

Neurogenetics

Research Areas of Interest:

- Identification of genes and susceptibility loci for neurological diseases.
- Investigation of the pathomechanisms by which genetics variants cause or contribute to risks for neurological diseases.
- Develop gene-based assays, diagnostics and therapeutics for neurological disorders.
- Develop cutting-edge tools and resources for neurogenetic and neurodevelopment research.
- Basic and translational research in neurogenetics and genomics.
- Investigation of the genetic basis of normal neural development and function, and perturbations that could lead to neurological disorders. This includes basic developmental studies in neurogenesis and cell fate determination, cell migration, dendritic growth & plasticity, axonal guidance and neurotrophic signaling.
- Training of neuroscientists in molecular medicine.
- Education of the scientific and lay communities in the ethical, legal and social issues in Neurogenetics.
- Engagement of patient and voluntary advocacy groups in partnerships to promote research in Neurogenetics.
- Promoting resource and data sharing.
- Translational research to link results of basic research in inherited neurological disorders to medication development and clinical trials

Program Directors:

Laura Mamounas (mamounal@ninds.nih.gov) Portfolio: Neurotrophic factors & signaling mechanisms; Signal transduction mechanisms in growth or repair & plasticity; Dendritic Growth and Plasticity; Genetic tools development; Rett Syndrome; Genetics of autism; Tourette Syndrome; ADHD. Contract: Gene Expression Nervous System Atlas (GENSAT).

John Porter (porterjo@ninds.nih.gov) Portfolio: Basic, translational, and clinical studies in muscular dystrophies (Duchenne/Becker, limb girdle, facioscapulohumeral, congenital, oculopharyngeal, and myotonic dystrophy) and inherited/acquired neuropathies. Inflammatory myopathy. Neuromuscular junction dysfunction in disease, including slow channel syndrome and inherited and acquired myasthenia gravis.

Robert Riddle (riddler@ninds.nih.gov) Portfolio: Developmental neuroscience, axonal guidance, CNS pattern formation, neural cell migration, lissencephaly, and cell fate determination. Fragile X Syndrome, Down Syndrome, Williams Syndrome, Mental Retardation. Developmental Disorders of the cerebellum. Molecular genetics in the mouse. Zebrafish and Drosophila as model systems. miRNA. Epigenetic mechanisms in health and disease.

Danilo Tagle (tagled@ninds.nih.gov) Portfolio: Scientific Areas include Genetic Resources and Tools Development, Functional and Comparative Genomics, Proteomics, Animal Genetic Models, Gene therapy and Gene delivery, linkage and association studies for Mendelian and complex diseases, DNA repair diseases, Pharmacogenomics and genetic variation. Disease areas include 1) Lysosomal storage diseases including Mucopolysaccharidoses, Mucopolysaccharidoses, Sphingolipidoses; Glycogen Storage diseases, Glycoproteinoses, Lysosomal Transport Disorders, and Neuronal Ceroid Lipofuscinoses, 2) Leukodystrophies: Canavan, Krabbe, Alexander's disease, etc., 3) Mitochondrial disorders: Leigh syndrome, Pearson syndrome, etc., 4) Other Rare metabolic or Orphan Diseases: Ataxia-telangiectasia, Wilson's disease, 5) Dystonia 6) Leukodystrophy.

Channels, Synapses and Circuits

Research Areas of Interest:

- Molecular and cellular studies of nervous system signaling, especially in relation to electrical excitability and inter-cellular communication.
- Basic and clinical studies of Epilepsy.
- Structural and functional studies of molecules underlying neural signaling, including ion channels, neurotransmitter receptors and transporters, synaptic vesicle and synaptic scaffolding proteins, and intracellular signal transduction cascades.
- Molecular and cellular mechanisms of synaptic transmission, synaptic modulation and plasticity, synapse formation and development. • Studies of CNS circuits, especially studies that are focused on underlying cellular and synaptic properties (overlaps with Systems and Cognitive Neuroscience).
- Technology development for research on neural signaling, including genetic models, tools for analyzing or manipulating gene expression and function, or for manipulating cell signaling. New techniques for structural studies of membrane proteins and for study of protein interactions.
- Research on channelopathies and their involvement in specific neurological disorders.
- Translational research to link results of basic research on channels and synapses to medication development and clinical trials.

