*Michel Ohmer, Emily Le-Sage, Mark Wilber, Allie Byrne, Brandon LaBumbard, Karie Altman, Nina McDonnell, Veronica Saenz, Ian Latella, Laura Brannelly, Cheryl Briggs, Jamie Voyles, Louise Rollins-Smith, Douglas Woodhams, Corinne Richards-Zawacki; University of Mississippi, Skidmore College, University of Tennessee, University of California Berkeley, St. Bonaventure University, The Pennsylvania State University, The University of Melbourne, University of California Santa Barbara, University of Nevada Reno, Vanderbilt University Medical Center, University of Pittsburgh, University of Massachusetts Boston*	Environmental and community drivers of resilience to an amphibian pathogen in North America
11:30 am	*Rachel Verdi, Brandon Hoenig, Myah Madril, Sydney Dawson, Corinne Richards-Zawacki; University of Pittsburgh*	Using eDNA Metabarcoding to Track Changes in Tropical and Temperate Amphibian Communities
11:45 am	*Thomas Tao, Melissa Prusinski, Conor Taff, Corey Freeman-Gallant; Skidmore College, Cornell University*	Migratory birds as an understudied reservoir of Babesia microti

10:30 AM – 11:45 AM **Room 618**

Diversification, radiation, and speciation

Chair: Ellen Strong

10:30 am	*Elizabeth Miller, Rose Faucher, Pamela Hart, Melissa Rincon-Sandoval, Aintzane Santaquiteria, Ricardo Betancur-R, Luke Tornabene, Kory Evans, Dahiana Arcila; University of California Irvine, Rice University, The University of Alabama, University of Oklahoma, University of Washington, Scripps Institution of Oceanography*	Phylogenomics and micro-CT scanning reveal continuous innovation in a deep-sea radiation
10:45 am	*Sonali Garg, James Hanken, S. D. Biju; Harvard University, University of Delhi*	Patterns of diversification and distribution in Raorchestes frogs on the Indian subcontinent
11:00 am	*Ellen Strong, Tricia Goulding; Smithsonian Institution, National Museum of Natural History*	The amphi-Pacific disjunction in a mangrove gastropod clade explained
11:15 am	*Candace Grimes, Kyle David, Damien Waits, Andrew Mahon, Kenneth Halanych; University of North Carolina Wilmington, Vanderbilt University, Central Michigan University*	Rewrite the star's... Genome: Population structure and adaptations to life in the Southern Ocean
11:30 am	*Michael Connelly, Victoria Glynn, Anabell Cornejo, Matthieu Leray, Sean Connolly, Andrea Quattrini; NHGRI/NIH, McGill University, Smithsonian Tropical Research Institute, Smithsonian Institution National Museum of Natural History*	Genome skimming resolves east Pacific Pocillopora species diversity and population differentiation

10:30 AM – 11:45 AM **Room 608**

Division of Ecoimmunology & Disease Ecology Best Student Presentation

Chair: James Adelman

10:30 am	*Rachael Kramp, Faith Rovenolt, Jason Walsman, Jessica Stephenson, Catherine Wynne, Devin Henry; University of Pittsburgh*	The microbiome: an underappreciated factor in parasite transmission and heterogenity
10:45 am	*Maria Valadez-Ingersoll, Hanny Rivera, JK Da-Anoy, Thomas Gilmore, Sarah Davies; Boston University*	A multiomic approach to understand tradeoffs between symbiosis and immunity in a reef-building coral
11:00 am	*Eaqan Chaudhry, Kelley Stewart, Leo Fletcher, Carolyn Miller, Brian Dick, Michael Wisdom, Cynthia Downs; SUNY College of Environmental Science and Forestry, University of Nevada Reno, USDA Forest Service*	Density-dependent impacts on physiology of North American elk (Cervus elaphus)
11:15 am	*Ria Mirchandani, Kaitlyn Linney, Louise Rollins-Smith; Vanderbilt University*	Lymphocyte Inhibition by Cell Wall Components of Batrachochytrium dendrobatidis (Bd)
11:30 am	*David Clark, Jason Walsman, Faith Rovenolt, Izabelle Weiler, Vineet Nayak, Paige Person, Joshua Tamsen, Jessica Stephenson; University of Pittsburgh*	Experimental epidemics reveal that host sex and sociality impact transmission within host groups

10:30 AM – 12:00 PM **Room 602**

Social behavior, Part 1

Chairs: Michael Reichert, Grace Melone

10:30 am	*Brooke Fitzwater, John Bonvillain, Elizabeth Cameron, Raegin Hovin, Faith Kirby, Anna Catherine Meyers, Johanna Nelson, Jenna Stremmel, Ryan Earley; University of Alabama, St. Mary's College of Maryland*	Effects of sex-associated visual and chemical cues on social behavior in a mangrove fish
10:45 am	*Zachary Emberts, Ummat Somjee; Oklahoma State University, University of Texas*	The metabolic cost of fighting-related injuries
11:00 am	*Molly Wingard, Lindsey Wells, Andrew Fuller, Giovanna Lopez, Mark Garcia*; Southwestern Oklahoma State University*	Unseen Opportunity: Do Hermaphrodite Cues Influence Male-Male Aggression in Mangrove Rivulus Fish

11:15 am	*Bryce Barbee, Eleanor Caves; University of California Santa Barbara*	Exploring how individual behavioral variation affects service quality in marine cleaning mutualisms
11:30 am	*Grace Melone, Acacia Tang, James Crall; University of Wisconsin Madison*	Gotta Fan 'Em All: Using computer vision based tracking to understand the impacts of heatwaves
11:45 am	*Marco González-Santoro, Corinne Richards-Zawacki, Yusan Yang; University of Pittsburgh, University of South Florida*	The role of learning in speciation by sexual selection
12:00 pm	*Natalia Karadimitriou, Lili Vizer, Peter Buston, Kian Thompson; Boston University*	The Processes Governing the Joining and Leaving of Social Groups in Clownfish, Amphiprion percula.

10:30 AM – 12:00 PM **Room 603**

Neuroanatomy, Part 1

Chair: R Keating Godfrey

10:30 am	*Isabel Aksamit, Felipe Dorigão-Guimarães, Wulfila Gronenberg, R Keating Godfrey*; University of Arizona, São Paulo State University (UNESP), University of Florida*	Brain size scaling during development in the white-lined sphinx moth (Hyles lineata)
10:45 am	*Karmi Oxman; Drexel University*	Parental care and brain investment in a monogamous arthropod
11:00 am	*Diana Neacsu, Robyn Crook; San Francisco State University*	A 3-Dimensional Reconstruction of the Arm Nerve Cord of the Octopus, Octopus bocki
11:15 am	*Russell Wyeth, Yulia Reunov, Victoria Tweedie-Pitre; St. Francis Xavier University*	HCR in situ hybridization reveals new complexity and detail in the nervous system of Lymnaea
11:30 am	*James Hanken, Doug Boyer, Matt Gage, Brendan Haley, Jocelyn Triplett, Stephen Turney, Julie Winchester, Jon Woodward; Harvard University, Duke University*	Northcutt collection online: a novel resource for comparative neuroscience and developmental biology
11:45 am	*Ana Lyons, Boyeong An, Lilia Dow-Yuzawa, Richik Pal, Saul Kato; University of California San Francisco*	Establishing tardigrades as an emerging model organism for systems neuroscience

10:30 AM – 12:00 PM **Room 607**

Population and landscape genomics

Chair: Jessica Zehnpfennig

10:30 am	*Jessica Zehnpfennig, Candace Grimes, Kenneth Halanych, Andrew Mahon; Central Michigan University, University of North Carolina Wilmington*	Population Genetics of Nymphon australe in the Southern Ocean
10:45 am	*Austin Hannah, Jason Mays, Crystal Ruble, Nathan Whelan*; US Fish and Wildlife Service, Conservation Fishes, Inc., Auburn University*	Range-wide landscape genomics of the federally threatened spotfin chub (Erimonax monachus)
11:00 am	*Mia Adcock, Nathan Whelan, Samantha Donohoo, Kendall Moles, Nicole Garrison; Auburn University, US Fish and Wildlife Service, Arkansas Game & Fish Commission, West Liberty University*	Population Genomics of the Endangered Freshwater Mussel, Arcidens wheeleri, in the Little River, AR
11:15 am	*Meredyth Duncan, C. Sarah Cohen, Benson Chow, Kevin Myron, Jaden Stone; Estuary and Ocean Science Center, San Francisco State University*	Characterizing invasive Watersipora (Bryozoa) populations in the central California rocky intertidal
11:30 am	*Edu Guerra, Sharlene Santana; University of Washington*	Neither wing morphology nor body mass predicts degree of gene flow in bats
11:45 am	*Jack Hruska, Joseph Manthey, Garth Spellman, John Klicka; Texas Tech University*	Recombination rate and gene density are correlated with clines of diversity and differentiation

10:30 AM – 12:00 PM **Room 604**

Terrestrial adaptations and ecomorphology

Chairs: Lucas Weaver, Jonathan Nations

10:30 am	*Jonathan Nations, Anna Wisniewski, Graham Slater; University of Chicago*	Beyond categories: predicting multivariate diet from phenotypic data in extant and extinct taxa
10:45 am	*Luke Weaver, Jonathan Nations, David Grossnickle; Kent State University, University of Chicago, Oregon Institute of Technology*	Predictors of arboreality from appendicular skeletons illuminate locomotor trends in early mammals
11:00 am	*Alexa Wimberly, Jonathan Nations, Graham Slater; University of Chicago*	Using Bayesian multi-level modeling to predict habitat importance in Ruminantia
11:15 am	*Sarah Saxton Strassberg, Kenneth Angielczyk; University of Chicago, Field Museum of Natural History*	Inference of fossoriality and digging mode in fossil rodents using extant digging rodents as a guide
11:30 am	*Donavan Jackson, Sharlene Santana; University of Washington*	Geographic Variation Patterns in Cranial Shape and Pelage Color of the least chipmunk (T. minimus)
11:45 am	*Kathleen Lois Foster, Alessandro Maria Selvitella; Ball State University, Purdue University Fort Wayne*	The ecomorphology of primates is detected in the long bones
12:00 pm	*Princeton Vaughn, Claire Middleton, Alex Heine, Ishani Sinha, Andrea Rummel, Shane Campbell-Staton; Princeton University, Rice University*	Examining the basis of performance in high wind conditions in a lizard, Anolis sagrei

10:30 AM – 12:00 PM **Room 611**

Skulls

Chair: Jeanette Wyneken

10:30 am	*Jeanette Wyneken, Michael Salmon, Tommy Cutt, Alexander Gaos, Don McLeish; Florida Atlantic University, Maui Ocean Center Marine Institute, Marine Turtle Biology & Assessment Program, NOAA Pacific Islands Fisheries Science Center*	Foraging Methods and Head Shape in Two Sympatric Sea Turtles
10:45 am	*Eloise Hunt, Ryan Felice, Joseph Tobias, Daniel Field, Stephan Lautenschlager, Anjali Goswami; Natural History Museum London, UCL, Imperial College London, University of Cambridge, University of Birmingham*	Ecological and Life History Drivers of Galloanserae Skull Evolution
11:15 am	*Amani Webber-Schultz, Brooke Flammang, Lauren Simonitis, Kayla Hall; New Jersey Institute of Technology, University of Washington's Friday Harbor Labs, Florida Atlantic University, University of Washington*	Picking the Nose: investigating dermal denticle orientation at the nares of sharks
11:30 am	*Kelsi Rutledge, John Dabiri; Caltech*	Complex flow in stingray nostril geometry may passively enhance odor capture
11:45 am	*Danielle Adams, Brad Boyce, Daniel Hooks, Benjamin Klitsner, Kevin Garber, Sam Price, Richard Blob; Clemson University, CINT, Sandia National Laboratories, Los Alamos National Laboratory*	Stiffness and density of the skull and mandible across cetaceans and artiodactyls
12:00 pm	*Chris Law, Leslea Hlusko, Jack Tseng; University of Texas, Centro Nacional de Investigación sobre la Evolución Humana, University of California Berkeley*	Uncovering the mosaic evolution of carnivoran skeletal systems

10:30 AM – 12:00 PM **Rooms 615-616**

Motion and vision

Chair: Ruchao Qian

10:30 am	*Ruchao Qian, Jamie Theobald; Florida International University*	Neural Effects of Motion Parallax in the Tobacco Hornworm Hawk Moth
10:45 am	*Elina Barredo, Jamie Theobald; Florida International University*	Drosophila flight responses to landscape motion speed during object tracking

11:00 am	*Yash Sondhi, Akito Kawahara, Huai-Ti Lin, Samuel Fabian, Pablo Allen; Florida Museum of Natural History, University of Florida, Imperial College London, Council on International Educational Exchange*	Diversity of 3D flight patterns of insects entrapped by artificial light
11:15 am	*Agnish Prusty, Payel Chatterjee, Sanjay Sane; National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bangalore, National Center for Biological Sciences*	Sensorimotor apparatus underlying head movements in hawkmoths
11:30 am	*Pavan Kaushik, August Paula, Anna Stöckl, Kajal Kumari, Liang Li, Ruiheng Wu, Iain Couzin; Max Planck Institute of Animal Behaviour, Konstanz University*	MATREX VR: Bridging Land, Water, and Air through Virtual Reality MATREX
11:45 am	*Mustafa Mert Ankarali, Osman Kaan Karagoz, Aysegul Kilic, Emin Yusuf Aydin, Ismail Uyanik*; Middle East Technical University, Hacettepe University*	Exploring Motion-Based Active Sensing in Relation to Predictive State-Estimation Uncertainty

10:30 AM – 12:00 PM **Room 606**

Aquatic neurobiology, Part 2

Chair: Billie Goolsby

10:30 am	*Julie Butler, Lauren O'Connell; Stanford University*	Dopamine neurons govern chemosensory-gated tadpole begging behaviors
10:45 am	*Marie-Therese Fischer, Camilo Rodriguez-Lopez, Julie Butler, Lauren O'Connell; Stanford University*	Nutritional tuning of tadpole behavior
11:00 am	*Billie Goolsby, Tony Chen, Ashlyn Callan, Loranzie Rogers, Julie Butler, Mark Cutkosky, Lauren O'Connell; Stanford University, Harvard University*	Hungry Hungry Tadpoles: Begging influences Behavioral and Neural Response in Poison Frog Parents
11:15 am	*Cheng-Yu Li, Jessica Bowers, Theresa Alexander, Scott Juntti; University of Maryland*	Olfaction controls detection of reproductive odors and parenting avoidance in African cichlids
11:30 am	*Orhun Koc, Sumeyye Anilmak, Azra Nur Sert, Ismail Uyanik; Hacettepe University*	A Novel Experimental Assay To Study Multisensory Integration for Zebrafish During Rheotaxis
11:45 am	*Luis Hernandez-Nunez, Joana Avrami, Florian Engert; Harvard University*	Functional development of sensory and motor circuits for cardiac control in zebrafish

Friday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:15 PM **Rooms 613-614**

Morphogenesis and organogenesis

Chair: Ryan Range

1:30 pm	*Sydney Popsuj, Alberto Stolfi; Georgia Institute of Technology*	Wnt-Dependent and -Independent Repertoire of Dkk3 in Tunicate Neurodevelopment and Neurodegeneration
1:45 pm	*Keren Maze, Bradley Davidson, Hannah Gruner; Swarthmore College*	*Adrenergic signaling in Ciona robusta is required for maintenance of a cardiac stem cell population*
2:00 pm	*Richard Garcia, Zixi Gao, Hannah Gruner, Bradley Davidson; Swarthmore College*	Wnt signaling regulates stem cell proliferation during Ciona Robusta heart growth
2:15 pm	*Zixi Gao, Richard Garcia, Hannah Gruner, Bradley Davidson; Swarthmore College*	Wnt signaling negatively regulates cardiac progenitor division during Ciona Robusta heart growth
2:30 pm	*Jennifer Fenner, Ryan Range*; Auburn University*	TGF-Beta and Wnt interactions coordinate anterior-posterior and dorsal-ventral axis specification

2:45 pm	*Tal Gordon, Tal Zaquin, Noam Hendin, Omri Wurtzel, Lucia Manni, Ayelet Voskoboynik, Noa Shenkar; Stanford University, Haifa University, Tel Aviv University, University of Padova*	Insights into the cellular and molecular mechanisms of a highly regenerative tunicate
3:00 pm	*Emily McParland, Noah Gurley, T Butcher, Corbin Jensen, Mark Peifer; Brown University, Herbert Wertheim UF Scripps Institute for Biomedical Innovation and Technology, Columbia University, University of North Carolina Chapel Hill*	Defining the mechanism by which Rap1 regulates Canoe and cell-junction cytoskeletal connections

1:30 PM – 3:15 PM **Room 611**

Hormones, behavior, and reproduction

Chairs: Morgan Benowitz-Fredericks, Kathleen Hunt

1:30 pm	*Morgan Benowitz-Fredericks, Sierra Pete, Stephanie Walsh, Alexis Will, Shannon Whelan, Alexander Kitaysky; Bucknell University, Institute of Arctic Biology, University of Alaska Fairbanks, Institute of Sea Bird Research & Conservation*	CANCELLED – Rapid behavioral effects of endogenous & exogenous corticosterone vary by sex in siblicidal chicks
1:45 pm	*Samuel Lane, Holland Galante, Lindsey Chiesl, Timothy Greives, Britt Heidinger; North Dakota State University, Tarleton State University*	Do testosterone and parental behavior relationships vary across latitude in house sparrows?
2:00 pm	*Anna James, Lynn Siefferman, Kendall Terry, Leigh Bailey, Alexandra Bentz; University of Oklahoma*	Analyzing relationships between the social environment and maternal hormone allocation
2:15 pm	*Camilo Alfonso, Amalia Moore; Virginia Tech*	Do social interactions influence testosterone levels in the red-capped manakin?
2:30 pm	*Jen Jelincic, Danielle Dillon, C. Loren Buck, Matthew Rogers, Daniela Mello, Alyson Fleming, Kathleen Hunt; George Mason University, New England Aquarium, Northern Arizona University, NOAA Alaska Fisheries Science Center, University of North Carolina Wilmington*	Bowhead whale reproductive cycles from the 1940's-1960's inferred from hormones and stable isotopes
2:45 pm	*Kathleen Hunt, Allie Case, Piper Thacher, Nadia Gray, Trent Grasso, Janine Brown, Matthew Savoca, John Ososky, Michael McGowen, Malia Smith, Alyson Fleming; George Mason University, Smithsonian Institution, Smithsonian Conservation Biology Institute, Hopkins Marine Station, Stanford University, National Museum of Natural History, University of North Carolina Wilmington*	What normal used to be: Reproductive cycles of WWII-era blue and fin whales inferred from baleen
3:00 pm	*daniella chusyd, Claire Goodfellow, Janine Brown, Steve Paris, Nicole Boisseau, Stephanie Dickinson, Tessa Steiniche, Colin Chapman, Richard Mutegeki, Patrick Omega, Nelson Ting, David Allison, Michael Wasserman; Indiana University, Oregon University, Center for Species Survival, Smithsonian Conservation Biology Institute, Vancouver Island University, Makerere University*	No discernible difference in thyroid concentrations between African savanna and hybrid elephants

1:30 PM – 3:15 PM **Room 608**

Prey-predator interactions

Chairs: William M. Ballentine, Marina F. Vollin

1:30 pm	*Isabelle Neylan, Emily Longman, Eric Sanford, Jay Stachowicz, Andrew Sih; Louisiana State University, University of California Davis, Bodega Marine Laboratory*	Long-term anti-predator learning and memory across populations and sexes of an intertidal snail
1:45 pm	*Madison Wagner, Paul Moore; Bowling Green State University*	The importance of predatory chemical cues in shaping snail growth and shell strength
2:00 pm	*Kassidy Ye, Kate Otter, Laurenzcia Cairo, Paul Katz; University of Massachusetts Amherst*	Nudibranch behavioral responses to dangerous prey are location-dependent, not state-dependent

2:15 pm	*Jesse Barber, Akito Kawahara; Boise State University, University of Florida*	Anti-bat ultrasound production in moths is globally and phylogenetically widespread
2:30 pm	*William Ballentine, Kelly Dorgan, Elizabeth Murphy; Swarthmore College, Dauphin Island Sea Lab, Stockholm University*	Nemertean predators evoke behavioral responses in interstitial annelids
2:45 pm	*Alix Coonfield, Todd Blackledge; University of Akron*	Three-dimensional web complexity alters prey detection behaviors in common house spider
3:00 pm	*Marina Vollin, Amber Wright, Tim Higham; University of California Riverside, University of Hawaii at Manoa*	Losing tails and preferred space: autotomy alters perch height in male day geckos, but not females

1:30 PM – 3:15 PM **Room 603**

Community ecology in a changing world

Chair: Brandon Hoenig

1:30 pm	*Katelynn Jankowiak, Zach Stahlschmidt; University of the Pacific*	Artificial light at night creates a network of habitat patches for an urban arthropod community
1:45 pm	*Margaret Menso, Paul Moore, Christopher Ward; Bowling Green State University*	The interactive effects of nitrate and road salt on benthic algal assemblages in artificial streams
2:00 pm	*Pamela Brannock, Gabriela Canas, Nikki Dix, Zoe O'Malley-Pearson, Tiffany Rojas, Samantha Chapman; Rollins College, Guana Tolomato Matanzas National Estuarine Reserve and University of North Florida, University of Buffalo, Villanova University*	Microbial changes in a northeast Florida salt marsh-mangrove forest ecotone
2:15 pm	*Gavia Lertzman-Lepofsky, Luke Frishkoff, D Mahler; University of Toronto, University of Texas Arlington*	Deforestation and elevation jointly determine morphospace occupation in anole communities
2:30 pm	*Christine Mantegna, Steven Roberts, Camille Gaynus; University of Washington, Black In Marine Science*	Approaches for Minimally Invasive Long-Term Ecological Monitoring
2:45 pm	*Miranda Mudge, Emma Timmins-Schiffman, Mike Riffle, Gabriella Chebli, Julia Kubanek, William Noble, Brook Nunn; University of Washington, Georgia Institute of Technology*	Predicting harmful algal blooms through high-resolution metaproteomics of a bacterial microbiome
3:00 pm	*Brandon Hoenig, Jakub Zegar, Michel Ohmer, Macie Chess, Brady Porter, Myah Madril, Corinne Richards-Zawacki; University of Pittsburgh, University of Mississippi, Carnegie Mellon University, Duquesne University*	More than gene editing: Using CRISPR-Cas12a for rapid, field-based, molecular organism detection.

