



PERSONAL INFORMATION

Name and surname **PEDROTTI GIULIA**

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Nationality Italian

Date of birth 01/01/1995

WORK EXPERIENCE

- Date (from – to) OCTOBER 2021- PRESENT
- Name and address of employer University of Verona, Department of Diagnostic and Public Health – Section of Pharmacology
- Position held **PhD Student in “Neuroscience, Psychological and Psychiatric Sciences, and Movement Sciences”**
Supervisor: Prof. Ilaria Decimo
Co-Supervisor: Dott. Emanuela Bottani
- Main activities and responsibilities European project CureMILS “A reprogramming-based strategy for drug repositioning in patients with mitochondrial DNA- associated Leigh syndrome (MILS)”. Project number EJPRD2020-010. Coordinator: Dr. Alessandro Prigione (Department of General Pediatrics, Neonatology and Pediatric Cardiology, Duesseldorf University Hospital, Medical Faculty, Heinrich Heine University, Duesseldorf; Max Delbrueck Center for Molecular Medicine (MDC), Berlin); Team Leader: Dr. Emanuela Bottani.
Main activities: Evaluation of PDE5 inhibitors as reference drugs for MILS: Understanding the action mechanism of PDE5i on mitochondrial membrane potential (MMP) and mitochondrial biogenesis in MILS-NPCs carrying different mutations in MT-ATP6 gene. Characterization of complex V assembly and activity in disease-carrying cell lines.

Involvement in the project funded by the italian foundation A.M.Me.C.-Associazione malattie metaboliche congenite “Understanding the neuropathological phenotype of NUBPL-related disease in an in vitro 3D brain model and exploiting new therapeutic approaches”. PI: Emanuela Bottani, Caterina Garone, (Department of Medical and Surgical Sciences, University of Bologna).
Main activities: Setting up of gene knock down technology in murine brain organoids; metabolomic profile and neuronal characterization.

Telethon Spring Seed Grant 2020 “Targeting mitochondrial metabolism to promote full neural development in Allan Herndon Dudley syndrome (AHDS)” – Project Number Telethon_GSP20004_PAsMCT8006. PI: Ilaria Decimo; CO-PI: Emanuela Bottani, Giorgio Malpeli.
Main activities: Generation of murine cerebral organoid for modeling AHDS. Neural characterization by immunofluorescence, calcium imaging, gene expression; metabolic characterization by Seahorse analysis, western blot; miRNA profiling by NSG. Development of Pharmacological interventions to boost mitochondrial OXPHOS and fatty acid oxidation.

European project HERMES (hybrid Enhanced Regenerative Medicine Systems) - Project Number 824164. Coordinator: Gabriella Panuccio (IIT, Genova), Team Leader: Ilaria Decimo

Main activities development of brain organoids starting from mouse neural stem cells. Set up of organoids generation protocol, immunofluorescence characterization, gene expression analysis and assessment of functional activity.

- Date (from – to) JUNE 2020 - SEPTEMBER 2021
 - Name and address of employer University of Verona, Department of Diagnostic and Public Health – Section of Pharmacology, supervision of Prof. Decimo Ilaria
 - Position held **Research fellow (research scholarship)**
 - Main activities and responsibilities Telethon Spring Seed Grant 2020 “Targeting mitochondrial metabolism to promote full neural development in Allan Herndon Dudley syndrome (AHDS)” – Project Number Telethon_GSP20004_PAsMCT8006. Generation of murine cerebral organoid for modeling AHDS. Neural characterization by immunofluorescence, calcium imaging, gene expression; metabolic characterization by Seahorse analysis, western blot; miRNA profiling by NGS. Pharmacological treatment with Nicotinamide Riboside to boost mitochondrial metabolism.
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- Date (from – to) MARCH 2019 - MARCH 2020
 - Name and address of employer University of Verona, Department of Diagnostic and Public Health – Section of Pharmacology, supervision of Prof. Decimo Ilaria
 - Position held **Master’s Degree Internship student**
 - Main activities and responsibilities Development of brain organoids starting from mouse neural stem cells. Set up of organoids generation protocol, immunohistochemical characterization and assessment of functional activity.
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- Date (from – to) FEBRUARY 2017 – JULY 2017
 - Name and address of employer University of Brescia, DMMT – Section of Pharmacology, supervision of Prof. Maria Cristina Missale
 - Position held **Bachelor’s Degree Internship student**
 - Main activities and responsibilities Reprogramming of iPSCs from peripheral blood cells and differentiation into neurons.

