

34th Annual Karger Workshop in Evolutionary Neuroscience
November 10, 2022

Exaptation, maladaptation and evolution of the nervous systems

Organized by Daphne Soares, New Jersey Institute of Technology with assistance by Grace Capshaw Johns Hopkins University

- 7:30- 8:00** **Breakfast**
- 8:00-8:10** **Welcome and Introduction**
Daphne Soares & Grace Capshaw
- 8:10-8:55** **The persistence and transience of memory**
Paul Frankland, University of Toronto, Canada
- 8:55-9:35** **Origins of neurons, brains, and memory mechanisms through the lens
of single-cell genomics**
Leonid Moroz, University of Florida, USA
- 9:35-10:05** **Break**
- 10:05-10:50** **“Maladaptive” chronic pain driven by adaptive and exaptive mechanisms
in nociceptors**
Edgar T. Walters, University of Texas Health Science Center at Houston, USA
- 10:50-11:35** **Inhibitory systems in brain evolution: pathways for vulnerability in
neurodevelopmental disorders**
Kari Hanson, University of California, San Diego, USA
- 11:35-12:00** **Round Table Discussion I**
- 12:00-1:30** **Lunch**
- 1:30-2:30** **What are mental adaptations, maladaptations, exaptations, and diversity?
Insights from evolutionary-medical studies of autism and psychosis**
Bernard Crespi, Simon Fraser University, Canada
- 2:30-3:15** **Adaptive and maladaptive responses during colonization of caves**
Helena Bilandžija, Ruđer Bošković Institute, Croatia
- 3:15-3:45** **Break**
- 3:45-4:30** **'Earless' frogs evade adaptive explanation and expose sensory insights**
Molly Womack, Utah State University, USA
- 4:30-5:15** **Exaptation or Exploration? The Nature of Adaptive Evolution**
James Napoli, American Museum of Natural History, New York, USA
- 5:15-6:00** **Round Table Discussion II**
- 6:00-8:00** **Reception**

2022 J.B. Johnston Club for Evolutionary Neuroscience Annual Meeting
November 11, 2022
San Diego, CA

7:30-8:30 Breakfast

8:30-8:40 Introduction/Welcome Program Committee

Speaker is underlined

8:40-8:58 Biophysical modeling of leech mechanosensation suggests cilia are tuned to the least dispersive components of surface waves

Bruno Mota, Faye Piephoff, Cynthia Harley, and Brian Taylor

8:58-9:16 Too hot to handle? Effects of increased temperature on brain and sensory development in the Port Jackson Shark (*Heterodontus portusjacksoni*)

Emily E. Peele, Culum Brown, Charlie Huveneers, and Kara E. Yopak

9:16-9:34 Integrating neuroplasticity and evolution

Caleb J. Axelrod, Swanne P. Gordon, and Bruce A. Carlson

9:34-9:52 One ascending visual pathway to the telencephalon in the medaka, a percomorph fish

Hanako Hagio and Naoyuki Yamamoto

9:52-10:10 Coffee Break (18 min)

10:10-10:28 Differential distributions of otpa-protein versus *lhx5*-, *lhx6*, and *isll*-driven GFP define the extended medial amygdala in zebrafish

Thomas Mueller

10:28-10:46 A shared regulatory pathway in neural stem and neural crest cells: implications for cell proliferation and neurodevelopmental disease pathogenesis

Amalia J. Napoli, Sarah Schubel, Josiah D. Zoodsma, Lonnie P. Wollmuth, and Howard I. Sirotkin

10:46-11:04 Hearing vibrations: the auditory nerve and first-order cochlear nuclei of the Western ratsnake (*Pantherophis obsoletus*)

Dawei Han and Catherine Carr

11:04-11:22 Adult neurogenesis in turtles increases during classical fear conditioning

Alice S. Powers

11:22-12:00 Discussion on diversity in JBJC

12:00-1:30 Lunch

1:30-2:30 **Karger Special Invited Guest: Bernard Crespi**
Autism, intelligence, and neuroscience: what are the connections?"

2:30-2:48 **Various modes of whole brain and cerebellum size evolution in conjunction with shifting body plan in Lepidosauurs**
Christopher P. Heesy and Leigha M. Lynch

2:48-3:06 **What hangs with what in various mammalian brains**
William Grisham, Wei Cai, and Trisha G. Mukherjee

3:06-3:24 **Movement representations in the primary somatosensory cortex (S1) of the greater galago *Otolemur garnetti* elicited by intracortical microstimulation**
Andrew C. Halley, Hui-Xin Qi, Jamie L. Reed, Iwona Stepniewska, Qimeng Wang, Jon H. Kaas, and Leah Krubitzer

3:24-3:42 **Coffee Break (18 min)**

3:42-4:00 **Identifying the neural substrate of vocal learning in cetaceans: a comparative transcriptomic approach**
Brigid Maloney, Ksenia Orekhova, Gregory Gedman, Matthew Biegler, Marcelo Magnasco, and Erich D. Jarvis

4:00-4:18 **As strong as an ox? mTBI-like tau accumulation in brains of headbutting muskoxen**
Nicole L. Ackermans, Merina Varghese, Enna Selmanovic, Joy S. Reidenberg, and Patrick R. Hof

4:18-4:36 **Covariation of skull and brain morphology in domestic dogs**
Sophie A. Barton, Marc Kent, and Erin E. Hecht

4:36-4:54 **Macroevolution of the primate entorhinal cortex**
David Vanier and Jeroen Smaers

4:54-5:30 **Business meeting and recognition of Karger awardee**

6:00-9:00 **Reception**