1:30 PM – 3:30 PM **Rooms 615-616**

Biomechanics of creepy crawlies

Chair: Angela Alicea-Serrano

1:30 pm	*Teagan Mathur, liyuan zhang, Josh Gibson, Ophelia Bolmin, Jake Socha, Marianne Alleyne, Sara Wilmsen, Kamel Fezzaa, Aimy Wissa; Princeton University, University of Illinois Urbana-Champaign, Beckman Institute, Center for Integrated Nanotechnologies, Sandia National Laboratories, Virginia Tech, Argonne National Laboratory*	Go with the flow: Developing a scaffold to examine the energy flow within click beetles
1:45 pm	*Kyung Jun Paul Lee; Princeton University*	Aerodynamics and Transition Dynamics of the Hind Wings of Schistocerca americana Grasshopper
2:00 pm	*Myriam Uhrhan, Richard Bomphrey, Huai-Ti Lin; Imperial College London, Royal Veterinary College*	Putative roles for sensory hairs on dragonfly wings
2:15 pm	*Sunny Kumar, Victor Ortega-Jimenez, Ishant Tiwari, Adler Dillman, Saad Bhamla; Georgia Institute of Technology, University of Maine*	Buckling instability in jumping nematode and inspired soft model
2:30 pm	*Artis Brasovs, Kevin Nguyen, Griffin Donley, Kostya Kornev; Clemson University, Wichita State Universsity*	Cockroaches bend antennae by pumping blood

2:45 pm	*Angela Alicea-Serrano, Todd Blackledge, Ali Dhinojwala, Jessica Garb; University of Akron; University of Massachusetts Lowell*	Morphology and transcriptomics illuminate silk adhesion to water by the spider Wendilgarda clara
3:00 pm	*Candido Diaz, John Long, John Roff; Vassar College*	Spin and Slap: High-Speed Prey Capture of the Bolas spider Cladomelea akermani

1:30 PM – 3:30 PM **Room 609**

Adjusting to a changing world

Chair: Christopher Murray

1:30 pm	*Savannah Weaver, Evan Odberg, Tess McIntyre, Taylor van-Rossum, Eric Riddell, Emily Taylor; University of North Carolina Chapel Hill, California Polytechnic State University San Luis Obispo*	Acclimation of Cutaneous Evaporative Water Loss to Humidity
1:45 pm	*Austin Hoffman, Zach Stahlschmidt; University of the Pacific*	Plasticity in response to temperature magnitude and fluctuation—from coloration to thermal tolerance
2:00 pm	*Alison Hall, Manali Rege-Colt, Melissa Pespeni; University of Vermont*	Genetic underpinnings of developmental plasticity and acute thermal responses in a coastal copepod
2:15 pm	*Christopher Murray, Matt Long, Neel Aluru; Woods Hole Oceanographic Institution*	Multigenerational plasticity to hypoxia and acidification in Atlantic silversides (Menidia menidia)
2:30 pm	*Jimmy deMayo, Jasmine Vidrio, Greg Ragland; University of Colorado Denver*	Adaptive value of plasticity from interspecific variation in transcriptomes during thermal stress
2:45 pm	*Jessica Reemeyer, Lauren Chapman; McGill University*	Seasonal variation in thermal tolerance and hypoxia tolerance of a threatened minnow and a congener
3:00 pm	*Michael Logan, Karla Alujevic, Leah Bakewell, Albert Chung, John David Curlis, Samantha Fontaine, Daniel Nicholson, Renata Pirani, Adam Rosso, Claire Williams, Kelly Wuthrich, W. Owen McMillan, Christian Cox; University of Nevada Reno, Florida International University, Princeton University, University of Michigan, University of Texas Arlington, Smithsonian Tropical Research Institute*	Rapid change in a rainforest anole: results from the first six years of a translocation experiment
3:15 pm	*Michelle Monette; Western Connecticut State University*	Variable warm temperature elevates thermal tolerance but impairs freshwater tolerance in killifish

1:30 PM – 3:30 PM **Room 604**

Thermal physiology, Part 2

Chair: Heather Liwanag

1:30 pm	*Courtney Grula, Arun Rajamohan, Joseph Rinehart; United States Department of Agriculture*	Cryopreservation of Anopheles mosquitos
1:45 pm	*Benjamin Haussmann, Tiffany Hegdahl, Travis Robbins; University of Nebraska*	Thermal adaptions in embryonic metabolic rates and developmental times in a Sceloporus lizard
2:00 pm	*Colin Goodman, Stephen Deban; University of South Florida*	Cold recruits: impacts of temperature on motor control during lizard locomotion
2:15 pm	*Ellen Keaveny, Travis Rusch, Eleanor Holloway, Michael Dillon; University of Wyoming, USDA-ARS*	Thermal preference of heterothermic bumble bees across species and life stage
2:30 pm	*Kate Riordan, Nicole Thometz, Francesca Batac, Heather Liwanag; California Polytechnic State University, University of San Francisco, California Department of Fish & Wildlife*	Effects of ontogeny and oiling on the thermal function of southern sea otter fur
2:45 pm	*Kristen Crandell, Bret Tobalske, Donald Powers; Bangor University, University of Montana, George Fox University*	Different ways for the same result: heat dissipation areas role in maintaining bird body temperature
3:00 pm	*Wonil Choi, Rachel Neto, Haruka Wada; Auburn University*	Hypoxia-Induced Edema in Avian Embryos

3:15 pm	*Eric Brown, Claudia Saldaña-DeCamillis, Danielle Levesque; University of Maine, Universidad de Puerto Rico Río Piedras*	A Global Comparison of Sciurid Thermoregulatory Phenotypes

1:30 PM – 3:30 PM **Room 606**

Animal cognition

Chairs: Mahaut Sorlin, Christine Lattin

1:30 pm	*Katrina Moore, Anahita Sadrossadat, Oceanus Zhang, Craig McGowan, Monica Daley; University of California Irvine, Keck School of Medicine of USC*	Sex, size, & body condition influence exploratory behavior in wild kangaroo rats (Dipodomys deserti)
1:45 pm	*Melanie Kimball, Danna Masri, Eve Gautreaux, Keegan Stansberry, Tosha Kelly, Christine Lattin; Louisiana State University*	Conspecific alarm calls prevent the attenuation of neophobia behavior in wild-caught house sparrows
2:00 pm	*Christine Lattin, Kevin Krajcir, Tosha Kelly, Melanie Kimball, Ella Cochran, Keegan Stansberry, Blake Dusang, Ayushi Patel, Danna Masri, Sara Lipshutz; Louisiana State University, Duke University*	A possible role for neophobia in invasion success: A tale of two sparrows
2:15 pm	*Danae Diaz, Steve Nowicki, Sonke Johnsen; Duke University*	Is feather color a signal of cognitive ability in Eastern bluebirds?
2:30 pm	*Lena Kaufmann, Lea Urban, Rolf Becker, Andreas Ochs, Michael Brecht; Humboldt University of Berlin*	Asian elephant water hose tool use
2:45 pm	*Chris Templeton, Michelle Winfield, Kyla Sandoval, May Murakami-Smith, Reece Rhinehart, Carrie Nunnenkamp; Western Washington University, Pacific University*	Do traffic noise regimes affect noise-induced cognitive impairment in zebra finches?
3:00 pm	*Morgan Clark; Michigan State University*	Painted turtle personality: C. picta exhibit behavioral syndromes across contexts
3:15 pm	*Mahaut Sorlin, Simon Lailvaux; University of New Orleans*	Cognitive abilities of both a native and an invasive species of Anolis lizard

1:30 PM – 3:30 PM **Room 617**

Spines and punctures

Chairs: Philip Anderson, Frederik Puffel

1:30 pm	*Bingyang Zhang, Philip Anderson; University of Illinois Urbana-Champaign*	Form-function relationship in biological puncture: the effect of speed, sharpness, and curvature
1:45 pm	*Philip Anderson, Bingyang Zhang; University of Illinois Urbana-Champaign*	Adventures in experimental impact dynamics and puncture mechanics
2:00 pm	*Abby Weber, Philip Anderson; University of Illinois Urbana-Champaign*	Standardizing Stabbing: Quantifying Parasitoid Wasp Hosts' Resistance to Puncture
2:15 pm	*Katherine Karkosiak, Abby Weber, Todd Blackledge; University of Akron, University of Illinois Urbana-Champaign*	Puncture Resistance of Spider Egg Sacs
2:30 pm	*Jacob Sobol, Anthony McGinnis, Trinity Lozano, Cassandra Donatelli, Benjamin Perlman; California State University, Long Beach, Chapman University*	Watch your step!: Stingray Sting Prevention
2:45 pm	*Sean Ono, Benjamin Perlman, Kambria Galindo, Jacob Sobol, Anthony McGinnis, Trinity Lozano, Hanna Adamson, Samantha Widdoss, Grace Armendariz, Justin Yip, Angela Velazquez; California State University Long Beach*	Urobatis halleri Strikes Back!: 3D Tail Kinematics of the Round Stingray
3:00 pm	*Ryan Sesler, Lisa Whitenack*; Allegheny College*	The Effects of Wear on the Morphology and Puncture Force of Shark Teeth
3:15 pm	*Frederik Puffel, Olivia Walthaus, Victor Kang, David Labonte; Imperial College London*	Biomechanics of leaf fracture in herbivores: a scaling study on leaf-cutter ants

1:30 PM – 3:30 PM **Room 618**

Ecology and evolution of coloration

Chair: Andrew Stoehr

1:30 pm	*Cody Porter, Faye Romero, Dean Adams, Rauri Bowie, Eric Riddell; Iowa State University, University of North Carolina Chapel Hill*	Why are birds dark in cold, wet places?
1:45 pm	*Charles Watson, Christian Cox; Texas A&M University - San Antonio, Florida International University*	The ecology and evolution of decoys, a paradoxical antipredator strategy
2:00 pm	*Rebecca Koch, Chidimma Okegbe, Chidambaram Ramanathan, Xinyu Zhu, Matthew Toomey, Yufeng Zhang, Geoffrey Hill*; University of Tulsa, University of Memphis, Chidambaram Ramanathan, Auburn University*	Effects of captivity on mitochondrial respiration and production of red pigments in the House Finch
2:15 pm	*Chloe Keck, Carol Boggs, Daniel Speiser; University of South Carolina, University of South Carolina, Rocky Mountain Biological Laboratory*	Larval dietary restriction makes butterfly wings less colorful
2:30 pm	*Andrew Stoehr, Katelyn Glaenzer, Devin VanWanzeele, Samantha Rumschlag; Butler University, US EPA*	Resource-based trade offs and phenotypic plasticity in butterfly melanism
2:45 pm	*Shana Border, Matthew Dugas; Illinois State University*	Nestling size and ornamentation interact to shape early development in house sparrow families
3:00 pm	*Roberto Márquez; University of Michigan*	The mechanisms of correlated evolution: Aposematism in Phyllobates poison-dart frogs
3:15 pm	*Kristina Fialko; University of Chicago*	Evaluating light environment and display as contributors to color variation in Phylloscopus warblers

1:30 PM – 3:30 PM **Room 602**

Multisensory systems

Chair: Jordanna Sprayberry

1:30 pm	*Katherine Jordan, Jordanna Sprayberry, Stacey Combes, Wilsaan Joiner; University of California Davis, Muhlenberg College*	Multisensory integration of noisy cues in bumblebees
1:45 pm	*Adam Blake, Jeff Riffell; University of Washington*	Interplay of visual and olfactory cues in mosquitos
2:00 pm	*Jordanna Sprayberry, Katelyn Graver; Muhlenberg College*	Integration of visual and olfactory cues by foraging bumble bees is state-dependent.
2:15 pm	*Nobel Zhou, Michael Rauscher, Jessica Fox; Case Western Reserve University*	Modulating gaze control by manipulating multisensory input in Drosophila melanogaster
2:30 pm	*Varun Sharma, Simon Sponberg; Georgia Tech*	Task-Relevant Multisensory Representation in a Population of Descending Neurons
2:45 pm	*Cheyenne Tait, Paul Katz; University of Massachusetts Amherst*	Structural complexity in central multimodal processing in a nudibranch mollusc brain
3:00 pm	*Madison Hales, Yu Yang, Aradhya Rajanala, Christopher Pierce, Mingyuan Zhu, Philip Benfey, Noah Cowan, Daniel Goldman; Georgia Institute of Technology, Johns Hopkins University, Duke University*	Control Theory Analysis of Rice Root Response to Frequency-dependent Environmental Stimuli
3:15 pm	*Juntao He, Baxi Zhong, Esteban Flores, Zhaochen Xu, Daniel Soto, Daniel Goldman; Georgia Tech*	Tactile feedback enhances multi-legged locomotion on rugose terrain

1:30 PM – 3:30 PM **Room 612**

Complementary to S4: Computational and physical models in research and teaching to explore form-function relationships

Chairs: Jennifer Lyn Houtz, Erin Sauer

1:30 pm	*Eric Tytell, Erik Anderson, Martha Sutter, Yordano Jimenez, Alexandros Anastasiadis, Auke Ijspeert, Karen Mulleners; Tufts University, Woods Hole Oceanographic Institute, Grove City College, Ecole Polytechnique Federale de Lausanne*	Comparing the role of body wavelength in anguilliform and carangiform swimming performance
2:00 pm	*Kathleen Ritterbush, Nicholas Hebdon, David Peterman, YunJi Choi, Mikelia Heberer, Garrett Butler, Jay Merril; University of Utah, Chapman University, Penn State University*	Swimming with fossils: student research of ammonite locomotion using computation, robotics, and play
2:15 pm	*Laura Miller, Matea Santiago, Nick Battista; University of Arizona, College of New Jersey*	Using Computational Fluid Dynamics to Understand Fluid-Organism Interactions
2:30 pm	*Nicholas Hebdon, Alexa Ortega, Alexander Orlove, Lindsay Waldrop; Chapman University*	Does cranial morphology variation among domestic dog breeds reveal a functional mirage?
2:45 pm	*Olivia Hawkins, Megan Vandenberg, Eric Tytell, Cassandra Donatelli; Tufts University, University of Washington, Chapman University*	The impact of caudal fin shape on the hydrodynamic performance of elongate foils
3:00 pm	*Reese Gartly, Senthurran Sivalinghem, Lachlan Fisher, Mouad Elganga, Benjamin Rubin, Andrew Mason, Natasha Mhatre*; University of Toronto at Scarborough, University of Western Ontario*	How spider bodies set the communication frequency
3:15 pm	*Yash Mistry, Swapnil Morankar, Nikhilesh Chawla, Oliver Weeger, Clint Penick, Dhruv Bhate; Arizona State University, Purdue University, Technische Universität Darmstadt, Auburn University*	Exploring Form-Function Relationships in Euplectella Aspergillum Using Computational Modelling

1:45 PM – 3:30 PM **Room 607**

Host-microbe interactions

Chairs: Erin Sauer, Jennifer Houtz

1:45 pm	*Moria Chambers, Owais Gilani, Edith Simpson, Ryan Walker, Sarah Townsend, Aidan Sullivan, Madden Tuffy, Zhengkai Zhu, Deeshani Patel, Sarah Lower; Bucknell University*	Firefly immunity: factors influencing survival during bacterial infection.
2:00 pm	*Robert Fitak, Taryn Gustafson, Jenna Palmisano; University of Central Florida*	What are pentastomes, really? And no, they don't have five mouths
2:15 pm	*Trey Sasser, Jesse Weber; University of Wisconsin - Madison*	Increased metabolic rate and mass loss associated with peritoneal fibrosis in threespine stickleback
2:30 pm	*Erin Sauer, Sakura Roberts, Johnathan Novotny, Weston Perrine, Madeline Sudnick, Sarah DuRant; University of Arkansas*	Paternal behavior and disease history interact to influence offspring immune phenotypes
2:45 pm	*Jennifer Houtz, Mercy Melo, Jean-Francois Therrien, Allison Cornell; Allegheny College, University of Massachusetts Amherst, Hawk Mountain Sanctuary, Penn State Altoona*	Disentangling relationships between diet and gut microbial diversity in kestrel nestlings
3:00 pm	*Morgan Swanson, Jacob Kerby; University of South Dakota*	Amphibian Microbiome Inhibition by Chytrid Fungus
3:15 pm	*Erin Brosnan, Milagros Rincon-Paz, Jacob LaFond, Anna Savage; University of Central Florida, University of Tampa*	Ranavirus-Bd coinfections and immunogenetic diversity in native and invasive American bullfrogs

7:30 PM – 8:30 PM **Ballroom B**

George A. Bartholomew Lecture: Dr. Eleanor Caves

The promise of integrative biology in studying animal perception: lessons from mate choice and mutualism

Sponsored by the Sable Systems International

Friday POSTER SESSION P3

Exhibit Hall 4A • 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am • Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm • Odd # - Authors present from 4:30-5:30 pm

Adhesion

P3-1	*Maxwell Handen, Andrew Moura, Brooklynn Campbell, Teresa Liu, Austin Garner; Syracuse University, University of Akron*	Bendy branches: impacts of substrate diameter and compliance on gecko locomotion
P3-2	*Andrew Moura, Caleb Mast, Austin Garner; Syracuse University, University of Akron*	Running on a rocky road: the impacts of substrate rugosity and movement cue on sea urchin locomotion
P3-3	*Sierra Weil, Austin Garner; Syracuse University*	Pliable perches: The effects of perch compliance on jumping performance of green and brown anoles
P3-4	*Mimi Morrison, Alli Cramer; University of Denver, University of Washington*	Hanging on by a thread: how substrate friability affects M. galloprovincialis byssal attachment
P3-5	*Evan Steinberg, Alyssa Stark, Stephen Yanoviak; Villanova University, University of Louisville*	The Effect of Substrate Roughness on Self-Cleaning of Ant (Camponotus pennsylvanicus) Adhesive Pads.