Program Directors:

Margaret Jacobs (jacobsm@ninds.nih.gov) Portfolio: Basic and clinical studies of Epilepsy (including clinical trials).

Edmund Talley (talleys@ninds.nih.gov) Portfolio: Research on synaptic transmission, plasticity and structure, including studies on synapse development and regeneration.

Shai Silberberg (silberbs@ninds.nih.gov) Portfolio: Basic research on the structure, function, and regulation of channels, transporters, and pumps (CTP); Physiology and pathophysiology of ion channels and transporters; Channelopathy.

Randall Stewart (stewartr@ninds.nih.gov) Portfolio: Basic structure, function, and biophysics of channels, transporters, and pumps; Channelopathy; Structural biology; Basic studies of epilepsy;; Seizure prediction; Study of epileptogenesis utilizing proteomics and DNA microarrays.

Systems & Cognitive Neuroscience

Research Areas of Interest:

- Research on higher brain functions that underlie complex behaviors such as learning, memory, attention, language, cognition, emotion, movement, and response to pain. • Research in homeostatic regulation of cyclic and appetitive behaviors such as sleep, activity, feeding, and drinking. • Identify risk factors for developmental cognitive disorders.
- Develop better methods for assessing behavior and other neurological functions in animal models as a useful model for human conditions.
- Analysis of neural circuits and systems that mediate motor control, sensory processing, nociception and cognitive activities, especially circuits and systems with known medical consequences.
- Application of novel tools and methodologies for system approaches, including optical recording, neuroimaging, neuroinformatics, advanced in vivo recording and stimulation techniques, and methods for analysis of complex neural signals.

Program Directors:

Debra Babcock (dbabcock@ninds.nih.gov) Portfolio: (1) Neural mechanisms of cognition, (2) Integrative approaches in behavioral and cognitive neuroscience, neurobehavioral disorders and all aspects of central nervous system plasticity, (3) Neuroimaging , (4) Systems Neuroscience research, (5) Clinical Neurophysiology.

Daofen Chen (chend@ninds.nih.gov) Portfolio: (1) Neural circuits at system level, (2) Sensorimotor functions, and adaptive and rehabilitative strategies for movement disorders and stroke sequelae, (3) Imaging and device-based technologies for systems neuroscience.

Merrill Mitler (mitlerm@ninds.nih.gov) Portfolio: (1) CNS homeostatic regulation of sleep, circadian rhythms, feeding and body weight (2) Sleep in neurological disorders such as Parkinson's disease and stroke, (3) Neurobiology of obesity and complications of obesity-related disorders such as diabetes and sleep-disordered breathing (4) Neuroendocrinology

Linda Porter (porterl@ninds.nih.gov) Portfolio: (1) Peripheral and central mechanisms of chronic pain, (2) Anatomy and physiology of pain signaling and pathways, (3) Analgesic and instrumentation development for pain management, (4) Neuroimaging in pain research, (5) Painful conditions and pain associated with disease states, (6) Genomic and proteomic approaches to pain research, (7) Neural plasticity related to chronic pain conditions, and 8) cognitive aspects of pain perception.

Repair & Plasticity

Research Areas of Interest:

- Mechanisms contributing to injury and repair of the brain and spinal cord. • Neural plasticity in the adult nervous system.
- Restoration of function in neurologically disabled individuals. • Stem and progenitor cell biology in the development and repair of the nervous system.

Program Directors:

Ramona Hicks (hicksra@ninds.nih.gov) Portfolio: (1) Basic, translational and clinical studies that relate to traumatic brain injury (TBI) or neonatal hypoxic-ischemic injury (HI), including mechanisms of injury in the acute and chronic stages; (2) Cognitive/emotional domains affected by TBI or HI; (3) Use of imaging technology and other measurement tools to assess cognitive/behavioral changes after TBI or HI.