EDUCATION AND TRAINING

- Date (from – to) 2017-2020
 - Title of qualification awarded **Master’s degree in MOLECULAR AND MEDICAL BIOTECHNOLOGY-**
Doctor in Molecular and Medical Biotechnology (LM9)
 - Thesis title “Developmental study of functional brain-region specific mouse organoids
 - Name and type of organization providing education and training University of Verona, Department of Diagnostic and Public Health.
Supervisor: Prof. Ilaria Decimo
 - Mark 110/110 cum laude and honorable mention
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- Date (from – to) 2014-2017
 - Title of qualification awarded **Bachelor’s degree in BIOTECHNOLOGY**
Doctor in Biotechnology (L2)
 - Thesis title “Differenziamento di cellule staminali pluripotenti indotte (iPS) da cellule di sangue umano in neuroni come modello di malattie neuropsichiatriche”
 - Name and type of organization providing education and training University of Brescia, DMMT
Supervisor: Prof. Maria Cristina Missale
 - Mark 110/110 cum laude
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- Date (from – to) 2009-2014
 - Title of qualification awarded **High School Diploma in Scientific Studies**
 - Name and type of organization providing education and training Liceo Annibale Calini, Brescia

- Mark 87/100

PUBLICATIONS

Ciarpella F, Zamfir RG, Campanelli A, Ren E, **Pedrotti G**, Bottani E, Borioli A, Caron D, Di Chio M, Dolci S, Ahtainen A, Malpeli G, Malerba G, Bardoni R, Fumagalli G, Hyttinen J, Bifari F, Palazzolo G, Panuccio G, Curia G, Decimo I. Murine cerebral organoids develop network of functional neurons and hippocampal brain region identity. *iScience*. 2021 Nov 15;24(12):103438. doi: 10.1016/j.isci.2021.103438. PMID: 34901791; PMCID: PMC8640475.

TECHNICAL COMPETENCES

CELL CULTURE AND CELL BIOLOGY EXPERTISE

- Isolation and in vitro culture of rodent primary cells: mouse embryonic (E14.5 and E16.5) neural stem cells (NSCs) from hippocampus tissue, meninges and the subventricular zone (SVZ), hippocampal stem cells from rat embryos (E18.5).

- Isolation and in vitro culture of Mouse Embryonic (E14.5) Fibroblast (MEF).

- in vitro culture of human NPCs primary cell lines.

- in vitro culture of human iPSCs

- in vitro culture and maintenance of established cell line like HEK and fibroblasts.

- development and characterization of brain organoid technology starting from mouse embryonic neural stem cells.

- transient transfection of synthetic oligonucleotides (shRNA); stable transduction of gene of interest and shRNAs by lentivirus.

- calcium imaging assay using Fluo4-AM dye.

- cellular preparation for Fluorescence Activated Cell Sorting (FACS)

- microplate reader-based cellular assays (ATP content, cell viability, lactate quantification)

MOLECULAR BIOLOGY EXPERTISE

-Lentivirus production.

- DNA/RNA extraction.

- real-time PCR.

- mtDNA content analysis with qPCR.

-ELISA.

HISTOLOGY TECHNIQUES

-CNS tissue and brain organoids fixation and cryosectioning in preparation of immunofluorescence staining.

- immunofluorescence.

- immunohistochemistry.

PROTEIN ANALYSIS TECHNIQUES

- protein extraction, quantification and western blot.

-mitochondrial extraction from cell, analysis of mitochondrial respiratory chain complexes through BNAGE and 2D-SDS PAGE.

OTHER INSTRUMENTS

-independent user of Seahorse instrument for metabolic analysis on cells.

-Independent user of Fortessa X-20 Flow Cytometer. Analysis with FlowJo software.

- Independent User of Fluorescence (Nikon Ti Eclipse) and confocal microscope (Zeiss LM710), with respective software.

ADDITIONAL INFORMATION: COMMUNICATION FOR SCIENTIFIC CONFERENCES

Lucidi B.; Ciarpella F.; **Pedrotti G.**; Santanatoglia C.; Rossi E.; Zamfir R.; Bottani E.; Decimo I. "Murine cerebral organoids to study neuronal maturation in Allan-Herndon-Dudley Syndrome (AHDS)" Submitted for presentation at SINS2023, Turin, 14-17 september 2023.

Rossi E.; Ciarpella F.; **Pedrotti G.**; Santanatoglia C.; Lucidi B.; De Tomi E.; Zamfir R.; Malerba G.; Malpeli G.; Bottani E.; Decimo I. "Bulk RNA sequencing analysis to follow the neuronal maturation of AHDS organoids" Submitted for presentation at SINS2023, Turin, 14-17 september 2023.