Animal communication

P3-6	*Helena Wood-Barron, Athena Rycyk, Jonathan Triminio, Marisa Tellez; New College of Florida, Crocodile Research Coalition*	Crocodile talk: structural analysis of American and Morelet's crocodile vocalizations in Belize
P3-7	*Evan Donnachie, Matthew Fuxjager*, Doris Preininger, Susanne Stückler; Brown University, Vienna Zoo, University of Vienna*	Environmental stressors as trigger of dynamic color change
P3-8	*Sierra Glassman, Adi Domer, Robert Dudley; University of California Berkeley*	Sexual Dimorphism in a Vocalization of Anna's Hummingbirds
P3-9	*Susan Cantonwine, Tara Empson, Melissa (Misty) Proffitt, Maëlle Lefeuvre, Elizabeth Derryberry; University of North Carolina Chapel Hill, University of Tennessee, Jagiellonian University, University of Tennessee Knoxville*	Love in the heat: Avian courtship displays in response to a thermal challenge
P3-10	*Isabelle Laun, Suzy Renn, Andrew Anderson; Reed College*	Singing Cichlids: How to Serenade a Fish
P3-11	*Amanda Puitiza, Monique Udell; Oregon State University*	Contextual Factors Affecting Human Perception of Emotion in Cats from Photos
P3-12	*Katie Smith, Thomas Hahn, Carly Hawkins; University of California Davis*	Cultural evolution of mountain white-crowned sparrow song: Drift or cross-dialect contamination?
P3-13	*Thomas Quigley, Paul Forlano, Sydney Gdanski, Xylo Lazrinth, Rachel Rodriguez; CUNY Brooklyn College, National Science Foundation*	Anthropogenic Noise and Opsanus tau Advertisement Calls in Various New York City Soundscapes
P3-13A	*Renske Kerkhofs, Olaf Ellers, Amy Johnson; Bowdoin College*	Humming Along: Sound Production in the American lobster

Aquatic locomotion

P3-14	*Sophia Sebo, Frank Fish*, Paolo Segre, Jean Potvin, Jeremy Goldbogen; West Chester University, Hopkins Marine Station, Stanford University*	Blue and Humpback Whales Use Upper Jaws as Delta Wings to Provide Stabilizing Lift During Feeding
P3-15	*Olivia Guerra, Mark Westneat, Linnea Lungstrom; University of Chicago*	Structure and function of the vertical septum and neural-haemal spines of burrowing wrasses
P3-16	*Amalia Moore, Beckett Socha, Makenna Moore, Josh Taylor, Yohan Sequeira, Ignacio Moore, Jake Socha*; Blacksburg High School, Virginia Tech*	Swimming, terrestrial, and land-to-water locomotion in an aquatic caterpillar
P3-17	*Hanna Adamson, Benjamin Perlman; California State University Long Beach*	If the shoe fits: Strike responses of the round stingray (u. Halleri) to different human foot sizes
P3-18	*Molly Schneider, Grace Johnston, Emily Volpe, Katrina Whitlow; Saint Mary's College*	Smallmouth startles: Extreme temperatures reduce responsiveness and increase escape latency

P3-19	*Jack Peterson, Melina Hale; University of Chicago*	Kinematics of Swimming Across Flow in a Rainbow Trout Model
P3-20	*Bryant Lopez, Haley Obenshain, Wesley Chen, Ariana Lee, Douglas Pace, Siavash Ahrar*; California State University Long Beach*	Investigating ciliary-mediated hydrodynamics of sand dollar larvae via millifluidics
P3-21	*Nick Battista; The College of New Jersey*	Paddling against the waves: how varying wavelength kinematics affect tomopteris locomotion
P3-22	*Yihan Li, Kelly Diamond; Rhodes College*	The effects of body length on undisturbed swimming patterns of Endler's guppies (Poecilia wingei)
P3-23	*Ivan Beck, Melina Hale*; Colorado College, University of Chicago*	Patterns of arm use during walking in young Octopus bimaculoides
P3-23A	*Brady Nichols, Graham Lucas, Hank Marriott, Olaf Ellers, Mary Lou Zeeman, Dale Syphers, Amy Johnson; Bowdoin College*	Fall forward, spring back: Mechanical drivers of the sea star bouncing gait

Biogeography

P3-24	*Zade Alafranji, Peter Aspholm, Haley Heine, Rina Morisawa, Phoebe Fu, Nathaniel Moyes, Shanta Hejmadi, Shahan Derkarabetian, Sarah Boyer; Macalester College, American Museum of Natural History, University of British Columbia, Harvard University*	Phylogeny and Diversification of Ancient New Zealand Mite Harvesters
P3-25	*Adera Craig, Chloe Nash, Mark Westneat; University of Chicago, Okinawa Institute for Science and Technology*	Biogeographic and evolutionary trends of feeding specializations in butterflyfishes (Chaetodontidae)
P3-26	*Victoria Vandersommen; University of Alaska Anchorage*	Discovering the Baseline Biodiversity of Cumaceans in the circum-Antarctic
P3-27	*Chloe Schwab, Abigail Uehling, Gustav Paulay; Friday Harbor Labs, University of Washington, Florida Museum, Universtiy of Florida*	Three is one, one is three: Upheaval of "Toxopneustes" species
P3-28	*Annie Chu, Tyler Soberanis, Emiliy Chapman, Erika Ono-Kerns, Patricia Cristales, Sarila Young, C. Sarah Cohen; San Francisco State University*	Aftermath of severe winter storms on a colonial tunicate invading the rocky intertidal of CA
P3-29	*Lee Morris, Travis Wendel; University South Carolina Union*	Multiple biases distort biodiversity records of freshwater aquatic invertebrate indicator species
P3-30	*Harrison Mancke, Lauren Baena, Andrew Mahon, Kenneth Halanych; University of North Carolina Wilmington, Central Michigan University*	The Mitochondrial Constellation: Phylogenetic Relationships of Sea Stars based on mitogenomes
P3-31	*Palmer Campbell-Kaswell, Sandy Wyllie-Echeverria, Bruce Finney; Friday Harbor Laboratories, University of Washington, Idaho State University*	Investigating Sediment Traits to Hindcast the Distribution of the Marine Angiosperm Zostera marina
P3-32	*Noah Armstrong, Dylan Klure, Robert Greenhalgh, Tess Stapleton, M. Denise Dearing; University of Utah*	Identifying the source of Utah's invasive fox squirrel (S. niger) through population genetics
P3-33	*Zachary Niedermaier, Yuya Nishida, Hannah Osland, Elizabeth Heath-Heckman; Michigan State University*	Discovering new populations of the Hawaiian Bobtail Squid, Euprymna scolopes, using eDNA analysis
P3-33A	*Benny Chan, Yao-Feng Tsao; Academia Sinica Taiwan*	Cryptic diversity of the coral-associated bivalve Pedum spondyloideum in the Indo-Pacific

Chemical ecology and evolution

P3-34	*Kaitlin Henry, Melody Sain, Chris Martine*; Bucknell University*	Chemical analysis of extrafloral nectar in western Australian Solanum tudununggae (Solanaceae) to ex
P3-35	*Marina Luccioni, Jules Wyman, Lauren O'Connell; Stanford University*	Diet and Chemical Defenses of the Sonoran Desert Toads

Chewing, feeding, and digestion

P3-36	*Josiah Guynes, Kelsey Stilson, Sacha Sides, Susan Williams, Elizabeth Brainerd, Anna Wolff, Erika Tavares; Brown University, University of Florida, Ohio University*	Employing novel microsurgical techniques in combination with XROMM to assess mastication in mice
P3-37	*Nami Ha, Jacob Harrison, Elio Challita, Miriam Cooperband, Saad Bhamla; Georgia Institute of Technology*	How spotted lanternflies feeding on phloem sap flick sticky honeydew droplets

P3-38 *Hannah Shideler, Elska Kaczmarek, Max Sarmet, Kendall Steer, Thomas Stroud, Alexane Fauveau, Ani Smith, Skyler Wallace, Maressa Kennedy, Alex-Ann Velasco, Morgan Blilie, Christopher Mayerl; Northern Arizona University, University of Brasília, NEOMED*
Impact of dynamic changes in flow rate on infant feeding function in an animal model

P3-39 *Alex-Ann Velasco, Elska Kaczmarek, Max Sarmet, Kendall Steer, Thomas Stroud, Alexane Fauveau, Maressa Kennedy, Ani Smith, Hannah Shideler, Skyler Wallace, Morgan Blilie, Javier Ceja-Navarro, Christopher Mayerl; Northern Arizona University, University of Brasília, NEOMED*
Consequences of chronic consumption of thickened milk on infants in an animal model

P3-40 *Skyler Wallace, Elska Kaczmarek, Max Sarmet, Kendall Steer, Ani Smith, Hannah Shideler, Maressa Kennedy, Alex-Ann Velasco, Thomas Stroud, Alexane Fauveau, Morgan Blilie, Christopher Mayerl; Northern Arizona University, University of Brasília, NEOMED*
Impact of a biomimetic, ducted nipple on infant feeding function through ontogeny in an animal model

P3-41 *Ani Smith, Elska Kaczmarek, Max Sarmet, Kendall Steer, Thomas Stroud, Alexane Fauveau, Maressa Kennedy, Hannah Shideler, Alex-Ann Velasco, Skyler Wallace, Morgan Blilie, Christopher Mayerl; Northern Arizona University, University of Brasília, NEOMED*
Impact of Chronic Use of Viscous Milk on Infant Feeding Physiology: Sucking

P3-42 *Maressa Kennedy, Elska Kaczmarek, Max Sarmet, Kendall Steer, Thomas Stroud, Alexane Fauveau, Ani Smith, Hannah Shideler, Alex-Ann Velasco, Skyler Wallace, Morgan Blilie, Christopher Mayerl; Northern Arizona University, University of Brasília, NEOMED*
Impact of Chronic Use of Viscous Milk on Infant Feeding Physiology: Swallowing

P3-43 *Sonia Lopez, Emily McParland, Peishu Li, Nicholas Gidmark, Courtney Orsbon; Knox College, Brown University, University of Chicago*
Cranial landmark variation in mammals gives diverse alignment for temporomandibular biomechanics

P3-44 *Amira Siddique, L Odette Herrand, Alyssa Stringer, Emily McParland, Peishu Li, Courtney Orsbon, Nicholas Gidmark; Knox College, Brown University, University of Chicago, University of Vermont*
Diverse jaw muscle orientations provide clinically relevant correlations with occlusal grinding

P3-46 *Callie Crawford, Shubham Vijay Kumar Yadav, Jonathan Huie, Emily Kane; Coastal Carolina University, University of Louisiana Lafayette, The George Washington University*
Stop, Chomp, and Roll: Rotational feeding behavior in marine sculpins

P3-47 *Alyssa Stringer, Emily McParland, Peishu Li, Nicholas Gidmark; Knox College, Brown University, University of Chicago*
Bony morphology dictates TMJ stress field positioning across common model species

P3-48 *Jensine Coggin, Duvall Dickerson-Evans, Rory Miller, Erin Hackett, Roi Gurka; Coastal Carolina University*
Flow field surrounding bluegill sunfish (Lepomis macrochirus) during suction-feeding

Climate change

P3-49 *Aniela Anuszczyk; San Diego Mesa College*
Assessing the biodiversity of a California desert ecosystem in an unusually wet year

P3-50 *Valentina Alaasam, Rafael Baez-Segui, Emerald Lin, Gaia Rueda-Moreno, Kristin Winchell; New York University*
Luxury effects in NYC: Socioeconomic effects on biodiversity across taxa

P3-51 *Jessica Fenners, Sarah Chapman, Jennifer Houtz, Maren Vitousek, Mark Haussmann*; Bucknell University, Allegheny College, Cornell University*
Telomere dynamics in Tree Swallows: exploring the effects of temperature and microbiome

P3-52 *Kai Davis, Aaron Ninokawa; East Carolina University*
Mussel Poop and Climate Change: The Effects of Mytilus trossolus Biodeposition on Ocean Chemistry

P3-53 *Sierra Winter, Chris Clark; University of California Riverside*
The Effects of Climate Change and Urbanization on Hummingbirds' Ranges

P3-54 *Fredric Janzen, Ayley Shortridge; Michigan State University*
Effects of flash drought during incubation on common snapping turtle phenotype and fitness

P3-55 *Giselle Cuevas, Nathan Rank, Elizabeth Dahlhoff; Sonoma State University, Santa Clara University*
Evaluation Of Snow Cover Differences In Eastern Sierra Nevada 2018-2023

P3-56 *Gracey Brouillard, Maren Vitousek, Conor Taff, David Chang-van-Oordt; Cornell University, Princeton University*
The Effect of Temperature and Stress on Blowfly Abundance and Development in Tree Swallow Nests

P3-57	*Allison Welch, Aubrey Anthony, Amanda Montgomery; College of Charleston*	Differential effects of salinization influence predator-prey interactions of tadpoles and insects
P3-58	*Rachel Potter, Emily Carrington; University of Washington*	Peeling Back the Layers: Photosynthetic performance in Intertidal Macroalgal Beds
P3-59	*Miguel F Estrada-Caballero, Gordon Bennett; University of California Merced*	Using the endemic Nesophrosyne leafhopper as a model system to Predict Adaptation to Climate Change
P3-59A	*Masaki Hara, Michael Navarro; Minnesota State University, Mankato, University of Alaska Southeast*	The Subtidal Environment at Auke Bay between Spring and Fall 2021

Comparative endocrinology: Development and endocrine disruption, Part 2

P3-60	*Lisa Crummett, Sebastian Castillo; Soka University of America*	Effect of synthetic estrogen exposure on algal symbiosis and reproduction in the aggregating anemone
P3-61	*Kyle Bouten, Michael Minicozzi; Minnesota State University Mankato*	In Utero Developmental Effects of Sodium Perchlorate Exposure in Mice
P3-62	*Randi Libin-Straub, Michael Minicozzi; Minnesota State University Mankato*	The Effects of Perchlorate Exposure on Zebrafish Behavior
P3-63	*Stefanny C Titon, Patricio Garcia-Neto, Braz Titon-Jr, Aymam Cobo-de-Figueiredo, Regina Markus, Fernando Gomes, Vania R Assis*; University of Sao Paulo, University of South Florida*	Immune-pineal-retinal axis in amphibians: unveiling a novel connection?
P3-64	*Noelle Black, Julia Gosling, Alexander Schreiber*; St Lawrence University*	Is bigger better? Effect of tadpole size on responsivity of different tissues to thyroid hormone
P3-65	*Jasmeen Kaur, Ryan Paitz, Alexandra Bentz; University of Oklahoma, Illinois State University*	Molecular Effects of Yolk Hormones During Embryonic Development

Comparative endocrinology: Stress and reproduction, Part 1

P3-66	*Jack Dziubek, Eva Lindner, Madeline Roth, Jennie Stevenson, Mark Haussmann*; Bucknell University*	How social stress affects the gut in the socially monogamous prairie vole
P3-68	*Hayley Mapes, Janae Shew, Henry Marden, Meredith Journey, Brian Beckman, Sean Lema; California Polytechnic State University, National Marine Fisheries Services*	Stress inhibition of fish growth: cortisol effects on insulin-like growth factor-1 (Igf1) pathways
P3-69	*Ursula Beattie, David Harris, L. Michael Romero, Michael Reed; Tufts University*	Investigating metrics of individual repeatability of the stress response
P3-70	*Naomi Fernandez, Maryam zareizadeh, Myana Keusch, Dakota Lazore-Swan, Michael Agyekum, Keith Omane-Agyei, Kaitlyn Barton, Aidan Fauth, Kelsang Chokey, Kyle Abramson, Alexander Schreiber*; St. Lawrence University*	Synergistic effects of thyroid hormone and dexamethasone on diverse aspects of frog metamorphosis
P3-71	*Zoey Dale, Henry Marden, Janae Shew, Hayley Mapes, Sean Lema*; California Polytechnic State University*	Acute stress effects on Igf1 and metabolic pathways in olive rockfish
P3-72	*Janae Shew, Henry Marden, Hayley Mapes, Sean Lema*; California Polytechnic State University*	Blood hematological and transcriptome responses to cortisol in blue rockfish
P3-73	*Marcus Jorgensen, Diana Hews; Indiana State University*	Reproductive state in females and hold time in males predict N:L ratios of brown bats but not hair
P3-74	*Carlie Saline, Jeffery Kittilson, Ellen Ketterson, Adam Fudickar, Timothy Greives; North Dakota State University, Indiana University*	Does Developmental Photoperiod Alter Reproductive Hypothalamic Gene Expression in Dark-Eyed Juncos?
P3-75	*Kseniya Krayeva, Zoey Dale, Teresa Guerre, Sean Lema*; California Polytechnic State University*	Temperature modulates the sensitivity of oogenesis pathways to E2 stimulation in a temperate fish
P3-76	*Teresa Guerre, Madeline Housh, Sean Lema*; California Polytechnic State University*	High temperature impairment of reproduction in fish: impacts on the female HPG axis and oogenesis
P3-77	*Sarah Detmering, Robyn Crook; San Francisco State University*	Measuring Effects of Stress on Sepia bandensis through the Judgment Bias Task

Conservation and environmental biology

P3-78	*Megan Schwartz, Michael O'Mahoney, Johanna Cannon, Jennifer Brave, Maddie Emerson, Annika Johnson, Christopher Meyer; University of Washington, Smithsonian Institution, Academies of Loudoun*	Zooplankton species richness estimates are increased with environmental DNA sampling at FHL
P3-79	*Katrina Giambertone, Cheryl Logan, Margarita Brandt; California State University Monterey Bay, Universidad San Francisco de Quito, Campus Cumbayá*	What drives heat and cold tolerances in Galápagos Pocillopora communities?
P3-80	*Peyton Abdelbaki, Lauren Fuess, Erin Borbee; Texas State University*	Tracking symbiont uptake rates and immunity in a model anemone Exaiptasia diaphana
P3-81	*Jaclyn McFadden, Jason Spadaro; Florida Southern College*	Investigating the effects of increased temperatures on the grazing rates of the Caribbean king crab
P3-82	*Journey Moore-Prewitt, Terence Leach; Swarthmore College*	Warming Waters Hinder Burying within the Common Sand Dollar, Echinarachnius parma
P3-83	*Hannah Cavanaugh-Gouvea, Lloyd Haughton, Liz Burmester, Justin McAlister*; College of the Holy Cross*	Examining the organismal responses of Nematostella vectensis to tire dust, a ubiquitous pollutant
P3-84	*Savannah Fisher, Rion Reynolds, Clinton Moran*, John Zardus; The Citadel, College of Charleston*	Temperature impacts on feeding kinematics in the striped barnacle
P3-85	*Robert Podolsky, Zoe Munson; College of Charleston, Alaska Pacific University*	Effects of elevated CO_2 exposure on post-molt recovery of pinching force in the ornate blue crab
P3-86	*Nitara Vishwanath, Joshua Riddle, Pauline Yu, Dorothy Coleman; Evergreen State Colloege*	Host preference and host availability for an introduced intestinal parasitic copepod
P3-87	*Maria Rosa, David Hudson*, Taegan McMahon, Gerard Gadigian, Diana Tarazona, Jaime Rojas, Alexandra Hernández-Ubaque, Julio Otero-Perez; Connecticut College, Remote Ecologist Inc, Wandering Technologist, Fundación Centro de Investigación Marina - Caribe, Oceanario Islas del Rosario - CEINER*	Monitoring sessile invertebrate biodiversity on 3D printed biodegradable materials in Colombia
P3-88	*David Hudson, Lars Vikstrom, Alyson Lowell, Leah Reidenbach, Bradley Peterson; Remote Ecologist Inc, Stony Brook University*	Mud Crab Metabolism, Feeding, and Survival Under Increased Temperature and Acidification
P3-89	*Rebecca Varney, Rhiannon Nolan, Kemi Ashing-Giwa, Jody Bourgeois, Alyssa Biggs, Ashley Cockram, Erin Fitzgerald, Adriana Halvonik-Sanchez, Nicholas Liou, Alexandria Marquardt, Julian Quinones, Katherine Rogers, Lachan Roth, Lucia Roth, Dario Russo, Ariel Shatsky, Kayli Stowe, Megan Schwartz; University of California Santa Barbara, University of South Carolina, University of Washington*	CANCELLED – A quantitative comparison of six meiofaunal extraction methods across phyla at Friday Harbor Labs

