

## April M. Becker

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- Position**
- Assistant Professor** (2017 – current)
- University of North Texas, tenure track  
Research, teaching, and supervision
- Adjunct Instructor of Neurology and Neurotherapeutics** (2018 – current)
- University of Texas Southwestern Medical Center
  - Research and supervision
- Education**
- Doctor of Philosophy: Neuroscience, School of Biomedical Sciences, UT Southwestern Medical Center, Dallas, Texas**
- Master of Science: Behavior Analysis, University of North Texas, Denton, Texas**
- Bachelor of Science: Zoology, Colorado State University in Fort Collins, Colorado**
- Research**
- Behavior Analytic Neuroscience and Basic Behavior Analysis (2017 – current)**
- Neuroplasticity and Repertoire Repair Lab (PI)**
- The manipulation of neuromodulatory systems to mediate effects of contingencies
  - The relationship between brain plasticity and behavioral plasticity
  - Behavioral recovery from brain injury
  - The development of basic behavioral technologies for research and rehabilitative therapy
- Cultural Evolution and Analysis (2018 – current)**
- Evolutionary Culture Lab (PI)**
- The selection of multi-organism behavioral patterns via environmental contingencies
  - Cultural systems, social contingencies, and multilevel selection
  - The relationships between biological, behavioral, and cultural selection
- Doctoral Research, Advisor: Dr. Mark Goldberg 2011-2017**
- The influence of the basal forebrain cholinergic system on plasticity and behavioral recovery from ischemic stroke
  - The structure of the basal forebrain cholinergic system and its changes consequent to motor cortical ischemic stroke
- Graduate Research, Advisor: Dr. Jesus Rosales-Ruiz 2007-2011**
- The influence of schedule manipulations and limited holds on “motivation”
  - The relationship between the current repertoire and the rate of novel behavior under variability schedules
- Graduate Research, Advisor: Dr. Sigrid S. Glenn 2007-2011**
- The effects of metacontingencies on group coordination
  - Paradigmatic unification of biological and behavioral selectionist science
- Hughes Undergraduate Research Scholar, Advisor: Dr. Myron Baker 2001-2003**
- Exploring the social function of bird song: Relationships between alarm call variation in black-capped chickadees to predator threat and distance
- Hughes Undergraduate Research Scholar, Advisor: Dr. Donald Mykles, 1999 – 2001**
- Cell biology of muscle atrophy, with translational attention to muscular dystrophy.

## Grants

- Ralph E. Powe Junior Faculty Enhancement Award** 06/2019 – 05/2020  
April Becker (PI) Role: PI  
Title: Improving throughput and sensitivity of the cylinder test for behavioral assessment in stroke research
- Research Seed Grant (RSG), UNT Office of Research & Innovation** 05/2019 – 04/2020  
April Becker (PI) Role: PI  
Title: Electrical stimulation of neuromodulatory systems during recovery from stroke
- Beatrice Menne Haggerty Center for Research on Brain Injury & Repair in Stroke**  
Mark P. Goldberg (PI) 2015 – 2018  
Role: Collaborator (2017–2018)  
Role: PhD Candidate (2015–2017)
- National Institutes of Health Training Grant T32 5T32NS069562-05** 06/2013 – 06/2015  
Awardee: UT Southwestern Medical Center Role: Trainee
- Society for the Advancement of Behavior Analysis Master's Thesis Grant**  
Awardee: April Becker 2010  
Role: Awardee

## Publications

- **Becker, A. M.**, Betz, D. M., & Goldberg, M. P. (2020). Forelimb Cortical Stroke Reduces Precision of Motor Control in Mice. *Neurorehabilitation and Neural Repair*, 1545968320921825.
- Cihon, T., **Becker, A. M.**, Ortu, D., Glenn, S. (2020). Establishing a Research Lab for Cultural Science. In Cihon, T. & Mattaini, M. (Eds.), *Behavior Science Perspectives on Culture and Community*. Springer International Publishing. 10.1007/978-3-030-45421-0
- Ganzer, P.D., Darrow, M.J., Meyers, E.C., Solórzano, B.R., Ruiz, A.D., Robertson, N.M., Adcock K.S., James, J.T., Jeong, H.S., **Becker, A.M.**, Goldberg, M.P., Pruitt, D.T., Kilgard, M.P., Rennaker, R.L. (2018). (2018). Closed-loop neuromodulation restores network connectivity and motor control after spinal cord injury. *eLife*, 7, e32058.
- **Becker, A.** (2018). The flight of the locus of selection: Some intricate relationships between evolutionary elements. *Behavioural processes*.
- **Becker, A. M.**, Meyers, E., Sloan, A., Rennaker, R., Kilgard, M., & Goldberg, M. P. (2016). An automated task for the training and assessment of distal forelimb function in a mouse model of ischemic stroke. *Journal of Neuroscience Methods*, 258, 16-23.
- Ortu, D. **Becker, A.**, Woelz, T.A.R. & Glenn, S. S. (2012). An Iterated Four-Player Prisoner's Dilemma Game with an External Selecting Agent: A Metacontingency Experiment. *Latin American Journal of Psychology*, 44:1, 111-120.
- Baker, M. C. and **Becker, A. M.** (2002). Mobbing calls of black-capped chickadees: effects of urgency on call production. *Wilson Bulletin*, 114, 510-516.

