The Year of "YOU" 04

This edition of “Hypothesis” focuses on graduate education and the individual with interviews and stories about SGPS students, postdocs and alumni.

Students

Joe Candela 08
WISDOM 10
ASRC Gallery 14
The Art Show 16
Student Events 18

Alumni

Theresa Peterson, PhD ‘03 28
Angela Bruno, PhD ‘03 32
Alumni Notes 34

Publications & Presentations

PostDocs

Michael Stefanik 20
Frederic Depreux 24
Postdoc Tidbits 26
A number of occasions presented themselves this past year that prompted me to reconsider the individual, the you, in our academic and training programs. One such occasion centered on the discussion of whether personal expression as reflected in body piercing and tattoos potentially detracted from an applicant’s ability to interview favorably for a place in our graduate class. Responding that personal expression is always valued, the discussion re-initiated an evaluation of the role of the individual in our programs and the role of the programs in addressing the individual. This year’s “Hypothesis” reflects our attention on you.

Our students are the products of the rapid acceleration of American Individualism, begun in philosophic thinking and poetic expression more than a century ago. What appears now to be individual, and at times, unconventional style began subtly with the unconventional expression of individual (even reclusive) contemplation of nature and its transcendental relationship to the individual. For instance, the Amherst home of the poet Emily Dickinson was her “lab” for observation of nature and contemplation of the monistic relationship of nature with the individual. Fast-forward back to contemporary times in which individual contemplation and creativity actively shape our societal reality. From Dick Tracy and “Back to the Future,” to the Apple watch and hoverboards, the driving forces of Gates, Zuckerberg and Jobs individually transformed our society and reality. They even re-defined the individual and the relationship of the individual to society.

How then does graduate education address the individual now, and what are the challenges and opportunities for individualized graduate education that lie ahead? The former, of course, is clearer to us, and thus is the place to start. A cornerstone of current graduate education is the Individualized Development Plan (IDP) and progression toward competencies outlined in the plan. The IDP consists of two key components – a self-assessment survey and a planning module. The self-assessment portion provides an evaluative opportunity for reflection on perceived strengths and weaknesses in a variety of personal and professional qualities. The planning component provides an opportunity to formulate and express both short- and long-term expectations for graduate education as well as career goals in the context of work/life balance.
The year of YOU

The categories of personal and professional qualities (e.g., communication skills) in the self-assessment component of the IDP mirror the programmatic competencies developed by the National Postdoctoral Association and adapted by SGPS for use in graduate education three years ago. The competency areas of discipline-specific conceptual knowledge, research skill development, communication skills, professionalism, ethics in research, and leadership and management skills are developed on an individual basis through multiple forms of engagement in graduate education.

At the programmatic level, individuals advance toward fulfillment of competencies through coursework and non-curricular programs and activities. More important, each type of individual engagement addresses multiple competencies. For example, the required coursework advances competencies in scientific knowledge, critical thinking, communication, data analysis, etc.

Other forms of individual engagement with programmatic opportunities have been developed, such as the Teaching Scholar Program, the Grant Incentive Program, the Health Professions Education Certificate, Career Development and Enhancement Program, and so forth. Additional activities such as the All School Research Consortium provide opportunities for development of individual student competencies in leadership, organizational skills, professionalism, collaboration and communication. Current graduate education facilitates in-depth, individualized development in specific competencies in concert with self-assessment and planning through the IDP.

Mentorship is the second cornerstone of current graduate education. Quality graduate education ensures mentorship in a variety of settings and from multiple sources. The nature and focus of the mentor-mentee relationship changes over time as a student’s individual competencies, achievements and goals change through the progression of graduate education. For example, SGPS has established eight distinct platforms for mentorship, starting with first-year advising and progressing through increasingly specific and individually focused mentorship platforms such as individual research mentors, individual mentorship committees and, finally, alumni mentorship networks.

With some understanding of where we are, who will the individual become in biomedical graduate education in the future, and how will graduate education reciprocally pivot to keep the individual in full focus? Will the cornerstones of competencies and mentorship remain foundational, or even relevant? There appears to be no inherent or obvious reason to doubt the foundational importance of mentorship and competency development in future graduate education. To the contrary, there are signs pointing to the increased centrality of these components in supporting successful graduate education. However, their use as foundational elements will change in the future architectural design of quality graduate education. This new design will be shaped by re-definition of careers for individuals with advanced degrees and by the need to provide a workforce well-positioned to assume these careers. The individual will be increasingly specialized. Most important, this will not be the type of individual specialization of students earning their degree today. It will not be a neuroscience PhD working as a sole investigator on a research project. It will not be a biochemistry PhD working with a physiology PhD on a joint research project. It will not be a virologist working with a research team.

The successful graduate in biomedical sciences will unite specialized knowledge in a particular field of research with specialized skills or knowledge in a complementary field of study. The diversity of expertise generated by combinatorial areas of study, research and experience will fill increasing workforce demands for careers with diverse and individualized knowledge and skills. For example, biochemistry PhDs with experience in regulatory affairs of drug design are increasingly needed in pharmaceutical and biotechnology industries. Geneticists with degrees in sociology are needed to understand the link between health, genomics and culture. Microbiologists with additional knowledge of soil science and biochemistry are needed for improved agricultural production. The combinatorial matrix of individuals with potentially unique expertise is expansive.

