Developmental Neuroscience

Developmental Neuroscience Internships

Internship Categories

Contact +91-8977624748 for joining process

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Browse Developmental Neuroscience internship programs at NTHRYS Biotech Labs — academic, professional, industrial and research tracks across the categories below.

CATEGORIES

Neural Tube Formation and Patterning
Investigate mechanisms of early neural tube closure, segmentation, and anterior-posterior axis specification in embryonic development.

Neurogenesis in Developing Brain Regions
Study neural progenitor cell proliferation, differentiation, and migration in embryonic and postnatal neurogenic zones.

Axon Guidance and Pathfinding
Examine molecular cues and mechanisms directing axonal growth cones toward appropriate synaptic targets during development.

Synaptogenesis and Synaptic Refinement
Analyze synapse formation, maturation, and activity-dependent pruning processes during critical developmental periods.

Cortical Layering and Organization
Investigate laminar architecture development, neuronal migration patterns, and cellular organization in developing cortex.

Myelination and Oligodendrocyte Development
Study oligodendrocyte precursor differentiation, myelin formation, and developmental timing in central nervous system.

Astrocyte Development and Function
Examine astrocyte specification, maturation, and their supportive roles during neural development and synaptogenesis.

Cerebellar Circuit Development
Research granule cell migration, Purkinje cell organization, and synaptic connectivity formation in developing cerebellum.

Hippocampal Network Formation

Study neuronal migration, circuit assembly, and synaptic organization in developing hippocampal formation.

Thalamocortical Projection Development

Investigate thalamic axon guidance, cortical targeting, and layer-specific innervation patterns during brain development.

Cell Adhesion Molecules in Neural Development

Analyze roles of cadherins, immunoglobulin superfamily proteins, and integrins in neuronal migration and synapse formation.

Growth Factor Signaling in Neurogenesis

Study FGF, BMP, Wnt, and Notch signaling pathways controlling neural progenitor proliferation and differentiation.

Morphogen Gradient Interpretation

Examine how developing neural tissues interpret morphogen concentration gradients for cell fate specification and patterning.

Critical Period Plasticity Mechanisms

Research molecular and cellular mechanisms underlying heightened neural plasticity during critical developmental windows.

Experience-Dependent Neural Development

Investigate how sensory input and neural activity shape circuit development, connectivity, and functional organization.

Microglia and Synaptic Pruning

Study microglial activation, phagocytic mechanisms, and roles in activity-dependent synapse elimination.

Developmental Neuroinflammation

Analyze inflammatory cytokine signaling, immune cell recruitment, and their effects on neural circuit development.

Neuronal Apoptosis and Programmed Cell Death

Investigate caspase activation, death receptor signaling, and naturally occurring neuronal death during development.

Gene Expression Profiling During Development

Use RNA-seq and in situ hybridization to map spatiotemporal gene expression patterns in developing neural tissue.

Epigenetic Regulation of Neural Development

Study histone modifications, DNA methylation, and chromatin remodeling controlling developmental gene expression programs.

Transcription Factor Networks in Neurogenesis

Analyze cascades and interactions of developmental transcription factors controlling neural cell fate decisions.

MicroRNA Functions in Neural Development

Research microRNA-mediated post-transcriptional regulation of genes controlling neurogenesis and differentiation.

Brain Organoid Development and Modeling

Generate self-organizing neural tissue models from stem cells to study developmental processes and disease mechanisms.

Patient-Derived iPSC Neural Differentiation

Differentiate induced pluripotent stem cells from patients into neural lineages to model developmental disorders.

Optogenetic Circuit Mapping During Development

Use light-activated proteins to functionally map and manipulate developing neural circuits in vivo.

Two-Photon Imaging of Developing Neurons

Employ deep tissue imaging to visualize real-time neuronal migration, growth, and synaptic development in intact tissue.

Patch-Clamp Electrophysiology in Developing Brain

Record ion channel properties and synaptic currents from developing neurons to assess functional maturation.

Sensory System Development Neurobiology

Investigate developmental assembly of visual, auditory, olfactory, or somatosensory neural circuits and receptor systems.

Motor System Circuit Development

Study spinal cord motor neuron development, neuromuscular junction formation, and motor circuit assembly.

Cognitive Circuit Development and Maturation

Research prefrontal and limbic circuit assembly underlying executive function, memory, and emotional development.

Social Brain Development in Mammals

Examine developmental changes in neural circuits mediating social behavior, attachment, and social cognition.

Developmental Genetic Models and Transgenic Animals

Use CRISPR, conditional knockouts, and transgenic animals to study gene function in neural development.

Human Brain Development Comparative Analysis

Compare developmental timelines, cellular processes, and circuit organization across primate and mammalian species.

Neurotrophic Factor Signaling Cascades

Investigate BDNF, NGF, and neurotrophin receptor signaling controlling neuronal survival, growth, and differentiation.

Neurovascular Development and Angiogenesis

Study blood vessel formation, brain-blood barrier maturation, and neurovascular interactions during development.

Developmental Neurotoxicology and Environmental Factors

Research how environmental toxins, maternal factors, and pathogens affect fetal and early postnatal neural development.

Maternal-Fetal Immune Interactions in Neuroimmunity

Examine maternal antibody effects, placental immunology, and prenatal immune influences on fetal brain development.

Congenital Neural Disorders Pathomechanisms

Investigate cellular and molecular mechanisms underlying developmental neural defects like neural tube defects and holoprosencephaly.

Autism Spectrum Disorder Developmental Neurobiology

Study alterations in neural connectivity, circuit organization, and synapse development associated with autism

genetics.

Intellectual Disability Genetic and Cellular Mechanisms

Research how mutations affecting neural development lead to intellectual disability and cognitive impairments.

Sleep Development and Neural Circuit Maturation

Investigate ontogeny of sleep-wake cycles, EEG changes, and neural circuits controlling sleep during development.

Circadian Rhythm Development in Brain

Study development of circadian clock circuits in suprachiasmatic nucleus and peripheral oscillators.

Learning and Memory System Development

Examine developmental maturation of neural circuits supporting learning, synaptic plasticity, and memory consolidation.

Reward and Motivation Circuit Development

Research ontogeny of dopaminergic, opioid, and limbic circuits underlying reward sensitivity and motivation.

Stress Response System Development

Study hypothalamic-pituitary-adrenal axis maturation and stress-induced neural circuit changes during development.

Language Network Development in Human Brain

Investigate structural and functional development of language-related brain regions and neural connectivity patterns.

White Matter Maturation and Connectivity

Study myelination patterns, fractional anisotropy changes, and long-range white matter connectivity development.

Developmental Neuroimaging and Longitudinal Studies

Use MRI, fMRI, and PET imaging to track structural and functional brain development over time.

Stem Cell Niche Development in Brain

Investigate how extracellular matrix, vasculature, and cellular components create neural stem cell microenvironments.

Notch Signaling and Cell Fate Determination

Study Notch-mediated lateral inhibition, neurogenic versus gliogenic decisions, and stem cell maintenance during development.