



Anita Maria Rominto

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Education

PHD IN NEUROSCIENCE – 01/11/2022 - ON GOING

University of Torino - Neuroscience Institute Cavalieri Ottolenghi (NICO)

INTERNATIONAL MASTER DEGREE IN NEUROSCIENCE – 05/09/2019 - 18/07/2022

University of Trieste, Italy

BACHELOR DEGREE IN BIOLOGY – 29/09/2015 - 28/02/2019

University of Parma, Italy

DIPLOMA DI LICEO CLASSICO – 2010 - 2015

Gian Domenico Romagnosi, Italy

Training and work experiences

PHD PROJECT – 01/11/2022 - ON GOING

Supervisor: Prof. Filippo Tempia, Prof. Eriola Hoxha

Institution: University of Torino, IT

Project title: Role of Glycogen Synthase Kinase-3 in prefrontal cortex neural alterations in mood disorders

Project description: Glycogen Synthase Kinase-3 (GSK3) is a partially active kinase highly expressed in the CNS and involved in many cellular processes fundamental for neural functioning and survival. Altered modulation of its activity through decreased inhibitory phosphorylation has been linked to mood disorders. The main brain region associated with mood disorders is the prefrontal cortex (PFC), the central domain for cognitive and executive functions. However, little is known about the neural alterations of the PFC in mood disorder. Using animal models of depression and whole-cell patch-clamp, I aim to investigate how and by which mechanisms a GSK3 dysregulation alters the neural function of the PFC and contributes to depression onset and progression.

PHD VISITING STAY – 08/01/2025 - 09/04/2025

Supervisor: Prof. Maximiliano J. Nigro

Institution: Kavli Institute for Systems Neuroscience, Trondheim, NO

Project description: The aim of this research stay was to gain training and experience on stereotaxic mouse brain surgery for viral injections and whole-cell patch-clamp recordings combined with optogenetics in brain slices.

MASTER DEGREE DISSERTATION PROJECT – 01/05/2021 - 17/05/2022

Supervisor: Armin Lak, PhD

Institution: University of Oxford, UK

Project title: Prefrontal cortex and decision-making: developing an economic gambling task in mice

Project description: The prefrontal cortex (PFC) is involved in decision-making, but appropriate tasks that resemble complex neuroeconomics decisions and that allow recordings of neural activity *in vivo* are poorly available in rodents. Here, I developed an economic gambling task with visual stimuli and recorded PFC neural activity while mice performed the task. Results show that a visual perceptual decision-making task is feasible in head-fixed mice, that they show a tendency toward risk-seeking behavior, and that neurons in PFC regions fire accordingly to the stimuli and choices presented.

Main activities and responsibilities:

My contribution to the project was to handle and train mice on the visual perceptual decision-making task and evaluate their performance. I recorded PFC activity by head-fixing mice during the task and using Neuropixels probes. I performed brain slice staining and acquired images of them at the fluorescence microscope, in order to align them with the Allen Mouse Brain Atlas and reconstruct the 3D position of probes in the brain and the regions recorded, through a MATLAB interface. I performed behavioral analysis with a script that I created on RStudio in order to evaluate the preference for the different choices and the reaction time.

Techniques and skills acquired:

Animal manipulation, head-fixing and training; electrophysiology *in vivo*; histology; fluorescence microscopy; probe localization and 3D brain reconstruction (MATLAB); behavioral analysis (RStudio), image editing (ImageJ, Illustrator).

ERASMUS+ TRAINEESHIP POST LAUREA – 30/05/2019 - 23/09/2019

Supervisor: Pier Francesco Ferrari, PhD

Institution: Institute for Cognitive Sciences - Marc Jeannerod, Lyon, FR

Project title: Early social adversity effects on macaque development

Project description: In order to simulate the early-life institutional deprivation that is associated with ADHD disorder later in childhood and adolescence, a group of monkeys was reared by the biological mother while the other group was reared by humans in a neonatal nursery. Then, the two groups were housed together and social and non-social experiments were performed to identify signs of ADHD-like disorder and to establish differences in the behavior and development of the two groups.

Main activities and responsibilities:

I analyzed previously recorded social and non-social experiments in order to look for signs of ADHD-like disorder and the differences in the behavior and development of the two groups. Furthermore, I contributed to another project involving electrophysiological recordings in the monkey premotor and motor cortex during a grasping motor task by helping train DeepLabCut software in recognizing the monkey's hand movement.