This is even more evident when graduate education in its entirety, with degrees such as anthropology, economics and linguistics, is considered. This same rationale for the need to diversify and individualize graduate education in biomedical sciences applies to all areas of graduate study in the arts and sciences. With this in mind, it is clear that programmatic competencies designed to prepare students for diverse career opportunities and Individualized Development Plans that bring education and career expectations and goals into focus will be increasingly important to successful graduate education. In addition, increasingly diverse mentorship will be needed to mirror the increasingly diverse career pathways opening to students with advanced degrees.

The challenge for graduate education in the future is to develop the personal and professional qualities of the individual, the you, that fit both the person and the individualized career pathway. It will need to mirror the complexity and diversity of you with all the complexity and diversity of the future.

DEAN JOSEPH X. DIMARIO
Putting it all Together

Joseph Candela has chosen a rare path. One of a handful of dual degree students at Rosalind Franklin University, he is the only student currently combining podiatric studies with a doctoral education in basic science research. Now in his third year of research in the physiology and biophysics laboratory under the mentorship of Dr. Carl White, Joe will be only the third DPM/PhD student to graduate with the dual degree since Dr. William M. Scholl College of Podiatric Medicine became part of Rosalind Franklin University in 2001.

At an early age, Joe found himself tracking toward the sciences. He was adept at math and science, and having a nurse for a mother meant that health care was always a part of his background. His father helped feed Joe’s curiosity by taking him along to doctor visits so Joe could gain a better understanding of the processes and different aspects of the profession. This experience of learning about future careers is something Joe feels more parents should explore with their kids. Encouraged by his parents and teachers, motivated by his keen interest in discovering how things work and following his passion for helping people, Joe majored in kinesiology during his undergraduate studies. This focus on the science of movement, particularly the biomechanics of human gait, and his desire to understand how all the body’s systems worked together drew him to podiatric medicine.

His leap into biomedical research came when he reached Rosalind Franklin University. Here he became more aware of the laboratory-based opportunities to expand his own understanding and create new knowledge of body systems. Joe envisions clinical medicine and scientific investigation as intertwined. His philosophy is that, by advancing health care through good science and investigation, physicians can go beyond the realm of individual impact and begin affecting patients worldwide.

The reality of graduate school brought new challenges. Joe was still enjoying a wave of confidence after completing his first two years of podiatry school and passing the podiatric boards when he began his research in Dr. White’s laboratory. It was edifying to see that all of his hard work had paid off. But after the initial pride in being offered this rare combined degree opportunity, Joe’s first memory of starting his doctoral research studies was thinking, “What did I get myself into?” He recalls entering the realm of research training, experimental design and the new environment of graduate school life.

“I felt like I hit the reset button and was back at the bottom, starting all over again,” he said.

He quickly found his niche in the department, laboratory and research field – adjusting to the new setting and scholarly community.

Graduate school also instilled in Joe a new level of patience. The ebb and flow of life in the laboratory took some getting used to. He learned that research progress can shift quickly from inactivity and setbacks to flurries of successful activity and almost overwhelming workload. Although he understood the rewards of perseverance, he learned to redefine his approach and to focus on “where the story is taking you” in order to gain clarity and understanding in the face of challenges. This approach has served him well in his additional roles of both teacher and tutor at RFU. Joe finds it rewarding to help his fellow students progress from struggle to mastery of concepts.

Robert Joseph, DPM, PhD, chairman of the Scholl College Department of Podiatric Medicine and Radiology, serves as Joe’s physician-scientist mentor. Dr. Joseph emphasizes Joe’s skill at balancing his doctoral studies and continued engagement in clinical shadowing experiences.

“Joe’s research has clinical implications, and I am excited to watch how he continues to grow and integrate clinical care with research,” Dr. Joseph said.

This faith is not misplaced. Joe is on track to submit two scientific publications about microvascular dysfunction in obesity and has already presented his work in national venues, including the 2015 Experimental Biology Conference. He continues to expand his understanding of healthcare-related research and build this interprofessional knowledge base through his work on the university’s Institutional Review Board (IRB). Contemplating the ethical considerations and protocols embedded in the broad spectrum of the university’s research has been eye-opening, granting him a deeper understanding of the research and functions of all the university’s professional fields. Collaborative, cross-discipline research is an area of his education he feels will be critical to the future of science and health care.

Joe becomes thoughtful when asked about his advice for students considering the interprofessional approach of obtaining a dual degree. While he feels strongly that translational research is critical to health care, he acknowledges that this path is not for everyone. He cautions that each pathway has its own merits and challenges, but that marrying the two requires both luck and true commitment to the hard journey of becoming a clinician scientist. Committing to becoming a healthcare professional is one thing, truly understanding the profession and being rigorously thorough in the study of podiatry is something that should be carefully studied. Joe jokes that medicine is not for the faint-hearted or weak-stomached. A podiatrist needs to have both compassion and an iron will to treat patients with sometimes devastating wounds.

Venturing into research requires a thoughtful discovery process: finding the right mentor and laboratory match, selecting a research problem that will feed your passion and curiosity for the years it takes to obtain the degree, and cultivating both technical skills and professional relationships. Above all, Joe cautions prospective physician scientists about following their dreams.

“Don’t listen to the naysayers,” he said. “A lot of people will try to tell you that you will only be half as good at either career as someone who only focused on one. That is just not true. Each path complements the other, because medicine and science would not exist without each other.”

