

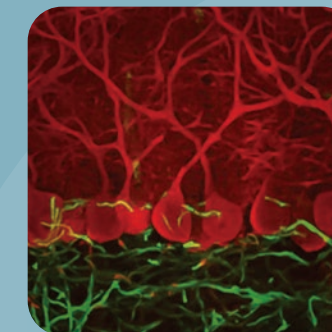
The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) is committed to supporting research in neuroscience, particularly as it affects developing systems and rehabilitation. The institute funds multidisciplinary basic, clinical, and behavioral research in this arena.



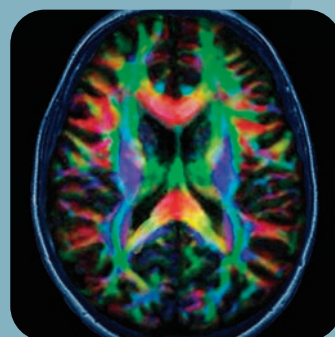
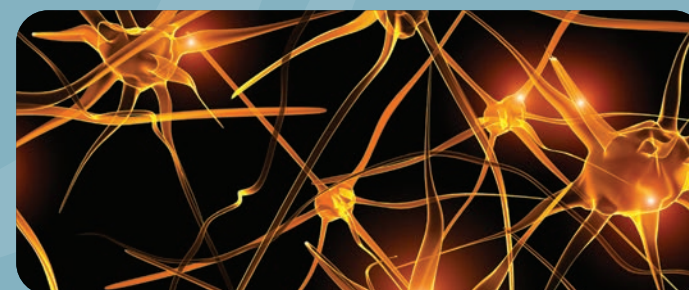
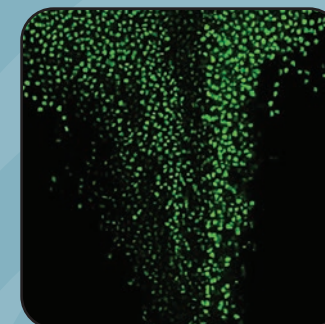
# Neuroscience Research Support at



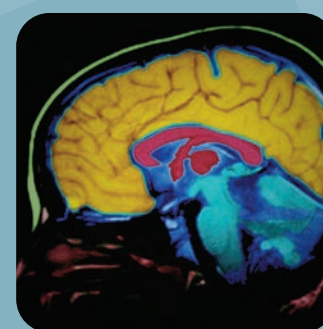
*Eunice Kennedy Shriver* National Institute  
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U. of Wisconsin-Madison Brain Collection



Learn more about NICHD's support of neuroscience research through the NICHD Neuroscience Research Support website: <https://www.nichd.nih.gov/neuroscience>.

# Neuroscience Research Support at NICHD

## Child Development and Behavior Branch

- Developmental pathways that lead to normal and at-risk brain development and behaviors and the underlying mechanisms of these pathways at the molecular, genetic, cellular, neuroanatomical, and network levels
- Innovations in neuroimaging methodologies for studying structure, function, and connectivity in early brain development
- Neural basis of cognition, language, executive function, math, learning, memory, pain, sleep, sensory, motor, and perceptual development and the interaction of these systems in the development of behavior
- Screening, diagnosis, and treatment of disabilities that affect learning, including the neural basis of reading, writing, and mathematical disabilities and attention deficits

**Contact: Dr. Amanda Price • (301) 827-1407 • [Amanda.Price@nih.gov](mailto:Amanda.Price@nih.gov)**

## Developmental Biology and Structural Variation Branch

- Normal and abnormal development of the central and peripheral nervous systems, including neural tube formation/defects
- Neurogenesis, cell migration, differentiation, axonal guidance, synapse formation, neural crest, and the role of growth and other rophic factors in neural development
- Blood-brain barrier formation/defects
- Neurodevelopmental teratogens
- Molecular, cellular, and biophysical mechanisms underlying neural development
- Multidisciplinary approaches including, but not limited to, human and animal models, genetics, genomics, and molecular and cellular biology

