

DELIA S. SHELTON

National Science Foundation Postdoctoral Fellow

E-MAIL: shelton.delia@gmail.com

<https://www.deliashelton.com>

EDUCATION

- 2010-2016 **Ph.D Psychological and Brain Sciences & Evolution Ecology and Behavior, minor Cognitive Science**
Indiana University, Bloomington, IN, USA
Committee: Emilia P. Martins, Jeffrey R. Alberts, Laura M. Hurley, Meredith J. West
- 2011 **Poynter Institute Teaching Research Ethics Certificate**
Indiana University, Bloomington, IN, USA
Director: Kenneth Pimple
- 2009-2010 **Alternative Teacher Certification Program**
Prairie View A&M University, Prairie View, TX, USA
Secondary Education, General Science Teacher
- 2005-2009 **Bachelor's of Science (B.S.) Animal Behavior, minor Spanish**
Southwestern University, Georgetown, TX, USA
Thesis: *Stay in School or Drop Out, What is a Fish to Do?: Multiple Selection Pressures on Teleost Fish.*
Adviser: Jesse E. Purdy
- 2003-2005 **Texas Academy of Mathematics and Sciences (TAMS)**
University of North Texas, Denton, TX, USA
High School Diploma

POSITIONS

- 2016-2019 National Science Foundation (NSF) Postdoctoral Fellow
 Leibniz Institute for Freshwater Ecology and Inland Fisheries (IGB)
 University of Windsor
 Oregon State University
 Mentors: Dennis Higgs, Jens Krause, Robert Tanguay
- 2010-2015 National Science Foundation Predoctoral Fellow
- 2010-2015 National Science Foundation IGERT Fellow in the Dynamics of Brain-Body-
 Environment Systems
- 2009-2010 Science Teacher, Houston Independent School District
- 2007-2008 UNCF·MERCK Science Initiative Scholar
- 2005-2009 Dixon Scholar, Southwestern University

(† contributed equally; undergraduate co-authored works marked with+)

1. **Shelton D.S.** and Alberts J.R. (2018) Development of behavioral responses to thermal challenges, *Developmental Psychobiology*, 54(7), 766.
10.1002/dev.21588
 - Wiley #top20article award for a top downloaded article in recent publication history.
2. **Shelton D.S.**, Meyer P.M., +Ocasio K.M. (2017) Environmental structure and energetic consequences in groups of young mice, *Physiology and Behavior*, 177, 155-160.
3. **Shelton D.S.** and Martins, E.P. (2017). Behavioral variation, adaptation, and evolution. In: Call, J., Burkhardt, G., Pepperberg, I., Snowdon C., and Zentall T. (Ed.s), APA Handbook of Comparative Psychology: Basic concepts, methods, neural substrate, and behavior, Vol. 1 (pp. 219-236). Washington, DC, US: American Psychological Association.
4. Suriyampola P. S., Sykes D. J., +Khemka A., **Shelton D. S.**, Bhat A., Martins E P. (2016). Social plasticity in complex environments: effects of water flow on social behavior of zebrafish. *Behavioral Ecology and Sociobiology*, 27(5), 1-7
5. **Shelton D.S.** (2016). A review of primer effects by murine pheromone signaling: pheromonal influences on reproductive conditions. *Journal of Ethology*, 34, 355.
6. Suriyampola, P.S., **Shelton, D.S.**, Shukla, R., Roy, T., Bhat, A. and Martins, E.P. (2016). Zebrafish social behavior in the wild. *Zebrafish*, 13(1), 1-8.
7. **Shelton D.S.** (2015). CISAB ambassadors in the student conference exchange program. *Center for the Integrative Study of Animal Behavior Bulletin*, 17(1), 11.
8. **Shelton D.S.**, +Price B.C., +Ocasio K.M., and Martins E.P. (2015) Social and physical environment influences shoal cohesion, but not coordination in zebrafish (*Danio rerio*). *Journal of Comparative Psychology*, 129, 72-77.
9. **Shelton D.S.**, Atagi, E., Keene, J. R., and Ross, T. (2015). Netlogo Boomshakalaka model. Indiana University, Bloomington, IN.
http://ccl.northwestern.edu/netlogo/models/community/Boomshakalaka_shelton-atagi-keene-ross
10. **Shelton, D.S.** 2014. Locating and securing funding. In: Smith. M.J.T., Browne, M.M, Johnson, K, & Peck, W. (Ed.s), GPS for Graduate School: Students Share their Stories. (pp. 1-13) Purdue University Press: West Lafayette, IN.

11. **Shelton D.S.** (2013). Shared goals. *Bulletin of the Museum of Zoology*, 3(1), 6.
12. +Price B.C., **Shelton, D.S.**, and Martins, E.P. (2013). Group-size-dependent cohesion of zebrafish (*Danio rerio*) in the presence of disturbances. *Integrative and Comparative Biology* 53:E353.
13. **Shelton D.S.** and Alberts J.R. (2013). Ontogenesis of group regulatory behavior in mouse litters. *Integrative and Comparative Biology*, 53:E370.
14. †Dillon G.M, †**Shelton D.**, McKinney A.P., Caniga M., Marcus J.N., Ferguson M.T., Kornecook T.J., and Dodart, J.C., (2009). Prefrontal cortex lesions and scopolamine impair attention performance of C57BL/6 mice in a novel 2-choice visual discrimination task, *Behavioral Brain Research*, 204, 67-76.
15. Dzieveczynski T.L., +Bessler A.M., **Shelton D.S.**, and Rowland W.J., (2006). Effect of a Dummy Audience on Male–Male Interactions in Siamese fighting fish, *Betta splendens*. *Ethology*, 112(2), 127-136