It’s also important to be able to get away from academia. When he’s not in the lab, Joe can be found lifting weights in the gym. "I love everything about weightlifting lifestyle and culture, from the training to the food you have to eat to achieve your goals," he said. "One of the things I like most about weightlifting is the personal competition against myself. When I train I always try to do a little bit better than I did the previous week so that I steadily improve. This translates into my school work and research. Just like in the gym, I always push myself to do a little bit better than I did the previous time. Whether it’s scoring better on an exam or figuring out what the next step is in my research, I always aim to improve. It is also a good way to clear your mind and release your frustrations."

Roberto Joseph, DPM ’03, PhD
WISDOM: Women in Scientific Discovery or Medicine (WISDOM), inspires young minds to learn more about science, technology, engineering and math (STEM). Originally a Franklin Fellows project of PhD students Nicole Woitowich and Sahithi Pamarthy, WISDOM promotes, through mentorship, graduate education in STEM and healthcare-related fields. Now an RFU student organization, WISDOM leads a busy schedule of activities and outreach events, some of which are included below:

ROLE MODEL TRAINING
On January 12, the students of WISDOM held an on-campus seminar for interprofessional students. Sara Koblika, a STEM outreach expert, was the speaker and led the conversation regarding effective and meaningful communication.

ROUND LAKE HIGH SCHOOL
The students at Round Lake High School interacted with the students of WISDOM during an after-school meeting of the high school’s STEM club. The workshop included a presentation on Rosalind Franklin, PhD, a discussion of possible career paths and a hands-on activity to demonstrate the concept of DNA.

STEMAPALOOZA
The Girl Scout Council of Greater Chicago and Northwest Indiana (GCNWI) offers over 1,000 programs for girls. The council hosted its fourth annual STEMapalooza Science Expo on March 7, 2015 in Lisle, IL. Girl Scouts ranging in age from 5 to 18, as well as their adult leaders, had the opportunity to interact with over 30 STEM organizations from the Chicagoland area. Scouts were able to explore science through hands-on exercises, live science demonstrations and received lots of science “goodies” to take home. WISDOM’s participation marked the first time Rosalind Franklin University was invited to this event. At the WISDOM table, students provided information on Rosalind Franklin, PhD, fun facts about DNA and giveaways. Using colored beads to represent DNA’s building blocks, the students taught scouts the concept of DNA base pairing by making bracelets. The activity was a huge success, drawing nearly 200 girls to the WISDOM table.

Links to websites:
GCNWI - www.girlscoutsgcnwi.org
STEMapalooza - www.gcwniprograms.org/program/1086

FIELD TRIP
WISDOM organized a field trip for Round Lake High School students, held April 8, 2015 to RFU. About 28 RLHS students visited the university for tours of the research departments, the gross anatomy and simulation labs, the Education and Evaluation Center, and the Feit First Museum. The day also included a panel discussion by RFU students, representing the university’s five colleges and schools, on various health science careers.

INAUGURAL WISCI SEMINAR
The WisCI seminar series is an initiative of WISDOM aimed at supporting and connecting female students, postdocs, faculty and staff. The inaugural speaker was Dr. Tina Henne, of the Argonne Leadership Institute at Argonne National Laboratory, who talked about the importance of mentorship at every career stage. PhD students Nicole Woitowich and Sahithi Pamarthy were also invited to ANL for a tour of the supercomputer Mira.

EMPOWERMENT DAY FOR GIRLS
WISDOM volunteered on May 29 at Empowerment Day for Girls, an annual event held in conjunction with RFU’s Office of Institutional Advancement, the YWCA and the Lake County Regional Office of Education. RFU hosted 120 Lake County girls, ages 9 to 14. Participants attended a series of presentations by RFU faculty and students designed to provide a fun and interactive way of learning about STEM fields. Topics included pathology, internet safety, civil engineering and physical therapy. PhD student Sahithi Pamarthy presented the keynote speech, “Genes, Girls and Empowerment.”

SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

Hypothesis

STUDENTS
**First - Year Bios.**

**Feras Altwal**
Feras graduated with a bachelor's degree in biotechnology and genetic engineering in 2009. Since graduation, his passion for biological sciences and the challenge of stem cell research has continued. In pursuit of his dream of becoming a better scientist, he completed in 2014 a master's of science in biology at Bradley University, where he participated in the first bioengineered trachea transplant using stem cells in the United States. He aims to exploit his experience to the clinical world by helping people with devastating and untreatable diseases using stem cells. He believes that a PhD program will equip him with the knowledge and skills he will need for his career as a scientist.

**Hanna Molla**
Hanna completed her undergraduate studies at the University of Colorado, Denver. She then spent a year in addiction-related neuroscience research in the Post-baccalaureate Research Education Program (PREP) at Arizona State University. Currently, her research interests lie in the underlying molecular mechanisms involved in neuropsychiatric disorders.

**Alyssa Littlefield**
Alyssa graduated from Appalachian State University in 2013 with a bachelor's in psychology. She followed this in 2015 with a master's of arts degree in psychology from the University of North Carolina, Wilmington. Her laboratory experience is in the fields of behavioral neuroscience and neuromarketing, studying the effects of aging, diet, and exercise on neuroinflammation. She has contributed to publications including the Journal of Neuroinflammation, Behavioral Brain Research and Physiology & Behavior. Her current research interest includes examining potential therapeutic targets in molecular biology. Her ideal future career would include research and development in a government or private industry laboratory setting.

