

@UlowaNeuro Notes

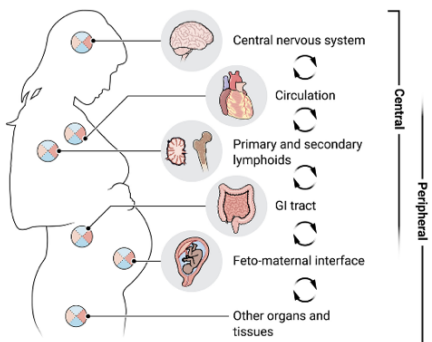
September 2025

This week I am reflecting once again on the strength of our collaborative community after hearing from the leaders of our latest [Research Programs of Excellence \(RPOE\)](#) and [Early-Stage Investigator Awards \(ESIA\)](#).

As always, these teams bring together fundamental and translational research to push the bounds of knowledge and advance toward greater understanding of the brain and nervous system. To achieve their broad goals, these teams include faculty from the Carver College of Medicine, College of Liberal Arts and Sciences, College of Public Health, and College of Engineering. Further expanding our reach, one of our ESI awardees is a College of Pharmacy faculty member. This truly represents the essence of our community—working together to change the course of disease in ways none of us could achieve alone.

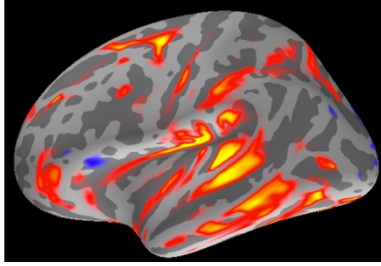
Our newest ESI Awardees are **Marie Gaine**, studying Genetic and Environmental Factors Contributing to the Development of Psychiatric Disorders, and **Jon Resch**, studying Neural Control of Salt Appetite, Thirst, and Blood Pressure. Their ESI-funded work will build the foundations for each of their labs and provide the data needed to compete for federal funding.

Hanna Stevens is leading The Iowa Women's Brain Initiative, investigating brain circuits and hormone and immune mechanisms underlying women and girls' risk for affective disorders. The team is exploring basic science of brain circuits during periods of female vulnerability to mood and anxiety disorders (**Sarah Ferri** and **Avrama Blackwell**), translational science of hormones and immune factors affecting the brain (**Banu Gumusoglu**), and translational science of understanding how a mother's risk can be passed through the placenta (Hanna).



The Pediatric Developing Brain Collaborative, led by **Lyndsay Harshman**, is looking at the neurodevelopmental impact of chronic diseases in children. She is working with **Janice Staber** and **Levi Sowers** to identify shared neuroinflammatory pathways within seemingly disparate pediatric conditions – including chronic kidney disease, hemophilia A, and traumatic brain injury – in parallel with long-term neurodevelopment and risk for developmental disorders.

PDBC-RPOE Aims CKD, HA, TBI	Multi-Omics Analysis	Neuroimaging Assessment	Novel Therapeutics
 Human Subjects recruited through UISFCH	 Immunohistochemistry Cytokine Assays Immunofluorescence RNA Sequencing Mass Spectrometry Proteomics Spatial Transcriptomics	 T2*-Weighted MRI Glymphatic Imaging Functional MRI Diffusion Tensor Imaging MR Spectroscopy	 Pharmacological Agents Dietary Interventions Non-viral Gene Therapy Alternative Endpoints for Approved Drugs
 Pre-clinical Animal Models			
Teams CKD: Harshman HA: Staber TBI: Sowers, Newell	Stevens, Psychiatry Zamba, Biostatistics	Magnotta, Radiology	CKD, HA, and TBI Teams
Timeline	Year 1	Year 2	Year 3



The Auditory, Behavior and Cognition RPOE team bridges the College of Medicine and College of Liberal Arts and Sciences, including clinician scientists, auditory biologists, cognitive neurobiologists, neural engineers, and cognitive scientists. Led by **Marlan Hansen**, **Bob McMurray**, and **Inyong Choi**, the goal is to pinpoint the relative impact of several different factors contributing to cognitive decline among people with hearing loss.

Team members have NIH-funded projects on pieces of this puzzle, and this project is their first attempt to knit them together. Iowa's deep history of speech and hearing research makes us possibly the only place in the world that could put this type of team together all on one campus.

Rainbo Hultman is leading an RPOE studying Headache Resilience: From Molecules to Brain Networks. This group is bridging molecular and neural circuit neuroscience to work toward better therapeutics for headache disorders, which are the second leading cause of disability worldwide. Iowa has a strong foundation of headache research, including breakthroughs by **Andy Russo**, who is a collaborator on this project. Rainbo's efforts will extend that work by integrating Iowa faculty expertise in genomics, electonomics, and TMS.



We are grateful to our partners at the Roy J. Carver Charitable Trust, whose commitment to the Iowa Neuroscience Institute makes this research possible. Their foundational support has allowed our RPOE teams since 2017 to train dozens of students and postdocs, generate hundreds of publications, and earn more than \$80M in external grant funding. I am inspired by the innovative thinking that brought our latest groups together and eager to follow their progress over the next three years.

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