Molecular Neurobiology Publication Projects

NTHRYS offer remarkable opportunities for students and researchers seeking to enhance their careers in neuroscience. By engaging in these projects, participants will not only acquire advanced knowledge in neurobiological processes but also develop essential skills for a successful career in academia or biotechnology industries.

Fees for Molecular Neurobiology Publication Projects: Rs 85000/- for 3 to 6 Months duration, Rs 150000/- for 7 months to 1 year duration

Contact +91-7993084748 for application process

Focussed Areas for Molecular Neurobiology Publication Projects at NTHRYS

1. Mechanisms of Synaptic Plasticity
2. Molecular Basis of Neurodegenerative Diseases
3. Molecular Pathways in Brain Development
4. Neural Repair and Regeneration
5. Role of Neuroinflammation in CNS Disorders
6. Molecular Insights into Cognitive Disorders
7. Analysis of Neural Circuits in Health and Disease
8. Genetic Influences on Brain Function and Behavior
9. Neurotransmitter Dynamics in Neural Networks
10. Neurovascular Interactions in Brain Function
11. Postbiotics Effects on Neurogenesis and Brain Health
12. Role of Gut-Brain Axis in Neurological Health
13. Epigenetic Regulation in Neural Development and Diseases
14. Applications of Neural Stem Cells in Regenerative Medicine
15. Mitochondrial Dysfunction in Neurodegeneration
16. Role of Proteinopathies in Neurological Diseases

This research focuses on understanding the molecular mechanisms underlying synaptic plasticity, which is fundamental to learning, memory, and overall brain function.

Main Objectives

- Identify key molecular players involved in synaptic plasticity.
- Explore the role of signaling pathways in modulating synaptic strength.
- Investigate the impact of synaptic plasticity on behavior and cognition.

Workflow

- In vitro and in vivo studies of synaptic plasticity models.
- Molecular and electrophysiological analysis of synaptic changes.
- Behavioral assessments linked to synaptic plasticity alterations.

Expected Results

- Detailed mapping of molecular pathways involved in synaptic plasticity.
- New insights into therapeutic approaches for enhancing cognitive function.

Contact +91- 7993084748 for more details

This project investigates the molecular basis of neurodegenerative diseases such as Alzheimer's, Parkinson's, and Huntington's diseases.

Main Objectives

- Identify genetic and molecular causes of neurodegenerative diseases.
- Study the role of protein aggregation and cellular dysfunction in disease progression.
- Develop strategies for early diagnosis and therapeutic intervention.

Workflow

- Analysis of disease models and patient samples.
- Identification of biomarkers and pathological pathways.
- Screening for potential therapeutic targets and drugs.

Expected Results

- New understanding of molecular processes driving neurodegeneration.
- Identification of biomarkers for early detection of neurodegenerative diseases.

Contact +91- 7993084748 for more details

This research explores molecular pathways involved in brain development, focusing on how genetic and environmental factors shape neural networks.

Main Objectives

- Investigate key signaling pathways involved in neural development.
- Understand the impact of genetic mutations on brain development.

- Study environmental factors influencing neurodevelopmental disorders.

Workflow

- Use of animal models and human stem cell systems.
- Analysis of genetic and environmental interactions in brain development.
- Identification of key developmental milestones and disruptions.

Expected Results

- Enhanced understanding of the molecular underpinnings of brain development.
- Identification of risk factors and potential interventions for neurodevelopmental disorders.

Contact +91- 7993084748 for more details

This project investigates molecular mechanisms involved in neural repair and regeneration, with a focus on potential therapeutic strategies for CNS injuries.

Main Objectives

- Identify molecular factors that promote neural regeneration.
- Study the role of stem cells in neural repair.
- Develop strategies to enhance neural recovery after injury.

Workflow

- Analysis of neural regeneration models in vitro and in vivo.
- Stem cell transplantation and recovery assays.
- Molecular analysis of repair pathways.

Expected Results

- Insights into promoting neural repair and regeneration.
- Potential therapeutic approaches for treating CNS injuries.

Contact +91- 7993084748 for more details

This research focuses on the role of neuroinflammation in CNS disorders such as multiple sclerosis and traumatic brain injury.

Main Objectives

- Identify key inflammatory pathways contributing to CNS disorders.
- Explore the impact of neuroinflammation on neural function and health.
- Develop anti-inflammatory strategies for treating CNS disorders.

Workflow

- Use of animal and cellular models to study neuroinflammation.
- Analysis of inflammatory markers in disease states.
- Testing of anti-inflammatory interventions.

Expected Results

- New insights into the role of inflammation in CNS diseases.
- Potential anti-inflammatory therapies for neurodegenerative and traumatic disorders.

Contact +91- 7993084748 for more details

This project explores molecular mechanisms underlying cognitive disorders such as autism, schizophrenia, and Alzheimer's disease.

Main Objectives

- Identify molecular abnormalities linked to cognitive impairments.
- Study the genetic and environmental contributions to these disorders.
- Develop targeted therapies for cognitive enhancement.