**Jessica Centa**
Jessica earned a bachelor's in biology at Saint Mary’s College in Notre Dame, IN, and a master's in biotechnology at Roosevelt University. Before arriving at RFU, Jessica’s research focused on the genetic basis of methicillin resistance in *Staphylococcus aureus* as well as the behavior of *Saccharomyces cerevisiae*cdc42 mutant strains. Her current research interest includes examining potential therapeutic targets in molecular biology. Her ideal future career would include research and development in a government or private industry laboratory setting.

**Akshaya Ramachandran**
Akshaya Ramachandran came to RFU from India, where she completed her undergraduate and master's studies in industrial biotechnology. Her scientific interests run toward a diverse field of research that fuels her inquisitiveness. She hopes to become a researcher worthy of spreading advanced scientific knowledge.

**Wren Michaels**
Wren grew up in Manhattan, KS, where she received her undergraduate degree in microbiology from Kansas State University. She fell in love with research at K-State and wants to continue exploring the way microorganisms affect the body. Her specific interests are in virology and immunology.

**Sarah Mustaly**
Sarah, a first-year graduate student from Napani, IL, has an interest in microbiology and immunology. She recently received her bachelor of science degree from Benedictine University. She plans to study host inflammatory responses induced by infectious diseases.

**Miroslava Repak**
Miroslava (Mira) was born in the Balkan country Bosnia and Herzegovina during a civil war in the 1990s in what was then Yugoslavia. Because of this conflict, she placed a large focus on getting good grades in order to become the first in her family to go to college and achieve her dreams. She graduated from Valparaiso University with a biochemistry degree and hopes to work in the pharmaceutical industry after completion of her PhD. Her favorite quote is from Mahatma Gandhi’s: “Strength does not come from winning, but from being capable of recovering from defeat. It is not in strength, but in indomitable will.”

**Kathryne Young**
Kathryne grew up in central Florida and graduated from the University of Central Florida with a bachelor’s in chemistry. She loves all branches of science, but her main research interest is immunology. She hopes to study autoimmune diseases in her career.
ASRC embodies the interprofessional educational philosophy at our university, where researchers and future healthcare professionals present their recent research discoveries and share ideas on how research addresses healthcare challenges to ensure better patient outcomes.
The annual “Art from the Benchtop” show, presented by the Graduate Student Association, brings the art and love of science out from the laboratory for everyone to see. In doing so, the images transition from analytic scientific assessment to emotive conceptual art.
STUDENT EVENTS.

Grad students take the structure of DNA very personally!

Students enjoy an afternoon at a picnic celebration.

A break from studying means reading some lighthearted genetics journals.

Mardi Gras, and many other events, are reasons to celebrate.

Students are recognized for their service contributions to the community.

Upon graduation, students join the ever-growing list of SGPS alumni.
Dr. Stefanik reaches new heights on Mt. Whitney and continues to push the frontiers of knowledge on the cellular mechanisms associated with drug addiction.

TELL US ABOUT YOUR POSTDOCTORAL PROJECT

My project is aimed at characterizing and developing an understanding of the role that protein translation plays in maintaining pathological adaptations in the brain following extended withdrawal from cocaine. These changes in the nucleus accumbens (a brain region critical for the integration and processing of reward-related information) have been shown to underlie a heightened drug-seeking response followed by extended abstinence. Our lab recently demonstrated that protein translation contributes to this response. My task is to use a variety of techniques (ranging from using biochemical techniques to examine individual proteins to translation in cultured neurons and ultimately behavioral neuropharmacology) to characterize how synthesis of key proteins is regulated in the nucleus accumbens, as well as to see how these things change following drug exposure and withdrawal.

It involves a range of techniques and models. On any given day I may be working with cultured neurons in a dish in the morning and then have to run down to microinject drugs into a brain of an animal. Additionally, I have been working closely with our very talented biochemist Mike Milovanovic to develop a couple of relatively novel techniques to examine protein synthesis both in dissected tissue and cultured nucleus accumbens neurons.

So far, I think what has surprised me the most is that while we know quite a bit about how protein translation occurs in the brain, much of this work comes from only one brain region, the hippocampus. Virtually nothing is known about protein translation in the nucleus accumbens, despite it being one of the most studied brain regions for reward and addictive behaviors.

WHAT TYPES OF TRAINING HAVE YOU DONE ASIDE FROM YOUR POSTDOC WORK?

I spent two summers in undergrad doing research, one on a Bicentennial Fellowship at Middlebury College doing alcohol research in mice, and another that was sponsored by the National Science Foundation that allowed me to spend a summer at the university of South Carolina conducting research on Fetal Alcohol Spectrum Disorder. For my work both at Middlebury and elsewhere during my undergraduate career, I was awarded the college’s Rosalind Lieberman Reiss Award in 2009, which is given to the student in psychology who demonstrates the most promise to develop treatments for psychiatric disorders. I work hard every day to try to live up to that distinction.

In graduate school I was awarded two fellowships to further my interest in teaching. The Graduate Assistantship in an Area of National Need (GAANN) allowed me to take additional coursework in teaching and instruction. A second fellowship from the Howard Hughes Medical Institute gave me the opportunity to spend a semester as a teaching assistant at the College of Charleston for an upper level neuroscience course.