**Contact: Dr. Deborah B. Henken • (301) 496-5541 • [Deborah.Henken@nih.gov](mailto:Deborah.Henken@nih.gov)**

## Fertility and Infertility Branch

- Neuroendocrine control of reproduction, including the cellular and molecular mechanisms and network pathways within the brain that govern gametogenesis, steroidogenesis, and ovulation
- Genetic and epigenetic bases of diseases and disorders of central origin that impact reproduction
- Neural regulation of reproductive behavior, sexual function, and differentiation
- Neuroendocrine-immune and metabolic regulation of fertility
- Central regulation of transitions, such as puberty and reproductive aging, across male and female lifespans
- Effects of photoperiod and circadian rhythms on reproduction
- Neural regulation of reproduction, including the development of animal models through genetic engineering, cell/tissue culture including development and culture of organoids, imaging techniques, and tissue transplantation

**Contact: Dr. Ravi Ravindranath • (301) 435-6889 • [Ravindr@nih.gov](mailto:Ravindr@nih.gov)**

## Gynecologic Health and Disease Branch

- Role of central neurologic mechanisms and peripheral innervation in the development and treatment of gynecologic pain syndromes, including chronic pelvic pain, painful menses (dysmenorrhea), sexual pain (dyspareunia), and vulvodynia/ vestibulodynia
- Interaction among genetic, environmental, neurologic, and psychosocial factors in chronic gynecologic pain disorders
- Pathophysiology and treatment of pelvic pain syndromes in the setting of apparent normal anatomy, or in the presence of gynecologic pathology, including endometriosis and fibroids
- Mechanisms and risks factors for post-surgical pain following gynecologic or pelvic floor surgery
- Cellular, molecular, and genetic mechanisms of vulvodynia/ vestibulodynia, including neural pain pathways and extending to treatment studies
- Menstrual pain, including studies into onset of adolescent menstrual pain and menstrual pain throughout the reproductive life cycle

**Contact: Dr. Helena Ahn • (301) 827-3207 • [Helena.Ahn@nih.gov](mailto:Helena.Ahn@nih.gov)**

## Obstetric and Pediatric Pharmacology and Therapeutics Branch

- Clinical trials, including pharmacokinetic/pharmacodynamic studies, of drugs for neuropharmacological and psychopharmacological treatment of pediatric and obstetric patients
- Intrauterine neurotoxicity
- Drug disposition, neurotoxicity, and other adverse drug effects
- Molecular and cellular mechanisms of drug effects on neurotransmitters, drug receptors, and ion channels
- Neuroprotective agents and biomarkers
- Pharmacogenomic, proteomic, and imaging approaches and in vivo, in vitro, and in silico models
- Neurodevelopmental outcome measures, particularly in neonates and young children

**Contact: Dr. Zhaoxia Ren • (301) 402-9340 • [Zhaoxia.Ren@nih.gov](mailto:Zhaoxia.Ren@nih.gov)**

## National Center for Medical Rehabilitation Research

- Repair, adaptation, and plasticity processes related to rehabilitation and basic mechanisms of adaptation and rehabilitation
- Development and refinement of devices and technologies to improve function for individuals with physical disabilities
- Development, refinement, and validation of new or existing rehabilitation diagnostics and/or interventions for conditions resulting in disability
- Development, refinement, and validation of new or existing interventions to address chronic conditions associated with physical disabilities, as well as investigations of chronic symptom mechanisms
- Role of environmental factors and enhancements for conditions resulting in physical disability

**Contact: Dr. Joe Bonner • (301) 827-8303 • [Joe.Bonner@nih.gov](mailto:Joe.Bonner@nih.gov)**

## Intellectual and Developmental Disabilities (IDD) Branch

- Cellular, genetic, epigenetic, genomic, systems neuroscience, and actionable environmental factors that contribute to cognitive and behavioral aspects of IDD, such as Down, Fragile X, and Rett syndromes; inborn errors of metabolism; and autism spectrum disorders
- Comorbid conditions of IDD, such as disordered sleep, self-injurious behaviors, obesity, gastrointestinal dysfunction, seizures/epilepsy, attention deficit/hyperactivity disorder, and related mental health conditions
- New and improved tests and processes for prenatal, newborn, and early childhood screening to assess the efficiency and effectiveness of translating these tools into clinical care and community settings
- Biomarkers and outcome measures for IDD symptoms, severity assessments, and treatments, and their validation, especially outcomes targeting cognitive (including language), behavioral (adaptive or maladaptive), social, and medical issues
- Transitional time periods, including pre-symptomatic, adolescence to adulthood, middle adulthood to aging (e.g., prevalence of dementia in IDD populations), and causes of mortality
- Treatments and practices for IDD that impact clinical care and improve quality of life, including physiological, cognitive, and behavioral manifestations
- Ethical, legal, and social implications of research involving persons with IDD