SUBMITTED:

1. Suriyampola P. S., +Iruri-Tucker A., +Enriquez, A., +Blackwell, G., Cáceres J., **Shelton D. S.**, Martins E P. Small groups can benefit from even a small increase in group size when encountering varying water flow. (in review)
2. **Shelton D.S.**, +Watson T.D., and +Jacobs D.M. Environmental structure and the expression of group and individual movements in young mice. (in revision)
3. **Shelton D.S.**, +Austin Z.M., +Khemka A., Sykes D.J., Suriyampola P.S., Galholt S.P., Shaw, J.R., and Martins, E.P. Cadmium-exposed zebrafish affect social behavior of the un-exposed majority. (in review)

MANUSCRIPTS IN PREPERATION:

1. +Myers M.A., +Kim N., +Cahela J., **Shelton D.S.**, and Alberts J.R. Temperature-dependent spatial and social centrality. (in prep)
2. **Shelton D.S.**, Shelton, S. G., Daniels, D. K. Bhat, A., Raja, M., Krause, J., Higgs, D., Tanguay, R.L. and Martins E.P. Collective behavior of zebrafish in the wild. (To be submitted winter 2018)
3. **Shelton D.S.**, Shelton, S. G., Daniels, D. K. Bhat, A., Raja, M., Krause, J., Higgs, D., Tanguay, R.L. and Martins E.P. Wild zebrafish social networks. (To be submitted spring 2019)
4. **Shelton D.S.**, and Raja, M. Sensory tradeoffs across wild zebrafish populations. (To be submitted spring 2019).

HONORS

2017 Animal Behavior Society Allee Competition Semi-finalist
2014 Be More Engaged Award, City of Bloomington, IN USA
2012 ExxonMobil Bernard Harris Summer Science Camp Alumni Award
2009 Southwestern University Animal Behavior Student of the Year
2005-2009 Paideia Scholar

GRANTS (\$696,482)*

*all amounts are in USD

EXTERNAL AWARDS (\$414,915)

External research support

Ongoing Research Support

1611616 National Science Foundation D. Shelton (PI) 09/01/16-08/31/19
Postdoctoral Fellowship

The goal of this proposal was to document population-level differences in social behavior and test for sensory trade-offs in wild zebrafish found in India. (\$216,000)

Pending Research Support

NIH K99/R00 Pathway to Independence D. Shelton (PI)

The goal of this proposal is to study cadmium-induced behavioral disorders across generations. (\$998,973)

NSF Innovation-Corps D. Shelton (PI)

The goal of this proposal is to determine the commercial market for Visioglow, a technology that assesses multiple aspects of vision. (\$50,000)

National Academy of Sciences D. Shelton (PI)

Christine Mirzayan Science and Technology Policy Fellowship

The goal of the fellowship is to gain experience in science policy. (\$9,000)

Submitted, but not Funded Support

NOAA Sea Grant 04/2017

S. Walker (PI), D. Noakes (Co-PI), T. Quinn (Co-PI), A. Dittman (Co-PI)

Development of methods to reduce straying by hatchery salmon in order to maintain sustainable hatchery production for commercial, tribal and recreational fisheries in the Northwest United States.

Howard Hughes Medical Institutes D. Shelton (PI) 02/2017

Hannah H. Gray Fellows Program

The goal of this fellowship is to receive training in the development of collective behavior.

Completed Research Support

0851607 National Science Foundation E. Martins (PI) 08/01/2005-07/31/16
Graduate Research Assistant

The goal of this proposal was to develop a public service guide for sharing and combining behavioral data. (\$23,000)

0903495 National Science Foundation R. Beer (PI) 06/01/15-05/31/2016
Doctoral Dissertation Improvement Grant

The goal of the proposal was to develop multisensory assays to behaviorally phenotype zebrafish. (\$4,758)

0903495 National Science Foundation R. Beer (PI) 08/01/10-07/31/15
Integrative Graduate Education and Research Traineeship

The goal of this fellowship was to support graduate studies and training in dynamics of brain–body–environment systems in behavior and cognition. (\$64,000)

National Science Foundation D. Shelton (PI) 08/01/10-07/31/15
Graduate Research Fellowship

The goal of this fellowship was to support graduate training in identifying simple environmental mechanisms that affect complex behavior in zebrafish and house mice. (\$96,000)

Houston Independent School District D. Shelton (PI) 10/30/09-05/31/10
GEAR UP Innovation Grant

The goal of this grant was to enrich the educational environment of Title I high school students through the deconstruction and construction of robotic sharks. (\$1,000)

United Negro College Fund • Merck D. Shelton (PI) 05/01/07 – 08/01/08

The goal of this fellowship was to support undergraduate training in biomedical research at Merck Research Laboratories in neuroscience, Alzheimer's and drug discovery. (\$25,000)

External scholastic support

2015 NSF Travel Award - \$700

2013 Society for Integrative and Comparative Biology Broadening Participation- \$500

2013 Charlotte Mangum Housing Award

2012 National Institutes of Health (National Institute for Child Health and Development) and Sackler Institute - \$450

2008 Animal Behavior Society Charles H. Turner Travel Award

2005-2006 Animal Behavior Society Charles H. Turner Travel Award

FELLOWSHIP SUPPLEMENTS

2015 NSF IGERT Travel Award - \$2930

2015 NSF IGERT Travel Award - \$2425

2014 NSF IGERT Travel Award - \$1629

2013 NSF IGERT Travel Award - \$2953

2012 NSF IGERT Travel Award - \$580

INTERNAL AWARDS (IU – INDIANA UNIVERSITY, SU – SOUTHWESTERN UNIVERSITY;
\$281,567)

Indiana University D. Shelton (PI) 08/01/16 – 05/31/17
Diversity Dissertation Year Fellowship (\$25,000) I declined.