Hypothesis

Michael Stefanik, PhD, a postdoctoral fellow in Dr. Marina Wolf’s neuroscience laboratory, was recently awarded the Ruth L. Kirschstein Institutional National Research Service Award (NRSA) for his work on protein translation and the incubation of cocaine craving. Here, he discusses the high points of his academic career.
My graduate research focused on developing a new technology called optogenetics for use in a rodent drug self-administration model. We virally introduced light-activated ion channels and transporters into neurons in key brain regions and then used light delivered through fiber optics to control the rat’s behavior. I was really fortunate to be at MUSC during this time, and was able to publish some of the first papers in optogenetics and drug seeking. It gave me a profound appreciation for how much work goes into getting a new technique/technology to work. This lesson has been particularly helpful in the lab at RFU, as we try to develop some non-isotopic metabolic labeling techniques for use in our studies.

TELL US ABOUT YOUR PROUDEST ACHIEVEMENTS.

In graduate school I was selected to give a talk at the Molecular and Cellular Cognition Society national meeting. I didn’t know until about a week before that I would be giving a talk in front of about 800 people in between two Nobel laureates and Harvard’s director of neurobiology. After my talk, one of the laureates congratulated me on my work. That was a pretty neat feeling. Every other talk I have given since has been a piece of cake.

More, receiving the award notice for my F32 NRSA was one of the proudest days of my scientific career thus far. So much hard work and so many hours go into preparing a grant, and this one was scored particularly high, so it was nice to have a feeling of validation that what you are doing is being recognized. Such a big part of that was the help of my mentor and sponsor on the grant, Marina Wolf. I’m really fortunate to work in a lab where there are so many resources and so much support.

TELL US ABOUT SOMEONE WHO HAS INFLUENCED YOUR DECISION TO BECOME OR CONTINUE AS A SCIENTIST.

Probably the biggest turning point in my academic career was taking physiological psychology with Dr. Kim Cronise at Middlebury. Her knowledge, humor and enthusiasm really inspired me. I ended up doing research in her lab for two years, and it really is because of her guidance and support that I am in science today. Meeting and working with Dr. Cronise was really the turning point for me. She really invested so much into my development. Whether it was having me present at regional or national conferences as an undergrad, or taking the extra time to introduce me to people in the field, the boost that she gave me early in my career really helped get me where I am today. What I think is even more amazing is that her mentorship hasn’t ended in the years since I’ve graduated. I can still call/email her for advice, and she’s even had me invited to give a seminar back at Middlebury. I really can’t thank her enough.

WHAT DO YOU FIND MOST CHALLENGING ABOUT THE LIFE OF A SCIENTIST?

Science is really just a whole bunch of really simple tasks that build upon each other. The biggest challenge is to be able to take the lessons learned from these simple experiments and successfully synthesize them in a creative fashion in order to come up with the next big idea.

TELL US ABOUT YOUR BACKGROUND; HAS IT INFLUENCED YOUR CAREER?

I grew up in Adams, Massachusetts (a town of 7,000 that is geographically as far away from Boston as you can get and still remain in the state). I received my BA in psychology from Middlebury College in Vermont in February 2009. As part of our unique February Admissions Program, I skied down a mountain in my cap and gown at graduation. I then changed climates completely and moved to Charleston, South Carolina, where I completed my PhD in neuroscience at the Medical University of South Carolina in May of 2014. Now I am back in the cold.

WHAT ARE YOUR FAVORITE PASTIMES AWAY FROM THE LAB?

I really enjoy food and cooking. I had a gap semester before I entered college, and I used the time to work in a really nice restaurant/catering place. I learned so much during that period. I’ve also been fortunate to be able to travel internationally and delve deep into the cuisines of different countries. During my time in Charleston, I hosted countless lab dinners. Every Thanksgiving, I cooked dinner for people in my department. My final year of grad school I hosted 35! Now that I own a house I’ve taken to gardening as well. It is really rewarding to cook vegetables that you have grown.

In the last four or so years I’ve also taken up distance running. In that time, I’ve run two marathons, 10+ half-marathons, a few 50–100 mile relays and too many 5k’s, 10k’s etc. to count. I’m currently training to run the Chicago Marathon.

WHAT MIGHT SOMEONE BE SURPRISED TO KNOW ABOUT YOU?

I almost went to culinary school instead of college. 😄
Fred Depreux, PhD, began his graduate training in France at the Université Blaise Pascal, where he earned a master of arts in food and human nutrition. His graduate mentor there began a position at Purdue University and offered Fred the opportunity to join the new laboratory. Dr. Depreux accepted and continued his studies at Purdue, earning a PhD in animal science in 2000.

Graduate school was an exciting time. Beyond discovering a new country, culture and a wealth of scientific opportunities, he found he was suddenly immersed in an overwhelmingly intellectual atmosphere of professors and peers. Time seemed to move more slowly in graduate school. Scientific exploration allowed him an escape from the outside world and space and time to patiently investigate new ideas and build collaborations.

Dr. Depreux found a love of the university environment for its diversity of backgrounds, cultures and interests. Before arriving at Rosalind Franklin University, he held postdoctoral positions at Boston’s Massachusetts General Hospital, Harvard Medical School, Los Angeles’ House Ear Instititute and University of Chicago.