**Contact: Dr. Bettina Buhning • (301) 827-8626 • [Bettina.Buhning@nih.gov](mailto:Bettina.Buhning@nih.gov)**

## Pediatric Trauma and Critical Illness Branch

- Pediatric neurocritical care, resuscitation, and rehabilitation
- Pathogenesis and prevention of sequelae of traumatic brain injury, including inflicted childhood neurotrauma, abusive head trauma, and other cerebral injuries and insults in infants and young children
- New and improved approaches for screening, evaluation, and diagnosis of brain injury, including the use of biomarkers, imaging, and biomechanics
- Risk factors and neuroprotective agents for cerebral injury and neurologic morbidity in pediatric intensive care
- Pathophysiology and management of acute injuries and comorbid conditions
- Neurodevelopmental outcomes in critically ill and injured children, including the prevalence of cognitive, motor, and affective deficits that influence daily functioning and quality of life
- Gene–environment interactions in multidisciplinary basic, clinical, and translational research on violence and child maltreatment

**Contact: Dr. Valerie Maholmes • (301) 496-1514 • [Valerie.Maholmes@nih.gov](mailto:Valerie.Maholmes@nih.gov)**

## Pediatric Growth and Nutrition Branch

- Nutritional effects on brain development
- Neurotropic growth factors in neuronal function, connectivity, and overall brain development
- Neuroendocrinology
- Sexual dimorphism of the nervous system
- Innervation of endocrine organs

**Contact: Dr. Karen Winer • (301) 496-6877 • [Karen.Winer@nih.gov](mailto:Karen.Winer@nih.gov)**

## Maternal and Pediatric Infectious Disease Branch

- Epidemiology, diagnosis, clinical manifestations, pathogenesis, transmission, treatment, and prevention of HIV, including neurologic complications in infants, children, adolescents, and pregnant and non-pregnant persons in domestic and international settings
- Neurobiologic and neurodevelopmental effects of HIV and associated co-infections, as well as other infectious diseases, such as Zika virus, cytomegalovirus, tuberculosis, hepatitis, malaria and COVID-19
- Interactions between infectious agents, genetics, brain, and behavior including multidisciplinary, basic science, imaging, and assessment studies
- Neuro-related outcomes of drugs for treating HIV and its associated comorbidities, including the pharmacokinetic–pharmacodynamic interface between central nervous system drug penetration and effects of the drugs, and neurologic outcomes and neurotoxicity of treatment drugs
- Evaluation, assessment, and monitoring of emerging and re-emerging infectious diseases in utero that affect the neonate/infant/child, including impact on the pediatric nervous system
- Characterization of HIV reservoirs and persistence, and pursuit of potential strategies for HIV cure/remission in infants and children

**Contact: Dr. Sonia Lee • (301) 594-4783 • [Sonia.Lee@nih.gov](mailto:Sonia.Lee@nih.gov)**

## Pregnancy and Perinatology Branch

- Management of maternal neurologic and mental health disorders and their effect on pregnancy and infant outcomes
- Neuroplacentology: Placenta, uterine blood flow, antenatal diagnosis, and their effects on fetal neurologic well-being and long-term programing
- Neurochemical control of labor and the fetal neuroendocrine system
- Pathogenesis, prevention, treatment, and sequelae of preterm birth, intrauterine growth retardation, stillbirth, neonatal encephalopathy, bilirubin-induced brain injury, hypoglycemia, as well as brain injury, trans-placental effects of toxicants, and microbial and viral infectious agents
- Long-term outcomes of in utero repair of meningomyelocele
- Tools to assess fetal, neonatal, and infant neurologic functions and injury, including wireless technologies, EEG, near-infrared spectroscopy, brain optical imaging, MR tractography, and MRI of the developing brain
- Neonatal pain and its treatment on long-term neurosensory and behavioral outcomes
- Studies of the neuropathological basis of Sudden Infant Death Syndrome (SIDS) and other Sudden Unexpected Infant Deaths (SUID)

**Contact: Dr. Andrew Bremer • (301) 402-7886 • [Andrew.Bremer@nih.gov](mailto:Andrew.Bremer@nih.gov)**

## Research Training

Training and career development opportunities within the neuroscience field that correspond with NICHD research priorities

**Contact: Dr. Dennis Twombly • (301) 451-3371 • [DTwombly@mail.nih.gov](mailto:DTwombly@mail.nih.gov)**