Indiana University D. Shelton (PI) 08/01/10-05/31/2015
Psychological and Brain Sciences, Heller Fellowship
Summer support for graduate studies on group regulatory behavior in mouse huddles. (\$4,067)

Indiana University D. Shelton (PI) 08/01/10-05/31/2015
Graduate Scholars Fellowship (\$125,000) I declined.

Southwestern University D. Shelton (Co-PI with 2 undergrads)08/01/05 – 05/01/09
King Creativity Fund
Develop a robotic shark in study antipredatory associative learning in schools of fish. (\$2,140)

Southwestern University D. Shelton (Co-PI with 6 undergrads)08/01/05 – 05/01/09
Paideia Scholar Research Grant
Civic engagement to break down barriers between the local (Georgetown, TX) and university
(Southwestern University) community, and develop a monument dedicated to the history of war
and peace. (\$1,000)

Southwestern University D. Shelton (PI) 08/01/05 – 05/01/09
Bishop Ernst T. Dixon Scholarship
Full scholarship to support undergraduate studies. (\$120,000)

Internal scholastic support

2015 Center for Integrative Study for Animal Behavior Travel Award, IU - \$400
2015 Provost Travel Award, IU - \$800
2013 Provost Travel Award, IU - \$700
2013 Biology Department Travel Award, IU - \$250
2012 Indiana University Women in Science Program, IU - \$550
2012 Animal Behavior Lab Travel Award, IU - \$400
2012 Center for Integrative Study for Animal Behavior Travel Award, IU - \$360
2011 Animal Behavior Laboratory Travel Grant, IU - \$500
2010 Animal Behavior Laboratory Travel Grant, IU - \$400

INTELLECTUAL PROPERTY

- Invention Id: DRAFT/250/18- Sole inventor, submitted institutional disclosure to Oregon State University. Technology served as a platform for applying to NSF i-Corps.

PROFESSIONAL AFFILIATIONS

- American Fisheries Society - Oregon Chapter
- Society for Integrative and Comparative Biology 2011
- International Society for Developmental Psychobiology 2010-2013
- Center for the Integrative Study of Animal Behavior 2010-2016
- Alliance for Graduate Education and the Professoriate - Midwest Cross Roads 2010-2016
- Southwestern Psychological Association 2007-2009
- Southwestern Comparative Psychological Association 2007-2009
- Animal Behavior Society 2005-present
 - o 2017-2020 member of the Diversity committee, and coordinator of the Charles H. Turner Program.

TEACHING EXPERIENCE

- 2018 Guest Lecture, Social Networks
Undergraduate Animal Behavior course, April 5, 2018. ~50 students.
University of Tennessee - Knoxville
- 2013 Guest Lecture, Social Behavior: Group Structure and Cooperation, in
undergraduate/graduate Animal Behavior course, April 9, 2013. ~50 students.
Indiana University-Bloomington
- 2011 Lecturer, Indiana University-Bloomington *BioEthics*:
Center for Integrative Study of Behavior
~ 10 undergraduates and 2 primary school teachers
Mentor: Emilia Martins, Ph.D.
- 2009-2010 Science Teacher at Title 1 High School in
Houston Independent School District
Science Department: *Integrated Physics and
Chemistry* >200 high school students
Supervisor: Carolyn Brown, M.A.

ADDITIONAL EXPERIENCE

- 2009 **University of Ghana: Oceanography and Fisheries**
Legon, Ghana (West Africa)
Research Assistant –Academic School Term
Fisheries research • aquatic sampling • coastal surveying
- 2008 **INBIO Parque**
Heredia, Costa Rica (Central America)
Research Assistant –Academic School Term
Managed butterfly colony • Herpetological husbandry

- 2007, 2008 **Merck Research Laboratories**
Boston, MA, USA
 Research Associate- Summer Intern
 Drug discovery • Operant conditioning • Immunohistochemistry • Alzheimer’s models • High throughput behavioral phenotyping
- 2005-2008 **Aquatic Animal Laboratory- Southwestern University**
Georgetown, TX, USA
 Research Assistant –Academic School Term
 Classical conditioning • Cephalopod husbandry • Animatronics • Pharmacology • Saltwater system management
- 2005, 2006 **Alliance of Graduate Education and the Professoriate (AGEP)**
Rice University, Houston, TX, USA
 Research Associate- Summer Intern
 Carnivore enrichment • Zoo • Stereotypical Behavior •Public outreach
- 2004 **NSF REU- Center for Integrative Study of Animal Behavior (C.I.S.A.B.)**
Indiana University, Bloomington, IN, USA
 Research Associate-Summer Intern
 Audience effect • tropical fish • video-play back

MENTORING

Mentored 2 master’s of science student, 22 undergraduates and 5 high school students in full-time summer research programs or multi-week academic year internships. The students were from diverse backgrounds, 19 women, 15 people of color, 3 first generation college students, 2 LGBTQ students and one veteran. I have 8 undergraduate co-authors on refereed articles, and 13 students have given presentations at conferences.