At RFU, Dr. Depreux is an integral member of Dr. Michelle Hastings’ cell biology and anatomy lab.

Dr. Depreux brings senior experience in a variety of different lab settings and expertise in the area of developmental biology and specifically in the biology of hearing, according to Dr. Hastings.

“It makes my day, every day!” he said.

Dr. Depreux is impressed by the environment of mentorship and collaboration he has found in the Cell Biology and Anatomy Department, an environment he believes is fundamental to the success of trainees, projects and laboratory teams.

“How has helped guide work in the lab that is focused on the development of therapeutic approaches for the treatment of deafness, blindness and vestibular dysfunction,” Dr. Hastings said. “He has been instrumental in testing delivery and dosing paradigms for small molecule therapeutics to the ear at times that are critical for proper hearing development.

“Fred always has encouraging words for everyone around him and has an optimistic and enthusiastic outlook to the work we are doing,” she added. “These attributes along with his scientific knowledge and expertise make him an ideal colleague and postdoctoral fellow.”

Fran Jodelka, manager of the Hastings Lab, couldn’t agree more. Dr. Depreux is patient and helpful and shows a genuine interest in others, she said. His warm personality and his ready smile make him approachable.

“When someone new joins the lab, there is always the hesitation if the person can fit in with the dynamics,” Fran said. “Not only does Fred fit in, he quickly became part of our lab ‘family’.”

Dr. Depreux enjoys “the day-to-day interactions with the department (CBA) where the community is easy to access and scientific discussions are friendly and informal.

“That makes my day, every day!” he said.

Dr. Depreux is patient and helpful and shows a genuine interest in others, she said. His warm personality and his ready smile make him approachable.

“With Dr. Hastings, I found an awesome gateway of camaraderie and collaboration helps to get things done.”

Dr. Depreux insists that the rewards in science come with perseverance. He recalls spending several months alone on optimization of a technique before it finally worked.

“In hindsight, it was a small victory,” he said. But the payoff for dedication sticks with him.

“Fred always has encouraging words for everyone around him and has an optimistic and enthusiastic outlook to the work we are doing. These attributes along with his scientific knowledge and expertise make him an ideal colleague and postdoctoral fellow.”

Dr. Michelle Hastings
The life of a scientist is not always all work and no play. Recently, postdocs from Dr. Bala Chandran’s lab and two colleagues from the University of Edinburgh went whitewater rafting on the Payette River in Idaho during a break from the 40th Annual International Herpesvirus Workshop in Boise, July 2015.

Some postdocs at RFU take a break from research during National Postdoc Appreciation Week.
As a graduate student at Rosalind Franklin University working in the lab of Dr. DiMario, one might say that I learned a lot about chicken muscle fiber development with a specific focus on the underlying molecular mechanisms of innervation-dependent regulation of the slow myosin heavy chain 2 gene – the results of which were published in multiple peer-reviewed journals. But I say I learned about transferrable skills that come with the pursuit of a PhD (or any advanced degree for that matter) and the value of mentorship. Graduate school was challenging to say the least – long hours, experiments that didn’t always work, gels that leaked, no end in sight, etc. In spite of the rollercoaster ride that can be graduate school, Dr. DiMario remained a consummate mentor and supporter and, consequently, I never gave into the downs of this ride.

Dr. DiMario inspired me to work hard, know myself and embrace my shortcomings so that I could grow, persist and achieve what I never thought possible. In the words of Einstein, “Once we accept our limits, we can go beyond them.” So, without hesitation, I moved beyond to postdoctoral training.

During my postdoc training at Baylor and Northwestern, I shifted research interests and focused on estrogen receptor signaling in breast cancer and uterine epithelial cells. I co-authored a few more manuscripts (and am very proud of the MCB publication), but I began to discover that the most enjoyable part of my postdoc experience involved writing, presenting and speaking about the big picture impact of research. I excelled at communicating science and was particularly drawn to the art of storytelling. As such, I wrote an NRSA because I was convinced that I was supposed to climb the ivory towers of academia.

Then, it hit me like artist Rene Magritte’s painting, “Son of Man,” that sometimes we are blind to our own blindness. Magritte hinted that his painting “is about the conflict of what is visibly hidden and what is visibly present in that the apple obscures the face.” It took four years as a postdoc for me to realize that what was in front of me was not necessarily what was behind me. I had an underlying passion propelling me toward a non-traditional scientific career path – medical communications – but I had a huge obstacle in front of me in that I knew no one who had successfully embarked on this unbeaten journey, and the mere thought of leaving the academic setting elicited a vasovagal response. Even so, I decided to go for it; and with fear in my heart and a baby on the way, I put on my running shoes and never looked back.

What do you want your legacy to be? As a medical communications liaison, I was recently asked this question by the Vice President of Medical Affairs Strategies and Communications at Takeda Pharmaceuticals. It seemed simple enough, but I had no response. Certainly, if I began with the end in mind, I should have my answer. But I realized that the harder and longer I pondered the question, the more and more frustrated I became in searching for the legacy that was to be mine. So, I took another approach and reflected about my science career to date.

Theresa Jordan Peterson, PhD '03

Communicating Legacy.

Dr. Peterson, now the Associate Director for Medical Affairs Publications, talks about graduate education and her own career path in the inaugural presentation of a program, called “Pathways Taken,” in which SGPS alumni share their perspectives and experiences in their career choices.

