Neurobiology and Changing Ecosystems

The First Annual Scialog Conference
March 13 – 16, 2025

scialog2025®

THE PAUL G. ALLEN FRONTIERS GROUP

RESEARCH CORPORATION *for* SCIENCE ADVANCEMENT

THE FREDERICK GARDNER COTTRELL FOUNDATION

THE KAVLI FOUNDATION

Scialog: Neurobiology and Changing Ecosystems

Objectives

Engage in dialogue with the goal of accelerating high-risk/high-reward research.

Identify and analyze bottlenecks to advancing fundamental science for understanding neurobiology and changing ecosystems and develop approaches for breakthroughs.

Build a creative, better-networked, collegial community that is more likely to produce breakthroughs.

Form teams to write proposals to seed novel projects based on highly innovative ideas that emerge at the conference.

Most importantly, enjoy the discussions about where this field should go and how we can work together to get there.

Process

Brainstorming is welcome; don't be afraid to say what comes to mind.

Consider the possibility of unorthodox or unusual ideas without immediately dismissing them.

Discuss, build upon and constructively criticize each other's ideas — in a spirit of cooperative give and take.

Make comments concise to avoid monopolizing the dialogue.

Diversity, Inclusion and No Harassment

Research Corporation for Science Advancement fosters a welcoming and respectful environment for listening in which the different identities, backgrounds, and perspectives of all participants are valued, and in which everyone is empowered to share ideas as fellow scientists.

RCSA does not tolerate any form of harassment, which could include verbal or physical conduct that has the purpose or effect of substantially interfering with anyone else's participation or performance at this conference, or of creating an intimidating, hostile, or offensive environment. Any such harassment may result in dismissal from the conference.

Read RCSA's Code of Conduct

Scialog: Neurobiology and Changing Ecosystems

From the President

Welcome to the 2025 ***Scialog: Neurobiology and Changing Ecosystems*** meeting, cosponsored by Research Corporation, The Paul G. Allen Frontiers Group, the Frederick Gardner Cottrell Foundation, and The Kavli Foundation. This is the first of three Scialog meetings on this theme.

The goal of this Scialog is to catalyze multidisciplinary collaboration on fundamental science projects that underlies how organisms are resilient in the face of anthropogenic changes to the environment. This includes obvious changes like global warming and ocean acidification, but also more subtle changes like the impact of air, noise and light pollution as well. We need new methods to survey microenvironments to complement large-scale surveys of macro-level changes, better modeling of the changes and how they spread across ecosystems, and of course a deep understanding of how organisms adapt to their new reality.

Scialog's overarching purpose is to advance cutting-edge science of great significance to humanity by catalyzing innovative, basic research. Our focus is on scientists in the early years of their independent careers. Through the unique Scialog process, we seek to lay the foundation for an ongoing, highly creative, cross-disciplinary community of scientists that will prove adept at identifying exciting areas for research advances for decades to come.

To that end, under the guidance of Program Directors **Andrew Feig**, **Richard Wiener**, **Eileen Spain** and **Silvia Ronc**o (Research Corporation), and with assistance from our initiative partners **Amy Bernard**, **Stephanie Albin** and **Angie Michaiel** (Kavli Foundation), **Julie Harris** and **Jodi Lilley** (Paul G. Allen Frontiers Group) and **Shaun Kirkpatrick** (Frederick Gardner Cottrell Foundation), we hope you will be engaged in passionate discussions with colleagues, many of whom you will meet for the first time at Scialog. The process is designed to stimulate new ideas that you might not be able to pursue on your own but become possible to try out in collaborative teams. The result, we expect, will be a meeting unlike others that you attend. We are confident that you will find the next two days to be extremely worthwhile.

This is your opportunity to air that wild idea you have been reluctant to share with others, or to discuss a nagging hunch that does not yet have sufficient supporting data, or to take a leap on a high-impact/high-risk project instead of concentrating all your effort on incremental studies. This is the time to come up with, and be open to, completely new ideas that may truly change the world and to find new colleagues and collaborators with whom to pursue them.

We hope this first meeting on this topic yields a crop of outstanding team proposals, which will make our job of determining who receives funding very challenging. For all Fellows, whether or not you develop a funded project, we are sure that this Scialog network will provide long-term benefits. I wish you every success in exploring new and compelling ideas over the next two days.

Have a terrific meeting!

Daniel Linzer
President
Research Corporation for Science Advancement

From the Program Director

Research Corporation's highly interactive Scialog meetings have the goal of catalyzing new collaborations based on blue-sky ideas among Scialog Fellows who constitute a highly select group of exemplary early career scientists from the U.S. and Canada. The emphasis is on dialog, networking, and building new collaborations to pursue novel, high-risk discovery research.