MASTER’S STUDENTS

- 2018 Jeffrey Kelly – MS student at University of Liverpool
 2017-2018 Samuel Swanson – MS in Water Resource Engineering, Oregon State University

UNDERGRADUATES

- 2018 Colbe Moe – NSF i-Corp Team member, Oregon State University.
 2018 Fahren Nipple- Society of Toxicology intern, Oregon State University
 Hnin Oo “May” Wai, SURF intern, and NSF i-Corp team member, Oregon State University
 2018 Sierra Shelton – India field research assistant, Blinn College
 2017 Ploypenmas Sonya Boyd – PROMISE intern, Oregon State University
 2015-2016 Mary Myers- research assistant, graduate student at Ball State University
 2015-2016 Nahrie Kim- research assistant, graduate student at Seoul National University
 2015 Xenia Davis- NIH MARC Scholar, won best poster presentation at Annual Biomedical Conference for Minority Students for her summer research project through the NSF REU
 2015 Samantha Schwindel- research assistant, Hutton Honors Scholar, Indiana University, graduate student at University of Louisville

2015 Stephanie McQueen- research assistant, Indiana University, veterinary assistant
2014-2015 Anuj Khemka- research assistant, Indiana University
2014 Zoe Austin- NSF REU; OK Louis Stokes Alliance for minority participation scholar, graduate student, Indiana University
2014 Jason Cahela- NIH MARC scholar, respiratory therapist at Queens Medical Center, Hawaii, USA
2014 Meital Shacaf- IFLE scholar, Indiana University
2013-2014 Erik Wegner-Clemens- veterinary student
2014 Karen Ocasio- NSF REU, Jr., Microbiologists in industry
2012-2013 Devin Jacobs- 1st place poster at Animal Behavior Conference, law school
2012-2013 Brittany Price- NSF REU- conference presentation, Broadening Participation Travel Award, Charlotte Mangum Award, CISAB travel award, honor's thesis at North Carolina State University, post-bac at Wright State University, PhD program University of North Carolina
2012 Patrick Sweeny- military veteran
2012 Gray Stephenson- summer undergraduate research assistant, biology major, founder of a green start-up company
2012 Dakota Scheu- lawyer J.D., civil law, 2nd Place Poster in Animal Behavior Seminar
2011 Lauren Green- Professional Experience in Radio Communication
2011 Ticia Watson- NSF REU, Master's in Public Health Florida International

HIGH SCHOOL STUDENTS

2017 Dolores Shelton – Oregon State University, PROMISE intern.
Roger Morris- Bloomington North high school research assistant, pursuing
2013 economics at Indiana University
2013 Andy Morris- Bloomington North high school, research assistant
Hannah Fox-Teague- Holland Summer Scholar, high school research
2013 assistant
2011-2012 Moonju Lee- high school student, pursuing B.S. in Neuroscience at Rice University

JR. HIGH SCHOOL STUDENTS

2015 Dolores Shelton – Brenham Jr. High summer research assistant

SERVICE

2016-2019 Animal Behavior Society Diversity committee member – Coordinator of Charles H. Turner Program
2018 SACNAS outreach volunteer to increase K-12 engagement in STEM
TEAMTox toxicology club volunteer to increase undergraduate engagement in STEM
2018
2017 Oregon Department of Fish and Wildlife, Free Fishing Day liaison, ad translator
2017, 2018 Student presentation judge, Oregon Chapter of American Fisheries

SERVICE Contd.

- 2011-2016 Volunteer with Bethel Homework Help, contributing to the efforts that were honored by the 2014 *Be More Engaged Award* from the City of Bloomington Community and Family Resources Department for encouraging literacy.
- 2011-2013 Indiana University, Mechanisms of Behavior (Graduate Student Representative)
- 2010-2016 Student Member, CISAB Animal Behavior conference planning committee. Chair of program committee (2013-2014), peer reviewing and compiling abstracts.
- 2007-2008 Southwestern University Animal Behavior Society (Student Representative)
- 2005-2008 SU Natives – Organized Annual Powwow, and made presentations about First Nations to local school children.
- 2005-2008 Empowering Blacks and Others to Never Yield (E.B.O.N.Y.)-Dollas Committee head– 2005-2006; Secretary 2006-2007; Multicultural Council Representative -2007-2008
- 2005-2008 Theatre for Social Justice (T.S.J.)- 2006-2008
- Students Helping Admissions Recruit Prospects (SHARP), Southwestern University

REVIEWER *number of times requested to review in ()

Animal (3), Animal Behavior (2), Aquatic Biology (3), Entropy (1), Environmental Biology of Fishes (3), Journal of Comparative Psychology (2), Marine Ecology Progress Series (1), PeerJ (2), PLOS ONE (4), Royal Society Open Science (7), NPR A Moment in Science (1).