Theresa Jordan Peterson, PhD '03

“Dr. DiMario inspired me to work hard, know myself and embrace my shortcomings so that I could grow, persist and achieve what I never thought possible.”

Then, it hit me like artist Rene Magritte’s painting, “Son of Man,” that sometimes we are blind to our own blindness. Magritte hinted that his painting “is about the conflict of what is visibly hidden and what is visibly present in that the apple obscures the face.” It took four years as a postdoc for me to realize that what was in front of me was not necessarily what was behind me. I had an underlying passion propelling me toward a non-traditional scientific career path – medical communications – but I had a huge obstacle in front of me in that I knew no one who had successfully embarked on this unbeaten journey, and the mere thought of leaving the academic setting elicited a vasovagal response. Even so, I decided to go for it; and with fear in my heart and a baby on the way, I put on my running shoes and never looked back.

What do you want your legacy to be? As a medical communications liaison, I was recently asked this question by the Vice President of Medical Affairs Strategies and Communications at Takeda Pharmaceuticals. It seemed simple enough, but I had no response. Certainly, if I began with the end in mind, I should have my answer. But I realized that the harder and longer I pondered the question, the more and more frustrated I became in searching for the legacy that was to be mine. So, I took another approach and reflected about my science career to date.

Theresa Jordan Peterson, PhD '03

Communicating Legacy.

Dr. Peterson, now the Associate Director for Medical Affairs Publications, talks about graduate education and her own career path in the inaugural presentation of a program, called “Pathways Taken,” in which SGPS alumni share their perspectives and experiences in their career choices.

Theresa Jordan Peterson, PhD '03

“Dr. DiMario inspired me to work hard, know myself and embrace my shortcomings so that I could grow, persist and achieve what I never thought possible.”

Then, it hit me like artist Rene Magritte’s painting, “Son of Man,” that sometimes we are blind to our own blindness. Magritte hinted that his painting “is about the conflict of what is visibly hidden and what is visibly present in that the apple obscures the face.” It took four years as a postdoc for me to realize that what was in front of me was not necessarily what was behind me. I had an underlying passion propelling me toward a non-traditional scientific career path – medical communications – but I had a huge obstacle in front of me in that I knew no one who had successfully embarked on this unbeaten journey, and the mere thought of leaving the academic setting elicited a vasovagal response. Even so, I decided to go for it; and with fear in my heart and a baby on the way, I put on my running shoes and never looked back.
So, a piece of advice for those entering or currently pursuing a graduate degree: Keep an open mind and follow your passion. As I mentioned in the opening alumni remarks at the 101st Commencement Celebration, passion can win Nobel prizes, passion can impact the lives of patients suffering from debilitating diseases and passion can change the world.

I never envisioned that I would grow up to be a “medical communications liaison,” but then again, I never thought that I would speak publicly in front of thousands of graduates and their families and dole out future advice. Speaking at the recent RFU commencement was immensely important (albeit nerve-shattering) because the university invested in me. RFU gave me the tools to bridge the gap between school and an alternative career path in medical communications.

My current position allows me to embrace my passion and explore many opportunities including the ability to oversee publications, medical information-related activities, medical reviews of promotional materials and health economics outcomes research, and in multiple therapeutic areas such as diabetes, obesity and gastrointestinal disorders. Through medical communications, I have come to understand the importance of integrated healthcare professional relationships (e.g., PharmDs, MDs, PhDs, PAs) for achieving quality patient care.

I have also witnessed how medical communications can have far-reaching impacts, from helping to shape healthcare professional treatment decisions to elevating the voice of a patient. Aside from these responsibilities, Takeda fosters giving back to the community and stewardship. I have mentored summer interns and rotating residents (including a recent RFU PharmD graduate), volunteered at the Museum of Science and Industry events to inspire STEM careers, and counseled high school students on the many ways in which an advanced scientific degree can be utilized.

My road to a career in medical communications has not been without bumps. None of my accomplishments thus far would have been possible without others who helped me along the way.

Staying connected, developing a network and reaching out to others for guidance, development and career advice has been pivotal. I learned that no matter where you are in your career, people really do want to help — you just have to ask — which might be why I was asked the question about legacy. The vice president, a successful PharmD in her own right, challenged me. I thought that my legacy might be the seemingly logical progression through the ranks of medical communications to director or vice president. But in reviewing my career choices to date, I think that it’s more. Maybe it’s that I equip others with the tools to achieve limitless possibilities. Maybe as an avid runner, it’s that I crush the competition in the Discovery Dash, or maybe it’s all of the above. As a mom, sister, wife, runner, medical communications liaison, I want my legacy to be... What do you want yours to be? 
Angela Bruno, PhD '14

Ideas are her Currency.

The youngest of a family of seven, Angela Bruno, PhD ’14, developed a strong will and a passion for the care of others. Watching as doctors struggled to address her mother’s illness, she determined to make a difference in the lives of others affected by neurodegenerative disease. She completed her undergraduate studies at the University of Illinois, Chicago, where she studied both theoretical physics and biochemistry, graduating in 2009. In 2014, she graduated with her PhD in Neuroscience, where she completed her studies under the mentorship of William Frost, PhD, chair of the Department of Cell Biology and Anatomy. There she enjoyed the freedom to try new ideas, grow through failures and ultimately learn to trust her instincts. She also discovered that learning to ask good questions is one of the most challenging aspects of being a scientist.