Research Corporation, The Paul G. Allen Frontiers Group, the Frederick Gardner Cottrell Foundation, and The Kavli Foundation chose to focus on Neurobiology and Changing Ecosystems because of the huge changes occurring to our natural and built environments, and the significant issues of adaptation and resilience required as a result. Many of these environmental changes are occurring at rates faster than traditional evolution and natural selection can respond, so we seek to understand at a fundamental level how neural pathways are adapting to these challenges. At this Scialog, we are bringing together chemists, physicists, climate scientists, neurobiologists, and behavioral ecologists, among others, to work together collaboratively on novel, high-risk projects to better understand how organisms can be resilient in the face of these anthropogenic challenges, whether on land, in the sea, or in the air.

We have two outstanding keynote speakers – **Christina Grozinger** (Pennsylvania State University) and **Martin Tresguerres** (University of California, San Diego) – to set the stage for breakout discussions. They will be joined by a terrific group of senior scientists to round out the team of facilitators:

Carlos Baiz, University of Texas at Austin
Gaby Nevitt, University of California, Davis
Cindy Moss, Johns Hopkins University
Jeff Riffell, University of Washington
Kim Rosvall, Indiana University
Joellen Russell, University of Arizona
Emilie Snell-Rood, University of Minnesota Twin Cities
Wolfgang Stein, Illinois State University

Scialog meetings focus on dialogue and team building with the goal of creating novel strategies and collaborative approaches. An important feature is the opportunity for Scialog Fellows to form teams and write proposals to pursue particularly creative ideas that emerge through the dialogue. We hope this competition is exciting, but regardless of which proposals are funded, the primary purpose is to catalyze a deeper and more meaningful exchange of ideas than ordinarily occurs at scientific conferences. Our intent is for this process to help participants gain new insights and connections that significantly advance fundamental science.

We hope each participant finds the Scialog experience of great value. Please do not hesitate to provide feedback on how to make the conference better. My fellow Program Directors, **Richard Wiener, Silvia Ronco**, and **Eileen Spain**, the RCSA staff, and I are here to help make the meeting a great experience!

Andrew Feig
Program Director
Research Corporation for Science Advancement

Conference Agenda
March 13-16, 2025

Thursday, March 13

2:00 – 6:00 pm	**Registration**	Kiva B
2:00 – 5:00 pm	**Snacks & Informal Discussions**	Kiva B
5:00 – 6:30 pm	**Poster Session and Reception**	Kiva B & Kiva Patio
6:00 – 6:30 pm	**Meeting for Discussion Facilitators**	Kiva A
6:30 – 7:30 pm	**Dinner**	Kiva Patio
7:30 – 8:30 pm	**Welcome** Dan Linzer, President, RCSA **Conference Overview, Outcomes and Proposal Guidelines** Andrew Feig, Senior Program Director, RCSA **Introductions/Ice Breakers**	Kiva A
8:30 – 10:00 pm	**Starlight Cafe**	Kiva Patio

Friday, March 14

7:00 – 8:00 am	**Breakfast**	Flying V
8:00 – 8:45 am	**Keynote Presentation** *Why and How We Study Neurobiology in Changing Environments: The ADC-NiCE Approach* Martin Tresguerres, University of California, San Diego	Kiva A
8:45 – 9:00 am	**Breakout Session Overview and Instructions**	Kiva A
9:00 – 10:15 am	**Breakout Session I**	Kiva A/B Ventana Rincon & Sabino
10:15 – 10:35 am	**Report Out**	Kiva A
10:35 – 11:15 am	**Conference Photo and Morning Break**	TBD
11:15 – 11:45 am	**Mini Breakout Session I** (Fellows) **Facilitator Meeting**	All spaces Kiva A
11:45 – 1:00 pm	**Lunch**	Flying V
1:00 – 2:15 pm	**Breakout Session II**	Kiva A/B Ventana Rincon & Sabino
2:15 – 2:35 pm	**Report Out**	Kiva A
2:35 – 3:05 pm	**Mini Breakout Session II** (Fellows)	All spaces
3:05 – 5:15 pm	**Afternoon Break, Informal Discussions and Leisure Time**	Kiva B
5:15 – 6:30 pm	**Poster Session and Reception**	Kiva B & Kiva Patio
6:30 – 7:30 pm	**Dinner**	Kiva Patio
7:30 – 8:15 pm	**Keynote Presentation** *Mechanisms Underlying Resiliency to Changing Ecosystems: From Genes to Landscapes* Christina Grozinger, Penn State University	Kiva A
8:15 – 10:00 pm	**Starlight Cafe**	Kiva Patio

