



Special Seminar

Oligodendroglia in Development and Multiple Sclerosis: Insights from Single-Cell and Spatial Omics

Gonçalo Castelo-Branco, PhD

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**FRIDAY, JANUARY 26, 2024
10:00 AM**

WILLIAM E. STAVERT AMPHITHEATRE, DOUGLAS HALL
DOUGLAS RESEARCH CENTRE, 6875 LASALLE BOULEVARD, MONTREAL

To join the meet the speaker session for trainees (lunch provided), please send a message to coordinator@adversitymentalhealth.com

Gonçalo Castelo-Branco

Professor Gonçalo Castelo-Branco is a Professor of Glial Cell Biology at the Department of Medical Biochemistry and Biophysics at Karolinska Institutet, Stockholm, Sweden. Prof. Castelo-Branco received his PhD in Medical Biochemistry in 2005, working on development of dopaminergic neurons and neural stem differentiation. He completed post-doctoral fellowships first at the Karolinska Institutet and then at the University of Cambridge, United Kingdom, working in neural and pluripotent stem cells and chromatin. Prof. Castelo-Branco started his research group in 2012, focusing on the molecular mechanisms regulating the epigenomic states of oligodendrocyte lineage cells in neuroinflammatory and demyelinating diseases such as multiple sclerosis (MS), using technologies such as single cell and spatial transcriptomics and epigenomics, among others. The long-term goal of his group is to build a solid platform of convergent knowledge and know-how on the epigenetics of (re)myelination and neuroinflammation, which will allow to establish innovative regenerative strategies for neuroinflammatory diseases such as MS. Prof. Castelo-Branco has received many prestigious awards and grants, including European Research Council Consolidator and Advanced Grants, the Swedish Society for Medical Research (SSMF) 100 years Jubileum Prize, the Royal Swedish Academy of Sciences Göran Gustafsson Prize 2021 in Medicine and the Hans Wigzell prize 2022. Prof. Castelo-Branco was elected in 2023 to the Nobel Assembly at Karolinska Institutet, that yearly awards the Nobel Prize in Physiology or Medicine.

Selected Publications

Multimodal chromatin profiling using nanobody-based single-cell CUT&Tag. Bartosovic M; Castelo-Branco G. NATURE BIOTECHNOLOGY. 2023;41(6):794-805

Spatial profiling of chromatin accessibility in mouse and human tissues. Deng Y; Bartosovic M; Ma S; Zhang D; Kukanja P; Xiao Y; Su G; Liu Y; Qin X; Rosoklija GB; Dwork AJ; Mann JJ; Xu ML; Halene S; Craft JE; Leong KW; Boldrini M; Castelo-Branco G; Fan R. NATURE. 2022;609(7926):375-383

Epigenomic priming of immune genes implicates oligodendroglia in multiple sclerosis susceptibility. Meijer M; Agirre E; Kabbe M; van Tuijn CA; Heskol A; Zheng C; Mendanha Falcão A; Bartosovic M; Kirby L; Calini D; Johnson MR; Corces MR; Montine TJ; Chen X; Chang HY; Malhotra D; Castelo-Branco G. NEURON. 2022;110(7):1193-1210.e13

Spatial-CUT&Tag: Spatially resolved chromatin modification profiling at the cellular level. Deng Y; Bartosovic M; Kukanja P; Zhang D; Liu Y; Su G; Enniful A; Bai Z; Castelo-Branco G; Fan R. SCIENCE. 2022;375(6581):681-686

Single-cell CUT&Tag profiles histone modifications and transcription factors in complex tissues. Bartosovic M; Kabbe M; Castelo-Branco G. NATURE BIOTECHNOLOGY. 2021;39(7):825-835

Altered human oligodendrocyte heterogeneity in multiple sclerosis. Jäkel S; Agirre E; Mendanha Falcão A; van Bruggen D; Lee KW; Knuesel I; Malhotra D; Ffrench-Constant C; Williams A; Castelo-Branco G. NATURE. 2019;566(7745):543-547

Disease-specific oligodendrocyte lineage cells arise in multiple sclerosis. Falcão AM; van Bruggen D; Marques S; Meijer M; Jäkel S; Agirre E; Samudyata; Floriddia EM; Vanichkina DP; Ffrench-Constant C; Williams A; Guerreiro-Cacais AO; Castelo-Branco G. NATURE MEDICINE. 2018;24(12):1837-1844

Oligodendrocyte heterogeneity in the mouse juvenile and adult central nervous system. Marques S; Zeisel A; Codeluppi S; van Bruggen D; Mendanha Falcão A; Xiao L; Li H; Häring M; Hochgerner H; Romanov RA; Gyllborg D; Muñoz Manchado A; La Manno G; Lönnerberg P; Floriddia EM; Rezayee F; Ernfors P; Arenas E; Hjerling-Leffler J; Harkany T; Richardson WD; Linnarsson S; Castelo-Branco G. SCIENCE. 2016;352(6291):1326-1329