Diversity in science

P3-90	*Salma Abdel-Raheem, Allison Payne, Milagros Rivera, S. Sturdivant, Nia Walker, Melissa Márquez, Armando Ornelas, Mo Turner, Kelsey Byers, Roxanne Beltran; University of California Santa Cruz, INSPIRE Environmental, University of Hawaii, Curtin University, University of Washington, John Innes Centre*	Oceanography's Diversity Deficit: Identifying and Addressing the Challenges for Marginalized Groups
P3-91	*Nari Chang, Sharndeep Kaur, Ulrike Muller*; California State University Fresno*	Inequities in academia as evident in vertebrate collections
P3-92	*Ana Lyons, Mashel Fatema Saifuddin, Kevin Daigle, Laura Persson; University of California, San Francisco*	Every body, every mind: A framework for building community among disabled & neurodiverse scientists
P3-93	*Liam Wrixon, Charles Abramson; Haskell Indian Nations University*	Promoting Indigenous Students in NSF REUs
P3-94	*Patrick Monari, Emma Hammond, Candice Malone, Amelia Cuarenta, Lisa Hiura, Kelly Wallace, Linzie Taylor, Devaleena Pradhan; University of Wisconsin-Madison, University of Colorado, Emory University, Idaho State University*	CANCELLED – Leveraging individual power to improve racial equity in academia
P3-94A	*Janice Voltzow, Christie Karpiak, Michelle Maldonado, Stacey Muir, Declan Mulhall; University of Scranton*	Royal Scholars: Enhancing Science Self-Efficacy for Low-Income Students in STEM

Division of Neurobiology, Neuroethology, & Sensory Biology best student poster presentation

P3-95	*Niveditha Sankar, Rachel Cohen; Minnesota State University, Mankato*	The headaches of brain stereotactic surgery: Behavioral effects in green anole lizards
P3-96	*Katrina Carrier, Patsy Dickinson, Yasemin Altug, Isabella Kane, Rania Janmohamed, Kaitlyn Elias, Daniel Powell; Bowdoin College*	The combinatorial effects of temperature and salinity on the nervous system of the American lobster
P3-97	*Haleigh Bilodeau, James Newcomb, William Scala; New England College*	The nervous system is important for cell division during regeneration of rhinophores in Berghia
P3-98	*William Scala, Haleigh Bilodeau, James Newcomb; New England College*	Investigating potential priming of rhinophore regeneration in Berghia stephanieae
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P3-117	*Nicole Melendez, Nicole Moody, Matthew Fuxjager; University of Puerto Rico - Mayaguez Campus, Brown University*	Motoneuron soma size measurement optimization through analysis in ImageJ
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P3-125	*Harshada Sant, Kriti Dhiman, Ashley Glover, Brandon Drescher, Yuelong Wu, Richard Schalek, Jeff Lichtman, Paul Katz, Sarah DeAmicis*; University of Massachusetts Amherst, Harvard University*	3D EM reconstructions of neurons in the nudibranch, Berghia reveal novel ultrastructural features
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P3-128	*Tara Empson, Melissa (Misty) Proffitt, Susan Cantonwine, Maëlle Lefeuvre, Emily Levy, Kimberly Rosvall, Elizabeth Derryberry; University of Tennessee, University of North Carolina Chapel Hill, Jagiellonian University, Indiana University, University of Tennessee Knoxville*	Singing in the heat: Transcriptomic signatures of thermal resilience in a songbird

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P3-200	*Hannah Zaini, Asad Beck, Glorianna Gutierrez, Horacio de-la-Iglesia; University of Washington*	Effect of circadian rhythm robustness on sleep and epilepsy in a mouse model of Dravet syndrome
P3-201	*Weipang Chang, Melina Hale; University of Chicago*	Characterization of Slow Rhythmic Muscle Activity in the Arms of Octopus bimaculoides
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P3-233 *Rachel Christensen, Unitas Vang, Elsa Vieregg, Zade Alafranji, Haley Heine, Sarah Boyer; Macalester College* — Examining Species Classification of New Zealand's Mite Harvesters in the Genus Rakaia

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P3-236 *Unitas Vang, Rachel Christensen, Elsa Vieregg, Sarah Henderson, Phil Sirvid, Anna Stewart, Sarah Boyer; Macalester College, New Zealand Speleological Society* — First report of cave-adapted mite harvester arachnids from New Zealand

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P3-249 *Jun Cai, Virginia Weis; Oregon State University* — Thermal stress on symbiosis onset and maintenance in developing Exaiptasia diaphana pedal lacerates

P3-250 *Claudia Saldaña-DeCamillis, Eric Brown, Danielle Levesque; Universidad de Puerto Rico, University of Maine* — Tropical Blind Spots in Sciurid Thermoregulatory Physiology

P3-251 *Gabriela Robles-Pérez, Natalie Herbison, Trisha Panganiban, Laura Haefner, Victor Gonzalez, Thomas Tscheulin, Theodora Petanidou, John Hranitz; University of Puerto Rico, University of Kansas, California State University Los Angeles, National Science Foundation, University of Pennsylvania Bloomsburg*
Do bees' heat tolerances improve following an acute heat exposure?

P3-252 *Stella Raymond, Dana Twisk, Allyson Taylor, Heather Liwanag; California Polytechnic State University San Luis Obispo*
Polar Pelts: Morphology and Thermal Function of the Pelts of Weddell Seals

P3-254 *Natalie Herbison, Victor Gonzalez, Gabriela Robles-Pérez, Thomas Tscheulin, Theodora Petanidou, John Hranitz, Trisha Panganiban, Laura Haefner; University of Kansas, University of Puerto Rico, University of Pennsylvania, California State University Los Angeles, National Science Foundation*
Mediterranean pollinators display limited acclimation capacity for heat tolerance

P3-255 *Julia Bowsher, Gagandeep Brar, Joshua Rinehart, Alex Torson, Sarah Signor, George Yocum, Joseph Rinehart; North Dakota State University, U.S. Department of Agriculture*
Diapause initiation in the solitary bee Megachile rotundata

P3-256 *Riya Belani, Wes Dowd, Lani Gleason, Richelle Tanner; Washington State University, California State University Sacramento, Chapman University*
Epigenetic Patterns in Juvenile Mussels: DNA Methylation and How it Drives Thermal Tolerance

P3-257 *Evelyn Peyton, David Coughlin*; Widener University*
Thermal acclimation studies in brook trout: Do native brook trout respond to a warming environment?

Complementary to S10: What do trade-offs mean to reproducing females? An integrative look at whole-organism trade-offs

P3-258 *Deblina Misra, Janet Young, Ching Chang, Harmit Malik, Theresa Luktisch, Teri Orr; New Mexico State University*
Waiting and balancing acts: the evolution of reproductive delays in bats

Complementary to S4: Computational and physical models in research and teaching to explore form-function relationships

P3-259 *Andrew Schulz, Gokhan Serhat, Katherine Kuchenbecker; Max Planck Institute for Intelligent Systems, KU Leuven*
Adapting a high-fidelity simulation of human skin for comparative touch sensing in an elephant trunk

P3-260 *Nicholas Hebdon, David Peterman, YunJi Choi, Mikelia Heberer, Garrett Butler, Jay Merril, Kathleen Ritterbush; Chapman University, Penn State University, University of Utah*
Choose you research adventure: hypothesis cascades for aquatic biomechanics

P3-261 *Suzanne Amador Kane, Xuanyi Wu, S. Tonia Hsieh; Haverford College, Temple University*
Using simulations and unsupervised learning to explore gait patterns in spider autotomy data

Complementary to S9: Evolution, physiology, and biomechanics of insect flight

P3-262 *Stav Talal, Geoffrey Osgood, Phoenix Pulver, Jon Harrison, Arianne Cease; Arizona State University, Global Locust Initiative*
Daily consumption is not sufficient to fuel energy for repeated days of locust flight

P3-263 *Tomas Diaz, Caroline Williams, Jacqueline Lebenzon; Unviersity of California Berkeley*
Using RNA Interference to Understand Selective Flight Muscle Histolysis in Gryllus lineaticeps

Special Poster Session: Minorities in Shark Sciences

P3-264 *Abel Gong, Andrew Nosal, Daniel Cartamil; University of San Diego, Point Loma Nazarene University, Scripps Institution of Oceanography, University of California San Diego*
Migration, aggregation, and philopatry of two nearshore elasmobranch species in Southern California

P3-267 *Danna Valentina Sanchez-H., Brooke Flammang; New Jersey Institute of Technology*
Bioinspired reduction of tag drag

P3-268 *Amber Chiodini, Adilene Landa-Gaulrapp, Maria G Quiceno, Melanie Cardenas, Johneil Ferguson, Harlyn Hosten, Ciera Jarrett, Jordan Penn, Tatiana Restrepo-Padilla, Karin Sandager, Carlee Bohannon, Gabriele Larocca-Conte, Jasmin Graham, Catherine Macdonald, Sora Kim; Minorities in Shark Sciences, University of California Merced, University of Miami*
Dining with Sharks: Exploring Feeding Regimens via Stable Isotope Analysis

P3-269 *Amani Webber-Schultz, Brooke Flammang, Kaelyn Gamel; New Jersey Institute of Technology, DOD US Navy*
Shark Tales: Comparative Caudal Fin Diversity of Dermal Denticles

P3-270 *Valentina Garcia-Nunes, Lauren Simonitis; Minorities in Shark Sciences, University of Washington's Friday Harbor Labs, Florida Atlantic University*
Olfactory Morphology in Spotted Ratfish (Hydrolagus colliei)

P3-271	*Rose Leeger, Jeffery Hoch; The University of Colorado Boulder, Nova Southeastern University*	A Morphometric and Behavioral Analysis of Everglades Mosquitofish Hybridization in South Florida
P3-272	*Christine Sarkis, Erin Seney, Brandon Hoenig, Anna Forsman; University of Central Florida, University of Pittsburgh, Colby College*	Investigating Relationships among Microbiome, Disease Severity, and Diet in Green Sea Turtles
P3-273	*Karson Burton-Reeder, Jane Khudyakov, Jayne Gardiner, Tonya Wiley; University of the Pacific, New College of Florida, Havenworth Coastal Conservation*	Identifying novel markers of stress in sharks
P3-274	*Maryann Fuentes, Micaela Rivera, Allen Mensinger; Union College, University of Minnesota Duluth, The Marine Biological Laboratory*	The effect of anthropogenic sound on embryonic Scyliorhinus retifer respiration
P3-275	*Meghana Binraj; Species and Spaces Foundation*	Flipping Fins & Feeding Curiosity: Unconventional Marine Science Communication, Indian Fish Markets
P3-276	*Dkaria Bascom; Minorities in Shark Sciences*	Exploring Correlations Between Habitat Complexity and Biodiversity Through Quantitative Analysis

Saturday Schedule of Events

Events take place in the Seattle Convention Center, unless otherwise noted

EVENT	TIME	LOCATION
Speaker Ready Room	7:00 AM – 10:00 AM	Room 601
Registration	7:30AM – 2:00PM	Exhibit Hall
Coffee Break AM	9:30 AM – 10:30 AM	Exhibit Hall
SPECIAL LECTURES		
The Carl Gans Award: Dr. Michael Granatosky Decoding Behavioral Innovation Beyond Anatomy *Sponsored by Journal of Experimental Biology*	1:30 PM - 2:30 PM	Ballroom C
John A. Moore Lectureship: Dr. David Shiffman You're gonna need a bigger engagement strategy: Lessons learned from teaching the public about shark science and conservation	4:00 PM - 5:00 PM	Ballroom C
SYMPOSIUM ORAL PRESENTATIONS		
S10: What do trade-offs mean to reproducing females? An integrative look at whole-organism trade-offs	7:45 AM – 3:30 PM	Ballroom B
S11: Recent advances in the mechanistic understanding of avian responses to environmental challenges	8:00 AM – 3:00 PM	Rooms 619-620
Special Session: Minorities in Shark Sciences	8:00 AM – 12:00 PM	Room 611
CONTRIBUTED PAPER ORAL PRESENTATIONS		
MORNING		
Mechanosensation	8:00 AM – 9:30 AM	Room 603
Morphology and phylogeny	8:00 AM – 9:45 AM	Room 612
Reproduction and development	8:00 AM – 9:45 AM	Room 602
Paleontology and paleobiology	8:00 AM – 10:00 AM	Ballroom C
Odors and olfaction, Part 1	8:00 AM – 10:00 AM	Rooms 615-616
Sensory biomechanics, ventilation and respiration	8:00 AM – 10:00 AM	Room 617
Thermal biology	8:00 AM – 10:00 AM	Rooms 613-614
Jumping, hopping, and climbing	8:00 AM – 10:00 AM	Room 608
Sensing Behavior: How animals sense their environment	8:00 AM – 10:00 AM	Room 606
Cellular and molecular physiology, Part 2	8:00 AM – 10:00 AM	Room 607
Evolution of form and function, Part 2	8:00 AM – 10:00 AM	Room 618
The biology of thermal stress in corals	8:00 AM – 10:00 AM	Room 609
Thermal physiology, Part 3	8:15 AM – 9:30 AM	Room 604
Advancing undergraduate education	10:00 AM – 12:00 PM	Room 603
Phenotypic evolution	10:15 AM – 12:00 PM	Room 618
Evolutionary morphology	10:15 AM – 12:00 PM	Room 602
Birds on the wing	10:30 AM – 11:45 AM	Ballroom C
Complementary to S8: Modeling organismal responses to changing environments	10:30 AM – 11:45 AM	Room 607
Epidemiology	10:30 AM – 11:45 AM	Rooms 613-614
Sound and hearing	10:30 AM – 11:45 AM	Room 604
Corals and their partners in a changing world	10:30 AM – 11:45 AM	Room 609
Odors and olfaction, Part 2	10:30 AM – 12:00 PM	Rooms 615-616
How do organisms cope with stress	10:30 AM – 12:00 PM	Room 606
Social behavior, Part 2	10:30 AM – 12:00 PM	Room 608
What's on the surface?	10:30 AM – 12:00 PM	Room 617
Complementary to S7: Convergent evolution across levels of biological organization, organisms, and time, Part 1	10:45 AM – 12:00 PM	Room 612

AFTERNOON

Neuroanatomy, Part 2	2:30 PM – 3:30 PM	Room 604
Complementary to S7: Convergent evolution across levels of biological organization, organisms, and time, Part 2	2:30 PM – 3:45 PM	Room 612
Complementary to S9: Evolution, physiology, and biomechanics of insect flight	2:30 PM – 3:45 PM	Room 607
Aquatic neurobiology, Part 3	2:30 PM – 3:45 PM	Room 606
Adhesion	2:30 PM – 4:00 PM	Room 603
Science outreach	2:30 PM – 4:00 PM	Room 618
Insects in flight	2:30 PM – 4:00 PM	Room 608
Wings, limbs, and fins: Part 2	2:30 PM – 4:00 PM	Rooms 615-616
Immunity	2:30 PM – 4:00 PM	Rooms 613-614
Development and life history	2:30 PM – 4:00 PM	Room 617
Biomechanical modeling	2:30 PM – 4:00 PM	Room 602
Conservation biology of corals: Genetic and environmental correlates	2:30 PM – 4:00 PM	Room 609

COMMITTEE AND BOARD MEETINGS

Public Affairs Committee	7:00 AM – 8:00 AM	Room 308
Educational Council Meeting	12:00 PM – 1:30 PM	Room 304
Student/Postdoc Affairs Committee	12:00 PM – 1:30 PM	Room 308

WORKSHOPS AND PROGRAMS

Alternative career paths for scientists with a PhD in biomechanics, neuromechanics, or functional morphology	12:15 PM – 1:30 PM	Room 602
Evolution, Physiology, and Biomechanics of Insect Flight Workshop	12:15 PM – 1:30 PM	Room 619-620
Organismal Systems Modeling: Modeling organismal responses to changing environments	12:15 PM – 1:30 PM	Room 604

SOCIAL EVENTS

Minorities in Shark Sciences Closing Ceremony	2:30 PM – 3:30 PM	Room 611
SICB Closing Celebration	5:30 PM – 7:00 PM	4th Floor Atrium

Saturday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM **Ballroom B**

Symposium 10: What do trade-offs mean to reproducing females? An integrative look at whole-organism trade-offs

Chairs: Chloe C Josefson, Teri J. Orr

7:45 am	*Chloe Josefson, Teri Orr; North Carolina Central University, New Mexico State University*	Symposium Introduction: An integrative look at whole-organism trade-offs in reproducing females
8:00 am	*Teri Orr, Chloe Josefson, Theodore Garland; New Mexico State University, North Carolina Central University, University of California Riverside*	A view from the shoulders of giants: trade-offs in context from Fisher to present day
8:30 am	*Jamie Marks, Simon Lailvaux*; Michigan State University, University of New Orleans*	The life-history of maternal effects
9:00 am	*Wendy Hood; Auburn University*	Life history, condition dependency, and energetic performance
9:30 am	*Andrea Liebl, AJ Steen, Katie Brust, Makayla Busskohl, Andrew Russell; University of South Dakota, Liebl Laboratory, University of Exeter*	Female reproductive costs: Trade-offs for females in an avian cooperative breeder
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Kathryn Wilsterman; Colorado State University - Fort Collins*	Gestating at the top of the world: Adaptive evolution of reproductive traits at high elevations
11:00 am	*Megan Meuti, Carlos Esquivel, Chiristiana Arkorful-Bondzie, Lydia Fyie, Sarah Short; The Ohio State University, Bayer*	Uncovering male and female mosquito contributions to seasonal differences in reproductive physiology
11:30 am	*Patricia Lopes; Chapman University*	The female perspective on disease risk
12:00 pm	**Lunch**	
1:30 pm	*Ned Place, David Peck; Cornell University*	Testing the “Adaptive Sterilization Hypothesis” in mice inoculated with Chlamydia muridarum
2:00 pm	*Lisa Powers; Bucknell University*	Bat Reproductive Processes and Pathogen Response
2:30 pm	*Theodore Garland; University of California Riverside*	Teaching about trade-offs and constraints
3:00 pm	*Chloe Josefson, Teri Orr; North Carolina Central University, New Mexico State University*	Roundtable Discussion: Organismal trade-offs during reproduction from a female-centered perspective

8:00 AM – 3:00 PM **Rooms 619-620**

Symposium 11: Recent advances in the mechanistic understanding of avian responses to environmental challenges