Techniques and skills acquired:

Video-analysis of behavioral tests (Excel); kinetic analysis of grasping behavior with machine learning (DeepLabCut).

BACHELOR DEGREE DISSERTATION PROJECT – 21/09/2018 - 20/12/2018

Supervisor: Andrea Sgoifo, PhD

Institution: University of Parma, IT

Project title: Depression induced via social isolation in female rats

Project description: Although depression is more prevalent in women than men, studies on depression have been predominantly conducted in male animals. Hence, I developed and tested an animal model of depression induced by prolonged social isolation in female rats, in order to investigate its physiological and behavioral effects and to find new therapeutic strategies. This study revealed that stress-inducing social isolation is an effective paradigm to induce a depression-like state in female rats. In 6 weeks, female rats developed characteristic signs of depression, such as increased immobility and failed escape behavior, anhedonia, increased HPA axis activity and decreased BDNF and AEA levels in the hippocampus.

Main activities and responsibilities:

I performed behavioral experiments for the assessment of a depressed-like state, such as the sucrose preference test and the forced swim test, and I monitored the basal locomotor activity and the heart rate using a radio telemetric device that I surgically implanted. Throughout the study, I collected blood samples for detecting corticosterone levels and performed vaginal smears to check the estrous cycle. After the sacrifice, I collected brain samples for the analysis of BDNF and AEA levels.

Techniques and skills acquired:

Behavioral tests (SPT, FST); blood sample collection; cell staining; optical microscopy, surgery.

Language skills

Mother tongue: Italian

Other language(s): English C1 (IELTS)

Scholarship awarded

FENS AND IBRO-PERC TRAVEL GRANT

Travel grant of 750 EUR to attend the Neural Circuit Development and Plasticity Course at the Utrecht Summer School, 10-14 July 2023, Utrecht, The Netherlands

PHD FELLOWSHIP FOR THE RESEARCH DOCTORATE IN NEUROSCIENCE - UNIVERSITY OF TURIN

Three years fellowship to study the neurophysiology of mood disorders at the Neuroscience Institute Cavalieri Ottolenghi (NICO), Turin, Italy

Publications and poster presentations

Rominto A M, Loddo M, Berrino L, Montarolo F, Hoxha E, Tempia F. Depression in mice causes decreased neuronal excitability and enhanced frequency adaptation in medial prefrontal cortex pyramidal neurons. Under revisions in *Scientific Reports*

Distinct representation of economic variables across regions and projections of the frontal cortex. Majumdar A, Ashcroft C, Fritsche M, Zatka-Haas P, Walker N, Bijoch L, Mistry L, Rominto A M, Duckworth-Essilfie T, Swann J, Molnar Z, Packer A M, Butt S, Lak A. bioRxiv 2024. Now accepted by Neuron

Montarolo, F., Rominto, A. M., Berrino, L., Bertolotto, A., Laezza, F., Tempia, F., & Hoxha, E. (2025). Deletion of Fgf14 confers resilience to basal and stress-induced depressive-like behavior and reduces anxiety in mice. *Translational psychiatry*

Oral communication Chronic social defeat stress reduces prefrontal cortex excitability in mice. Rominto A M, Loddo M, Berrino L, Montarolo F, Hoxha E, Tempia F. National meeting of PhD students in Neuroscience, SINS, Pisa 2025

Poster Depression in mice causes decreased neuronal excitability and enhanced frequency adaptation in medial prefrontal cortex pyramidal neurons. Rominto A M, Loddo M, Berrino L, Montarolo F, Hoxha E, Tempia F. 75th SIF national congress, Turin 2025

Poster Altered GSK3 and prefrontal cortex activity in a mouse model of depression. Rominto A M, Montarolo F, Berrino L, Hoxha E, Tempia F. National meeting of PhD students in Neuroscience, SINS, Naples 2024

Poster Reduced anxiety and resilience to depression induced by deletion of Fgf14, a physiological modulator of voltage-dependent Na⁺ channels. Rominto A M, Montarolo F, Tempia F, Hoxha E. 73th SIF national congress, Pisa 2023

Poster Probing prefrontal cortical signal during risky economic decisions in mice. Antara Majumdar, Caitlin Ashcroft, Lauren Strickland, Anita Maria Rominto, Simon Butt, Matthias Fritsche, Armin Lak. FENS forum, Paris 2022