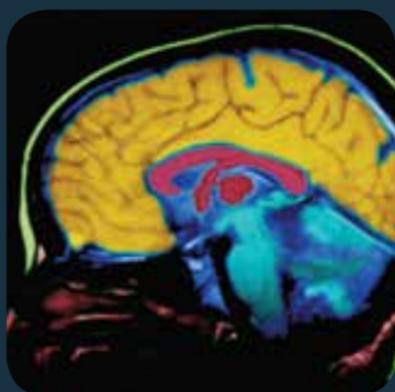
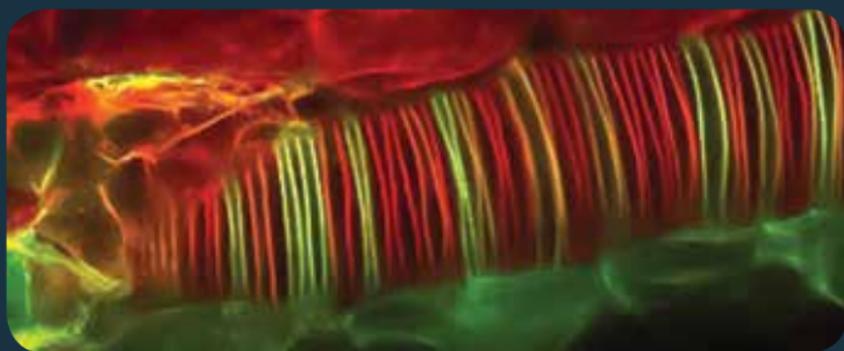


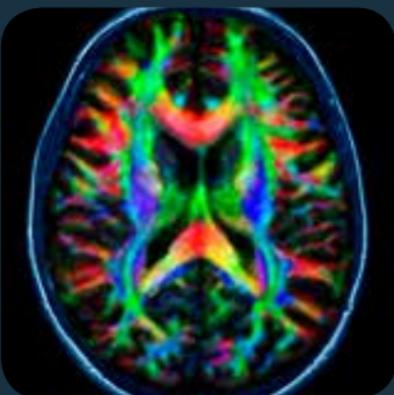
**Neuroscience Research
Support at the *Eunice
Kennedy Shriver*
National Institute
of Child Health and
Human Development
(NICHD)**



The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) is committed to supporting research in the neurosciences, particularly as it affects developing systems and rehabilitation.

The NICHD spends approximately 25 percent of its research funds on basic, clinical, and/or behavioral research in this arena.

Within this context, the Institute has primary responsibility for projects related to maternal and child health and human development, reproduction, developmental biology, clinical nutrition, perinatal and infant morbidity and mortality, intellectual and developmental disabilities, pediatric and maternal AIDS, and medical rehabilitation.



Neuroscience Research Support at the NICHD

Developmental Biology and Structural Variation Branch

- Normal and abnormal development of the central and peripheral nervous systems
- Neurogenesis, cell migration, differentiation, guidance, synapse formation, neural crest, and the role of growth and other factors in neural development
- Neural tube formation/defects
- 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: Deborah Henken • (301) 496-5541 • Deborah.Henken@nih.gov

Child Development and Behavior Branch

- Typical and atypical basic developmental behavioral and cognitive neuroscience in humans and animal models
- Developmental neuroanatomical, neuroendocrine, neurophysiological, and neuroconnectivity bases of behavior
- Neural basis of language, math, cognition, learning, memory, and sensory, motor, and perceptual development, and the interaction of these systems in the development of behavioral function
- Screening, diagnosis, and treatment of disabilities that affect learning, including reading, writing, and mathematical disabilities, and attention deficits
- Multidisciplinary approaches include behavioral and molecular genetics, behavioral and cognitive interventions, structural and functional neuroimaging, and electrophysiology

Contact: Lisa Freund • (301) 435-6879 • Lisa.Freund@nih.gov

Fertility and Infertility Branch

- Neuroendocrine control of reproduction, including the cellular and molecular mechanisms within the brain governing gametogenesis, steroidogenesis, and ovulation
- Genetics basis and epigenetic modifications of reproductive neuroendocrine diseases and disorders
- Neural regulation of reproductive behavior, sexual function, and differentiation
- Neuro-endocrine-immune and metabolic regulation of fertility
- Effects of photoperiod and circadian rhythms on reproduction
- Basic and clinical approaches include the development of animal models through genetic engineering, cell/tissue culture, imaging techniques, and tissue transplantation