Naomi Kleitman (kleitman@ninds.nih.gov) Portfolio: Spinal cord injury/disease (SCI) and peripheral nerve repair: (1) Cell transplantation to stimulate regeneration, using trophic factors, providing a bridge for regenerating axons, replacing lost neurons; (2) Delivering factors to promote regeneration or block inhibition; (3) Recovery of function by preserving or regenerating specific cord tracts; (4) Schwann cell myelination; (5) De/remyelination related to loss or recovery of function after SCI and glial cell transplantation.

David Owens (owensd@ninds.nih.gov) Portfolio: Stem cells in the nervous system including: (1) Understanding the basic biology of stem and progenitor cells in the normal nervous system, and following damage or disease; (2) Application of stem cells in developing treatments for the repair of the nervous system; (3) Endogenous neurogenesis in development and adulthood; (4) Tissue engineering approaches to repair the CNS.

Joseph Pancrazio (pancrazj@ninds.nih.gov) Portfolio: (1) Neural engineering , neural prostheses, neural technology; (2) Neural repair, plasticity in neural systems, machine interfaces and implanted devices, novel biomaterials for repair; (3) Bioengineering applied to the nervous system, nanotechnology for the nervous system, neural control and processing of neural information.

Neurodegeneration

Research Areas of Interest:

- Parkinsonian Diseases (PD), including early onset forms, corticobasal degeneration, progressive supranuclear palsy.
- Alzheimer's disease (AD), as well as frontotemporal dementias, and Lewy body dementias.
- Amyotrophic Lateral Sclerosis (ALS), as well as other adult-onset motor neuron disease including ALS-dementia complex of Guam.
- Huntington's disease (HD), as well as adult onset trinucleotide repeat disorders and ataxias.
- Other adult onset neurodegenerative disorders such as Multiple System Atrophy, Pick's Disease, Hallevorden-Spatz disease, tauopathies, synucleinopathies and amyloidopathies.

Program Directors:

Diane DiEuliis (murphyd@ninds.nih.gov) Portfolio: (1) Parkinson's disease, basic genetic, molecular and cell biology (2) basic science and pathology of corticobasal degeneration, Multiple system atrophy, Picks' and Progressive supranuclear palsy, tauopathies (4) biophysical studies of amyloidosis. Manages PD-DOC, Morris K. Udall Centers of Excellence for Parkinson's Disease Research. Manages CINAPS.

Larry Refolo (refolol@ninds.nih.gov) Portfolio: (1) Pathogenesis and epidemiology of ALS and ALS-dementia complex of Guam; (2) AD, including animal modeling, neurotrophic factors, neurotransmitters, beta-amyloid, APP, Presenilins, ApoE, Biomarkers. (3) Basic studies of Parkinson's focused on mitochondrial pathologies, energetics, and animal models; clinical studies for ALS and Parkinsons Disease;Vascular Cognitive Impairment; translational studies on ALS, Alzheimer's disease, Parkinson's disease and Vascular Cog Impairment . Manages PD Animal Model Facility.

Beth-Anne Sieber (sieberb@ninds.nih.gov) Portfolio: (1) Parkinson's disease biology; (2) Basic neurobiological mechanisms underlying neuronal loss in neurodegenerative disorders; (2) Glial biology and neuronal-glia interactions involved in the pathophysiology of neurodegenerative diseases; (3) Oxidative stress mechanisms relevant to neurodegeneration; (4) Deep Brain Stimulation- basic and clinical research examining underlying circuitry and mechanism of action; (5) Translational and clinical studies relevant to the neuroprotection and treatment of Parkinson's disease; (6) Gene therapy studies targeted toward Parkinson's disease treatment. Manages PD Roster.

Margaret Sutherland (sutherlandm@ninds.nih.gov) Portfolio: (1) Parkinson's disease including epidemiology, GWA studies, genetics (2) Huntington's disease including epidemiology, GWA studies, basic mechanisms, mitochondrial dysfunction, transcription and epigenetics, protein trafficking, protein modification; translational research (3) Transporter and receptor signaling associated with neurodegeneration; (4) Stem cell clinical and applied research studies, involving the use stem cells for drug and environmental toxin screening and for cell replacement therapies; (5) Animal modeling for neurodegenerative diseases. Manages HD Roster.