PRESS

1. Undark Magazine – For Minorities in Science, Building Communities Matter (11/06/2017)
<https://undark.org/article/mentorship-programs-science-technology/>
2. National AGEP News - GPS for Graduate School: Students Share their Stories (1/26/2015)
<http://blogs.mtu.edu/agep/2015/01/26/gps-for-graduate-school-students-share-their-stories/>
3. CISAB - segment in Indiana University REU program in Animal Behavior (7/17/2013) <http://www.indiana.edu/~animal/reu/REU.php>
4. Southwestern University Newsroom - Spanish Department Alumni Stories (9/24/2013) <http://www.southwestern.edu/live/news/8504-delia-shelton-class-of-2009>
5. Southwestern University - King Creativity Scholars: I am a real shark! (4/19/2007) <http://www.southwestern.edu/live/news/2510-i-am-a-real-shark/academics/kcf/news.php>

RELEVANT SKILLS

Laboratory: fish, mice, rats, exotic and agriculture animal husbandry, video play-back techniques, animal trapping, animatronics, animal tracking software, Med-associates software, electrical wiring, plumbing, tank design and construction,

Computer: Netlogo, Matlab, R, Python, CowLog, Image J, Zotero, IR Flash, Ethovision, IDTracker, SPSS, SAS, Sigma Plot, Photoshop, iMovie, Event Recorder Software,

Field Research: Ghana, Costa Rica, India, PADI Diver certified

Languages: Spanish (intermediate proficiency), Twi & Ewe (beginning proficiency), German (beginning proficiency), Hindi & Bangla (beginning proficiency),

PRESENTATIONS

(high school and undergraduate co-authored works marked with+)

INVITED TALKS

- 2018 • Collective behavior in wild and domestic zebrafish. RIKEN Center for Brain Science, Tōkyō, Japan. October 31, 2018.
 - Physical environments alter collective behavior. Research Faculty of Agriculture seminar, Hokkaido University, Sapporo, Japan. October 24, 2018
 - Social lives of domestic and wild kin, zebrafish. Keynote address at the International Symposium – Research Developments in Zebrafish, Nanomaterial & Actinobacteria, Padmavani College, Salem, Tamil Nadu, India. February 8, 2018
 - Into the wild and back again: social behavior of zebrafish and toxic kin. Biotechnology seminar, Anna University, Tamil Nadu, India. February 7, 2018

- 2017 • Toxins in the fins helps uncover the leader within? Indian Institute for Science Education and Research, Kolkata, West Bengal, India. November 15, 2017
 - Groups of tails and scales, the environment affects the details. Institute of Neuroscience, University of Oregon, Eugene, OR, USA. October 30, 2017.
 - A few cadmium fish influence social behavior and group dynamics in zebrafish. Allee Symposium, Animal Behavior Society, Scarborough, Ontario, Canada. June 14, 2017.
 - Social Networks are powerful for answering behavioral ecology questions. Behavioral ecology workshop at the Oregon Hatchery Research Center, Alsea, OR, USA. March 9, 2017
 - Heads or tails, feet or fins: the environment affects everything within. Psychology seminar, University of Tennessee at Knoxville, TN, USA. January 26, 2017.

- 2016 • Social Roles in Zebrafish. Charité – Universitätsmedizin Berlin, Berlin, Germany. November 30, 2016.
 - Environmental features influence the behavior of zebrafish shoals. Fisheries and Wildlife Departmental Seminar, Oregon State University, Corvallis, OR, USA. April 26, 2016.

INVITED TALKS Contd.

- 2015 • Collective Behavior in Huddles and Puddles: simple environmental mechanisms shape complex behavior in two model organisms. Talk presented at the Psychology seminar, University of Tennessee at Knoxville, TN, USA. September 25, 2015.
- A tale of scales and tails: environmental mechanisms and social roles in mice and fish. Biology seminar University of Windsor, Windsor, Ontario, Canada. September 18, 2015.
- Zebrafish behavior shaped by the natural world. University of Exeter, Exeter, Southwest England, United Kingdom. July 16, 2015
- Splash into environmental mechanisms of zebrafish behavior. Carleton University, Ottawa, Ontario, Canada. June 30, 2015.
- Individuals influence the responses of zebrafish shoals. Keck Center for Behavioral Biology, North Carolina State University, Raleigh, NC, USA. February 20, 2015.

- 2014 • The importance of social relationships for zebrafish and graduate school. Talk presented at University of Peradeniya, Kandy, Sri Lanka. October 24, 2014.
- Martins lab ethoinformatics. Integrated Behavior Ontology for the Behavioral Science Community in Two Workshops. Princeton University, Princeton, N.J., USA. Organizers: Anne Clark, Susan Margulis, Peter Midford, and Cynthia Parr. August 7-8, 2014.

- 2013 • Model organism collective behavior. Briefing at U.S. Embassy with Environment, Science, Technology and Health Officer Nelson Wu, Kuala Lumpur, Malaysia. March 15, 2013
- Collective behavior in model organisms. University of Malaya, Kuala Lumpur, Malaysia. March 12, 2013.
- Mouse and fish collective. Universiti Teknologi Malaysia-Shah Alam, Kuala Lumpur, Malaysia. March 11, 2013.

- 2011 • UmWeltian empirical studies and developmental situated-embodied agents: Computational models of group behavior. Talk presented at Epistemology of Modeling and Simulation, Pittsburgh, PA, USA. April 2, 2011.

TALKS

1. **Shelton, D.S.**, Austin Z.M., Khemka A., Sykes, D.J., Suriyampola, P.S., and Martins E.P. (October, 2018). Cadmium-exposed zebrafish affect social behavior of the Un-exposed Majority. Pacific Northwest Association of Toxicologists. Bothell, WA, USA.
2. Nipple F., **Shelton D.S.**, Tanguay, R.L. Does environmental complexity influence zebrafish social networks. (2018, August). Society of Toxicology Intern Symposium, Oregon State University, Corvallis, OR, USA.
3. **Shelton D.S.**, Shelton, S. G., Daniels, D. K. Bhat, A., Raja, M., Tanguay, R.L. and Martins E.P. (2018, August). Water flow, but not vegetation influences collective

behavior of zebrafish in the wild. Animal Behavior Society Conference. Milwaukee, Wisconsin, USA