Contact: Charisee Lamar • (301) 435-6977 • Charisee.Lamar@nih.gov

Neuroscience Research Support at the NICHD

Intellectual and Developmental Disabilities Branch

- Research and research training programs in intellectual and developmental disabilities (IDD), including common and rare neuromuscular and neurodevelopmental disorders, such as Down, Fragile X, and Rett syndromes, inborn errors of metabolism, autism spectrum disorders, and others
- Etiology and pathophysiology of abnormal nervous system development and function, and delineation of genetic, genomic, and epigenetic bases of IDD
- Screening, diagnosis, treatment, and management of IDD and other conditions identified by newborn screening or other screening methods
- Research on prevention of IDD as well as early intervention for these conditions
- Programs of support for Centers for research in IDD
- Development and assessment of clinically meaningful and valid biomarkers, outcome measures, and endpoints for clinical trials in IDD
- Multidisciplinary and translational research in IDD, including programs that integrate basic and applied research, training, and service activities for those with IDD and their families

Contact: Melissa Parisi • (301) 496-1383 • Melissa.Parisi@nih.gov

Maternal and Pediatric Infectious Disease Branch

- Domestic and international basic, translational, and clinical research into the epidemiology, natural history, pathogenesis, transmission, treatment, and prevention of HIV infection, including neurologic and psychiatric complications in infants, children, adolescents, pregnant women, mothers, women of childbearing age, and the family unit as a whole
- Neurobiologic and neurodevelopmental effects of HIV infection and associated co-infections in infants, children, adolescents, and pregnant and non-pregnant women
- Multidisciplinary studies of the interaction between infectious agents, genetics, brain, and behavior including basic science and imaging studies
- Behavioral interventions to prevent HIV acquisition
- Effects of drugs for treating HIV and its associated comorbidities on neurocognitive outcomes of HIV and related infections, including the pharmacokinetics/pharmacodynamics interface between central nervous system drug penetration and effects of the drugs, and neurologic outcomes and neurotoxicity of drugs used for treatment
- Effects on the fetus of *in utero* exposure to drugs used to treat HIV and infectious and non-infectious comorbidities in pregnant HIV-infected women

Contact: Rohan Hazra • (301) 435-6868 • Rohan.Hazra@nih.gov

Neuroscience Research Support at the NICHD

National Center for Medical Rehabilitation Research

- Pathophysiology and management of the chronically injured nervous and musculoskeletal systems (including stroke, traumatic brain injury, spinal cord injury, and orthopedic conditions)
- Repair and recovery of sensorimotor and cognitive function, functional plasticity and adaptation, and windows of opportunity for rehabilitative interventions
- Rehabilitative strategies involving pharmaceutical approaches, genetics and genomics, exercise, motor training, bioengineering, and behavioral modifications
- Pediatric rehabilitation
- Secondary conditions associated with chronic disabilities
- Improved diagnosis, assessment, and outcome measures
- Development of orthotics, prosthetics, and other assistive technologies

Contact: Ralph M. Nitkin • (301) 402-2242 • Ralph.Nitkin@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
- Effects of drugs on neurocognitive outcomes
- 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 of effect
- Use of approaches including pharmacogenomics, proteomics, imaging, and *in vivo*, *in vitro*, and *in silico* models

Contact: Zhaoxia Ren • (301) 402-9340 • Zhaoxia.Ren@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: Gilman Grave • (301) 496-5593 • Gilman.Grave@nih.gov