Workflow

- Use of animal models and patient-derived cells for molecular analysis.
- Behavioral testing to correlate molecular changes with cognitive outcomes.
- Screening of potential cognitive-enhancing therapeutics.

Expected Results

- Better understanding of molecular dysfunctions in cognitive disorders.
- Identification of potential therapeutic targets for cognitive enhancement.

Contact +91- 7993084748 for more details

This research explores the effects of postbiotics on neurogenesis and brain health, focusing on their potential therapeutic role in enhancing neurogenesis and protecting against neurological disorders.

Main Objectives

- Study the impact of postbiotics on neural stem cell differentiation and growth.
- Investigate neuroprotective effects of postbiotics in models of neurological diseases.
- Develop postbiotic-based therapies to enhance neurogenesis.

Workflow

- Use of cellular and animal models to study postbiotic effects on neurogenesis.

- Molecular and functional analysis of brain tissue after postbiotic treatment.
- Behavioral assessments and analysis of neural health.

Expected Results

- Enhanced understanding of the role of postbiotics in brain health.
- Identification of postbiotic therapies for improving neurogenesis and brain function.

Contact +91- 7993084748 for more details

This research explores the interaction between the gut and brain, focusing on how gut microbiota influence neurological function and behavior.

Main Objectives

- Study the molecular mechanisms connecting gut microbiota with brain function.
- Explore the role of gut-brain axis in neurological disorders.
- Develop strategies to modulate gut microbiota for neurological health benefits.

Workflow

- Analysis of gut-brain interactions in animal models and clinical samples.
- Investigation of gut microbiota's influence on behavior and cognition.
- Testing interventions to modulate gut-brain communication.

Expected Results

- Insights into the gut-brain connection and its role in neurological health.
- Potential microbiota-targeted therapies for neurological disorders.

Contact +91- 7993084748 for more details

This research explores the role of epigenetic mechanisms in neural development and neurological diseases, focusing on how epigenetic modifications regulate gene expression in the brain.

Main Objectives

- Identify key epigenetic changes involved in neural development.
- Study the role of epigenetic dysregulation in neurological disorders.
- Develop epigenetic-based therapies for brain disorders.

Workflow

- Use of advanced genomic techniques to study epigenetic regulation in neural cells.
- Identification of epigenetic markers linked to neural development and disease.
- Testing epigenetic therapies in preclinical models.

Expected Results

- Identification of critical epigenetic regulators of brain development and function.
- Potential new therapies targeting epigenetic dysregulation in brain disorders.

Contact +91- 7993084748 for more details

This research focuses on the application of neural stem cells in regenerative medicine, exploring their potential to repair damaged neural tissue and treat CNS disorders.

Main Objectives

- Identify factors that promote the growth and differentiation of neural stem cells.
- Explore the therapeutic potential of neural stem cells in neurodegenerative diseases and injuries.
- Develop protocols for efficient neural stem cell transplantation and integration.

Workflow

- In vitro culture and differentiation of neural stem cells.
- Transplantation studies in animal models of CNS disorders.
- Analysis of stem cell integration and function in the brain.

Expected Results

- Advances in neural stem cell therapy for brain injuries and neurodegenerative diseases.
- Development of efficient neural stem cell transplantation techniques.

Contact +91- 7993084748 for more details

This research explores the role of mitochondrial dysfunction in neurodegenerative diseases, focusing on how mitochondrial defects contribute to neuronal death and disease progression.

Main Objectives

- Study the molecular mechanisms linking mitochondrial dysfunction to neurodegeneration.
- Identify potential therapeutic targets to restore mitochondrial function in the brain.
- Develop strategies to mitigate the effects of mitochondrial dysfunction in neurodegenerative diseases.

Workflow

- Use of cellular and animal models to study mitochondrial dysfunction in neurons.
- Molecular analysis of mitochondrial pathways in disease models.
- Testing potential therapies to restore mitochondrial function.

Expected Results

- Better understanding of mitochondrial dysfunction's role in neurodegeneration.
- Identification of new therapies targeting mitochondrial defects in neurological diseases.

Contact +91- 7993084748 for more details

This project investigates the role of proteinopathies in neurological diseases such as Alzheimer's, Parkinson's, and ALS, focusing on how protein misfolding and aggregation lead to neuronal damage.

Main Objectives

- Study the molecular mechanisms of protein misfolding and aggregation in neurodegenerative diseases.
- Identify potential therapeutic targets to prevent or reverse protein aggregation.
- Develop therapeutic strategies for diseases associated with proteinopathies.

Workflow

- In vitro and in vivo studies of protein aggregation in disease models.
- Molecular analysis of pathways involved in protein homeostasis.
- Testing small molecules and other therapies targeting protein aggregation.

Expected Results

- New insights into the role of proteinopathies in neurodegenerative diseases.
- Development of therapeutic strategies to target misfolded proteins and prevent neuronal damage.

Contact +91- 7993084748 for more details