Neural Environment

Research Areas of Interest:

- Development and normal functions of glial cells including myelin formation, microglial function, astrocyte function and cell-cell communication among the diverse cell populations of the nervous system.
 - Cellular, infectious, immune, and inflammatory mechanisms in nervous system disorders such as multiple sclerosis, prion diseases, brain tumor, stroke, CNS and PNS tumors, and neuroAIDS.
 - Identify the molecular mechanisms of cell injury and death in the nervous system.
 - Vascular mechanisms of neurological disorders, CNS vascular development and the role of microvascular endothelia, extra-cellular matrix and cells of hematopoietic origin within the central nervous system.
 - Development of diagnostics and of therapies that will prevent, arrest or reverse autoimmune neurological disorders such as multiple sclerosis.
 - Mechanisms of blood-brain and brain-CSF barrier functions and of cell migration (and/or trafficking) into the CNS in stroke, immune disorders and CNS infections.
 - Development of animal models for infectious and immune disorders and stroke (e.g. transgenic or knockout/in models, viral models).
 - Study of normal glial or progenitor/stem cell populations and their role in the development or treatment of CNS and PNS tumors.
 - Study of biomarkers for vascular, and immune diseases of the nervous system.
 - Bi-directional translational research that transfers insights gained from basic research and clinical investigations.
- Program Directors:

Jane Fountain (fountain@ninds.nih.gov) Portfolio: (1) Brain Tumor, (2) Tuberous Sclerosis (3) Basic Glial Cell Biology (Stem cells, cell growth and differentiation), (4) Neurofibromatosis

Eugene Golanov (golanove@ninds.nih.gov) Portfolio: (1) Neuronal mechanisms in stroke; (2) Hemorrhagic Stroke (3) Apoptosis and cell death mechanisms in the nervous system; (4) Neuroprotection and brain hypoxia/ischemia; (5) Regulation of cerebral blood flow; (6) Mechanisms of functional recovery after stroke.

Tom Jacobs (jacobst@ninds.nih.gov) Portfolio: (1) Ischemic Stroke; (2) Blood-brain barrier; (3) Neuron-Glial-Endothelial Interactions; (4) Cerebrovascular Biology.

Ursula Utz (utzu@ninds.nih.gov) Portfolio: (1) Multiple Sclerosis (including clinical trials, translational research, animal models of MS, e.g., Theiler's virus and MHV); (2) Neuroimmunology; (3) Systemic lupus erythematosus, and other autoimmune diseases with CNS involvement; (4) Glial cell biology (Oligodendrocytes; Myelin formation and repair; Myelin mutants; Glial mediated inflammation).

May Wong (wongm@ninds.nih.gov) Portfolio: (1) Neuro-AIDS; (2) Infectious diseases of the nervous system, including bacterial, fungal and parasitic infections; (3) Neurovirology; (4) Creutzfeldt Jacob Disease and other transmissible spongiform encephalopathies

Clinical Trials

Research Areas of Interest:

- Development of clinical interventions for neurological disorders and stroke.
- Translation of findings in the laboratory to clinical research and clinical interventions.
- Innovation in clinical research methodology and protection of human subjects.

Program Directors:

Robin Conwit (conwitr@ninds.nih.gov) Portfolio: Clinical trials involving neuroprotection and intervention studies; ALS and other neuromuscular diseases; emergency clinical trials.

Janice Cordell (cordellj@ninds.nih.gov) Portfolio: Clinical trials and epidemiological studies, clinical trial design and monitoring, clinical research methodology, and recruitment and retention issues related to clinical research.

Brandy Fureman (furemanb@ninds.nih.gov) Portfolio: NINDS Clinical Research Collaboration (CRC); health services research; cell and other biologic therapies; prevention research; clinical research ethics and regulatory policy.

Wendy Galpern (galpernw@ninds.nih.gov) Portfolio: Clinical trials for neurodegenerative disorders and movement disorders, including Parkinson's disease, Huntington's disease, ataxias, dystonia; experimental therapeutics.

Laurie Gutmann (gutmanl@ninds.nih.gov) Portfolio: Clinical trials in myopathies, neuropathies, neuromuscular diseases.