4. **Shelton D.S.**, Shelton, S. G., Daniels, D. K. Bhat, A., Raja, M., Tanguay, R.L. and Martins E.P. (2018, March). Collective behavior of zebrafish in the wild. Oregon Chapter of the American Fisheries Society meeting. Eugene, Oregon, USA
5. **Shelton D.S.**, Austin Z.M., Khemka A., Sykes, D.J., Suriyampola, P.S., and Martins E.P. (2017, July). Behavioral toxicology of adult zebrafish. Oregon State University Super Fund Research Program Seminar. Corvallis, Oregon, USA.
6. **Shelton D.S.**, Austin Z.M., Khemka A., Sykes, D.J., Suriyampola, P.S., and Martins E.P. (2017, March). A few cadmium fish influence social behavior and group dynamics in zebrafish. Oregon Chapter of the American Fisheries Society meeting. Bend, Oregon, USA *Invited to dirty waters special session.
7. **Shelton D.S.** (2016, October). A Primer for a developing group: Simple environmental features influence complex behavior in zebrafish. Leibniz Institute for Freshwater Ecology and Inland Fisheries, Berlin, Germany.
8. Suriyampola P.S., +Iruri-Tucker, A.A., +Enriques, A., **Shelton D.S.**, and Martins E.P. (2016, August). Does group size improve synchronized motion in social groups? Animal Behavior Society Conference, Columbia, MO, USA.
9. **Shelton D.S.**, +Austin Z.M., +Khemka A., and Martins E.P. (2016, February). Cadmium-exposed individuals direct group behavior. Association for School for Public and Environmental Affairs Student Conference, Indiana University, Bloomington, IN, USA.
10. **Shelton D.S.**, +Austin Z.M., +Khemka A., and Martins E.P. (2015, August). Hidden in Pairs, Revealed in Shoals: indirect effects of cadmium on zebrafish group behavior. Talk included in Symposium organized by Thomas Bugnyar, Andrea Griffin, Sabine Tebbich at the International Ethological Conference, Cairns, New South Wales, Australia.
11. Suriyampola P.S., **Shelton D.S.**, Sykes D.J., Bhat A., and Martins E.P. (2015, August). Out of the wild: Social behavior of wild and domesticated zebrafish (*Danio rerio*) in response to habitat alteration. International Ethological Conference, Cairns, New South Wales, Australia.
12. +Davis, X. +Kim, N., **Shelton, D.S.**, and Alberts, J.R. (2015, July). Individual variation in thermal physiology and maternal care. Center for Integrative Study of Animal Behavior, Indiana University, Bloomington, IN, USA.
13. **Shelton D.S.**, +Austin Z.M., +Khemka A., and Martins E.P. (2015, June). Hidden in Pairs, Revealed in Groups: cadmium influences group responses in zebrafish. Animal Behavior Society Conference, Anchorage, AK, USA.

14. Suriyampola P.S., **Shelton D.S.**, Sykes D.J., Bhat A., and Martins E.P. (2015, June). A tale of two strains: Social behavior of wild and domesticated zebrafish (*Danio rerio*) in response to habitat alteration. Animal Behavior Society Conference, Anchorage, AK, USA.
15. +Austin, Z.M. +Khemka, A., +Shachaf, M., **Shelton, D.S.**, and Martins, E.P. (2015, April). Cadmium affects the responsiveness of zebrafish shoals. National Conference on Undergraduate Research Conference, Eastern Washington University, Cheney, WA, USA.
16. Suriyampola, P.S., **Shelton, D.S.**, Sykes, D.J., and Martins, E.P. (2015, March). Water flow influences the group behavior of zebrafish. Midwest Ecology and Evolution Conference, Bloomington, IN, USA.
17. **Shelton, D.S.** (2014, November). Social roles in small animal groups. Biology Club Undergraduate Research Night, Indiana University, Bloomington, IN, USA.
18. **Shelton D.S.**, +Cahela J.P., and Alberts J.R. (2014, August). Physiological consequences of 2-D and 3-D huddles in infant mice. Animal Behavior Society conference, Princeton University, Princeton, NJ, USA.
19. +Austin, Z.M. Khemka, A., Shachaf, M., **Shelton, D.S.**, and Martins, E.P. (2014, July). Cadmium alters the social dynamics of zebrafish. Center for Integrative Study of Animal Behavior, Indiana University, Bloomington, IN, USA.
20. +Cahela, J.P., **Shelton, D.S.**, and Alberts (2014, July). The effects of thermal physiology on the location of individuals within a group. Center for Integrative Study of Animal Behavior, Indiana University, Bloomington, IN, USA.
21. **Shelton, D.S.** (2014, April). Geometry of collective behavior in huddles and puddles. Seminar series in Evolution, Ecology and Biology, Indiana University, Bloomington, IN, USA.
22. +Price, B.C., **Shelton, D.S.**, and Martins, E.P. (2014, April). Larger shoals disrupt rheotaxis performance in zebrafish (*Danio rerio*). Thomas Jefferson Scholars seminar, North Carolina State University, Raleigh, NC.
23. **Shelton, D.S.**, +Price, B.C., +Wegner-Clemens, E., and Martins, E.P. (2013, August). Geometry of collective detection in zebrafish. International Ethological Conference, New Castle, England, UK.
24. +Ocasio, K. M., **Shelton, D.S.**, +Price, B.C., and Martins, E.P. (2013, July). Are two heads better than one?: differences between individual and group responses to water currents. Center for Integrative Study of Animal Behavior, Indiana University, Bloomington, IN, USA.