Chairs: Alexander R. Gerson, Maria Stager, Cory Elowe

8:00 am	*Alexander Gerson, Maria Stager, Cory Elowe; University of Massachusetts Amherst*	Introduction to the Symposium
8:30 am	*Jennifer Uehling, Conor Taff, Jennifer Houtz, Monique Pipkin, Paige Becker, Allison Injaian, David Winkler, Richard Gabrielson, Maren Vitousek; West Chester University, Cornell University, Allegheny College, Boston University, University of Georgia, Odum School of Ecology, SABER Consulting*	Experimental glucocorticoid elevation alters activity and dietary choices in a wild songbird
9:00 am	*Phred Benham; Museum of Vertebrate Zoology, University of California Berkeley*	Integrative approaches to studying intraspecific physiological adaptation to environmental change

9:30 am	*Jessie Williamson, Ethan Gyllenhaal, Selina Bauernfeind, Emil Bautista, Matthew Baumann, Chauncey Gadek, Peter Marra, Natalia Ricote, Thomas Valqui, Francisco Bozinovic, Nadia Singh, Christopher Witt; Cornell University, University of New Mexico, Museum of Southwestern Biology, Centro de Ornitología y Biodiversidad, Georgetown University, Universidad Adolfo Ibáñez, University of Oregon*	Extreme elevational migration spurs cryptic speciation in giant hummingbirds
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Catherine Ivy, Kevin Shoemaker, Christopher Guglielmo; University of Western Ontario*	Maintaining oxygen uptake and movement to the flight muscle during migratory flight in songbirds
11:00 am	*Cory Elowe, Alexander Gerson, Maria Stager; University of Massachusetts Amherst*	The influence of calcium regulation on migratory and thermoregulatory phenotypes of songbirds
11:30 am	*Wendy Hood, Emma Rhodes, Paulo Mesquita, Kang Nian Yap, Andreas Kavazis, Hailey Parry, Geoffrey Hill; Auburn University, National Heart, Lung and Blood Institute, National Institutes of Health*	Bioenergetic adaptations to migration in White-crown Sparrows
12:00 pm	**Lunch**	
1:30 pm	*Leonida Fusani, Andrea Ferretti, Ivan Maggini, Valeria Marasco; University of Veterinary Medicine, Max Planck Institute for Biological Intelligence, Konrad Lorenz Institute of Ethology*	Physiological adaptations for migration influence how birds to respond to environmental changes
2:00 pm	*Jamie Cornelius, Jessica Karr, Jalyn Devereaux, Ben Vernasco, Heather Watts; Oregon State University, Whitman College, Washington State University*	Beyond thermogenesis: seasonal variation in response to reduced food in captive crossbills
2:30 pm	*Maria Stager; University of Massachusetts Amherst*	The genetic architecture underlying avian flexibility in a complex physiological trait

8:00 AM – 12:00 PM **Room 611**

Special Session: Minorities in Shark Sciences

Chair: Jasmin Graham

8:30 am	*Aimee Mendoza; Minorities in Shark Sciences, New College of Florida*	Eugenie Clark Fellowship: The Human Connection to Shark Sciences through Digital Storytelling
8:45 am	*Omolara Fola-Matthews, Olufemi Soyinka, Olayinka Ashiru, Daphne Bitalo; Nigerian Institute for Oceanography and Marine Research, University of Lagos, National Coffee Research Institute*	Using DNA Barcoding to identify Shark Species off the Lagos and Ondo Coast, Nigeria.
9:00 am	*Heidy Martinez; Minorities in Shark Science*	CANCELLED – Rethinking Conservation Strategies: Evaluating the Efficacy of Time-Area Closures for Smalltooth Saw
9:15 am	*Ingrid Hyrycena; Federal University of São Paulo*	Researchers and fishers: how can this partnership benefit the conservation of elasmobranchs?
9:30 am	*Alyssa Andres, Harrison Clark, Jasmin Graham; Florida State University, University of South Florida, Minorities in Shark Sciences*	Defining bull shark movement, habitat use, and nursery habitat in a unique spring-fed ecosystem
9:45 am	*Jaida Elcock, Martin Arostegui, Simon Thorrold, Camrin Braun, Gregory Skomal; Massachusetts Institute of Technology, Woods Hole Oceanographic Institution, Massachusetts Department of Fish and Game*	A preliminary analysis of tag-derived buoyancy suggests basking sharks do not drawdown lipid reserve
10:00 am	**Coffee Break**	**Grand Ballroom**
10:30 am	*Buddhi Pathirana, Lauren Simonitis, Sora Kim; Ocean Rosy, University of Washington's Friday Harbor Labs, Florida Atlantic University, University of California Merced*	Trophic ecology of Chimaera, Hydrolagus colliei, inferred from stable isotope analysis.

10:45 am	*Kathy Liu, Jasmin Graham, Jayne Gardiner, Sora Kim, HyeJoo Ro, Tonya Wiley, Catherine Macdonald; University of Miami, Minorities in Shark Sciences, New College of Florida, University of California Merced, Havenworth Coastal Conservation*	Comparative cephalofoil morphology and diet of Florida bonnethead sharks (Sphyrna tiburo)
11:00 am	*Vicky Fong, Sarah Hoffmann, Jessica Pate; Marine Megafauna Foundation*	Kinematic analysis of pectoral fin movements in manta ray resting behavior using drones
11:15 am	*Annais Bonilla-Johnson; Florida State University, MISS*	Effect of Embryonic Maternal Investment on Elasmobranch Physiology

Saturday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:30 AM **Room 603**

Mechanosensation

Chair: Marie Suver

8:15 am	*Tanvi Deora, Mauro Torres, Alison Weber, Bingni Brunton, Tom Daniel; Shiv Nadar Institute of Eminence, Helen Wills Neuroscience Institute, University of California Berkeley, Bryn Mawr College, University of Washington*	Pilifers provide proprioceptive feedback about mouthpart movement in hawkmoths, Manduca sexta
8:30 am	*Parker McDonnell, Lingsheng Meng, Kaushik Jayaram, Jean-Michel Mongeau; University of Colorado Boulder, Penn State University*	Design of an insect scale robophysical model of the cockroach antenna with integrated sensing
8:45 am	*Ziheng Wang, Alison Weber, Abigail von-Hagel, Bingni Brunton, Tom Daniel; University of Washington, Bryn Mawr College*	Insect wing mechanosensory neurons encode rapid bending across a range of wingbeat phases
9:00 am	*Lesley Armah, Jessica Fox; Case Western Reserve University*	Haltere mechanosensory input for social wing movements in the black scavenger fly, S. punctum
9:15 am	*Marie Suver, Olivia Nunn, Emily Kophs, Tobias McCabe; Vanderbilt University*	Mechanisms and function of active antennal mechanosensation in Drosophila melanogaster

8:00 AM – 9:45 AM **Room 612**

Morphology and phylogeny

Chair: Rodrigo Tinoco Figueroa

8:00 am	*Caleb Axelrod, Ellen Urquhart, Swanne Gordon, Bruce Carlson; Cornell University, Washington University in St. Louis*	How does variation of covariation vary? Intraspecific patterns of fish brain region covariation
8:15 am	*Philip Bergmann, Emma McLellan; Clark University*	Conserved mechanisms of vertebral evolution mediate clade-specific body proportions in dinosaurs
8:30 am	*Anna Wisniewski, Graham Slater; Department of the Geophysical Sciences, The University of Chicago*	Hierarchy, tempo and mode in primate body size evolution
8:45 am	*Jamie Knaub, Madisan Biordi, Delaney Frazier, Maria Uribe-Mejia, Michelle Passerotti, Lisa Natanson, Tricia Meredith, Marianne Porter; Florida Atlantic University, NOAA Fisheries, Apex Predators Program, Northeast Fisheries Science Center*	Speedy, stiff, sharks: Vertebral morphology and 3D microstructure of lamniform sharks
9:00 am	*Samantha Gartner; Brown University*	Comparative morphometrics of the postorbital ligament in birds (Class: Aves)
9:15 am	*Leo MacLeod, Kate Bemis, Stacy Farina; Howard University*	Morphological diversity of the oral lures of Stargazers (Percomorphacea: Uranoscopidae)

9:30 am	*Roxanne Armfield; Yale University*	My Snake Is Smaller Than Yours: Tracing Wide Gaped Feeding In The North American Snake Fossil Record

8:00 AM – 9:45 AM **Room 602**

Reproduction and development

Chair: Bonnie Kircher

8:00 am	*Emily Turla, Gabriella Carvajal, Samantha Kuschke, Jeanette Wyneken; Florida Atlantic University*	Assessing fertility rates of leatherback sea turtle (Dermochelys coriacea) eggs
8:15 am	*Boris Tezak, Blanche Capel, Allison Montes; Duke University*	Temperature affects germ cell number which impacts sex determination in the red-eared slider turtle
8:30 am	*Antonia Weberling, Natasha Shylo, Hannah Wilson, Seth Malloy, Melainia McClain, Marta Marchini, Katherine Starr, Thomas Sanger, Florian Hollfelder, Paul Trainor; University of Oxford, Loyola University Chicago, University of Cambridge*	Squamate preoviposition embryogenesis diverges from chicken and exhibits high diversity
9:00 am	*Bonnie Kircher, Richard Behringer; University of Texas MD Anderson Cancer Center*	Development of Reproductive Organs in the Brown Anole
9:15 am	*Karen Crow, Kayla Hall, Riley Jones; San Francisco State University, University of Washington*	Are vertebrates constrained to two sets of paired appendages? The evolution of prepelvic claspers
9:30 am	*Genavieve Desjardin, Tony Williams; Simon Fraser University*	Egg size, the forgotten life history trait: using the Asian lady beetle as a model

8:00 AM – 10:00 AM **Ballroom C**

Paleontology and paleobiology

Chairs: Austin Lawrence, Caroline Abbott

8:00 am	*John Orcutt; Gonzaga University*	Critiquing the carnassial: reconstructing body mass in fossil small carnivorans
8:15 am	*Erika Goldsmith, Daniel Barta, Sterling Nesbitt, Ben Kligman, Adam Marsh, William Parker, Michelle Stocker; Virginia Tech, Oklahoma State University*	Osteohistology of a tiny phytosaur femur: implications for the evolution of early archosaur growth
8:30 am	*Elizabeth Sibert; Woods Hole Oceanographic Institution*	Improving fish and shark ecological and evolutionary histories from microfossil ichthyoliths
8:45 am	*Jacqueline Lungmus, Zoe Kulik, Yu-Tai Shi, Christian Sidor, Kenneth Angielczyk; Sam Noble Oklahoma Museum of Natural History, University of Washington, Chinese Academy of Sciences, Burke Museum, University of Washington, Field Museum of Natural History*	Shape analysis reveals distinction between South African and Chinese specimens of Lystrosaurus
9:00 am	*Sam Giles, Rodrigo Tinoco-Figueroa, Matt Friedman; University of Birmingham, University of Michigan*	Phylogenetic affinities of the earliest large-bodied actinopterygians and evolutionary implications
9:15 am	*Austin Lawrence, Jamie Hall, Kevin Middleton, Jacob Thomas, Abdullah Alsharafi, Sam Weiss, Trent Guess, Carol Ward; University of Chicago, University of Missouri*	Effect of skeletal torsion on human locomotor biomechanics: Support for hominin locomotor diversity?
9:30 am	*Caroline Abbott; The University of Chicago*	Taphonomic bias in the taxonomic identification of Lystrosaurus in the Karoo Basin, South Africa
9:45 am	*Edward Shelburne; University of Wisconsin - Milwaukee*	Assessing the paleoecology of fishes from the Mazon Creek fossil assemblage using morphometrics

8:00 AM – 10:00 AM **Rooms 615-616**

Odors and olfaction, Part 1

Chair: Mark Willis

8:00 am	*Carlos Ruiz, Marnix Vlot, Jennifer Wei, Koen Dechering, Jeff Riffell; University of Washington*	Decoding Chemosensory Signaling in Aedes aegypti: Insights from Glomerular Activity Mapping
8:15 am	*Pramod KC, Jeff Riffell; University of Washington*	Uncovering the odor transformation from antennal lobe neurons to descending neurons in the hawkmoth

8:30 am	*Grace Van-Susteren, Jeff Riffell; University of Washington*	Spectral and bi-modal learning in the yellow-fever mosquito, Aedes aegypti
8:45 am	*Anandrao Patil, Joshua Swore, Melanie Anderson, Jeff Riffell; University of Washington*	Olfactogenetic approach to understanding odor detection in Manduca sexta
9:00 am	*Jessleen Kanwal, David Miller, Mina Yousefelahiyeh, Jaison Omoto, Joe Parker; California Institute of Technology*	To Flex or Flee: Multimodal control of a chemical defense behavior in the rove beetle Dalotia
9:15 am	*Mark Willis, Shivansh Dave, Vivian Wheeler, Peter Coggan, Kim Thompson; Case Western Reserve University*	Do Insects Sniff with Their Wings?
9:30 am	*James Moloney, Irving Upshur, Chloe Lahondere; Truman State University, Virginia Tech*	Aedes japonicus phytophagy of fly poison (Amianthium musictoxicum) and analysis of floral volatiles

8:00 AM – 10:00 AM **Room 617**

Sensory biomechanics, ventilation and respiration

Chair: Andrew Schulz

8:00 am	*Robyn Grant, Eugene Starostin, Victor Goss, Tom Allen; Manchester Metropolitan University, University College London*	How does whisker shape affect mechanics?
8:15 am	*Joshua Gross, Tyler Boggs, Alyssa Hamm, Kaitlyn Reimer; University of Cincinnati*	Sensory tuning in subterranean environments
8:30 am	*Andrew Schulz, Lena Kaufmann, Michael Brecht, Gunther Richter, Katherine Kuchenbecker; Max Planck Institute for Intelligent Systems, Humboldt University of Berlin*	Whiskers that don't whisk: Unique structure from the absence of actuation in elephant whiskers
8:45 am	*Harry Tuazon, Emily Kaufman, Vishal Patil, Tuhin Chakrabortty, Saad Bhamla; Georgia Institute of Technology, Stanford University*	Latch and Float: Unveiling Collective Respiration Survival Strategies of California Blackworms
9:00 am	*Kirsten Ferner; Museum für Naturkunde - Leibniz-Institut für Evolutions- und Biodiversitätsforschung*	Development of the lung of the Gray short-tailed opossum (Monodelphis domestica) investigated by µCT
9:15 am	*Robert Cieri, Robert Shadwick, Marina Piscitelli-Doshkov, Merryn Tawhai; University of British Columbia*	Structure and function in the Cetacean pulmonary airway tree
9:30 am	*Tyler Boggs, Joshua Gross; University of Cincinnati*	The role for gill morphology in adaptation to low oxygen in the blind Mexican cavefish.
9:45 am	*Sarah Arnette, Stacy Farina, Matthew Kolmann, Lara Ferry; Arizona State University, Howard University*	The Ecomorphology of Batoid Gills

8:00 AM – 10:00 AM **Rooms 613-614**

Thermal biology

Chair: Jason Hodin

8:00 am	*Morgan Fleming, Kimberly Sheldon; University of Tennessee*	The impact of temperature and moisture on body size of 13 species of Appalachian Salamanders
8:30 am	*Julia Joos, Donald Miles; Ohio University*	Thermal ecology, activity patterns, and ecological niche modeling of Gopherus tortoises.
8:45 am	*Elva Lucero, Michael Newbrey, Ashley Desensi, Jennifer Newbrey; SWGA LSAMP, Columbus State University, Chattahoochee Riverkeeper*	Black and White crappie age-growth characteristics exhibit divergent responses to a thermal gradient
9:00 am	*Travis Robbins, Tiffany Hegdahl, Brandon Wolfsohn, Benjamin Haussmann, Stephanie Cromwell, Paul Ayayee; University of Nebraska Omaha*	Multiple lizard phenotypes respond to the latitudinal thermal gradient via countergradient variation
9:15 am	*Joanna Griffiths, Andrew Whitehead, Md Moshiur Rahman, Amanda Finger, Brittany Davis, Tien-Chieh Hung, Nann Fangue; University of California Davis, DWR*	Quantifying the evolutionary potential for Delta Smelt persistence in a warming habitat
9:30 am	*Christian Cox, Albert Chung, Aaron Bindrim, Georgia Davidson, Sarah Dean, Katherine Haines, Alexander Heise, Elana Mauer, Katrina Pfennig, Ethan Sorrell, David Tepper, Charlie van-den-Oord, Michael Logan; Florida International University, Princeton University, University of Virginia, Oberlin College, University of North Carolina, University of Nevada Reno*	Temperature-dependence of regional heterothermy in a diminutive snake

9:45 am	*Alexandra Martin, Diane Cordero, Alva Mihalik, Lindsey Swierk; Binghamton University*	Thermoregulatory behaviors and effects of water characteristics on dive duration in Anolis aquaticus

8:00 AM – 10:00 AM **Room 608**

Jumping, hopping, and climbing

Chair: Yakun Cao

8:00 am	*Dan Bartlett, Kaylin Raffle, Hayley Pettit, Miranda Brainard, Paityn Houglan, Kaelyn Gamel, Zachary Nopper, Rebekah Harden, Henry Astley, Austin Garner, Richard Londraville; University of Akron, DOD US Navy, Syracuse University*	Fish Out of Water: Effect of Substrate on Jumping Forces in the Blackspotted Rockskipper
8:15 am	*Matthew Boulanger, Talia Moore, Juri Miyamae, Gerry Hish; University of Michigan*	Jerboa Jump, But Can a Camera Catch it? Machine Vision for Behavioral Labeling in Captive Jerboa
8:30 am	*Christofer Clemente, Lauren Thornton, John Hutchinson, Glen Lichtwark, Craig McGowan, Alexis Wiktorowicz, Jonas Rubenson, Taylor Dick; University of the Sunshine Coast, University of Southern California, The Royal Veterinary College, Penn State University, The University of Queensland*	Unlocking Kangaroo Hopping: Posture, Tendon Stress, & the Metabolic Mystery
8:45 am	*Yakun Cao, Andrew Chacon, Agasthya Valluri, Nick Gravish; University of California San Diego*	Sticky feet do more than stick: adhesive pad use in level and vertical walking by Argentine ants
9:00 am	*Jonathan Huie, R. Pyron, Sandy Kawano; The George Washington University*	Locomotor kinematics and morphology of climbing Aneides salamanders
9:15 am	*Cassie Shriver, Andrew Schulz*, Dylan Scott, Jennifer Elgart, Joseph Mendelson, David Hu, Young-Hui Chang; Georgia Institute of Technology, Max Planck Institute for Intelligent Systems, Zoo Atlanta*	Defining Mammalian Climbing Gaits and their influence criteria including morphology and mechanics
9:30 am	*Xiao Yu, Zhenjie Jiang, Qian Kun Liu, Yaqing Wang, Chen Li; Johns Hopkins University*	CANCELLED – Direct pouncing behavior of jumping spiders Phidippus regius in web invasion
9:45 am	*Angela Mossor, Andrew McKamy, Melody Young, Michael Granatosky, Michael Butcher, Jesse Young; Northeast Ohio Medical University, Kent State University, Youngstown State University, New York Institute of Technology*	Inverse dynamics model for suspensory locomotion in brown-throated three-toed sloths