Peter Gilbert (gilbertp@ninds.nih.gov) Portfolio: Research grants in biostatistics and clinical trial design, monitoring and analysis, and training grants in biostatistics.

Deborah Hirtz (hirtzd@ninds.nih.gov) Portfolio: Clinical studies (trials, epidemiology, etc.) related to cerebral palsy prevention, stroke in infants and children, and other pediatric clinical research: autism, pediatric epilepsy, pediatric head trauma.

Scott Janis (janiss@ninds.nih.gov) Portfolio: Clinical trials and epidemiology studies in stroke and traumatic brain injury; SPOTRIAS acute stroke network; clinical trial design and monitoring; and clinical research methods.

Claudia Moy (moyc@ninds.nih.gov) Portfolio: Clinical trials and epidemiology studies in stroke, cerebrovascular disease, and other neurological disorders; quality of life and other patient-reported outcome measures in clinical trials; determinants of stroke risk and stroke disparities; clinical trial design and monitoring; clinical research methods; clinical trials training; ethical issues in clinical research.

Joanne Odenkirchen (odenkirj@ninds.nih.gov) Portfolio: Clinical trials and epidemiological studies, clinical trial design and monitoring, recruitment and retention issues related to clinical research, community and public health disease prevention and dissemination, international clinical research, ethical issues in clinical research, regulatory issues, pediatric trials, and clinical research methodology.

Technology Development

Research Areas of Interest:

- Translational research and therapy development programs.
- Anticonvulsant screening project.
- High-throughput drug screening.
- Medicinal Chemistry.
- Drug candidate libraries.
- Core Center Grant program coordination.
- Gene Microarray Consortium coordination.
- Administrative supplement programs for shared resources.
- Development and distribution of animal models of disease.

Program Directors:

Jill Heemsker (heemskej@ninds.nih.gov) Portfolio: High Throughput Drug Screening Facility for Neurodegeneration; NIH Clinical Compound Collection (NCC) for public distribution; SMA Therapeutics Development Project; Medicinal Chemistry Service for Neurotherapeutics.

David A. Jett (jetttd@ninds.nih.gov) Portfolio: Counterterrorism (CounterACT) Program and Neurotoxicology; CounterACT Research Centers of Excellence and Research Projects; CounterACT SBIR Program; Preclinical Development Contract; CounterACT ASP Component; InterAgency Collaboration with DoD (IAA); Neurotoxicology grants.

Yuan Liu (liuyuan@ninds.nih.gov) Portfolio: Computational Neuroscience and Neuroinformatics Programs and Initiatives including:

- Collaborative Research in Computational Neuroscience (CRCNS) (Interagency: NIH, NSF, ONR, & NGA)
- Inter-Agency Modeling and Analysis Group (IMAG) (NIH, NSF, DOE, DOD, NASA, USDA, & USDVA)
- Predictive Multiscale Models of the Physiome in Health and Disease (Trans-NIH)
- Bioinformatics and Computational Biology Working Group (Roadmap)
- National Centers for Biomedical Computing (Roadmap)
- Bioinformatics Science & Technology Initiative Consortium (BISTIC) (Trans-NIH)
- BioMedical Informatics Coordinating Committee (BMIC) (Trans-NIH)
- Clinical & Translational Science Award (CTSA) Government Informatics Subcommittee (Trans-NIH)
- Neuroimaging Informatics Technology Initiative (NifTI) (Multiple ICs)
- Neuroscience Information Framework Project Team (Blueprint)
- Neuroimaging Informatics Project Team (Blueprint)
- Neuroinformatics Working Group (Blueprint)

Thomas Miller (millert@ninds.nih.gov) Preclinical Development of Therapeutics. Research Infrastructure. Portfolio: Microarray Centers; P30 Center Core Grants.

Mark Scheideler (scheidelerm@ninds.nih.gov) Portfolio: Roadmap Molecular Libraries Assay Development for HTS Program.