Pedrotti G*, Zink A., Santanatoglia C., Henke MT., Di Donfrancesco A., Brunetti D., Tiranti V., Schuelke M., Prigione A., Bottani E. "Sildenafil restores normal MMP in MILS-NPCs with impaired Complex V assembly and activity." Accepted for presentation at EuroMit Conference, Bologna, 11-15 June 2023. (* presenter)

Ciarpella F., **Pedrotti G.**, Santanatoglia C., Lucidi B., Rossi E., De Tomi E., Zamfir R., Malerba G., Malpeli G., Bottani E., Decimo I. "Targeting mitochondrial metabolism to promote neuronal maturation in AHDS: developing new therapeutic approaches in 3D mouse brain organoids". Presented at XXI Telethon Scientific Convention, Riva del Garda, 13-15 March 2023.

Pedrotti G*, Zink A., Decimo I., Brunetti D., Tiranti V., Prigione A., Bottani E. "Sildenafil ameliorates MMP hyperpolarization in MILS-NPCs lines carrying different MT-ATP6 mutations". Presented at Mitonice Conference, Nice, 15-17 September 2022. (* presenter)

Zamfir R., Ciarpella F., Campanelli A., Ren E., **Pedrotti G.**, Bottani E., Caron D., Di Chio M., Dolci S., Ahtiainen A., Malpeli G., Malerba G., Bardoni L., Fumagalli G., Hyttinen J., Bifari F., Palazzolo G., Curia G., Decimo I. "Wnt3a supplementation induces specific hippocampal signature in murine brain organoids". Poster presented at FENS 2022.

Ciarpella F., Zamfir R., Campanelli A., Ren E., **Pedrotti G.**, Bottani E., Borioli A., Caron D., DiChio M., Dolci S., Ahtiainen A., Malpeli G., Malerba G., Bardoni R., Fumagalli G., Hyttinen J., Bifari F., Palazzolo G., Panuccio G., Curia G., Decimo I. "Development of robust and reproducible murine brain organoids endowed with networks of functional neurons and specific brain-region signature". Poster presented at Society of Neuroscience (SFN) 2021.

Ciarpella F., Zamfir R., Campanelli A., Sissi D., Di Chio M., Patuzzo C., Ren E., Bardoni R., **Pedrotti G.**, Loris M., Fumagalli G., Ahtiainen A., Malerba G., Hyttinen J., Panuccio G., Palazzolo G., Curia G., Decimo I. "Development of mouse hippocampal organoids". Federation of European Neuroscience Societies (FENS) forum; submitted, presented on 11-15 July 2020.

Ciarpella F., Zamfir R., Campanelli A., Di Chio M., **Pedrotti G.**, Dolci S., Mannino L., Fumagalli G., Curia G., Panuccio G., Palazzolo G., Decimo I. "Generation of 3D brain organoids to recapitulate hippocampal structure" Presented at European Organoid Symposium (EOS), Milan, 23-24 September 2019.

**ADDITIONAL INFORMATION:
SCIENTIFIC AFFILIATIONS**

Member of European Society for Mitochondrial Research and Medicine (E-Mit)

**ADDITIONAL
INFORMATION: MENTORING**

Academic year 2022-2023: Supervision of 1 student of Master's degree thesis in Molecular and Medical Biotechnology, University of Verona: "Characterization of patient-derived neural precursor cells and pre-clinical and pharmacological approaches for Maternally Inherited Leigh Syndrome".
Academic year 2021-2022: Supervision of 1 student of Master's degree thesis in Molecular and Medical Biotechnology, University of Verona: "T3-mediated transcriptional and metabolic regulations during murine cerebral organoid development".

**ADDITIONAL INFORMATION:
PERSONAL SKILLS**

MOTHER TONGUE

ITALIAN

OTHER LANGUAGE

ENGLISH

- Understanding
- Speaking
- Writing

C1
C1
C1

PERSONAL PROFILE

Availability to travel and meet new people; good entrepreneurial spirit and initiative, good team-working skills, and ability to plan and organize. Precise, and highly motivated. Always open to new working experiences and professional improvement.

COMPUTER SKILLS

PCs running Microsoft Windows and iOS; Word, Excel, Power Point, Adobe Acrobat Writer, Adobe Photoshop, ImageJ, GIMP 2.0, Image Lab, PRISM (GraphPad), FlowJo, Zen blue, audio processing software (Studio One 4, Garageband).

DRIVING LICENSE

B driving license

I hereby authorize the use of my personal data in accordance with the GDPR 679/16 - "European regulation on the protection of personal data"

Verona, April, 2023

Giulia Pedrotti

