Cajal course on
Neuroinflammation and how to study it

Course directors

Director: Dr. Cunningham Colm, PhD (Trinity College Dublin, Ireland)

Dr Colm Cunningham is a Neuroscientist with a specific interest in how systemic inflammation affects brain function. After a Ph.D. in Neurochemistry (1998), with K.F. Tipton in Trinity College Dublin (TCD), Colm pursued post-doctoral research in experimental neuropathology with Prof. Hugh Perry (University of Southampton, UK). His post-doctoral work examined the microglial response to chronic neurodegeneration and together they discovered microglial priming and described the acceleration of neurodegenerative disease by systemic inflammation.

In 2006 and 2010 he was awarded consecutive Wellcome Trust Career Development and Senior Fellowships to establish and develop the first animal models of delirium during dementia and his research group published several influential papers in the areas of neuroinflammation, microglia, delirium and dementia (Biological Psychiatry, Journal of Neuroscience, Neurobiology of Aging, Nature Reviews Immunology, GLIA, Brain, Behavior & Immunity). Dr Cunningham has since taken up a permanent post as Assistant Professor in Neuroscience in TCD. His work for some years has concerned the impact of systemic inflammation on the normal and diseased brain. The interaction between prior neurodegenerative pathology and superimposed secondary insults in delirium and long-term cognitive decline is the major focus of his work, and his laboratory is funded by the US National Institutes of Health (NIH), Alzheimer’s Research UK and the Simons Foundation (NY).

Selected references:


Deputy director: Dr. Sophie Layé, PhD (Research Director, Head of NutriNeuro Department, Head of the international Lab OptiNutriBrain, Laval University (Québec, Canada), Bordeaux University, INRA, Bordeaux INP (France))

Sophie Layé is interested in understanding how nutrition influences emotional behavior and cognition through the activity of specific nutrients on neurons and/or microglia. In particular, she and her team, demonstrated the importance of dietary polyunsaturated fatty acid and their metabolites in the regulation of neuroimmune interactions and synaptic plasticity. These knowledges open new strategies to design nutritional and pharmacological approaches to protect the brain and limit the development of neuropsychiatric and cognitive disorders.

Selected References:


Deputy director: Dr. Andy Greenhalgh, PhD (University of Bordeaux, France)

Dr Andy Greenhalgh is neuroimmunologist and an Agreenskills+ Research Fellow at INRA, University Bordeaux. He obtained his PhD with Prof. Dame Nancy Rothwell at the University of Manchester, working on the role cytokines in brain ischaemia and haemorrhage. His postdoctoral work was performed at McGill University, Canada, in the laboratory Dr Sam David. Dr Greenhalgh’s fundamental research interests are focused the immune system’s role in central nervous system (CNS) injury and disease, more specifically, the role of inflammation after a physically traumatic event, such as a brain or spinal cord injury. He has made important contributions to the preclinical development of anti-inflammatory molecules for the treatment of stroke and is particularly interested in two cell-types involved in the immune response to CNS injury; microglia and macrophages. Microglia are the resident immune cell of the CNS, whereas macrophages infiltrate from the blood after CNS injury. Both cell types are thought to be to the recovery of brain and spinal cord tissue. Dr Greenhalgh’s work is now focusing on the interconnected role of microglia and macrophages and how lipid content and signaling could be crucial in their function.

Selected references:


Greenhalgh AD, Brough D, Robinson EM, Girard S, Rothwell NJ, Allan SM (2012) Interleukin-1 receptor antagonist is beneficial in rat subarachnoid haemorrhage by blocking haem driven inflammation. Disease Models & Mechanisms 6:823-33
Deputy director: Dr. Agnès Nadjar, PhD (University of Bordeaux, France)

Dr. Agnes Nadjar has been recruited as an Associate Professor at the University of Bordeaux in 2006. Her research falls within the field of immunopsychiatry. Since she integrated the NutriNeuro lab in 2011, she is leading a research axis aimed at elucidating the role of lipids in neuroimmune interactions with a particular interest in the physiology of microglia.

Agnes Nadjar co-authored 41 publications and is regularly invited to talk at national and international meetings. In recognition of the impact of her scientific production, she received several awards, including the award of merit from the "Fatty Acid and Cell Signaling Society" and the "prime d'excellence scientifique" (2012-2016; 2016-2020).

She serves has a reviewer for numerous peer-reviewed journals, grant applications, PhD and HDR defenses.

Agnes Nadjar also organized or co-organized scientific days, national or international meetings. She is an elected member of the National Council of the Universities (69th section) and participates to several scientific boards within and outside the University of Bordeaux.

Agnes Nadjar is also the general coordinator of the International Master of excellence Neurasmus (Erasmus Mundus label). This 2-year programme fosters cooperation between 5 higher education institutions in Europe and Canada with a view to creating poles of excellence and providing highly trained human resources.

Agnes Nadjar is the co-founder and scientific director at Scilight (www.scilight.eu), a scientific communication company that provides visual solutions to broadcast excellence in research. Their scientific animations, 3D models, illustrations and visual standards are tailored to bring forward results of scientists from the academic and private world.

Selected references:

