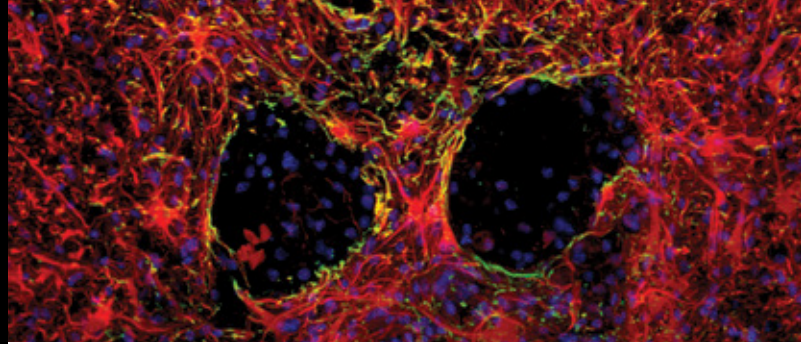
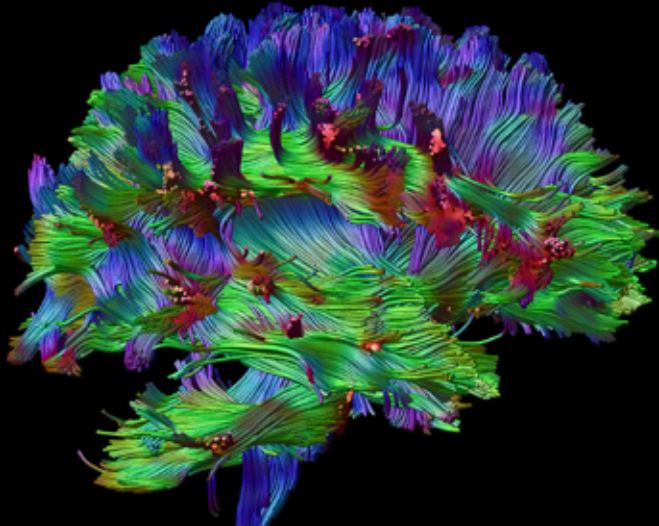
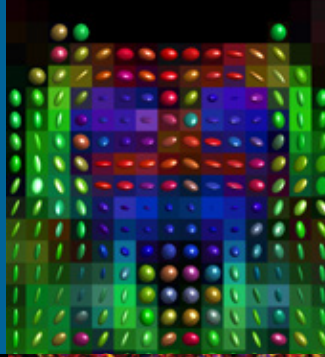


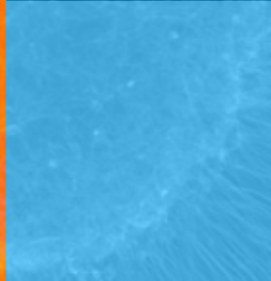
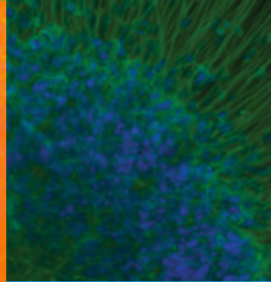
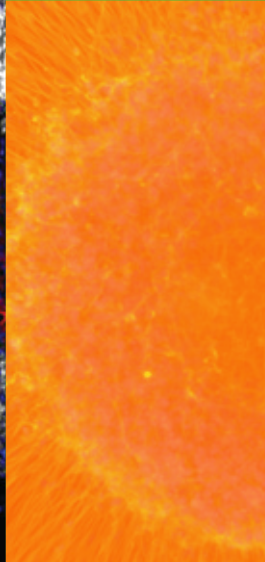
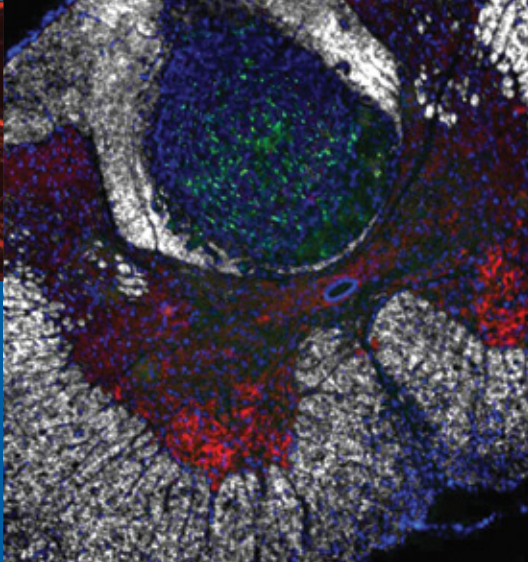
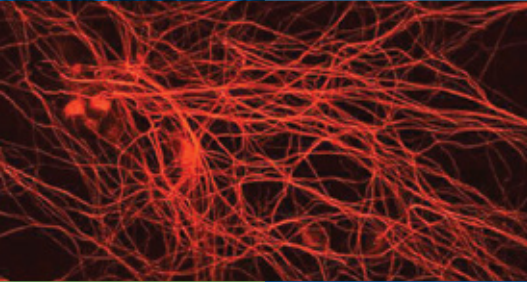
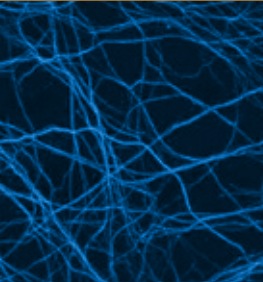
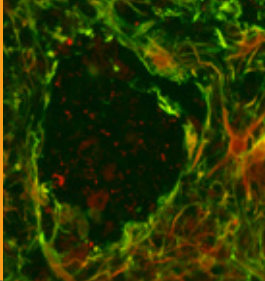
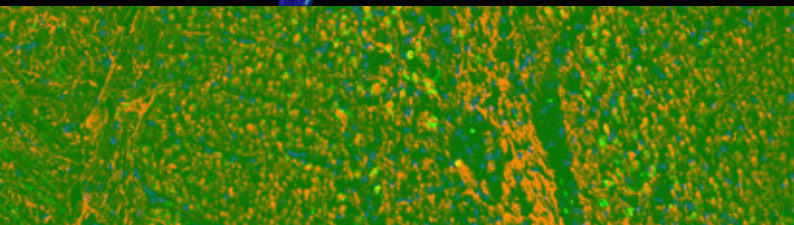