Saturday, March 15

7:00 – 8:00 am	**Breakfast**	Flying V
8:00 – 8:30 am	**Discussion of Team Formation**	Kiva A
8:30 – 9:00 am	**Mini Breakout Session III** (Fellows)	All Spaces
9:00 – 10:15 am	**Breakout Session III**	Kiva A/B Ventana Rincon & Sabino
10:15 – 10:35 am	**Report Out**	Kiva A
10:35 – 11:10 am	**Morning Break**	Kiva B
11:10 - 11:45 am	**Mini Breakout Session IV** (Fellows)	All Spaces
	Facilitator and Funding Partners Discussion	Kiva A
11:45 – 1:00 pm	**Lunch**	Flying V
1:00 – 5:45 pm	**Team Formation, Informal Discussions and Proposal Writing**	All Spaces
5:45 – 6:30 pm	**Reception**	Kiva Patio
6:30 – 7:30 pm	**Dinner**	Kiva Patio
7:30 – 10:00 pm	**Starlight Cafe**	Kiva Patio

Sunday, March 16

6:30 – 7:30 am	**Breakfast**	Flying V
7:30 – 11:00 am	**Presentation of Proposals**	Kiva A
	Assessment Survey and Wrap-up	
11:00 – 12:00 pm	**Lunch** (available to go)	Kiva B

Keynote Speakers

Why and How We Study Neurobiology in Changing Environments: The ADC-NiCE Approach

Martin Tresguerres
Professor, Scripps Institution of Oceanography
University of California, San Diego

Abstract: The nervous system interfaces with the environment and allows animals to tune fundamental biological functions including reproduction, habitat selection, feeding and predator avoidance. Ultimately, proper nervous system function relies on neurons, glia, and other neural cells communicating with each other through mechanisms that involve a variety of ion channels, ATPases and multiple other enzymes. Alarmingly, the underlying cell membrane conductances, signaling pathways, and inter-cellular metabolic communication are threatened by human activities that are introducing rapid environmental changes, with potential cascading effects on individuals, populations and ecosystems. While these potentially disastrous impacts demand urgent action, our predictive power and ability to intervene are constrained by our limited knowledge of *environmentally relevant* neurobiology connecting behavioral responses with causative cellular, molecular, and circuit-level processes in non-model systems. Our recently created *Allen Discovery Center for Neurobiology in Changing Environments (ADC-NiCE)* is taking an unprecedented effort in marine environmental neurobiology to accurately determine the consequences of natural and anthropogenic environmental variation on nervous system function and its downstream impacts on behavior, ecology and evolution. Our transdisciplinary approach is combining cutting-edge genomic approaches with physiological, behavioral and field experiments, and aims to identify mechanisms that confer neurobiological resilience or vulnerability to naturally and human-induced changing environments. The ultimate goal of *ADC-NiCE* is to guide policy making, conservation and restoration decisions and enable active interventional strategies. Additionally, *ADC-NiCE* will lead extensive scientific collaborative, training, tool and data sharing activities to catalyze cutting-edge research bridging neurobiology and environmental science throughout the world. The impact of *ADC-NiCE* will be further amplified through an extensive educational program that will introduce the general public to the mind-blowing field of marine neurobiology.

Mechanisms Underlying Resiliency to Changing Ecosystems: From Genes to Landscapes

Christina Grozinger
Publius Vergilius Maro Professor of Entomology
Director, Center for Pollinator Research
Director, Huck Institutes of the Life Sciences
Penn State University

Abstract: Neural systems have been selected to allow animals to interact efficiently with their environments. These environments encompass social interactions within species, cross-species interactions including parasite-host and predator-prey interactions, seasonal weather conditions, and landscape structure. However, substantial changes in land use patterns have reduced habitat needed for rearing offspring, altered ecological communities and food webs, fragmented populations, and can lead to increased exposure to pollutants, pathogens, and parasites. Changing weather patterns influence not only the focal species but other species in the ecological network; for example, reductions in abundance or nutritional quality of host plants may negatively impact a focal species. In these changing conditions, what allows some species to thrive, while related species show declines? Here, we will discuss the sensory, physiological, developmental, and genetic factors that may underlie the behavior variation that allow some species and populations to thrive while others decline.

2025 Proposal Guidelines

1. Awards are intended to provide seed funding for teams of two to three Scialog Fellows formed at this conference for high-risk, high-impact projects.

2. The application package should be submitted as a single PDF file. Pages one and two should describe the project and role of each team member. A third page may be used for references. No budget is necessary.

3. Awards will be in the amount of $60K direct funding per team member, plus a small percentage for overhead. Grant duration will be one year.

4. No Scialog Fellow can be a member of more than two teams. If a Scialog Fellow is a member of two teams, other members of the teams must be different. No team can submit more than one proposal.

5. No Scialog Fellow who previously has won a Scialog NCE Collaborative Award can be a member of more than one team. The other team members must be different from the members of the previously awarded team.

6. Scialog Fellows who have previously won two Scialog NCE Collaborative Awards are not eligible to be funded members of a team, but they can participate as a non-funded team member.

7. Teams cannot include members who have previously collaborated with one another. If you are unsure of your status (e.g., prospective team members were part of a large collaboration but did not significantly interact), please check for clarification with an RCSA Program Director.

8. Teams are encouraged (but not required) to:
    a. Include members with different research approaches and methods.
    b. Include members from different disciplines.

