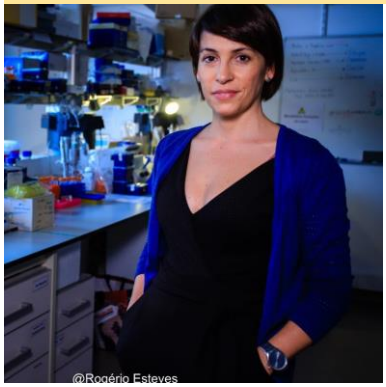
# Director & co-directors

## Luisa Lopes, PhD | University of Lisbon, Instituto de Medicina Molecular (iMM), Laboratory of "Neurobiology of Ageing & Disease" (Lisbon, Portugal)




Luísa V. Lopes (b. 1975, Lisbon, Portugal) studies the mechanisms inducing the "early-aging" of cognitive function, focusing on hippocampal circuitry and related behavior. She is a Biochemistry graduate from University of Lisbon (1998). During her PhD, carried out between the University of Lisbon, University of Cambridge, UK and the Karolinska Institute in Stockholm, she has detailed the role of a specific receptor for adenosine in the aged brain, the A2A, which affects glutamate release and cognition. In 2003, Luisa moved to Lausanne, Switzerland for a postdoc at the Nestlé Research Center, implementing new models to study the impact of chronic stress on memory and brain-gut interactions. In 2008, she joined the Instituto de Medicina Molecular-João Lobo Antunes in Lisbon as a staff scientist, and in 2013 became a Group Leader. Her team has pinpointed circadian disorders as a trigger for accelerated cognitive loss (Mol. Psychiatry, 2013; Scientific Reports, 2016)), established one of the underlying mechanisms for early synaptic degeneration in the hippocampus (Nature Neuroscience, 2017); and most recently, evidence of a neuro-immune link in short-term memory (Sci Immunol, 2019). She is currently focused on implementing novel ageing-equivalent models to study human synaptic function (Mol. Psychiatry 2018; Cell Rep 2019). Luisa has received public and private funding (FCT, Fritz Thyssen Foundation, EMBO, Bial, Santa Casa and EUH2020); she is a Mentor of the New York Academy of Sciences STEM program and founder of the Society for Neuroscience Lisbon Chapter. In 2019 she was one of the awardees of the Interstellar Initiative for Healthy Aging, promoted by the New York Academy of Sciences and Japan Agency for Medical Research and Development.

Website : imm.medicina.ulisboa.pt/investigation/laboratories/luisa-lopes-lab/#intro

*Selected publications:*

- ***Age-related shift in LTD is dependent on neuronal adenosine A2A receptors interplay with mGluR5 and NMDA receptors.*** *Mariana Temido-Ferreira, Diana G. Ferreira, Vânia L. Batalha, Inês Marques-Morgado, Joana E. Coelho, Pedro Pereira, Rui Gomes, Andreia Pinto, Sara Carvalho, Paula M. Canas, Laetitia Cuvelier, Valerie Buée-Scherrer, Emilie Faivre, Younis Baqi, Christa E. Müller, José Pimentel, Serge N. Schiffmann, Luc Buée, Michael Bader, Tiago F. Outeiro, David Blum, Rodrigo A. Cunha, Hélène Marie, Paula A. Pousinha and* ***Luísa V. Lopes*** *(2018)* ***Molecular Psychiatry,*** *doi: 10.1038/s41380-018-0110-9*
- ***α-Synuclein interacts with PrPC to induce cognitive impairment through mGluR5 and NMDAR2B.*** *Diana G. Ferreira, Mariana Temido-Ferreira, Hugo Vicente Miranda, Vânia L. Batalha, Joana E. Coelho, Éva M. Szegö, Inês Marques-Morgado, Sandra H. Vaz, Jeong Seop Rhee, Matthias Schmitz, Inga Zerr,* ***Luísa V. Lopes***** and Tiago F. Outeiro* (2017).* ***Nature Neuroscience*** *doi: 10.1038/nn.464*
- ***Novel Players in the Aging Synapse: Impact on Cognition.*** *Temido-Ferreira M, Coelho JE, Pousinha PA,* ***Lopes LV****. (2019) J Caffeine Adenosine Res. doi: 10.1089/caff.2019.0013.*

- ***The caffeine-binding adenosine A2A receptor induces age-like HPA-axis dysfunction by targeting glucocorticoid receptor function.*** *VL. Batalha, DG. Ferreira, JE. Coelho, JS. Valadas, R Gomes, MT emido-Ferreira, T Shmidt, Y Baqi, L Buée, CE. Müller, M Hamdane, TF. Outeiro, M. Bader, SH. Meijsing, G Sadri-Vakili, D Blum, and* ***Luísa V. Lopes*** *(2016).* ***Scientific Reports,*** *1;6:31493. doi: 10.1038/srep31493.*
- ***Exacerbation of C1q dysregulation, synaptic loss and memory deficits in tau pathology linked to neuronal adenosine A2A receptor****. Carvalho K, Faivre E, Pietrowski MJ, Marques X, Gomez-Murcia V, Deleau A, Huin V, Hansen JN, Kozlov S, Danis C, Temido-Ferreira M, Coelho JE, Mériaux C, Eddarkaoui S, Gras SL, Dumoulin M, Cellai L; NeuroCEB Brain Bank, Landrieu I, Chern Y, Hamdane M, Buée L, Boutillier AL, Levi S, Halle A,* ***Lopes LV****, Blum D..* ***Brain.*** *2019 Nov 1;142(11):3636-3654.*