8:00 AM – 10:00 AM **Room 606**

Sensing Behavior: How animals sense their environment

Chairs: Henry Cerbone, Shivansh Dave

8:00 am	*Stanley Stupski, Floris van-Breugel; University of Nevada Reno*	Wind gates search strategies in free flight
8:15 am	*Jaleesa Houle, Floris van-Breugel; University of Nevada Reno*	Navigating the breeze: unraveling insect odor plume tracking strategies in dynamic windscapes
8:30 am	*Henry Cerbone, Emily Scott, Marco Heerenbrink, Graham Taylor; University of Oxford, Oxford Flight Group*	Investigation of avian avoidance response to wind turbine blade patterning
8:45 am	*Daniel Mejia, Lydia Burnett, Nicholas Hebdon, Lauryn DeGreef, Lindsay Waldrop; Chapman University, Florida International University*	Chemical properties of target odors affect search kinematics of detection dogs
9:00 am	*Victor Zhang, Cassidy Austin, Jim Kenagy, Horacio de-la-Iglesia; University of Washington*	Lack of circadian entrainment by time-restricted feeding in a day-active rodent
9:15 am	*Olivia Harris, Imogen Watts, Alex Winsor, Jenny Yi-Ting Sung, Nathan Morehouse; University of Cincinnati, University of Massachusetts-Amherst*	Behavioral evidence for di- and trichromatic color vision in jumping spiders using gaze tracking
9:30 am	*Shivansh Dave, Mark Willis; Case Western Reserve University*	Three-dimensional analysis of odor-guided orientation in freely flying hawkmoth, Manduca sexta
9:45 am	*Alaina Friedrich, Donald Miles, Brett Seymoure; Ohio University, University of Texas at El Paso*	Illuminating the effects of artificial light at night: vocal phenology of avian cavity nesters

8:00 AM – 10:00 AM **Room 607**

Cellular and molecular physiology, Part 2

Chair: Joseph Covi

8:00 am	*Riley Roth-Carter, Jason Podrabsky; Portland State University*	DNA damage and repair in response to anoxia in embryos of an annual killifish
8:15 am	*Chelsea Hughes, Jason Podrabsky, Dietmar Kueltz, Elizabeth Mojica; Portland State University, University of California Davis*	Characterization of Histone Modifications in Response to Anoxia in Killifish Cells
8:30 am	*Yufeng Zhang, Joshua Shirazi, Reihane Eric, Amir Hosein Sanjari-Nia, Birgit Schilling, Judith Campisi, Chidambaram Ramanathan; University of Memphis*	Characterize Cellular Senescence in Avian Species
8:45 am	*Taylor Murphy, Bernard Rees; University of New Orleans*	Multi-tissue examination of gene expression in the Gulf killifish during hypoxia
9:00 am	*Lydia Fyie, Katie Westby, Megan Meuti; The Ohio State University, Tyson Research Center, Washington University in St. Louis*	Light pollution disrupts the circadian clock in two mosquito species in their overwintering dormancy
9:15 am	*Emily Slesinger, Ben Laurel, Erik Thuesen, Samantha Mundorff, Mary Beth Hicks, Paul Iseri, Thomas Hurst; Oregon State University, Evergreen State College*	North Pacific larval fish differ in their biochemical responses to environmental stressors
9:30 am	*Joseph Covi; University of North Carolina Wilmington*	The shared structure and biochemistry of extreme dormancy in divergent crustacean zooplankton
9:45 am	*Esmirna Cantu, MD Rahman; University of Texas Rio Grande Valley*	Pesticides alter tissue morphology and induce oxidative stress and apoptosis in kidneys of goldfish

8:00 AM – 10:00 AM **Room 618**

Evolution of form and function, Part 2

Chair: Natalia Taft

8:00 am	*Hannah Farrell, Zeresenay Alemseged; University of Chicago*	Covariation in the cortical and trabecular structure of the ape clavicle
8:15 am	*Katherine Corn, Roi Holzman, Christopher Martin, T. Linscott, Josef Uyeda; Virginia Tech, Tel Aviv University, University of California Berkeley*	Leveraging kinematic performance landscapes to model the macroevolution of feeding in reef fishes
8:30 am	*Sean Trainor, Kory Evans; Rice University*	Keeping it in the Family: Discerning Patterns of Scale Shape diversity in Reef Fishes
8:45 am	*Natalia Taft, Jeremy Harris, Terry Grande; University of Wisconsin Parkside*	Comparative Morphology of the Pectoral Free Rays Among Scorpaenoid Fishes
9:00 am	*Emma Schachner, Andrew Moore, Aracely Martinez, Raul Diaz-Jr, Scott Echols, Jessie Atterholt, Roger Kissane, Brandon Hedrick, Karl Bates; University of Florida, Stony Brook University, Louisiana State University, California State University Los Angeles, The Medical Center for Birds, University of Liverpool, Cornell University*	The subpectoral diverticulum in hawks and other soaring birds: not just another air sac
9:15 am	*Rebecca German, Christopher Mayerl, Devon Stuart; Northeast Ohio Medical University, Northern Arizona University, DevonMedicalArt*	Evolution of Infant Feeding in Mammals
9:30 am	*Stephanie Baumgart, Andrew Moore, Emma Schachner; University of Florida, Stony Brook University*	Bone distribution in the avian humerus and its correlation with flight style
9:45 am	*Julia Chaumel-Cerda, George Lauder; Harvard University*	The tail of myliobatid stingrays: understanding structure and function

8:00 AM – 10:00 AM **Room 609**

The biology of thermal stress in corals

Chair: Sarah Davies

8:00 am	*Carsten Grupstra, Kirstin Meyer-Kaiser, Matthew-James Bennett, Maikani Andres, Hannah Aichelman, James Fifer, Shantelle Bartley, Paola Gonzalez, Carlos Tramonte, Alexa Huzar, Annabel Hughes, Aden Nagree, Hanny Rivera, Sarah Davies*; Woods Hole Oceanographic Institution, Boston University*	Functional variation across cryptic coral lineages in Palau
8:15 am	*Brook Nunn, Tanya Brown, Emma Timmins-Schiffman, Miranda Mudge, Mike Riffle, Jeremy Axworthy, Jesse Zaneveld, Lisa Rodrigues, Jacqueline Padilla-Gamino; University of Washington, Bothell*	Resilience in a time of stress. Using proteomics to understand what makes some corals resilient and
8:30 am	*Hannah Aichelman, Carsten Grupstra, Annabel Hughes, Viviana Guerra, Sarah Davies; Boston University, Smithsonian Tropical Research Institute*	Cryptic coral diversity shapes bleaching patterns in Bocas del Toro, Panama
8:45 am	*Nia Walker, Hayley Luke, Spencer Miller, Darienne Kealoha, Erika Johnston, Carlo Caruso, Elena Mujica, Joshua Hancock, Crawford Drury; University of Hawaii, Hawaii Institute of Marine Biology, University of California Berkeley*	Links between coral thermal resilience and symbiosis across generations
9:00 am	*Jacqueline Padilla-Gamino, Emma Timmins-Schiffman, Jeremy Axworthy, Tanya Brown, Callum Backstrom, Brook Nunn, Lisa Rodrigues; University of Washington*	The importance of life history strategies in the recovery of corals after thermal stress
9:15 am	*Florence Fields, Jill Ashey, Brett Jameson, Chloe Carbonne, Hollie Putnam, Gretchen Goodbody, Yvonne Sawall, Samantha De-Putron; University of Rhode Island, Bremuda Institue of Ocean Sciences, Central Caribbean Marine Institute*	Assessing physiological and molecular plasticity in the early stages of Porites astreoides
9:30 am	*Holland Elder, Sibelle O'Donnell, Sophia Lee, Eleftherios Karabelas, Daniella Leon, Maria Ruggeri, Courtney Klepac, Erin Muller, Carly Kenkel*; University of Southern California, Mote Marine Laboratory*	Intraspecific variation in thermal tolerance in the endangered Caribbean coral, Acropora palmata

8:15 AM – 9:30 AM **Room 604**

Thermal physiology, Part 3

Chair: Lars Tomanek

8:15 am	*Lars Tomanek, Melissa May, Maria Vasquez; California Polytechnic State University, Florida Gulf Coast University, Loyola Marymount University*	Food availability and sirtuins as regulators of the cellular stress responses in intertidal mussels.
8:30 am	*Yaamini Venkataraman, Sara Shapiro, Sarah Zuidema, Julia Kelso, Mikayla Newbrey, Lauren Stephenson, Carolyn Tepolt; Woods Hole Oceanographic Institution, Cornell University, University of Massachusetts, Amherst, St. Augustine's University*	Investigating genomic and plastic contributions to thermal tolerance in a non-indigenous crab
8:45 am	*Wes Dowd, Dietmar Kueltz; Washington State University, University of California Davis*	A muted proteomic response to thermal stress in a stenothermal Antarctic fish
9:00 am	*Jantina Toxopeus, Eddy Dowle, Lalitya Andaloori, Greg Ragland; St. Francis Xavier University, University of Otago, University of Colorado Denver*	Variation in thermal sensitivity of diapause drives life history timing in an insect pest
9:15 am	*Madison McIntyre, Etti Cooper, Krystal Tolley, Christopher Anderson; University of South Dakota, South African National Biodiversity Institute*	Investigating the Role of Evaporative Water Loss in Chameleons

10:00 AM – 12:00 PM **Room 603**

Advancing undergraduate education

Chair: Christopher Martin

10:00 am	*Michael Angilletta, Christofer Bang, Kiara Crawford, Madison Delaney, Tray Geiger, Rachel Griffin, Annie Hale, Alysha Hall, Christopher Pagliarulo, Liesel Sharabi, John VandenBrooks, Christian Wright; Arizona State University*	Using virtual reality to teach biological concepts and transferrable skills to undergraduates
10:15 am	*Alexandria Hansen, Myung Shin; California State University Fresno*	Scientists in the Making: Undergraduate Service-Learning to Inspire the Next Generation
10:30 am	*Christopher Martin; University of California Berkeley*	Course-based undergraduate research (CURE): the evolution of spectacular adaptations in fishes
10:45 am	*Anthony Auletta, R Keating Godfrey, Peter DiGennaro; University of Florida*	Making bioinformatics more accessible via course-based undergraduate research experiences (CUREs)
11:00 am	*Ke Er Zhang, Jodie Jenkinson, Gaël McGill, Susan Keen*; University of Toronto, Harvard Medical School, Digizyme, University of Calfornia Davis*	Design to Learn: Creating visual representations of biological events may deepen understanding
11:15 am	*Davida Smyth; Texas A&M University San Antonio*	STEM Educators as Civic Educators
11:30 am	*Rachel Pepper; University of Puget Sound*	Group Exams: Helping students learn the material from the exam experience
11:45 am	*Shelly McCain, Jimmy deMayo, Greg Ragland; University of Colorado Denver*	CUREs at scale: offering a fly genetic research experience to high enrollment labs

10:15 AM – 12:00 PM **Room 618**

Phenotypic evolution

Chair: Kristin Winchell

10:15 am	*David Grossnickle, William Brightly, Lucas Weaver, Kathryn Stanchak, Rachel Roston, Spencer Pevsner, C.Tristan Stayton, P. Polly, Chris Law; Oregon Institute of Technology, University of Sheffield, Kent State University, University of Washington, Seattle Children's Research Institute, University of Oxford, Bucknell University, Indiana University, University of Texas*	A novel method for measuring phenotypic convergence
10:30 am	*Alonso Delgado, Marymegan Daly, Charlotte Benedict; Ohio State University*	Is sea anemone venom fundamentally different
10:45 am	*Giovanna Yumi-Scorsim-Omura, Laurel Yohe; University Of North Carolina Charlotte*	Genetic Variations and Olfactory Adaptations in Mollusks: Insights into Environmental Perception
11:00 am	*Lucas Legendre, Carlos Rodriguez-Saltos, Chad Eliason, Julia Clarke; University of Texas Austin, Jackson School of Geosciences, Field Museum of Natural History*	Evolution of the syrinx of Apodiformes including the vocal-learning Trochilidae (Aves: Strisores)
11:15 am	*Laura Hunter, Zeresenay Alemseged; University of Chicago*	The role of phylogeny in the relationship between hamate morphology and dexterity of haplorhines
11:30 am	*Alejandro Damian-Serrano, Kaiden Walton, Anneliese Bishop-Perdue, Kelly Sutherland; University of Oregon*	The evolution of salp colony architectures and its consequences for multi-jet locomotion
11:45 am	*Anthony Snead, Kristin Winchell; New York University*	Phylogenetic Niche Models Offers Insights into Past Refugia and Niche Evolution in Plethodon spp.

10:15 AM – 12:00 PM **Room 602**

Evolutionary morphology

Chair: Priscila Rothier

10:15 am	*Jules Chabain, Philip Anderson; University of Illinois Urbana-Champaign*	Pressure to Pointed Perfection: Habitat Influence on Stingray Serration Evolution
10:30 am	*Joseph Labun; University of the Fraser Valley*	Changes in Gasterosteus aculeatus bone density and morphology in response to calcium concentration

10:45 am	*Priscila Rothier, Anne-Claire Fabre, Roger Benson, Quentin Martinez, Pierre-Henri Fabre, Pedro Godoy, Vinicius Anelli, Brandon Hedrick, Anthony Herrel; Cornell University, American Museum of Natural History, Université de Montpellier, Universidade de São Paulo*	Unveiling the role of locomotor ecology and body size on the evolution of mammalian limb morphology
11:00 am	*Ceren Ordas, Jeanne Serb; Iowa State University*	Investigating the energetic cost of the distributed visual system of scallops
11:15 am	*Amanda Hewes, Todd McWhorter, Alejandro Rico-Guevara; University of Washington Seattle, University of Adelaide*	What determines feeding and pollination efficiency in avian pollination interactions?
11:30 am	*Bryan MacNeill, Fae Bramblepelt, Michael McKain, Aaron Rodriguez, Eduardo Ruiz-Sanchez, Juan Pablo Ortiz-Brunel; University of Alabama, University of Guadalajara*	Plastome phylogenomics of Agave subgenus Manfreda
11:45 am	*Jenny Burrow, Rachel Wilkins, Maggie Mayberry, Annaliese Novinger, Katherine Naumer, Haley Muse, Dalton McCart, Avery Russell; Missouri State University*	How bee learning might influence the evolution of a common flower morphology

10:30 AM – 11:45 AM **Ballroom C**

Birds on the wing

Chairs: Samik Bhattacharya, Chris Clark

10:30 am	*Chris Clark, Juan Areta; University of California Riverside, Instituto de Bio y Geociencias del Noroeste Argentino - CONICET*	How Nightjars produce loud wing-snaps during courtship
10:45 am	*Rosalee Elting, Md Zafar Anwar, Donald Powers, Bo Cheng, Haoxiang Luo, Bret Tobalske; University of Montana, Pennsylvania State University, George Fox University, Vanderbilt University*	Applying the Phenotype-Performance-Fitness Paradigm to Explore Aerial Combat in Hummingbirds.
11:00 am	*Samik Bhattacharya; University of Central Florida*	The Effect of Ground on Perching Maneuver
11:15 am	*Rémy Delplanche, Kathryn Greil, Ruowen Tu, Henry Sodano, Daniel Inman, Bret Tobalske; University of Montana, University of Michigan*	Effects of perturbation by vertical gusts upon the kinematics of gliding flight in doves
11:30 am	*Natalie Wright, Katherine Crawford, Abigail Garcia, Olivia Rataezyk; Kenyon College*	Mock tags cause a short-term decrease in takeoff velocity in House Sparrows

10:30 AM – 11:45 AM **Room 607**

Complementary to S8: Modeling organismal responses to changing environments

Chairs: Dianna Padilla, Kendra Greenlee

10:30 am	*Andre Szejner-Sigal, Irja Ratikainen, Øystein Varpe, Caroline Williams; North Dakota State University, Norwegian University of Science and Technology, University of Bergen, University of California Berkeley*	Winter energy allocation and fitness shift in response to stochastic snow cover in a montane beetle
10:45 am	*Andrew Gordus, Darya Task, Abel Corver; Johns Hopkins University*	Drug-induced changes to spider behaviors in the changing landscape of the web during web assembly
11:00 am	*Claudia Crowther, Lisa Schwanz; Michigan State University, The University of New South Wales*	Modelling plasticity and the evolution of environmental sex determination in a changing world
11:15 am	*Ione Hunt-von-Herbing; University of North Texas*	The Energetic Cost of Stress in Developing Fishes: Quantifying allostatic load indices (ALIs).
11:30 am	*Johnathan O'Neil, Pankaj Rohilla, Saad Bhamla; Georgia Institute of Technology*	Role of different legs in directionality and propulsion of Microvelia on water

10:30 AM – 11:45 AM **Rooms 613-614**

Epidemiology

Chairs: Alyssa Gehman, Tosha Kelly

10:30 am	*Madeline Sudnick, Erin Sauer, Ashley Love, Sarah DuRant; University of Arkansas, University of Connecticut*	Partial immunity after first infection is long lasting and reduces MG transmission
10:45 am	*Tosha Kelly, Keegan Stansberry, Melanie Kimball, Kaitlin Couvillion, Allison Cannon, Christine Lattin; Louisiana State University*	Reducing corticosterone may affect resistance and tolerance during acute avian malaria infection
11:00 am	*Bennett Hardy, Erin Muths, W. Chris Funk, Larissa Bailey; Chapman University, US Geological Survey, Colorado State University*	Quantifying intraspecific variation in host tolerance and resistance to a lethal pathogen
11:15 am	*Vanessa Marshall, Wesley Neely, Samantha Siomko, Shannon Buttimer, Jack Boyette, Carlos Becker, Ryan Earley; University of Alabama, Texas State University, The Pennsylvania State University*	Iron contamination mediates chytrid infection in Eastern newts: evidence from a field mesocosm study
11:30 am	*Morgan Eisenlord; Western Washington University*	High infectivity and waterborne transmission of seagrass wasting disease

10:30 AM – 11:45 AM **Room 604**

Sound and hearing

Chair: Megan Gall

10:30 am	*Megan Gall, Trina Chou; Vassar College*	Noise effects on black-capped chickadee, tufted titmiouse, and white-breasted nuthatch audition
10:45 am	*Loranzie Rogers, Jonathan Perelmuter, Nicholas Lozier, Brooke Vetter, Thomas Quigley, Julian Davis, Andrew Brown, Paul Forlano, Joseph Sisneros; Harvard University, Cornell University, University of Pittsburgh, University of St. Thomas, CUNY Brooklyn College, University of Southern Indiana, National Science Foundation, University of Washington*	Neural mechanisms of sound source localization in a vocal fish
11:00 am	*Kelly Ronald, Olivia Sprys-Tellner, Jacob Bergstrom, Peyton Hallemann, John Wenderski, Natalia Gonzalez-Pech; Hope College*	Urbanization and air quality can impact auditory processing in an urban-adapted songbird
11:15 am	*Lata Kalra, Mark Bee; University of Minnesota*	Perceptual salience is insufficient for auditory streaming in eastern gray treefrogs
11:30 am	*Elizabeth Derryberry, Graham Derryberry, Ruth Simberloff, Amy Luo, Michael Blum, David Luther, Jennifer Phillips; University of Tennessee, George Mason University, Washington State University*	Non-parallel behavioral responses to soundscape perturbations during the COVID-19 pandemic

10:30 AM – 11:45 AM **Room 609**

Corals and their partners in a changing world

Chair: Corrine Avidan

10:30 am	*Corrine Avidan, Roi Holzman; Brown University, Tel Aviv University*	The butterfly(fish) effect: Using Chaetodontidae territories as bioindicators
10:45 am	*Evelyn Abbott, Alexa Huzar, Mikhail Matz; Boston University, University of Texas Austin*	The lost symbiont sequences: New methodology for studying adaptation in symbiotic algae
11:00 am	*Karim Primov, Mikhail Matz, Mark Kirkpatrick; The University of Texas Austin*	Microbial predictors of bleaching in Great Barrier Reef Acropora millepora
11:15 am	*Hannah Reich, MacNeill Matthews, Nicole Cunningham, Corinne Richard, Cassidy Stadtfeld, Hayden Wink, The Students of Siderophore Superlab (Haverford-College-Bio300), The TAs of Siderophore Superlab (Haverford-College-Bio300), Kristen Whalen, Elizabeth Harvey; University of New Hampshire, Haverford College*	Iron wars over ligand soup: Exploring chemical crosstalk in Symbiodiniaceae - bacteria interactions