9. Proposals must be submitted electronically by **6:00 a.m. PST Sunday, March 16, 2025**. Instructions for submission will be provided at the meeting.

10. Awards are anticipated to start around **June 1, 2025**.

Scialog Fellows

Ina Anreiter ina.anreiter@utoronto.ca
Biological Sciences, University of Toronto Scarborough
I am a behavioral geneticist and neurobiologist focused on understanding the gene-regulatory processes that influence behavioral responses to external environments as well as individual differences in development and behavior.

Netz Arroyo netzarroyo@jhmi.edu
Pharmacology and Molecular Sciences, Johns Hopkins University School of Medicine
I am interested in the development of biology-inspired electrochemical sensors that enable real-time, continuous monitoring of a wide range of physiologically important molecules in situ in the living body.

Pinar Ayata payata@gc.cuny.edu
ASRC Neuroscience Initiative, The City College of New York, CUNY
As microglia are a major causal cell type in dementia, our lab is interested in how environmental factors may render microglia harmful and cause dementia, specifically as environmental factors account for 40% of dementia risk.

Katie Barott kbarott@sas.upenn.edu
Biology, University of Pennsylvania
We seek to understand the cellular mechanisms of how corals detect and respond to dynamic seawater conditions on a coral reef, and how prior exposure to stressors (e.g. ocean warming, acidification, or hypoxia) influences future coral performance across biological scales.

Martha Bhattacharya Marthab1@arizona.edu
Neuroscience, University of Arizona
My lab investigates how genetic and cell biological pathways influence nervous system and behavioral resilience following injury or disease. We use Drosophila, mice, and human cells. I am interested in contributing to collaborations on insect neurogenetics/genomics and behavior.

Ioana Carcea ioana.carcea@rutgers.edu
Pharmacology, Physiology and Neuroscience, Rutgers, The State University of New Jersey
My laboratory aims to uncover the biological mechanisms by which social behaviors adapt to changes in ambient temperature.

Larry Cheng huanyu.cheng@psu.edu
Engineering Science and Mechanics, Pennsylvania State University
We are developing biocompatible, on-skin paintable conductive biogels that exhibit temperature-controlled reversible phase transitions, which will be explored as neural-machine interfaces to closely mimic natural limb function and provide bidirectional communication.

Scialog Fellows Continued

Chelsea Cook chelsea.cook@marquette.edu
Biological Sciences, Marquette University
I am interested in how animals sense the environment, communicate, and organize to collectively behave. I am particularly interested in collective behaviors that affect change on the environment, such as collective thermoregulation.

James Crall james.crall@wisc.edu
Entomology, University of Wisconsin - Madison
I am broadly interested in behavioral ecology, with a particular interest in the role of behavioral flexibility and variation in coping with global change. Specific focus on social bees, collective behavior, species interactions and ecological networks.

Brian DePasquale bddepasq@bu.edu
Biomedical Engineering, Boston University
I am a computational neuroscientist. My research uses mathematical models and machine learning to study neural circuits. Presently I focus on olfactory circuits in invertebrates and motor control and decision-making in mammals. I analyze data of experimental collaborators.

Valentina Di Santo vdisanto@ucsd.edu
Scripps Institution of Oceanography
I study biomechanics and physiology of fish locomotion to reveal how evolutionary diversity and climate stressors shape movement. My work bridges biology and engineering to uncover the principles of aquatic locomotion, inspiring efficient, bio-inspired underwater technology.

Chayan Dutta cdutta@gsu.edu
Chemistry, Georgia State University
I study nanoplastic-membrane interaction and nanoplastic-induced protein conformational dynamics using in situ spectroscopy and microscopy. My research also aims to uncover how electric fields affect protein aggregates to develop treatments for misfolding diseases.

Jonathan Fadok jfadok@tulane.edu
Psychology, Tulane University
Investigating the neural circuits and mechanisms that drive adaptive behaviors, emotional regulation, and responses to stress. Our research integrates systems neuroscience and behavior to address fundamental questions about brain function and its relevance to mental health.

Scialog Fellows Continued

Mara Freilich mara_freilich@brown.edu
Earth, Environmental, and Planetary Sciences and Applied Mathematics, Brown University
I study the role of ocean and ecological dynamics in the climate system to gain predictive understanding of climate and ecosystems with a focus on carbon and nutrient cycles and microbial ecology. I use theory, modeling, observations, and community-engaged research.

Celeste Greer cgreer@luc.edu
Molecular Neuroscience & Pharmacology, Loyola University Chicago
I am interested in how the process of gene transcription influences how memories form and persist. I investigate DNA demethylases, histone modifiers, and transcription factors in regulating neuronal gene transcription.