Neuroscience Research Support at the NICHD

Pediatric Trauma and Critical Illness Branch

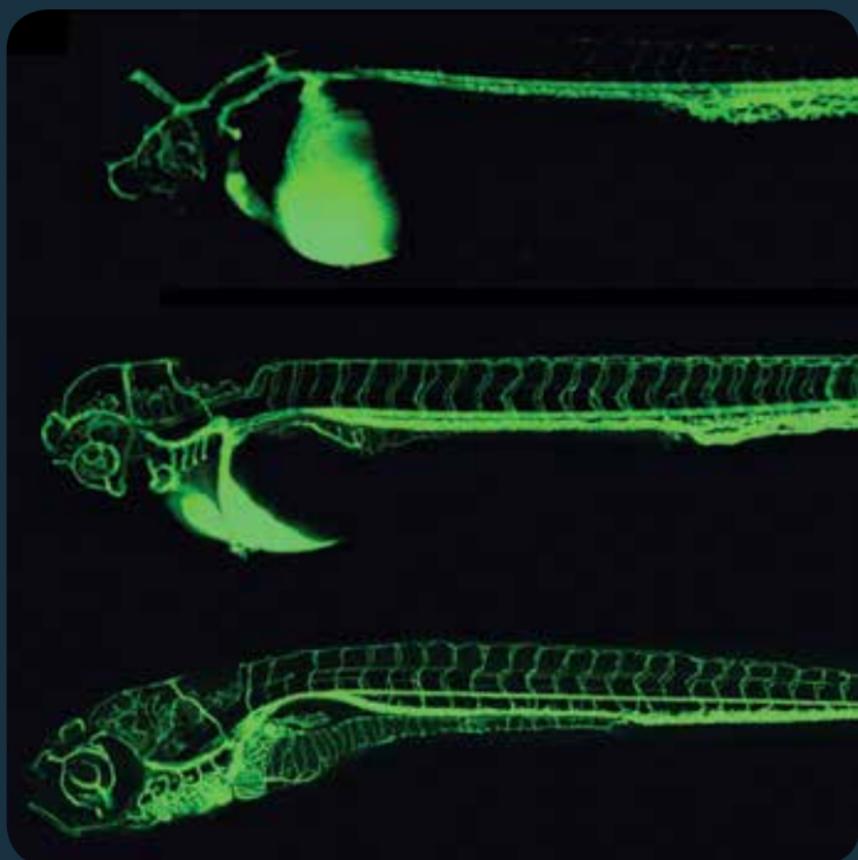
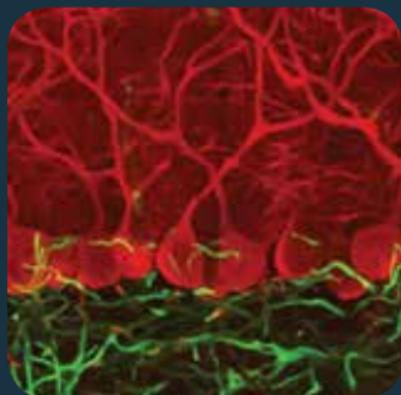
- Pediatric neurocritical care, resuscitation, and rehabilitation
- Pathogenesis and prevention of sequelae of traumatic brain injury including inflicted childhood neurotrauma, abusive head trauma, and other cerebral injuries and insults in infants and young children
- Approaches for improving the screening, evaluation, and diagnosis of brain injury including the use of biomarkers, imaging, and biomechanics
- Studies of risk factors for cerebral injury and neurologic morbidity in pediatric intensive care as well as studies of neuroprotective agents
- 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 affecting daily functioning and quality of life
- Multidisciplinary studies of gene–environment interactions in basic, clinical, and translational research on violence and child maltreatment

Contact: Valerie Maholmes • (301) 496-1514 • Valerie.Maholmes@nih.gov

Pregnancy and Perinatology Branch

- Management of maternal neurologic and mental health disorders and their effect on pregnancy and infant outcomes
- Placenta, uterine blood flow, antenatal diagnosis, and their effects on fetal neurologic well-being
- 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 and brain injury, transplacental effects of toxicants, and microbial and viral infectious agents
- Diagnostic and prognostic tools to assess fetal, neonatal, and infant neurologic injury and functions, including: EEG, aEEG, NIRS for CBF and CMRO₂, brain optical imaging, MR tractography, and MRI of the developing brain
- Assessing the effect of intensive care environment, including pain and its treatment and caregiving practices on long-term neurosensory and behavioral outcomes
- Development and regulation of cardiovascular, thermal and cardiorespiratory control, and sleep states in infancy and studies of neurologic deficits in Sudden Infant Death Syndrome (SIDS)
- Biology of the developing cerebral vasculature and mechanisms of high-altitude acclimatization

Contact: Tonse N. K. Raju • (301) 402-1872 • Tonse.Raju@nih.gov



To learn more about the NICHD's efforts in and support of neuroscience research, visit the NICHD Neuroscience Support website at <http://www.nichd.nih.gov/neuroscience>.



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of Child Health and Human Development



September 2013