## Recent Presentations and Posters

- The effects of targeted intracerebral saporin injection on recovery from stroke – Society for Neuroscience 2014 Dynamic Presentation Board
- Neuromodulation, Brain Plasticity and Behavior Analysis – Association for Behavior Analysis, International 2015 Symposium Presentation
- The necessity of cholinergic innervation from the Nucleus Basalis for stroke recovery – UT Southwestern Neuroscience Retreat 2015 Poster
- The automated reach task measures deficits in movement precision following photothrombotic

stroke – UT Southwestern Neuroscience Retreat 2016 Poster

- The Concept of The 'Whole' Organism in Behavioral Neuroscience – Association for Behavior Analysis, International 2016 Poster
- Strength vs precision: What does the mouse automated reach task assess? – Society for Neuroscience 2016 Poster
- Visualizing reorganization of cholinergic projections from the nucleus basalis after photothrombotic stroke. – Society for Neuroscience 2016 (Second author)
- Enhancing plasticity and recovery following spinal cord injury – Society for neuroscience 2016 Poster (Eighth Author)
- The automated reach task measures deficits in distal forelimb precision in mice following photothrombotic stroke – TxFreshAir Grand Challenges in Neuroscience Roundtable 2016 Poster
- Disseminating Behavior Analysis: Novel Applications and Additional Avenues – Association for Behavior Analysis, International 2017 Panel Member
- Cholinergic Neuromodulation in Stroke Recovery – UT Southwestern Neuroscience Retreat 2017 Presentation
- Chemogenetic activation of cholinergic neurons in the nucleus basalis during stroke recovery – Society for Neuroscience 2017 Dynamic Presentation Board
- Chemogenetic activation of cholinergic neurons in the mouse nucleus basalis during stroke recovery – International Stroke Conference 2018 Poster
- The interaction of phylogenetic and ontogenetic selection processes – Association for Behavior Analysis, International 2018 Presentation
- Historical research highlights from intersectional pharmacological and neuroscientific fields (last author, with student Stephanie Cran) – Association for Behavior Analysis, International 2018 Poster
- Can the concept of metacontingency and the performance matrix inform one another? – Association for Behavior Analysis, International 2018 Poster
- Motor Recovery after Transient Middle Cerebral Artery Occlusion May be Impacted by the Disruption of Nucleus Basalis-Cortical Cholinergic Pathways (second author) – International Stroke Conference 2019 Poster
- Engineering an enriched environment operant chamber and its implications (last author, with students Alex Davidson, Grayson Butcher, Jared Armshaw, Marla Baltazar, Selena Cruz) – Texas Association for Behavior Analysis 2019 Poster
- To Bull's-Eye Or Not To Bull's-Eye: Shaping Fine-Motor Responses with Outcome-Based Shaping Schedules (last author, with student Jared Armshaw) – Texas Association for Behavior Analysis 2019 Poster
- Enrichment components for rats in the lab environment (last author, with student Melody Jones) – UNT Scholar's Day, 2019 poster
- Oxytocin and its Effects on Social Reward in the Medial Prefrontal Cortex (last author, with student Ilena Persaud) – McNair Scholars Program Research Forum 2019 presentation
- Development of Paw Asymmetry Test for Rats (last author, with students Bunyong Dejanipont, Fernando Moreno, Dan Do, Harold Santiago Ramos) – Senior Design Day 2019 poster
- Inventing a Supercage for Rats (last author, with students Grayson Butcher, Alex Davidson Marla Baltazar, Jared Armshaw Selena Cruz) – Association for Behavior Analysis, International 2019 Poster
- Dopaminergic and Cholinergic Neuromodulation: A Neuro-Operant Review and Interpretation (second author) – Association for Behavior Analysis, International 2019 Poster
- Reflections on "Stroke Diary:" Verbal Behavior Perturbations and Recovery Strategies in a Single Case of Aphasia – Association for Behavior Analysis, International 2019 Poster
- Self-Experimentation and the Quantified-Self: Research, Theory, and Application – Association for Behavior Analysis, International 2019 Symposium Discussant

- Oxytocin and Social Reward in the Medial Prefrontal Cortex (last author, with student Ilena Persaud) – McNair Research Assembly, 2019, poster
- Invited Lecture: Connecting Environment-Behavior Relations in the Middle: Neuroscience and Behavior Analysis. – Texas Association for Behavior analysis 2020 Invited Presentation
- An Apparatus for Single-Subject Research with Rats in Group Housing (last author, with student Alex Davidson) – Texas Association for Behavior Analysis 2020 Poster
- Technology-infused operant measures of hemiparesis (last author, with student Jared Armshaw) – Texas Association for Behavior Analysis 2020 Poster
- Technological Innovation Enhances Operant Measures for Post-Stroke Pathologies (last author, with student Jared Armshaw) – Association for Behavior Analysis, International 2020 Poster
- Olfactory Stimulus Delivery and Removal System for an Operant Chamber (last author, with student Sophia Kirkland) – Association for Behavior Analysis, International 2020 Poster
- An Apparatus for Single-Subject Research With Rats in Group Housing (last author, with students Alex Davidson and Grayson Butcher) – Association for Behavior Analysis, International 2020 Poster
- Humor, Brains, and Video Games: The Many Ways to Link Physiology With Basic and Rehabilitative Behavioral Paradigms – Association for Behavior Analysis, International 2020 Symposium Chair
- Use of a Virtual Reality Gaming System to Improve Balance in Individuals With Chronic Stroke (last author, with student Selena Cruz) – Association for Behavior Analysis, International 2020 Presentation
- Towards a Natural Line of Fracture Between Behavior and Environment: Climbing Out of the Pigeonhole of the Skin on the Other Side – Association for Behavior Analysis, International 2020 Presentation
- Oxytocin and Social Reward in the Medial Prefrontal Cortex (last author, with student Ilena Persaud) – McNair Research Assembly, 2020, poster