Danielle Grotjahn grotjahn@scripps.edu
Integrative Structural and Computational Biology, Scripps Research Institute
We harness cellular cryo-electron tomography imaging and superresolution microscopy to uncover the structural and functional interactions mediating organellar dynamics in response to changing cellular conditions. I would be a valuable team member for anyone interested in collaborations that leverage high-resolution imaging to study organellar or protein structures.

Mélanie Guigueno melanie.guigueno@mcgill.ca
Biology, McGill University
We combine field and laboratory work to understand how natural selection or environmental contaminants shape cognition and the brain (e.g. neurogenesis), with a focus on spatial behaviour in non-model avian systems (brood parasitism, foraging, migration).

Elizabeth Heath-Heckman each@msu.edu
Microbiology, Genetics, and Immunology, Michigan State University
My research focuses on how beneficial bacterial symbionts influence host neurobiology, development, and evolution.

Franne Kamhi kamhif@denison.edu
Psychology, Denison University
My work integrates neurobiology and behavioral field biology techniques in the study of neuroecology. I am broadly interested in the neural mechanisms underlying adaptive behaviors, with a focus on ant sociobiology, neuromodulation, and comparative neuroanatomy.

Scialog Fellows Continued

Jason Keagy jxk6051@psu.edu
Ecosystem Science and Management, Pennsylvania State University
I study animal cognition and flexibility in behavior and physiology to solve conservation and wildlife management problems. Specifically,I focus on: 1) organismal response to climate or other environmental stressors, and 2) evolution of cognition.

Kenry kenry@arizona.edu
Pharmacology and Toxicology, University of Arizona
My research focuses on the engineering of platform tools and models to probe the biological and toxicological impacts of nanomaterials on neuroimmune system to enable more targeted and safer detection and treatment of environmentally influenced neurological disorders.

Alexandra Kingston ack6226@utulsa.edu
Biological Science, University of Tulsa
My lab seeks to understand how animals interact with and adapt to environments that are undergoing rapid human-induced change, a non-trivial feat. We engage this topic by studying how snapping shrimp use their sensory systems to interact with their changing environments.

Duncan Leitch dleitch@ucla.edu
Integrative Biology and Physiology, University of California, Los Angeles
I use neurophysiological, behavioral, and genetic techniques to understand sensory systems in a variety of vertebrates, with an eye toward the comparative neural basis of behavior in specialist species, including reptiles, fishes, amphibians, and insectivores.

Matthew Lovett-Barron mlb@ucsd.edu
Neurobiology, University of California, San Diego
My lab studies neurobiology and behavior in aquatic species, with a focus on the neural mechanisms of internal states in larval zebrafish, collective behavior in schooling glassfish, and more recently, the impact of climate change on marine organisms.

Guoyu Lu guoyulu62@gmail.com
Computer Engineering, Binghamton University
My research intersects between Computer Vision, Robotics, and Machine Learning, as well as applications in biology, ecology, climate, and health. Particularly, my work develops artificial intelligence techniques for scientific discoveries, i.e., AI for Science.

Scialog Fellows Continued

April Lukowski alukowski@ucsd.edu
Oceanography/Pharmacy, University of California, San Diego
I am interested in the discovery and characterization of biosynthetic pathways for environmentally, ecologically, and medicinally relevant molecules from the marine environment, with special emphasis on natural neurotoxins and serotonin receptor ligands.

Carlene D Moore carlene.moore@duke.edu
Neurology, Duke University
My research explores the sensory neurobiology of pain, focusing on TRP ion channels in migraine and chronic pain. We investigate neuron-non-neuronal interactions using advanced imaging, and genetic models to uncover pain mechanisms and develop innovative pain therapies.

Floria Mora-Kepfer Uy floria.uy@rochester.edu
Biology, University of Rochester
We know little about how unprecedented increasing temperatures will affect the neural resilience of ectothermal animals. We study how a single species of social wasp adapted to live in subtropical and temperate zones, to decrypt sensory processing under thermal challenges.

Abdoulaye Ndao a1ndao@ucsd.edu
Electrical and Computer Engineering, University of California, San Diego
I am developing new type of multifunctional implantable devices for in vivo neuromodulation and 3D volumetric imaging of deep neural tissue.

Zihao Ou Zihao.Ou@UTDallas.edu
Physics, University of Texas at Dallas
We have pioneered a non-invasive technique that renders endogenous tissues transparent in live animals, which can advance optical imaging platforms for visualizing dynamic behaviors within living cell, tissue, animal, and human, building upon our fundamental physical insights.

Orit Peleg orit.peleg@colorado.edu
Computer Science, BioFrontiers Institute, University of Colorado Boulder
My lab explores how biological signals are generated and interpreted across different channels – chemical, sound, or light. Using insect swarms as models, we study how organisms harness and propagate these signals, like fireflies' light and bees' pheromone-based communication.

Yamuna Phal yphal@mines.edu
Electrical Engineering, Colorado School of Mines
My research focuses on developing cutting-edge optical technologies for biomedical and space applications, with a particular emphasis on chiral sensing. My work has garnered recognition through several scientific awards and has been funded by Nexus, NASA, and NSF.