11:30 am	*Colleen Bove, Annabel Hughes, Alexa Huzar, Karl Castillo, Daniel Segrè, Sarah Davies; Ursinus College, Boston University University of North Carolina Chapel Hill*	Environmental drivers of coral-associated algal and microbial communities across multiple scales

10:30 AM – 12:00 PM **Rooms 615-616**

Odors and olfaction, Part 2

Chair: Gregory Pask

10:30 am	*Samuel Wechsler, Vikas Bhandawat; Drexel, Drexel University*	Characterizing the sensorimotor transformation in the fly olfactory system to naturalistic stimuli
10:45 am	*Jesse Granger, Gabrielle Nevitt, Sonke Johnsen; Duke University*	Nearest Neighbors as a foraging cue: Modeling the impact of collective movement on foraging
11:00 am	*Nicholas Kathman, Katherine Nagel, Hannah Gattuso; NYU Langone Medical Center, NYU School of Medicine*	Complementary dynamics of two central brain neuron populations support goal-directed odor navigation
11:15 am	*Sarah Lower, Samuel Pring, Hanh Tran, Mathew Price, Robert Mitchell; Bucknell University*	Illuminating odorant receptor diversity and sex-biased expression in the common eastern firefly
11:30 am	*Katie O'Connor, Yiyu Zheng, Nathan Peot, Zhangyi Wu, Sean Halloran, Jocelyn Millar, Gregory Pask, Sarah Lower, Douglas Collins, Greg Fahrner; Bucknell University, University of California Riverside, Middlebury College*	Unveiling the Secrets of Seductive Smell: Comparison of female firefly extracts to male attraction
11:45 am	*Gregory Pask, Sarah Lower, Kyle Arriola, Sean Halloran, Hannah Holmes, Daphné Halley, Yiyu Zheng, Douglas Collins, Jocelyn Millar; Middlebury College, Bucknell University, University of California Riverside*	Identification of a Sex Pheromone of the Winter Firefly, Photinus corruscus
12:00 pm	*Joshua Rivera, Joseph Rangel, André Luiz Carvalho, Adam Leaché, Matthew Fujita; University of Texas Arlington, The University of Washington*	CANCELLED – Femoral Gland Gene Expression in Parthenogenetic Lizards of the Genus Aspidoscelis

10:30 AM – 12:00 PM **Room 606**

How do organisms cope with stress

Chair: Cara Love

10:30 am	*August Easton-Calabria, Madalyn Laskowski, James Crall; University of Wisconsin Madison*	Automated tracking of behavioral responses to stressors across populations and species in Bombus
10:45 am	*Cara Love, Brian Arnold, Shane Campbell-Staton; Princeton University*	Multilevel examination of radiation stress and signatures of selection in Chernobyl wolves
11:00 am	*Dawn Noren, Jane Christopherson, Kristine Burtis, Tayler Kaplan, Lydia Staggs, Nick Tolimieri, Amy McCoy, Judy St.-Leger, Todd Robeck; NOAA NMFS Northwest Fisheries Science Center, University of Washington, SeaWorld California, SeaWorld Texas, SeaWorld Florida, SeaWorld Parks and Entertainment*	Intrinsic variation in wild killer whale body condition indices evaluated using trained individuals
11:15 am	*Brandon Hedrick, Florence Wen, Oliver Ljustina; Cornell University, Southeastern Louisiana University*	City Living: Does Urbanization Increase Stress in Eastern Musk Turtles?
11:30 am	*Janet Steven, Jenna Miladin, Katherine Ransone; Christopher Newport University*	Element concentrations in Silene leaves under water stress
11:45 am	*Lu Lin, Andrew Esbaugh; University of Texas Austin, Marine Science Inistitute*	Mechanisms of acid-base regulation of larval sheepshead minnows across a salinity gradient

10:30 AM – 12:00 PM **Room 608**

Social behavior, Part 2

Chairs: Julia Zeh, Ben Tidswell

10:30 am	*Michael Reichert, Barney Luttbeg, Elizabeth Hobson; Oklahoma State University*	Individual-group feedbacks and the role of perception in a simulated communication network
10:45 am	*Noah Egan, Haolin Zeng, Ram Avinery, Hosain Bagheri, Shengkai Li, Takao Sasaki, Daniel Goldman; Georgia Institute of Technology, University of Georgia, Princeton University*	Global coordination using local information in fire ant pontoon bridges
11:00 am	*Julia Zeh, Marc Lammers, Adam Pack, Susan Parks; Syracuse University, Hawaiian Islands Humpback Whale National Marine Sanctuary, University of Hawai'i at Hilo*	Behavior of humpback whale yearlings in Hawaii and comparisons with newborn calves
11:15 am	*Hosain Bagheri, Michael Goodisman, Daniel Goldman; Georgia Institute of Technology*	Environmental perturbations initiate compaction in fire ant clusters but at an energetic cost
11:30 am	*Ben Tidswell, Eric Tytell; Tufts University*	The Influence of Group Size on the Startle Responses of Giant Danios in Light and Darkness
11:45 am	*Lili Vizer, Douglas Alvarado, Colleen Bove, Annabel Hughes, Sarah Davies, Peter Buston; Boston University, Ursinus College*	Phenotypic Plasticity Associated with the Adoption of Social Positions in Clown Anemonefish

10:30 AM – 12:00 PM **Room 617**

What's on the surface?

Chair: Chloe Nash

10:30 am	*Chloe Nash, Linnea Lungstrom, Mark Westneat; Okinawa Institute for Science and Technology, University of Chicago*	Evolution of substrate use across global assemblages of the goatfishes (Family Mullidae)
10:45 am	*Elizabeth Surovic, Terry Ord; The University of New South Wales*	Morphological adaptations in recurrent water-land transitions
11:00 am	*Kelly Dorgan, Chesna Cox, Nina Stark, Grace Massey, Carl Friedrichs, Adrian Rodriguez-Marek, Md Rejwanur Rahman; Dauphin Island Sea Lab, University of Florida, Virginia Institute of Marine Science, Virginia Tech*	Seasonal changes in ecosystem engineering of marine sediments by infauna
11:15 am	*Chelsea Bennice, Lauren Krausfeldt, W. Brooks, Jose Lopez; Florida Atlantic University, Nova Southeastern University*	Octopus Skincare: Insights to Understanding the Microbiome for Two Tropical Octopuses
11:30 am	*Marnie Freckelton, Brian Nedved, Michael Hadfield; University of Hawaii*	Bacterial polysaccharide triggers settlement and metamorphosis in a polychaete and a coral
11:45 am	*Or Ben-Zvi, Paul Roberts, Devin Ratelle, Joseph Snider, Pichaya Lertvilai, Daniel Wangpraseurt, Dimitri Deheyn, Jennifer Smith, Jules Jaffe; University of California San Diego, Scripps Institute of Oceanography*	BUMP: a Benthic Underwater Microscope with Pulse Amplitude Modulation Capabilities

10:45 AM – 12:00 PM **Room 612**

Complementary to S7: Convergent evolution across levels of biological organization, organisms, and time, Part 1

Chairs: Jessica Goodheart, Emily Lau, Rebecca Varney

10:45 am	*Autumn Magnuson, Mason Dean, James Weaver, Joao Pedro Fontenelle, Nathan Lovejoy, Matthew Kolmann; University of Louisville, City University of Hong Kong, Harvard University, University of Toronto*	Saltwater to freshwater transitions in stingrays result in diversification, but not convergence
11:00 am	*Bridget Vincent, Emily Lau, Sriram Ramamurthy, Clara Bourguignon, Todd Oakley; University of California Santa Barbara*	Spotlight on cephalopods: How early evolutionary steps constrain photophore morphology
11:15 am	*Douglas Eernisse, Daniel Speiser; California State University Fullerton, University of South Carolina*	A distributed visual system of pigmented eyespots arose within a genus of tropical New World chitons
11:30 am	*Emmy Delekta, Matthew Kolmann; University of Louisville*	Assessing patterns of convergence in burrowing crayfish
11:45 am	*Jasmin Camacho, Andrea Bernal, Selene Swanson, Nicolas Rohner; Stowers Institute for Medical Research, University of Washington*	The insatiable sweet tooth: molecular adaptations to increased sugar consumption in mammals

Saturday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 2:30 PM **Ballroom C**

The Carl Gans Award: Dr. Michael Granatosky
Decoding Behavioral Innovation Beyond Anatomy
Sponsored by Journal of Experimental Biology

2:30 PM – 3:30 PM **Room 604**

Neuroanatomy, Part 2
Chair: Chiara Anselmi

2:30 pm	*Lisa Cooper, Matthew Smith, J.G.M. Thewissen; Northeast Ohio Medical University (NEOMED)*	Compositional differences in the cerebellum of beluga and bowhead whales
2:45 pm	*Nicole Moody, Nicole Melendez, Matthew Fuxjager; Brown University, University of Puerto Rico*	Neuromotor specialization for gestural communication in the downy woodpecker
3:00 pm	*Aria Ma, Sarah Holbrook, Jennifer Stauffer, Greg Cox; The Jackson Laboratory*	Characterizing limb-girdle muscular dystrophy type 2G from Titin cap mutation in mouse models
3:15 pm	*Michael Meece, Diego Zagazeta, Shubham Rathore, Elke Buschbeck; University of Cincinnati*	Exposure to long-wavelength light modulates recovery of retinal integrity in Drosophila melanogaster

2:30 PM – 3:45 PM **Room 612**

Complementary to S7: Convergent evolution across levels of biological organization, organisms, and time, Part 2
Chairs: Emily Lau, Rebecca Varney, Jessica Goodheart

2:45 pm	*Matthew Travert, Paulyn Cartwright, Kent Winata; University of Kansas*	The cellular dynamics of medusa development reveals distinct developmental trajectories in Medusozoa
3:15 pm	*Sara Lipshutz, Mark Hibbins, Kimberly Rosvall*; Duke University, University of Toronto, Indiana University*	Phylotranscriptomics and the evolution of aggression in cavity-nesting songbirds
3:30 pm	*Siena McKim, Thomas Turner; University of California Santa Barbara*	A thread on the convergent evolution of silk in crustaceans

2:30 PM – 3:45 PM **Room 607**

Complementary to S9: Evolution, physiology, and biomechanics of insect flight
Chairs: TBD

2:30 pm	*Anna Verbe, Bradley Dickerson; Princeton University*	Functionally stratified encoding on Drosophila halteres
2:45 pm	*Christina McDonald, Saad Bhamla; Georgia Tech*	Biomechanics of rapid aerial righting in waxy, wingless planthopper nymphs
3:00 pm	*Lisa Treidel, Caroline Williams, Colin Meiklejohn, Kristi Montooth; University of Nebraska Lincoln, University of California Berkeley*	How do dispersal strategies evolve? Uncovering the genetic basis of flight polymorphisms
3:15 pm	*Lourenco Martins, Jacqueline Lebenzon, Lisa Treidel, Colin Meiklejohn, Kristi Montooth, Caroline Williams; University of California Berkeley, University of Nebraska Lincoln*	Testing the threshold trait model to predict plasticity of flight dimorphism in Gryllus crickets
3:30 pm	*Olaf Ellers, Caleb Gordon; Bowdoin College, Yale University*	Scaling of induced power from dragonflies suggests that griffenflies were under-powered

2:30 PM – 3:45 PM **Room 606**

Aquatic neurobiology, Part 3

Chair: Lorian Schweikert

2:30 pm	*Megan Porter, Sitara Palecanda, Mireille Steck; University of Hawai'i at Mānoa*	Compounding complexity: Investigations of expressed opsin diversity across stomatopod species
2:45 pm	*Brendan Gibbs, James Strother, James Liao; University of Florida, Whitney Laboratory for Marine Bioscience*	Fear and peripheral sensory processing: The effect of an alarm cue on lateral line sensitivity
3:00 pm	*Lorian Schweikert, Laura Bagge, Lydia Naughton, Jacob Bolin, Benjamin Wheeler, michael Grace, Heather Bracken-Grissom, Sonke Johnsen; University of North Carolina Wilmington, Florida International University, Duke University*	Dynamic Light Filtering Over Dermal Opsin as a Sensory Feedback System in Fish Color Change
3:15 pm	*Lydia Naughton, Laura Bagge, Sonke Johnsen, Lorian Schweikert; University of North Carolina Wilmington, Duke University*	A new model of sensory feedback for regulating dynamic color change
3:30 pm	*Julia Notar, Hazel Havens, Sonke Johnsen; Duke University, University of North Carolina Chapel Hill*	Turn on the Bright Lights: the Sea Urchin *L. variegatus* is not Uniformly Sensitive to Light

2:30 PM – 4:00 PM **Room 603**

Adhesion

Chairs: Keegan Lutek, Diego Sustaita

2:30 pm	*Mandy Cai, Stephen Yanoviak, Alyssa Stark; Villanova University, University of Louisville*	Too Humid to Handle: The Effect of Ambient Humidity on Ant Adhesion, Locomotion, and Behavior
2:45 pm	*Guillermo Amador, Brett Klaassen-van-Oorschot, Benjamin Karman, Rutger Leenders; Wageningen University, Vrije Universiteit Amsterdam*	Scaling of stick insect stickiness
3:00 pm	*Andrew Moura, Austin Garner, Aria DiLeo, Maria Garcia; Syracuse University, Onendaga Community College*	Running up that hill: Locomotion of sea urchins on variable inclines and surface roughness
3:15 pm	*Keegan Lutek, Alyssa Stark; Villanova University*	Adhesive performance under different strain rates in Strongylocentrotus purpuratus
3:30 pm	*Diego Sustaita, Dulce Robles-Martinez, Mason Laurin; California State University San Marcos*	Anatomical and behavioral correlates of grasping performance in the salt marsh harvest mouse
3:45 pm	*Carla Narvaez-Diaz, Daniel Okamoto; Rhode Island College, Florida State University*	Effect of climate change on the adhesive performance of the sea urchin S. purpuratus

2:30 PM – 4:00 PM **Room 618**

Science outreach

Chair: Joseph Spagna

2:30 pm	*Joseph Spagna, Emily Monroe; William Paterson University*	The WPU Honors Track as model for integrating research into undergraduate biology curricula
2:45 pm	*Kelly Kissane; Lassen Community College*	Death to Powerpoints: How to Lecture Without Them.
3:00 pm	*Elizabeth Clark, Laura Lynn Gonzalez; University of California Berkeley*	Trouble in Sunshine Creek: Exploring virtual reality as an effective science communication tool
3:15 pm	*Jacob Botello, Matthew Wolak; Auburn University*	What's in a 'Game'? The Effects of a Video Game on Evolution Comprehension Among Undergraduates
3:30 pm	*Peter Zani;*	What I learned identifying 100,000 lizards on iNaturalist: the potential of community-based science
3:45 pm	*Daniel Brooks, Maria Alejandra Petino-Zappala; Ruhr University Bochum*	CANCELLED – Consolidation and Fragmentation of Biological Concepts

2:30 PM – 4:00 PM **Room 608**

Insects in flight

Chairs: Tsevi Beatus, Braden Cote

2:30 pm	*Michelle Hickner, Urban Fasel, Tom Daniel, Michael Dickinson, Steven Brunton, Bingni Brunton; University of Washington, Imperial College London, California Institute of Technology*	Tradeoffs between aerodynamic force production and sensing in insect wing and haltere morphology
2:45 pm	*Hyee Ryun Lee, Robert Dudley; University of California, Berkeley*	Mechanosensory role of elytra in beetle flight
3:00 pm	*Braden Cote, Mark Jankauski; Montana State University*	Empirical Evaluation of Wing Hinge Mechanics in Bumble Bees
3:15 pm	*ori stearns, Roi Gurka, Gal Ribak; Tel-Aviv University, Coastal Carolina University*	The flapping kinematics of forward flight aerodynamics in a large beetle (Betocera rufomanculata)
3:30 pm	*Suyash Agrawal, Christopher Rahn, Md Zafar Anwar, Bo Cheng; Pennsylvania State University*	Architectures and key attributes of wing neuromechanical system of natural fliers
3:45 pm	*Roni Maya, Noam Lerner, Omri Ben-Dov, Arion Pons, Tsevi Beatus*; The Hebrew University of Jerusalem Israel, Max Planck Institute for Intelligent Systems, Chalmers University*	A hull reconstruction-reprojection method for pose estimation of free-flying fruit flies

2:30 PM – 4:00 PM **Rooms 615-616**

Wings, limbs, and fins: Part 2

Chairs: Brett Aiello, Usama Sikandar

2:45 pm	*Jasmin Wong, Shane Windsor; University of Bristol*	The effect of wing morphing on the vibration properties of feathers in relation to air flow sensing
3:00 pm	*Vikram Baliga, Roslyn Dakin, Douglas Wylie, Douglas Altshuler; University of British Columbia, Carleton University*	A hypothesis for the role of optic flow in controlling different flight modes in hummingbirds
3:15 pm	*Usama Sikandar, Brett Aiello, Simon Sponberg; Georgia Institute of Technology, Seton Hill University*	Do silkmoths and butterflies fly alike?
3:30 pm	*Brett Aiello, Usama Sikandar, Sarah Maccarelli, Katie Pfuhl, Nicole Mason, Jared Johnson, Joanna Baker, Ethan Wold, Leo Wood, Chris Hamilton, Milton Tan, Akito Kawahara, Simon Sponberg; Seton Hill University, Georgia Institute of Technology, Stanford University, University of Illinois at Urbana-Champaign, University of Florida*	The evolution of distinct flight strategies in bombycoid moths and the development of a model clade
3:45 pm	*Edwin Dickinson, Melody Young, Michael Granatosky; New York Institute of Technology*	In vivo gripping forces and their anatomical correlates in lemurs

2:30 PM – 4:00 PM **Rooms 613-614**

Immunity

Chairs: David Chang van Oordt, Franziska Sandmeier

2:30 pm	*David Chang-van-Oordt, Daniel Metz, Oyebola Oyesola, Seokyoon Chang, P'ng Loke, Clayton Cressler, Andrea Graham; Princeton University, University of Nebraska-Lincoln, NIH*	Initial immune state of rewilded lab mice as a driver of host susceptibility to intestinal whipworms
2:45 pm	*Austin Allison, Helen Chmura, Cory Williams; Colorado State University, Rocky Mountain Research Station, United States Forest Service*	Biologgers reveal physiology and behavior trade-offs under immune challenge in a free-ranging mammal
3:00 pm	*Franziska Sandmeier, Kiara Olson, Angelina Martin, Taylor Urban; Colorado State University - Pueblo*	Immunological Memory or Immunological Priming in Tortoises
3:15 pm	*Jennifer Terry, Lorin Neuman-Lee; Arkansas State University*	Differential Innate Immune Component Contribution Against Two Bacteria in a Wild Freshwater Turtle
3:30 pm	*Stephen Ferguson, Harrison Williams, Catherine Grey, Elizabeth Danka; St. Norbert College*	Artificial light at night induces immune-telomere trade-offs in house sparrows (Passer domesticus)