25. **Shelton D.S.** (2012, December). Research opportunities for undergraduates. Center for Integrative Study for Animal Behavior. Bloomington, IN, USA.
26. **Shelton, D.S.**, +Price, B.C., and Martins, E.P. (2012, September). Rheotaxis and group cohesion is modulated by group size in zebrafish. Psychological and Brain Sciences Developmental Seminar. Bloomington, IN, USA.
27. **Shelton, D.S.**, +Price, B.C., and Martins, E.P. (2012, September). Group size influences group cohesion. Psychological and Brain Sciences, Bloomington, IN, USA.
28. +Price, B.C. **Shelton, D.S.**, and Martins, E.P. (2012, July). Group effects on rheotaxis in zebrafish (*Danio rerio*). Center for Integrative Study for Animal Behavior REU Showcase, Bloomington, IN, USA.
29. +**Shelton, D.S.** et al. (2008, March). Stay in school or drop out, what is a fish to do? Southwestern Comparative Psychological Association, Georgetown, TX, USA.
30. **Shelton D.S.**, Dillon, G.M., Dodart J-C. (2007, July). The development of an attention assay. Neuroscience Drug Discovery Meeting, Merck, Boston, MA, USA.
31. **Shelton D.S.**, Dzieweczynski T.L, and Rowland W. (2004, July). Betta be aggressive: using dummy fish to control audience behavior while examining audience effects in male Siamese fighting fish (*Betta splendens*). CISAB-REU Symposium, Indiana University, Bloomington, IN, USA.

POSTERS

1. **Shelton, D.S.**, Austin Z.M., Khemka A., Sykes, D.J., Suriyampola, P.S., and Martins E.P. (October, 2018). Cadmium-exposed zebrafish affect social behavior of the Un-exposed Majority. Pacific Northwest Association of Toxicologists. Bothell, WA, USA.
2. **Shelton D.S.**, Shelton, S. G., Daniels, D. K. Bhat, A., Raja, M., Tanguay, R.L. and Martins E.P. (2018, June). Collective behavior of zebrafish in the wild. Tribal Environmental Health Summit. Milwaukee, Oregon State University, Corvallis, Oregon, USA.
3. +Boyd, P.S., +Shelton, D.E.P., **Shelton, D.S.**, and Noakes, D.L.G. (2017, August). Behavior and Sensory Systems of Steelhead. Undergraduate Research Symposium, Oregon State University, Corvallis, Oregon, USA.
4. +Shelton, D.E.P., +Boyd, P.S., **Shelton, D.S.**, and Noakes, D.L.G. (2017, August). Behavior and Sensory Systems of Steelhead. PROMISE Expo, Oregon State University, Corvallis, Oregon, USA.
5. **Shelton D.S.**, Austin Z.M., Khemka A., Sykes, D.J., Suriyampola, P.S., Noakes, D.L.G. and Martins E.P. (2017, March). A few cadmium fish influence social behavior and

group dynamics in zebrafish. Gordon Research Conference on the Movement Ecology of Animals, Ventura, CA, USA.

6. +Kim, N. S., +Myers, M. A., +Cahela, J. P., **Shelton, D.S.**, and Alberts, J.R. (2016, April). The effects of body temperature, sex, and weight on spatial positioning. Poster presented at Animal Behavior Conference, Indiana University, Bloomington, IN, USA
7. +Myers, M. A., +Kim, N. S., +Cahela, J. P., **Shelton, D.S.**, and Alberts, J.R. (2016, April). Body temperature and social centrality in mouse pups. Poster presented at Animal Behavior Conference, Indiana University, Bloomington, IN, USA.
8. +Iruri-Tucker, A.A., Suriyampola, P.S., +Enriques, A., +Blackwell, G., **Shelton, D.S.**, Caceres, J., and Martins, E.P. (2016, April). The more the merrier: larger groups are better at responding to fluctuating environments. Poster presented at Animal Behavior Conference, Indiana University, Bloomington, IN, USA.
9. +Davis, X. +Kim, N., **Shelton, D.S.**, and Alberts, J.R. (2015, November). Individual variation in pup thermal physiology and maternal care. Poster presented at 2015 Annual Biomedical Research Conference for Minority Students (ABRCMS), Seattle, Washington, USA.+Khemka, A., +Austin, Z., +Shachaf, M., **Shelton, D.S.**, and Martins, E.P. (March, 2015). Hidden in Pairs, revealed in aggregation: cadmium influences zebrafish behavior. Poster presented at Animal Behavior Conference, Indiana University, Bloomington, IN, USA.
10. **Shelton, D.S.**, +Price, B.C., +Ocasio, K.M., and Martins, E.P (2014, April). Spatial structure of zebrafish shoals is influenced more by the physical environment than the social environment. Poster presented at Animal Behavior Conference, Indiana University, Bloomington, IN, USA.
11. **Shelton D.S.** and Alberts J. R. (2013, January). Ontogenesis of group regulatory behavior in mouse litters. Poster session presented at Society for Integrative and Comparative Biology, San Francisco, C.A., USA.
12. +Fox-Teague, H., +Ocasio, K.M., **Shelton, D.S.**, and Martins, E.P. (2013, July). Testing the waters: My first research experience. Poster presented at Jim Holland Summer Science Research Program, Indiana University, Bloomington, IN, USA.
13. +Jacobs, D.S., **Shelton, D.S.**, and Alberts, J.R. (2013, April). Energetic consequences of 2D and 3D huddling in mice. Poster session presented at Animal Behavior Conference, Bloomington, IN, USA.
14. **Shelton, D.S.** and Alberts, J. R. (2013, January). Ontogenesis of group regulatory behavior in mouse litters. Poster session presented at Society for Integrative and Comparative Biology, San Francisco, C.A., USA.