Scialog Fellows Continued

Cosima Porteus cosima.porteus@utoronto.ca
Biological Sciences, University of Toronto Scarborough
I am interested in the effects of anthropogenic stressors on the sensory systems of aquatic animals (crabs and fish). We use a many techniques at multiple levels of biological organization such as transcriptomics, electrophysiology, immunohistochemistry, and behavioral assays.

Diana Rennison drennison@ucsd.edu
Biological Sciences, University of California, San Diego
We are integrating population and functional genomics with ecological and evolutionary modeling to gain comprehensive eco-evolutionary insight into organismal responses to climate change using primarily threespine stickleback fish.

Felipe Ribeiro dfelipe@wustl.edu
Medicine, Washington University School of Medicine
My research focuses on understanding the mechanisms by which neurons shape immunity in health and disease, emphasizing the impact of environmental factors such as microbial toxins and inflammatory mediators on neuronal function.

Clare Rittschof clare.rittschof@uky.edu
Entomology, University of Kentucky
I use the agriculturally significant honey bee to study fundamental principles of social organization, behavioral regulation, and bee health, combining approaches from neuroscience, genomics, and behavioral ecology.

Nelson A Roque nur375@psu.edu
Human Development and Family Studies, Pennsylvania State University
My research examines cognitive aging, using mobile assessments and passive sensing to clarify how environmental factors impact cognitive health throughout the lifespan.

Laurie Sanders laurie.sanders@duke.edu
Neurology, Duke University
The Sanders lab studies the most common neurodegenerative movement disorder, Parkinson's disease (PD). We take a translational approach (bench-to-bedside) and our primary focus is the role of mitochondrial dysfunction, genome integrity and DNA repair in the pathogenesis of PD.

Mark Schultz mark-schultz-1@uiowa.edu
Pediatrics, University of Iowa
We study protein quality control regulation in various cell types and chemical exposures using induced pluripotent stem cells (iPSCs). This allows us to explore these processes in a cell-type and context-specific manner within an isogenic, genetically manipulable system.

Scialog Fellows Continued

Laura Stein laura.stein@ou.edu
Biological Sciences, University of Oklahoma
I am a behavioral ecologist interested in how plasticity and behavior, both within- and between-generations, influences evolutionary processes. My research program seeks to understand the neural mechanisms underlying sublethal effects of heat stress on parental care.

Marie Strader mstrader@tamu.edu
Biology, Texas A&M University
I am an integrative biologist who studies how marine species interact with their environment, and how abiotic conditions, such as those associated with rapid global change, influence organisms within a generation (plasticity) or across multiple generations (adaptation).

Yun Tao yuntao@uga.edu
Institute of Bioinformatics, University of Georgia
I am a theoretical biologist working at the interface of behavioral, population, and disease ecology, extending classical concepts in spatial ecology (e.g., animal home range and territoriality, contact network, metapopulation, habitat fragmentation) to new disciplines.

Valerie Tornini vtornini@ibp.ucla.edu
Integrative Biology and Physiology, Institute for Society and Genetics, University of California, Los Angeles
My lab is interested in understanding the molecular players that establish and regulate diverse cell types in vertebrate development, particularly of the brain. Keywords: cell state evolution, genetics/genomics, zebrafish, neurodevelopmental disorders, environmental impacts

Alicia Walf walfa@rpi.edu
Cognitive Science, Rensselaer Polytechnic Institute
I explore how ancient neuroendocrine systems are engaged, or not, during modern day challenges and affect cognition. My studies of the mechanisms of stress and wellbeing are not limited to a physical lab space and can occur in the "wild" (e.g. built environments, virtually).

Daniel Wangpraseurt dwangpraseurt@ucsd.edu
Marine Biology Research Division, Scripps Institution of Oceanography
I am an interdisciplinary marine biologist whose research bridges coral reef science, engineering, and biophysics.

Jadiel Wasson jw8745@nyu.edu
Biology, New York University
I aim to understand the mechanisms that regulate epigenetic inheritance. This begins with how external cues influence internal states and how this leads to the tuning of heritable information that influences offspring phenotypes.

Scialog Fellows Continued

Brady Weissbourd bweissb@mit.edu
Biology, Massachusetts Institute of Technology
We use the tiny, transparent jellyfish, Clytia hemisphaerica, to study how nervous systems evolve, regenerate, and give rise to behavior.

Eviatar Yemini eviatar.yemini@umassmed.edu
Neurobiology, University of Massachusetts Medical School
Our goal is determine how evolution shapes behavioral circuits (e.g., to adapt to changing climates and ecologies). We use our NeuroPAL method to color barcode neuron subtypes, and thus compare whole-nervous-system activity, neuron-by-neuron, between divergent nematode species.

