

PhD Position in Neuroscience/Neuroendocrinology (ERC-funded project: Ghostbuster)

We are seeking a highly motivated PhD student researcher to join the Energy Balance and Obesity research team at the INSERM Unit U1215, Neurocentre Magendie in Bordeaux, France (<https://neurocentre-magendie.fr>).

Description: The overall aim of the team is to elucidate the neurobiological mechanisms underlying the regulation of feeding and systemic metabolism. The Ghostbuster project will elucidate the molecular and functional heterogeneity of hypothalamic neuroendocrine neurons using state-of-the-art single-cell molecular and functional profiling methods. We will 'hunt' novel populations of 'ghost' neurons in the neuroendocrine hypothalamus that are characterised by high functional plasticity and atypical identity. A multidisciplinary approach will be used to achieve this goal, combining lineage tracing strategies, nutritional interventions, single cell profiling of hypothalamic neurons, bioinformatic analysis and viral-based tools for targeting ghost cell-related genes. These strategies will be combined with behavioural, metabolic and hormonal assessments of mouse models of ghost neuron loss or gain of function under physiological conditions and following exposure to obesogenic diets.

Requirements: highly motivated candidate and strongly interested in experimental neuroscience, neurophysiology, neuroendocrinology, hypothalamus, energy balance regulation, and obesity.

Starting Date and Term: September 2024, 3-years PhD contract fully funded through an ERC funded project.

Applications: Applications should be sent directly to Dr Carmelo Quarta (carmelo.quarta@inserm.fr) and should include a CV, a letter of motivation and contact details for at least one professional reference.

Relevant publications:

1) Quarta C, Claret M, Zeltser LM, Williams K, Yeo GSH, Tschöp MH, Diano S, Brüning JC, Cota D. POMC neuronal heterogeneity in energy balance and beyond: an integrated view. (2021). *Nature Metabolism* 3(3):299-308

2) Saucisse N., Mazier W., Simon V., Binder E., Catania C, Zizzari P., Leon S., Quarta C, Clark S, Becker J.M., Yeo G.S.H., Merkle F.T., Wardlaw S.L., Harkany T., Massa F., Marsicano G., Cota D. POMC neurons functional heterogeneity relies on mTORC1 signaling. (2021). *Cell reports* 37(2):109800.

3) Quarta C, Fisette A, Xu Y, Colldén G, Legutko B, Tseng YT, Reim A, Wierer M, De Rosa MC, Klaus, Rausch R, Thaker V, Graf E, Strom TM, Poher AL, Gruber T, Le Thuc O, Cebrian-Serrano A, Kabra D, Bellocchio L, Woods SC, Pflugfelder GO, Nogueiras R, Zeltser L, Grunwald Kadow IC, Anne Moon A, García-Cáceres C, Mann M, Treier M, Doege CA, Tschöp MH. (2019). Functional identity of hypothalamic melanocortin neurons depends on Tbx3. *Nature Metabolism* 1(2):222-235

4) Castellanos-Jankiewicz A, Guzmán-Quevedo O, Fénelon SV, Zizzari P, Quarta C, Bellocchio L, Tailleux A, Charton J, Fernandois D, Henricsson M, Piveteau C, Simon V, Allard C, Quemener S, Guinot V, Hennuyer N, Perino A, Duveau A, Maitre M, Leste-Lasserre T, Clark S, Dupuy N, Cannich A, Gonzales D, Deprez B, Mithieux G, Dombrowicz D, Bäckhed F, Prevot V, Marsicano G, Staels B, Schoonjans K, Cota D. (2021). Hypothalamic bile acid-TGR5 signaling protects from obesity. *Cell Metabolism* S1550-4131(21)00175-3.