Reflecting on her journey through graduate school, Dr. Bruno cautions that junior high and high school students showed less interest in math and science than grade school girls, but had the chance for girls to use their creativity in a project-oriented setting. She also observed that junior high and high school students showed less interest in science than girls, but had the chance for girls to use their creativity in a project-oriented setting. She also discovered that learning to ask good questions is one of the most challenging aspects of being a scientist.

Dr. Bruno’s scientific trajectory. It was at the Brains, Minds and Machine’s course, designed to foster interprofessional collaborations, that Dr. Bruno met iCub and its creators. An open-source, humanoid robot developed in Italy by the EU Project RobotCub, iCub is equipped with interactive faculties that afford it sight, hearing, movement and the ability to react to its environment. “One of the best things about the courses at MBL is that they provide an opportunity to experience vastly different perspectives,” Dr. Bruno said. “It is immeasurably valuable to see where one’s research focus sits in an entire landscape. My little niche may be comfortable, but it certainly doesn’t seem like enough.”

Following her studies, Dr. Bruno participated in several additional training courses offered by the Marine Biological Laboratory in Woods Hole, MA. These courses, Neural Systems & Behavior, Methods in Computational Neuroscience, and Brains, Minds and Machines, were immersive three-week workshops in which scientists engaged in training, lecture and project-based experiences in each topic area. Although intense, the courses offered unique rewarding collaborative experiences that would continue to influence Dr. Bruno’s scientific trajectory. It was at the Brains, Minds and Machine’s course, designed to foster interprofessional collaborations, that Dr. Bruno met iCub and its creators. An open-source, humanoid robot developed in Italy by the EU Project RobotCub, iCub is equipped with interactive faculties that afford it sight, hearing, movement and the ability to react to its environment.

“While the most important things about the courses at MBL is that they provide an opportunity to experience vastly different perspectives,” Dr. Bruno said. “It is immeasurably valuable to see where one’s research focus sits in an entire landscape. My little niche may be comfortable, but it certainly doesn’t seem like enough.”

Upon earning her PhD, Dr. Bruno accepted a postdoctoral fellowship in Dr. Henry Abarbanel’s laboratory in the Department of Physics at University of California, San Diego. There she found herself once again working in a multi-disciplinary setting. Funded by the Office of Naval Research, the laboratory’s current project aims to develop a way to incorporate data into a computer model of a zebra finch HVC neural circuit. The project’s ultimate goal is to inform foundational algorithms used in designing artificial neural systems, a theme that harkens back to Dr. Bruno’s experience with the iCub project. Her ambition to understand the language of neural networks is carrying the project into new territory. She has embarked on a collaborative project with RFU’s Grace (Beth) Stutzmann, PhD. Utilizing the data assimilation methods from the initial project, Dr. Bruno hopes to process information generated by neurodegenerative disease-compromised neural circuits in order to identify the most appropriate therapeutic options for treatment.

“Dr. Bruno’s outlook on the future extends beyond the bench. After participating as a facilitator at several events geared toward engaging younger girls in STEM fields, she observed that junior high and high school students showed less interest than grade school girls who had already ventured into the world of programming through MIT’s Scratch program. “The disparity between the support young men and women receive both emotionally and educationally for entering STEM fields must change,” said Dr. Bruno, who envisions a future where math and science are described and fostered equally between both boys and girls, at an earlier age and in a continuing fashion. She has observed the way big data is transforming the way scientists explore the brain, molecular biology and other fields, and she believes our future hinges on our nation investing in the rigorous and gender-equitable education of our youth in these fields.

Regarding life outside the lab, Dr. Bruno explains, “If I’m not in the lab, I am probably on a mountain – the higher the better.”
Yan Dong, PhD ’02, received his doctoral degree in neuroscience under the mentorship of Dr. Marina Wolf and Dr. Frank White. Now an associate professor of neuroscience at the University of Pittsburgh, Dr. Dong was recently honored with the Society for Neuroscience’s Jacob Waletzky Award for his research on drug abuse.

“Dong’s research focuses on how drugs of abuse like cocaine can hijack the brain’s existing circuitry and lead to addiction. Throughout his career, Dong has made great strides in characterizing how drugs of abuse alter the way the brain communicates with each other. Specifically, he has identified that exposure to cocaine produces lasting changes in the way that the amygdala and the nucleus accumbens — two brain regions implicated in drug-seeking behavior after a period of abstinence.”

Society for Neuroscience Annual Meeting, Chicago, IL.


Sawyer LA. (April 2015). “Cajal bodies shape genome conformation.” NCI Symposium on Chromatin, ncRNA, Methylation & Disease, Bethesda, MD.

Sawyer IA. (March 2015). “Cajal bodies shape genome conformation.” NIH Symposium: RNA Biology, Bethesda, MD.


Sawyer LA. (September 2015). “Cajal bodies shape genome conformation.” NIH Research Festival. Bethesda, M.D.

WE WOULD LOVE TO HEAR FROM YOU!

CONTACT us with your news at: IGPBS@rosalindfranklin.edu

FIND us on Facebook at: https://www.facebook.com/RFUMSGRADUATESCHOOL

VISIT the school's website: http://www.rosalindfranklin.edu/sgps

UPDATE your contact information at: http://www.rosalindfranklin.edu/alumni/update-us