2:30 PM – 4:00 PM **Room 617**

Development and life history

Chair: Alyssa Liguori

2:30 pm	*Aubrey Jane, Doug Rasher, Jesica Waller, Eric Annis, Markus Frederich; University of New England, Bigelow Laboratory for Ocean Sciences, Maine Department of Marine Resources, Hood College*	Transcriptomic changes in American lobster (Homarus americanus) developmental stages I through V
2:45 pm	*Alyssa Liguori, Sovannarith Korm, Alex Profetto, Emily Richters, Kristin Gribble; State University of New York at New Paltz, Marine Biological Laboratory, McLean Hospital*	Multigenerational patterns of maternal age effects on lifespan and reproduction in a rotifer
3:00 pm	*Richard Emlet; Oregon Insitute of Marine Biology, University of Oregon*	Developmental diversity among brittle stars from the Caribbean coast of Panama
3:15 pm	*Sheila Kitchen, Angela Poole, Alexa Bilsky, Mary Rowland, Samuel Piorkowski, Kira Turnham, Mónica Medina, Aki Ohdera; Texas A&M University at Galveston, Berry College, Pennsylvania State University, California Institute of Technology*	Inhibition of sphingosine kinase disrupts symbiosis of two cnidarian model systems
3:30 pm	*David Plachetzki, M Pankey, Jennifer Spillane, Joseph Ryan, Matthew MacManes; University of New Hampshire, Smithsonian Institution, The Whitney Laboratory for Marine Bioscience, The University of Florida*	Functional phylogenomic analyses of metazoan genome content
3:45 pm	*Avery Russell; Missouri State University*	Ecological and evolutionarily consequences of buzz pollination

2:30 PM – 4:00 PM **Room 602**

Biomechanical modeling

Chairs: Alessandro Maria Selvitella, Shir Bar

2:30 pm	*Alessandro Maria Selvitella, Kathleen Lois Foster; Purdue University Fort Wayne, Ball State University*	On the variability of human leg stiffness across strides and data analysis consequences
2:45 pm	*Yi-Yu Wang, Kuan-Chih Kuan, Tzu-Chia Liu, Chun-I Chiu, Hou-Feng Li, Kai-Jung Chi*; University College London, National Chung-Hsing University, Chiang Mai University*	Twisting tale of termite's elastic mandibles: Conceptual modeling for mechanics
3:00 pm	*Lillian Kidd, John Koberstein, Srinivas Turaga, Alison Tebo; University of Maryland, Baltimore County, Janelia Research Campus*	Green Fluorescent Proteins: Examining the Underlying Factors of Brightness Using Machine Learning
3:15 pm	*Shir Bar, Roi Holzman, Shai Avidan; Tel Aviv University*	Can I automate this? Managing expectations from AI-based tools
3:30 pm	*Christopher Richards, Tiina Murtola; Royal Veterinary College*	Modelling the effects of intrinsic muscle properties on the coordination of human reaching
3:45 pm	*Lyndsy Stacy, Ashley Teufel, Davida Smyth; Texas A&M University- San Antonio*	Agent-Based Modeling to Assess Optimal Conditions to Minimize Airborne Transmission

2:30 PM – 4:00 PM **Room 609**

Conservation biology of corals: Genetic and environmental correlates

Chair: Trinity Conn

2:30 pm	*Trinity Conn, Jessie Renton, Zoe Dellaert, Valérie Chamberland, Benjamin Werner, Thorsten Reusch, Iliana Baums; Pennsylvania State University, University of London, University of Rhode Island, SECORE International, Barts Cancer Institute, Helmholtz Centre for Ocean Research Kiel, Helmholtz Institute for Functional Marine Biodiversity*	Towards the Integration of Somatic Mutations into Models of Coral Development and Evolution

2:45 pm	*Maria Ruggeri, Iliana Baums, Macarena Blanco-Pimentel, Pol Bosch, Lisa Carne, Nichole Danser, Phanor Montoya-Maya, Megan Morikawa, Erin Muller, Andrew Baker, Ross Cunning, Craig Dahlgren, John Parkinson, Carly Kenkel; University of Southern California, Helmholtz Institute for Functional Marine Biodiversity (HIFMB), Ocean Encounters, Fragments of Hope, Scubble Bubbles, Coral Restoration Foundation, Iberostar, Mote Marine Laboratory, University of Miami, Shedd Aquarium, Perry Institute, University of South Florida*	Demographic history and resilience potential of the threatened Caribbean coral, Acropora cervicornis
3:00 pm	*Ashley Rossin, Gaby Carpenter, Gillian Coleman, Morgan Coleman, Benjamin Farmer, Daniel Holstein; Louisiana State University*	Caribbean upper mesophotic corals reproductively out-perform their shallow counterparts
3:15 pm	*Jeremy Axworthy, Sicheng Wang, Michelle DiBenedetto, Allie Johnson, Ruth Sofield, Jacqueline Padilla-Gamino; University of Washington, Western Washington University*	Microplastics ingestion and adhesion by reef-building corals under different flow rates
3:30 pm	*Nicolas Locatelli, Richard Karp, Keri O'Neil, Andrew Baker, Ross Cunning, Iliana Baums; The Pennsylvania State University, University of Miami, The Florida Aquarium, Shedd Aquarium, Helmholtz Institute for Functional Marine Biodiversity (HIFMB)*	A novel haplotype reference panel for the critically endangered coral, Acropora palmata

4:00 PM – 5:00 PM **Ballroom C**

John A. Moore Lectureship: Dr. David Shiffman

You're gonna need a bigger engagement strategy: Lessons learned from teaching the public about shark science and conservation

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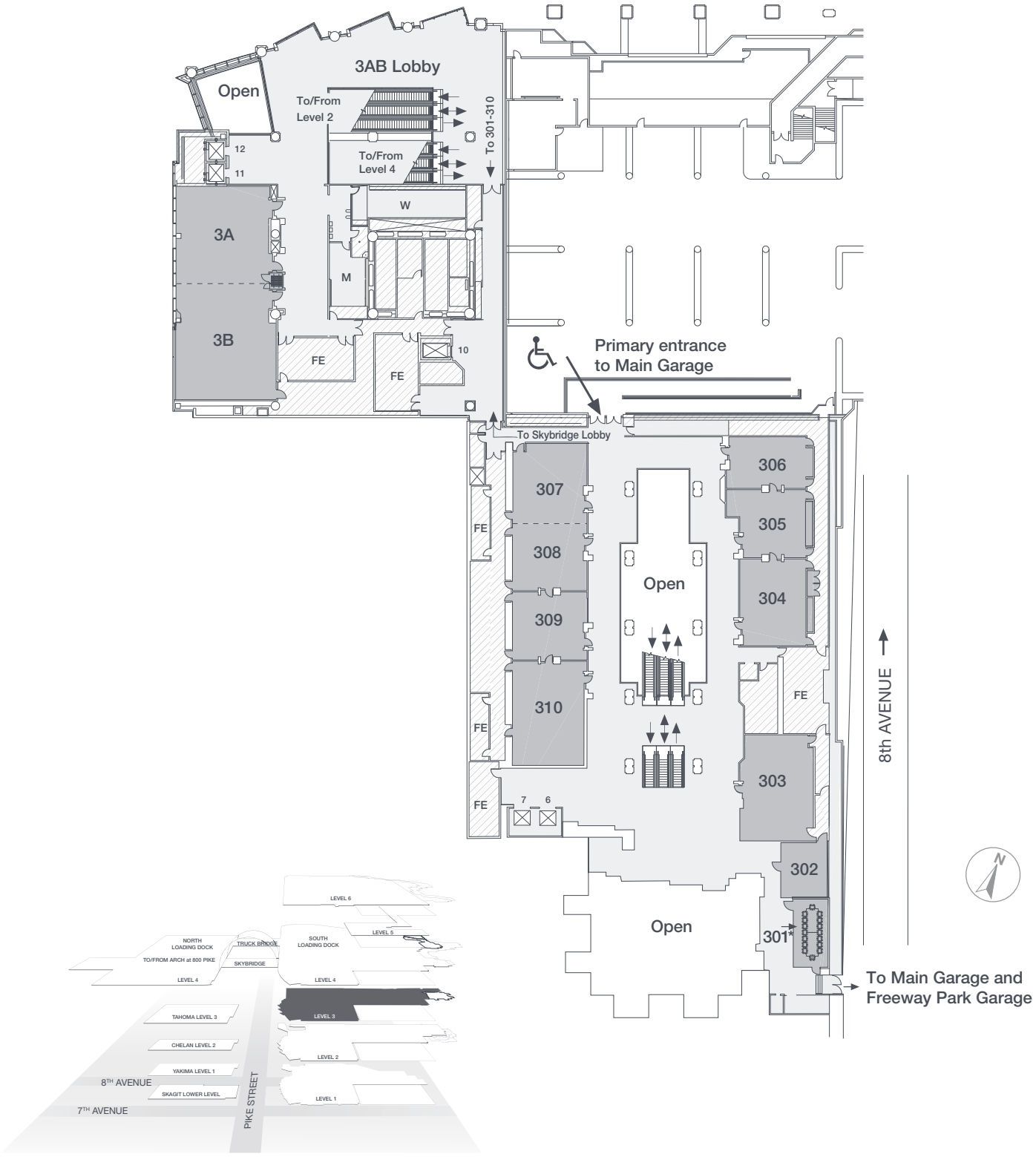
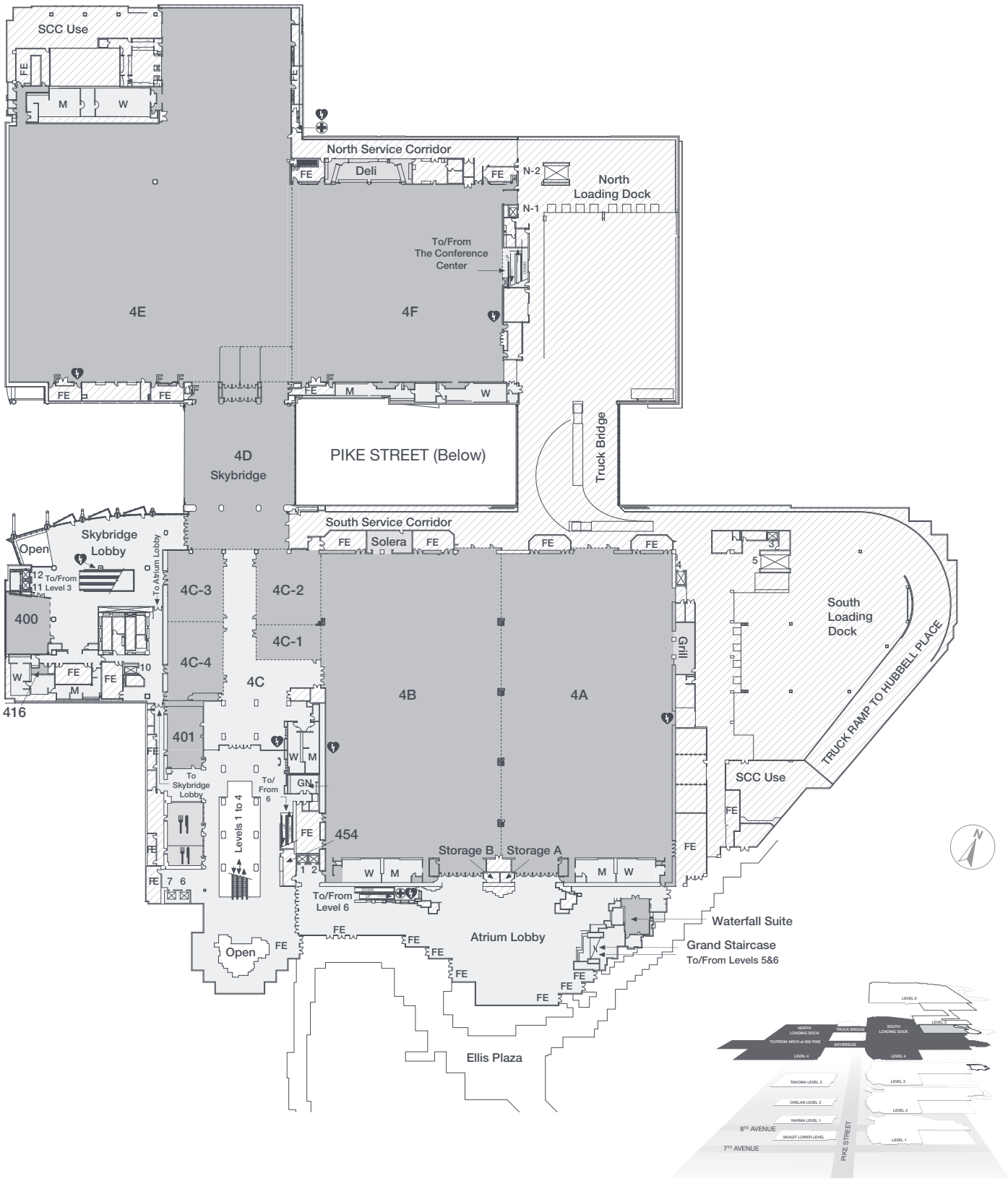
Seattle Convention Center Floorplan

Level 3 – Meeting Rooms



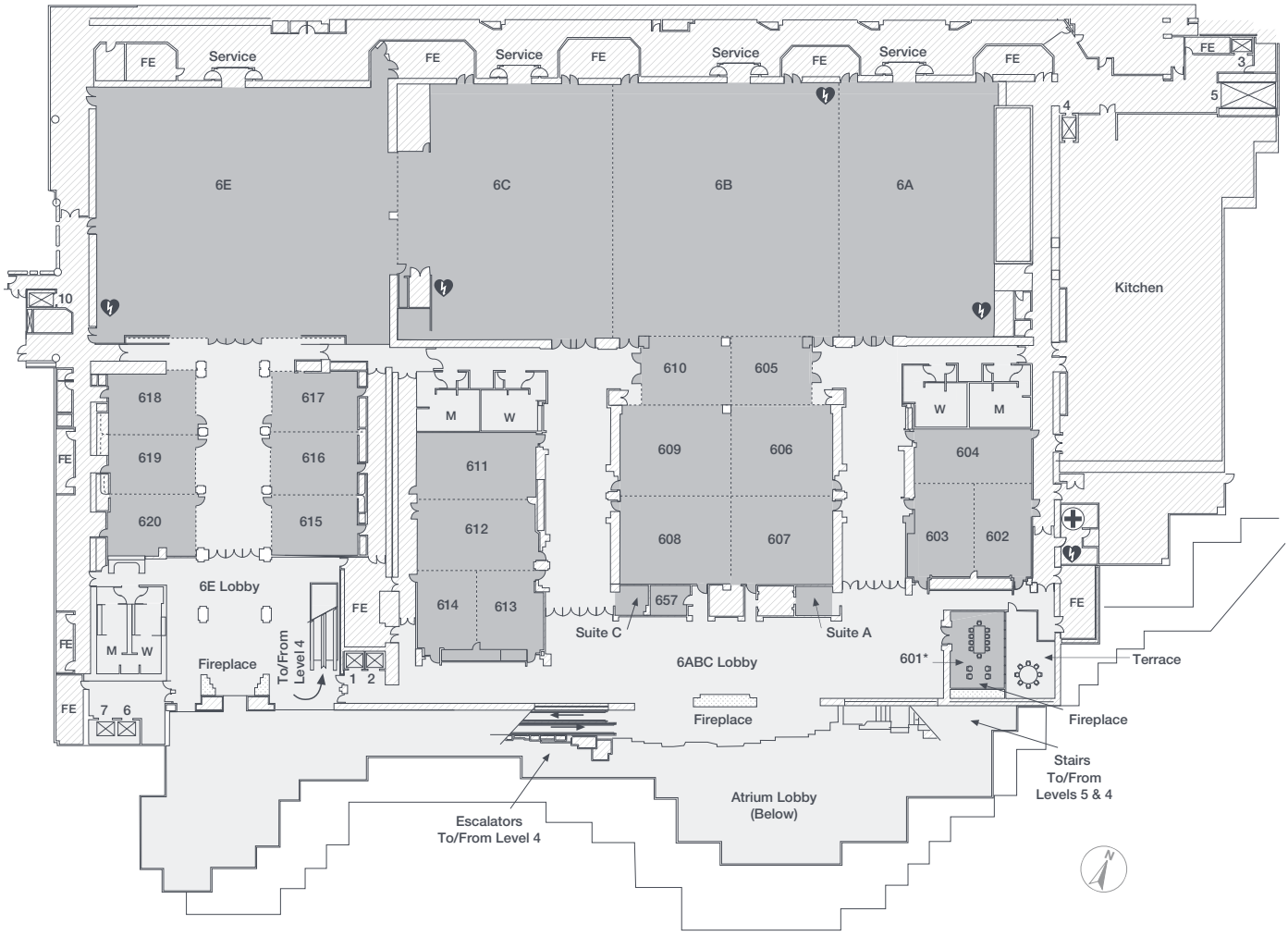
Seattle Convention Center Floorplan

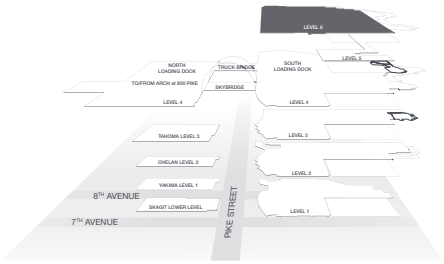
Level 4 – Exhibition Halls



Seattle Convention Center Floorplan

Level 6 – Ballrooms & Meeting Rooms





Notes

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The Society for Integrative and Comparative Biology

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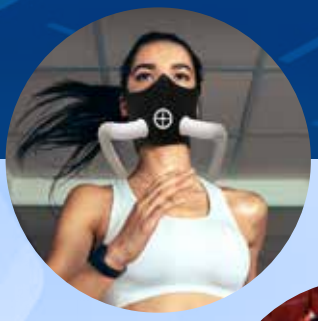

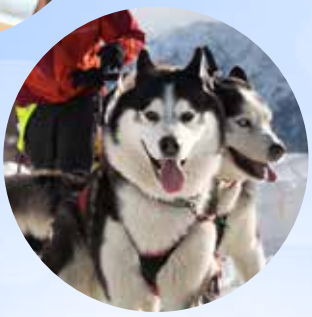

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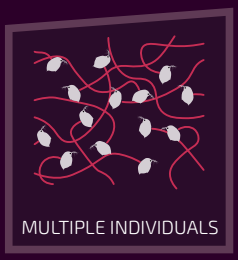
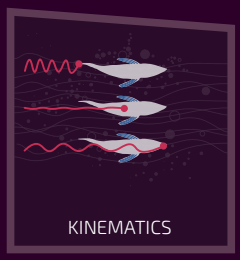
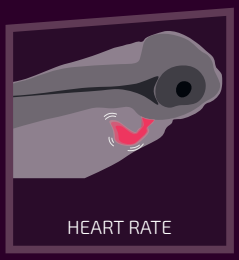


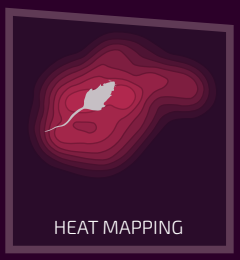
MULTIPLE INDIVIDUALS



KINEMATICS



HEART RATE



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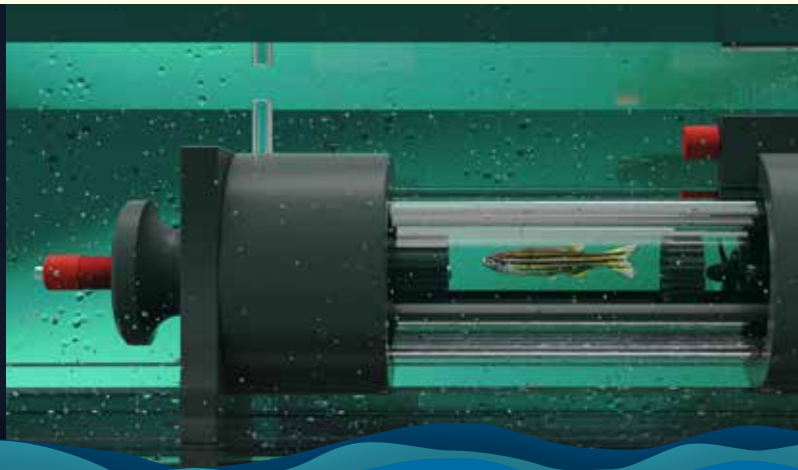

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