15. +Price B.C. **Shelton D.S.**, and Martins E.P. (2013, January). Group size dependent cohesion of zebrafish (*Danio rerio*) in the Presence of Disturbances. Poster presented at Society for Integrative and Comparative Biology, San Francisco, CA, USA.
16. **Shelton D.S.** and Alberts J.R. (2012, October). Group behavior of mouse litters and the development of regulated pup flow. Poster presented at the international conference of International Society for Developmental Psychobiology, New Orleans, LA, USA.
17. **Shelton, D.S.**, and Alberts, J.R. (2012, April). Dynamics of temperature dependent pup flow in developing mice. Poster presented at IGERT Showcase 3rd Annual Symposium, Bloomington, IN, USA.
18. **Shelton, D.S.** and Alberts, J.R. (2011, November). Development of temperature dependent pup flow in mice. Poster presented at the international conference of International Society for Developmental Psychobiology, Washington, D.C., USA.
19. +Watson T., **Shelton D.S.**, and Alberts J.R. (2011, July). Thermoregulatory huddling by ~~infant mice is augmented by nest configuration~~. Poster presented at the joint Animal Behavior Society and International Ethological Conference, Bloomington, IN, USA
20. **Shelton, D.S.**, and Alberts, J.R. (2011, April). The development of behavioral thermoregulation in *Mus musculus*. Poster presented at IGERT Showcase 2nd Annual Symposium, Bloomington, IN, USA.
21. **Shelton, D.S.** et al (2008, August). Under the Bottom and Over the Top: Defensive strategies of
 - a. mummichogs (*Fundulus heteroclitus*). Poster presented at Animal Behavior Society (ABS) 45th Annual International Conference, Snowbird, Utah, USA.
22. +**Shelton D.S.** et al. (2008, July). Stay in School or drop out, What is a fish to do? Antipredatory strategies of teleost fish. Poster presented at UNCF~Merck Fellows Symposium, Philadelphia, PA, USA.
23. **Shelton D.S.** +Christian L., and +Decker H. (2007, February). I Am A Real Shark! Poster presented at Southwestern Undergraduate Creative Works and Research Symposium, Georgetown, TX
24. **Shelton D.S.**, +Myer D. et al., (2007, April). Landscaping the history of war and peace. Poster presented at Southwestern University Paideia Symposium, Georgetown, TX, USA.
25. **Shelton D.S.**, Mathews-Borak C., and Meffert L.M. (2007, July). The behavioral effect of several enrichment conditions in Indo-Chinese tigers (*Tigris corbetti*). Poster presented at Animal Behavior Society (ABS) 44th Annual International Conference, Burlington, VT, USA.

26. **Shelton D.S.**, Dzieweczynski T.L, Rowland, W. (2006, August). An evaluation of the video playback technique in siamese fighting fish (*Betta splendens*). Poster presented at Animal Behavior Society (ABS) 43rd Annual International Conference, Snowbird, UT, USA.
27. **Shelton, D.S.**, Mathews-Borak, C., and Meffert, L.M. (2006, July). The behavioral effect of several enrichment conditions in Indo-Chinese tigers (*Tigris corbetti*). Poster presented at Rice University AGEP, Houston, TX.
28. **Shelton, D.S.**, Dzieweczynski T.L, Rowland, W. (2006, February). An evaluation of the video playback technique in siamese fighting fish (*Betta splendens*). Poster presented at Southwestern Undergraduate Creative Works and Research Symposium, Georgetown, TX, USA.
29. **Shelton, D.S.**, Dzieweczynski T.L, Rowland, W. (2005, July). An evaluation of the video playback technique in siamese fighting fish (*Betta splendens*). Poster presented at Rice University AGEP, Houston, TX, USA.
30. **Shelton D.S.** (2004, February). Shapes generate numbers: the final part. Poster presented at National Society for Black Chemist and Chemical Engineers Conference. Houston, TX, USA.

REFERENCES

Emília P. Martins, Ph.D
 (co-chair dissertation)
 Professor, School of Life Sciences
 Arizona State University, Tempe, AZ, USA
Emilia.Martins@asu.edu

Laura M. Hurley, Ph.D
 (PhD. Committee member)
 Associate Professor, Department of Biology
 Director of CISAB-REU
 Indiana University, Bloomington IN, USA
lhurley@indiana.edu

Meredith J. West, Ph.D
 (PhD Committee member)
 Professor Emeritus, Department of
 Psychological and Brain Sciences
 Indiana University, Bloomington IN, USA
mewest@indiana.edu

Robert Tanguay, Ph.D
 (NSF Postdoc Advisor)
 Distinguished Professor
 Environmental and Molecular Toxicology
 Oregon State University, Corvallis, OR, USA
Robert.Tanguay@oregonstate.edu

Jens Krause, Ph.D
 (NSF Postdoc Advisor)
 Head of Department
 Leibniz Institute for Freshwater Ecology and
 Inland Fisheries
 Von Humbolt University, Berlin, Germany
j.krause@igb-berlin.de

Dennis Higgs, Ph.D
 (NSF Postdoc Advisor)
 Head of Department, Biology
 University of Windsor, Ontario, Canada
dhiggs@uwindsor.ca