Alex Zestos zestos@american.edu
Chemistry, American University
I am a bioanalytical chemist who utilizes carbon fiber electrodes for the measurement of neurotransmitters with fast-scan cyclic voltammetry. I am interested in developing new tools and assays to help measure neurochemical biomarkers to further our understanding of the brain.

Tao Zhou tzz5199@psu.edu
Center for Neural Engineering, Pennsylvania State University
My lab develop novel devices, sensors, and platforms for an enhanced understanding of the in vivo nervous system, revealing mechanisms neural degenerative disease, and provide platforms for modulation of the in vivo nervous system.

Discussion Facilitators

Carlos Baiz cbaiz@cm.utexas.edu
Chemistry, University of Texas at Austin
Micro and nanoplastics, weathering and aging, interactions of micro/nanoplastics with biological systems, sensing of plastics, spectroscopy, physical chemistry of lipid membranes, protein dynamics.

Christina Grozinger cmgrozinger@psu.edu
Entomology, Pennsylvania State University
I use an integrative approach – spanning genomics, behavior, spatial ecology, and AI – to study bee behavior and support management and conservation of bees.

Cindy Moss cynthia.moss@jhu.edu
Psychological and Brain Sciences, Johns Hopkins University
How does the brain represent dynamic information from the natural environment? My lab investigates this question through integrated multichannel neural, high-speed video and microphone array recordings of bats engaged in target tracking, navigation and obstacle avoidance tasks.

Jeff Riffell jriffell@uw.edu
Biology and Neuroscience, University of Washington
The Riffell laboratory uses neurophysiological and behavioral approaches to explore how the olfactory system processes chemical information and how pollutants disrupt that information processing. The laboratory uses insect pollinators and disease vectors as model systems.

Kim Rosvall krosvall@indiana.edu
Biology, Indiana University Bloomington
My research combines neurogenomic, physiological, and behavioral approaches to study wild birds in a complex natural world, where I quantify and manipulate natural selection in action. I want to know how behavior evolves, especially in the context of environmental challenges.

Joellen Russell jrussell@arizona.edu
Geosciences, University of Arizona
I'm a climate modeler and oceanographer who uses biogeochemical ocean profiling floats, supercomputers, and satellites to predict the future of our planet. I'm obsessed with the Southern Ocean, ocean carbon accounting, and the future of greening in our windier and warmer world.

Emilie Snell-Rood emilies@umn.edu
Ecology, Evolution and Behavior, University of Minnesota Twin Cities
Behavioral and developmental plasticity, evolutionary history with stress, responses to urban environments and roadsides, habitat restoration, pollinators

Discussion Facilitators Continued

Wolfgang Stein wstein@ilstu.edu
Biological Sciences, Illinois State University
My research studies the flexibility and resilience of the nervous system against environmental stressors, with particular the focus on the cellular and circuit properties that underly short- and long-term adaptations to climate change-induced temperature changes.

Martin Tresguerres mtresguerres@ucsd.edu
Scripps Institution of Oceanography, University of California, San Diego
I study cellular physiology and evolution of aquatic organisms and their responses to environmental variability. I focus on neurobiology, symbiosis, biomineralization and energy metabolism at multiple levels from genes to cell biology, behavior, environmental physiology and genetics.

Guests

Stephanie Albin salbin@kavlifoundation.org
Neuroscience, The Kavli Foundation
As a Senior Program Officer at The Kavli Foundation, I advance neuroscience by supporting projects that advance open data, innovate technology to measure and understand brain activity, and explore how nervous systems respond to environmental change.

Cristianne Frazier cristi@cosfoundation.org
Medical Research, Circle of Service Foundation
The Circle of Service Foundation's Medical Research Program supports creative scientific research that seeks to advance cures, prevent disease, and improve health for all.

Julie Harris julie.harris@alleninstitute.org
Office of Science & Technology, The Paul G. Allen Frontiers Group
As a representative of The Paul G. Allen Frontiers Group and the Allen Institute, I am interested in all aspects of the topic area and have a wide range of interests across all areas of frontier science.

Olga Lew-Kiedrowska OlgaLew-Kiedrowska2024@u.northwestern.edu
Northwestern University

The Paul G. Allen Frontiers Group

Julie Harris julie.harris@alleninstitute.org
Vice President

Jodi Lilley jodi.lilley@alleninstitute.org
Program Officer

Frederick Gardner Cottrell Foundation of Research Corporation Technologies, Inc.