NUI Galway
OÉ Gaillimh



GALWAY
NEUROSCIENCE

The Galway Neuroscience Centre (GNC) is a centre of excellence for interdisciplinary neuroscience research and education across the National University of Ireland (NUI) Galway, with the aim of developing and disseminating improved understanding of the nervous system, and improved diagnosis and treatment of nervous system disorders.



Introduction to the Galway Neuroscience Centre

The Galway Neuroscience Centre (GNC) brings together all academic staff, students, researchers and clinicians at the National University of Ireland (NUI) Galway and Galway University Hospitals who have an interest in neuroscience research and teaching. It is a dynamic and interdisciplinary centre, comprising 25 Principal Investigators and their research groups, drawn from 4 of the University's Colleges (Science, Medicine, Engineering and Arts), as well as neurologists and psychiatrists in local hospitals.

Disorders of the brain and nervous system have a massive health, societal and economic impact, accounting for 35% of Europe's total disease burden at a cost of €400 billion per annum. NUI Galway and the GNC are committed to alleviating this burden by making neuroscience a strategic priority research thematic area within the University.

Objectives of the Galway Neuroscience Centre

1. To foster excellence in, and promote dissemination of, original research in neuroscience
2. To focus on translating and integrating research at a pre-clinical or laboratory level with the development of novel diagnostic and therapeutic approaches within clinical practice
3. To work with relevant industry partners, supporting neuroscience research in a collaborative manner, and seeking to commercialise our discoveries where relevant and appropriate
4. To help ensure that the topic of neuroscience has a national profile and to contribute to health-related research and policy developments in Ireland
5. To increase awareness and knowledge of neuroscience through educational and outreach activities
6. To promote an interest in neuroscience among students and to train the next generation of neuroscientists
7. To foster national and international collaborations in research and teaching

Research Themes

We aim to improve understanding of the pathogenesis of neurological and psychiatric diseases, to identify potential novel drug targets, to develop innovative and commercialisable therapeutics, and ultimately to bring these therapies to the patients. The critical mass of researchers within the GNC allows for the study of various disease areas (listed to the right) at multiple levels, employing a range of multidisciplinary approaches including molecular biology, genetics, neurochemistry, neurophysiology, neuroimaging and neuroanatomy, neuropharmacology, biomaterials, tissue engineering, behaviour, psychology and clinical intervention.

“NUI Galway has built an excellent reputation for high quality neuroscience research and clearly provides a superb environment for training the next generation of neuroscientists”

Professor David Nutt,
PRESIDENT OF THE EUROPEAN BRAIN COUNCIL

Technical Capabilities

- Clinical neuroimaging: MRI and PET
- Clinical EEG/EMG neurophysiology
- Neuropsychological and clinical assessment of cognition
- Clinical and preclinical genomics: genotyping and next-generation sequencing
- Generation of human pluripotent stem cells (iPSc)
- Preclinical disease models: anxiety, autism, depression, multiple sclerosis, Parkinson's disease, pain, spinal cord injury, stress, stroke
- Preclinical behavioural neuroscience
- In vitro disease models: Huntington's disease, neuro-degeneration, neuroinflammation, Parkinson's disease, stroke
- In vivo microdialysis
- Proteomics/lipidomics: mass spectrometry
- Microscopy (incl. electron and confocal), histology, autoradiography and neurostereology
- Cell/Enzyme based assays
- Molecular biology (e.g. Western blot, RT-qPCR)