- Roadmap Molecular Libraries Screening Center Network (MLSCN) Staff.
- Roadmap Molecular Libraries Initiative Project Team, Implementation Group (MLIIG), and Science Officers Working Group.
- Roadmap Clinical and Translational Science Awards (CTSA) Executive Committee and Public-Private Partnership Subcommittee
- Neuroscience Blueprint Translational Project Team
- Development and Implementation of Biomarker Technologies

James Stables (stablesj@ninds.nih.gov) Portfolio: Anti-Convulsant Screening Program, drug screening libraries/databases, pre-clinical testing and toxicology; Translational activities; Model Validation in resistance and Epileptogenesis; Seizure models for pediatric and geriatric populations, Bioterrorism efforts to find neuro-protectants.

Office of Minority Health and Research

Research Areas of Interest:

- Health disparities-related research (Stroke, NeuroAIDS, NeuroDiabetes, Epilepsy, Brain Injury, etc.).
- Basic, clinical, translational studies to support new, and/or ongoing neuroscience programs leading to diversity in the scientific workforce and the reduction of disease through research.
- Increase extramural community awareness of research and health information gained from NINDS-sponsored programs and activities.
- Foster innovative and effective partnerships and collaborations between minority institutions and established neuroscience laboratories; at federal and non-federal research institutions.

Program Directors:

(Vacant) Portfolio: (1) Health Disparities Research and Disease Prevention (2) Stroke Research (3) Specialized Center Cooperative Agreements (SNRPs) (4) Underrepresented Minority Capacity Building and Education (5) Clinical Trials (6) Educational outreach.

Alfred Gordon (gordona@ninds.nih.gov) Director, Office of Minority Health and Research. Associate Director for Minority Health and Research. Portfolio: (1) Center Grants in Health Disparities and Disease Prevention (2) Diversity Capacity Building and Education (3) Clinical Trials (4) Educational Outreach.

Michelle D. Jones-London (jonesmiche@ninds.nih.gov) Portfolio: (1) Specialized Neuroscience Research Programs (Emphasis on Basic and Translational Programs) (2) Diversity (Underrepresented Minority, Disadvantaged and Disability) Supplements (3) Re-Entry Supplements (4) R25 Education Programs (including Neuroscience Scholars Program) (5) Career Development Award (Diversity K01) (6) Predoctoral (F31) Diversity NRSA (7) SCORE Individual Awards (8) Diversity Outreach Conferences.

John K. Lynch (lynchj@ninds.nih.gov) Portfolio: (1) Specialized Center Cooperative Agreements (SNRPs), (2) Collaborative Neurological Sciences Awards (S11), (3) R25 Education Programs (including Neuroscience Scholars Program). Research Interests: (1) Stroke (2) Pediatric Neurological Disorders (3) Neuroepidemiology (4) Health Disparities (5) Clinical trials and population based studies (6) Neurogenetics.

Training and Career Development

Research Areas of Interest:

All scientific areas of the Institute. The Training Office is responsible for the development, implementation and maintenance of programs for training and career development of neuroscience researchers.

Program Director:

Stephen Korn (korns@ninds.nih.gov) Portfolio: Institutional Training Programs (T32s); All inquiries about training mechanisms (fellowships and career awards) except for questions about scientific relevance to the NINDS mission. Inquiries about the Pathway to Independence Award (K99/R00). For questions regarding scientific relevance to the NINDS mission, contact one program director from one of the clusters above who most closely matches your interest.

Office of International Activities

Research Areas of Interest:

- Develop creative approaches to promote international research in the neurosciences.
- Stimulate international activities with other NIH ICs, other domestic and foreign governmental agencies and non-governmental organizations.
- Encourage international neuroscience collaborations, training and capacity building through grants, short-term travel supplements and international conferences.

Program Director:

Yuan Liu (liuyuan@ninds.nih.gov) Portfolio: Trans-NIH and NINDS International Programs and Initiatives including: • IC International Representatives Group (Trans-NIH) • Brain Disorders in the Developing World • Fogarty International Research Collaboration Awards (FIRCA) • Global Health Research Initiative Program for New Foreign Investigators (GRIP) • International Neuroscience Fellowship Program (F05) • US-Japan Brain Research Cooperative Program (BRCP)