Shaun Kirkpatrick skirkpatrick@rctech.com
President

The Kavli Foundation

Amy Bernard abernard@hsfoundation.org
Vice President

Stephanie Albin salbin@kavlifoundation.org
Senior Program Officer, Neuroscience

Angie Michaiel amichaiel@kavlifoundation.org
Associate Program Officer, Neuroscience

Research Corporation for Science Advancement

Jennifer Brown jbrown@rescorp.org
Director of Finance and Human Resources

Andrew Feig afeig@rescorp.org
Senior Program Director

Danny Gasch dgasch@rescorp.org
Chief Financial Officer

Suzette Gonzalez sgonzalez@rescorp.org
Program & Award Administrator

Angela Hagen ahagen@rescorp.org
Communications Director

Lisa Jo Kastigar ljkastigar@rescorp.org
Executive Assistant to the President

Dan Linzer dlinzer@rescorp.org
President & CEO

Meg Zimlich Martin mmartin@rescorp.org
Director of Program & Award Administration

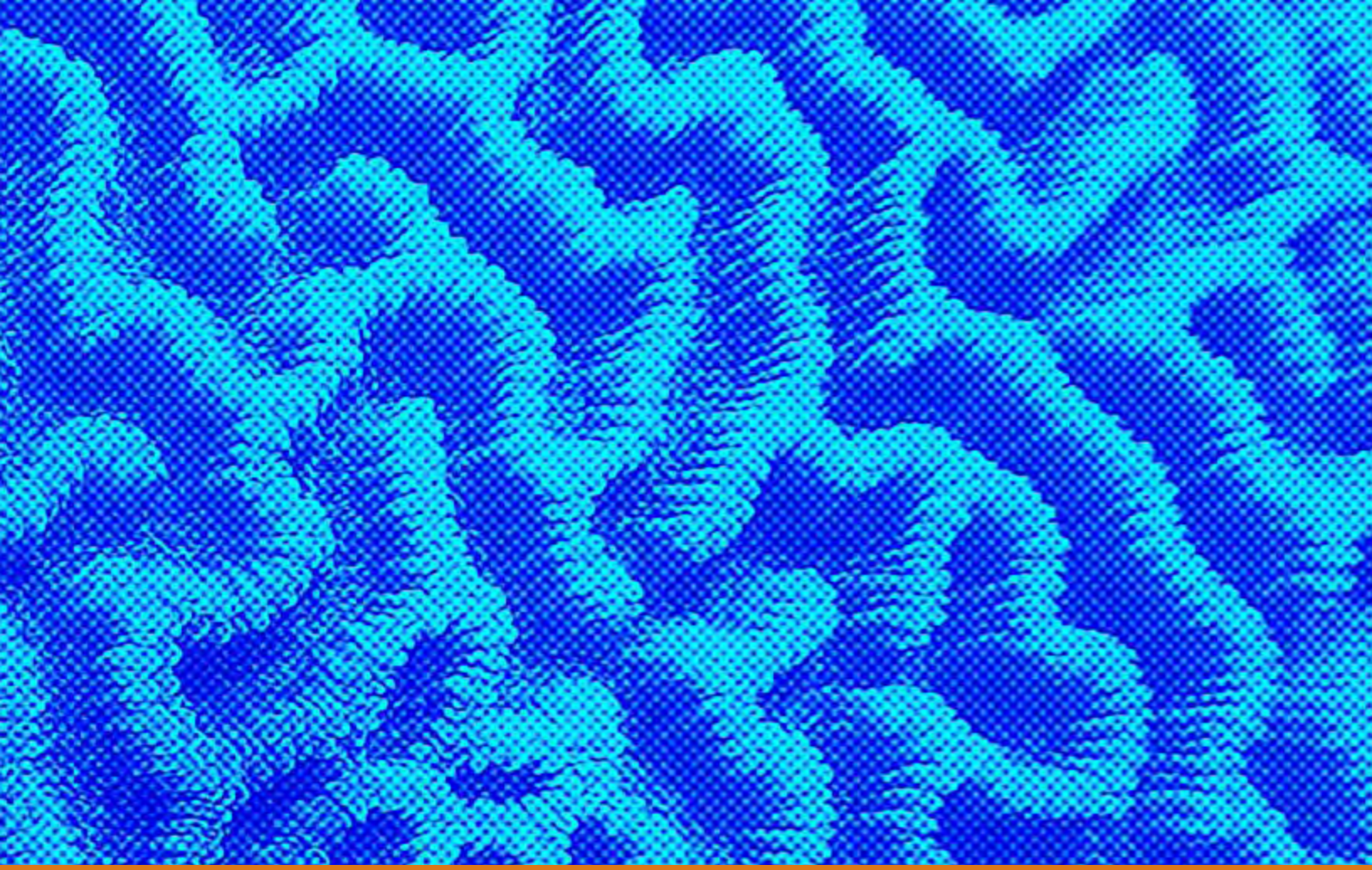
Aileen Quezada aquezada@rescorp.org
Program & Award Administrator, Senior

Silvia Ronco sronco@rescorp.org
Senior Program Director

Abhishek Shivaram ashivaram@rescorp.org
Data Analytics Specialist

Eileen Spain espain@rescorp.org
Program Director

Richard Wiener rwiener@rescorp.org
Senior Program Director



4703 East Camp Lowell Dr.
Suite 201
Tucson, Arizona 85712
Phone 520.571.1111
www.rescorp.org

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