NEURODEGENERATIVE DISORDERS AND NEUROREGENERATION

Parkinson's Disease

Alzheimer's Disease

Huntington's Disease

Multiple Sclerosis

Spinal Cord Repair

Stroke

NEUROPSYCHIATRIC DISORDERS

Depression

Anxiety

Bipolar Disorder

Schizophrenia

Autism

Stress

PAIN (CENTRE FOR PAIN RESEARCH)

Chronic Inflammatory and Neuropathic Pain

Post-operative Pain

Musculoskeletal Pain

Specific Areas of Research Expertise

- Development and validation of novel biomaterial-based technologies for treating neurological disorders
- Stem cell technologies, including adult stem cells and induced pluripotent stem cells, and the application of these technologies to brain and spinal cord repair
- The role of neuroinflammation, the endocannabinoid system, endoplasmic reticulum stress, neurotrophic factors, heat shock proteins and histone deacetylase complex in neurological and psychiatric disorders
- Pain research from bench to bedside through the Centre for Pain Research
- Development and validation of novel and highly-relevant animal models of neurological and psychiatric disorders
- Expertise in behavioural evaluation of motor, cognitive, affective and sensory function in animal models and in patients
- Clinical neuroimaging: structural, diffusion and functional MRI
- SNP genotyping, genome-wide association studies, next-generation sequencing, copy number variant analysis pertaining to schizophrenia and other nervous system disorders
- Cognitive neuroscience
- Psychological (e.g. cognitive behavioural) interventions for improved management of neurological and psychiatric disorders

For further details of our Principal Investigators and their research interests see:

www.nuigalway.ie/neuroscience

Industrial Partnership and Commercialisation

GNC has an established and successful track record of strategic partnership with pharmaceutical, biotechnology and medical devices industries. Global companies with ongoing research projects within GNC include Aerogen, Alkermes, Covidien, Enbio Materials, Mylan, Proxy Biomedical, Randox and others.

We welcome all opportunities to strengthen our existing connections and to develop new partnerships locally, nationally and globally.

FIVE REASONS TO PARTNER WITH GNC:

- Expertise in preclinical target identification and validation in a range of neurological and neuropsychiatric disease models
- State-of-the-art clinical and translational research facilities embedded within the grounds of Galway University Hospital
- NUI Galway's Ignite Technology Transfer Office is committed to supporting industry partnerships and to facilitating the realisation of commercial outputs
- A well established and successful track record of partnership with industry to generate real results leading to the filing of several invention disclosure files and patent applications
- Neuroscience Research at NUI Galway is synergised by several other Research Centres at NUI Galway with complementary expertise including:
 - ▶ *CPR: The Centre for Pain Research*
 - ▶ *ICAN: The Irish Centre for Autism and Neurodevelopmental Research*
 - ▶ *CRF/TRF: The Clinical Research Facility and Translational Research Facility*
 - ▶ *CÚRAM: The Centre for Research in Medical Devices*
 - ▶ *NFB: The Network of Excellence for Functional Biomaterials*
 - ▶ *REMEDI: The Regenerative Medicine Institute*
 - ▶ *CCMI: The Centre for Cell Manufacturing Ireland*
 - *NICOG: The Centre for Neuroimaging and Cognitive Genomics*



GALWAY
NEUROSCIENCE

Galway Neuroscience Centre

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www.nuigalway.ie/neuroscience

Key Achievements of the Galway Neuroscience Centre

- Designated an international Centre of Excellence in Neurodegeneration (CoEN; <http://www.coen.org>) in 2012 following peer review
- > 550 full, peer-reviewed research publications over a 5 year period
- €22 million research grant funding secured competitively over 5 years (e.g. from European Union, Wellcome Trust, Charities, Industry, Science Foundation Ireland, Health Research Board, Irish Research Council, Higher Education Authority and others)
- ~50 PhD students, 40 MSc (by research) students and 25 MD students graduated over a 5 year period
- Introduction of a Structured PhD in Neuroscience
- Strong track record of successful and productive collaboration with Industry
- Successful track record in technology transfer and commercialization of research findings in the form of patents, IDFs and spin-out companies
- Development of novel psychological interventions for the treatment of neurological disorders
- Organisation of major national and international conferences (e.g. European Workshop on Cannabinoid Research; Network of European CNS Transplantation and Restoration, Neuroscience Ireland, Irish Pain Society)
- Vibrant public outreach programme comprising large annual exhibits during Brain Awareness Week and the Galway Science Festival and regular school visits, public lectures and media interactions

Education, Training & Outreach

The GNC has an established and successful track record in education, training and outreach. GNC members teach Neuroscience at undergraduate and postgraduate level at NUI Galway in their cognate disciplines.

- Neuroscience taught in anatomy, physiology, biochemistry, pharmacology and psychology degree programmes, as well as to nursing and medical students
- Taught one-year MSc in Neuropharmacology
- Structured 4-year PhD programme, with modules in neuroscience
- Active participation in public outreach and promoting an informed society
- Dedicated events to enhance engagement of future neuroscientists at primary and secondary school level through hands-on laboratory experience