## Cheryl GRADY, PhD | University of Toronto, Rotman Research Institute, Baycrest Centre (Baycrest, Canada)

Dr. Grady received her graduate training in experimental psychology at Boston University. She worked in the Laboratory of Neuroscience at the National Institute on Aging in Bethesda, Maryland, as a research psychologist and Chief of the PET Unit, until 1996. In 1996 she moved to Toronto to take up her current position at the Rotman Research Institute at Baycrest. Dr. Grady is a senior scientist at the Rotman, and was the Assistant Director of the Institute from 2004 to 2010. She is a Professor in the departments of Psychiatry and Psychology at the University of Toronto, and held the Tier 1 Canada Research Chair in Neurocognitive Aging from 2005-2018. In 2001 she was awarded the Justine and Yves Sergent Award for Women in Neuroscience, and in 2010 was the recipient of the Donald Stuss Award for Research Excellence. She was elected as a Fellow of the Royal Society of Canada in 2019. Her research uses neuroimaging techniques, such as functional MRI, to determine how the functional connectivity of various brain areas mediates cognition and how this connectivity is modified by age. She and her colleagues were the first to demonstrate that some brain areas are over-activated in older adults compared to younger adults, and this activity could serve a compensatory function in supporting memory and other cognitive processes.
Website : sites.google.com/site/gradylabgroup

*Selected publications:*

- *Grady CL, McIntosh AR, Horwitz B, Maisog J, Ungerleider LG, Mentis MJ, Pietrini P, Schapiro MB, Haxby JV. Age-related reductions in human recognition memory due to impaired encoding. Science, 1995, 269:218-221.*
- *Alain C, Arnott SR, Hevenor S, Graham, S, Grady CL. "What" and "where" in the human auditory system. Proceedings of the National Academy of Science, USA, 2001, 98:12301-12306.*
- *Garrett DD, Kovacevic N, McIntosh AR, Grady CL. Blood oxygen level-dependent signal variability is more than just noise. Journal of Neuroscience, 2010, 30:4914-4921.*
- *Grady CL, The cognitive neuroscience of aging. 2012, Nature Reviews Neuroscience, 13:491-505.*
- *Amer T, Giovanello KS, Nichol DR, Hasher L, Grady CL. Default Network Activity Supports Memory for Meaningful Associations in Younger and Older Adults. Cerebral Cortex, 2019, 29:4568–4579.*

## Nora ABROUS, PhD | Bordeaux Neurocampus, Neurocentre Magendie, Laboratory of "Neurogenesis and pathophysiology" (Bordeaux, France)

Nora Abrous is a research director at INSERM and is the head of the "Neurogenesis and Physiopathology" team at the Neurocentre Magendie. She obtained her PhD on intracerebral Dopaminergic (DA) grafts in the laboratory of Pr Le Moal in Bordeaux under the supervision of Dr JP Herman. With her PhD in her pocket, Nora Abrous spent two years in Cambridge, England, in Dr. Dunnett's laboratory, working on the topic of brain plasticity and repair of lesions by embryonic neuron implants. Upon her return, she created her own team in Bordeaux and focused her work on functional recoveries, whether spontaneous or induced by DA transplants. After a series of observations revealing the deleterious effects of DA grafts, she decided to abandon this line of research with no future in the treatment of Parkinson's disease. Nora Abrous began the second part of her career in the 1995's questioned by the hypothesis of the existence of nerve stem cells, which can give rise to new neurons in the adult brain. She directs her work towards a link between memory and the production of new neurons, despite the prevailing dogma that nerve cells in the adult brain do not renew themselves. This intuition proved her right, the production of new neurons is linked to cognitive aging. In addition, she analyzed the involvement of glucocorticoids and neurosteroids given their importance in the pathophysiology of aging and found that inhibition or stimulation of neurogenesis is one of the mechanisms by which glucocorticoids may fragilize and neurosteroids may protect, respectively, cognitive functions during aging. After demonstrating a causal relationship between adult hippocampal neurogenesis & relational memory and pattern separation, she revealed that adult hippocampal neurogenesis plays a pivotal role in the appearance of anxiety-like behavior and contributes to a higher vulnerability to cocaine addiction. In addition, her work focuses on shaping adult neurogenesis by deleterious (prenatal stress) and positive (learning) life events.
Website : www.bordeaux-neurocampus.fr/staff/nora-abrous

*Selected publications:*

- *KEMPERMANN G, GAGE FH, AIGNER L, SONG H, CURTIS MA, THURET S, KUHN HG, JESSBERGER S, FRANKLAND PW, CAMERON HA, GOULD E, HEN R, ABROUS DN, TONI N, SCHINDER AF, ZHAO X, LUCASSEN PJ, FRISÉN J. Human Adult Neurogenesis: Evidence and Remaining Questions. Cell Stem Cell, 2018, 23:25-30.*
- *MONTARON MF, CHARRIER V, BLIN N, GARCIA P & ABROUS DN. Resilience to cognitive aging is associated with responsiveness of dentate neurons generated throughout adult life. BiorXiv , 2018, 290676.*
- *DUPRET D, FABRE A, DÖBRÖSSY MD, PANATIER A, RODRÍGUEZ JJ, LAMARQUE S, LEMAIRE V, OLIET SHR, PIAZZA PV, ABROUS DN. Spatial learning depends on both the addition and removal of new hippocampal neurons PLos Biol, 2007, 8:e214.*
- *DRAPEAU E, MAYO W, AUROUSSEAU C, LE MOAL M, PIAZZA PV, ABROUS DN. Spatial memory performances of aged tats in the water maze predict levels of hippocampal neurogenesis. Proc Natl Acad Sci, U.S.A, 2003, 100:14385-14390 (direct submission, track II).*

- *ABROUS D.N., KOEHL M., LE MOAL M. Neural precursors cells: from network to physiology. Physiol. Rev., 2005, 85: 523-569.*