OMB No. 0925-0001 and 0925-0002 (Rev. 12/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
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NAME: Andrea Cavaliere

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: PhD Student – Senior Fellowship

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Istituto Statale " E. Marini", Amalfi (SA)	Scientific Diploma	09/2007	07/2012	Scientific
Università degli Studi di Perugia, Perugia (PG)	Bachelor's Degree	10/2012	02/2016	Biotechnology
Università degli Studi di Pavia, Pavia (PV)	Master's Degree	10/2016	03/2019	Neurobiology
Università degli studi Milano Bicocca, Milan (MI)	PhD	10/2020	On going	Translational and Molecular Medicine

A. Personal Statement

I graduated with a Bachelor's degree in Biotechnology and then pursued a Master's degree in Neurobiology to further my studies in a field of great interest to me. During my master's thesis training, I began working at the Carlo Besta Neurological Institute with Dr. Tiranti's group. This experience allowed me to develop skills in cell biology, specifically in the utilization of induced pluripotent cells. Subsequently, I spent a year as a junior fellow in Dr. Marina Mora's group at the same institute, where I furthered my expertise in molecular biology and deepened my knowledge of Next Generation Sequencing techniques. Since 2020, I have been enrolled in a PhD program, once again working with Dr. Tiranti's group. Currently, my primary research focus is on understanding the pathomechanisms underlying LHON syndrome using induced pluripotent stem cells (iPSCs) derived from affected patients. Given the iPSC's ability to differentiate into various cell types, my work has centered around generating Retinal Ganglion Cells, retinal organoids, and potentially thalamic organoids in the future. This project has been made possible through the three-year Starting Grant I received from the Italian Ministry of Health.

B. Positions, Scientific Appointments and Honors

Positions

2023 – 2026: Principal Investigator of the project "LHON's engineered hiPSCs using CRISPR/Cas9 technology to create a fluorescent retinal reporter: travel through the optic nerve." – SG – 2021 – 12374454
2020 – 2023: Senior Fellowship as a researcher on project "REtinal ganglion cells and ORganoids from Inherited Optic Neuropathies: light on pathogenesis to fight blindness (REORION Project)"
2019 – 2020: Junior Fellowship as a researcher on project "Genetically or autoimmune-based neuromuscular diseases: molecular characterisation and study of pathogenetic mechanisms in cellular or experimental models"

Honors

2022: Winner of a 3-years Starting Grant funding by Italian Minister of Health
2019: Virtual Poster Presenter, AIM (Associazione Italiana Miologia)

C. Contributions to Science

- During my research in Dr Tiranti's group, I participated in the development and subsequent analysis of cellular models to understand the pathomechanisms underlying LHON and Pearson's Syndrome.

*1- Peron C, Mauceri R, Iannielli A, **Cavaliere A**, Legati A, Rizzo A, Sciacca FL, Broccoli V, Tiranti V. Generation of two human iPSC lines, FINCBi002-A and FINCBi003-A, carrying heteroplasmic macrodeletion of mitochondrial DNA causing Pearson's syndrome. Stem Cell Res. 2021 Jan 4;50:102151. doi: 10.1016/j.scr.2020.102151. Epub ahead of print. PMID: 33434818.*

*2- Peron C, Maresca A, **Cavaliere A**, Iannielli A, Broccoli V, Carelli V, Di Meo I, Tiranti V. Exploiting hiPSCs in Leber's Hereditary Optic Neuropathy (LHON): Present Achievements and Future Perspectives. Front Neurol. 2021 Jun 8;12:648916. doi: 10.3389/fneur.2021.648916. PMID: 34168607; PMCID: PMC8217617.*

*3- **Cavaliere A**, Marchet S, Di Meo I, Tiranti V. An In Vitro Approach to Study Mitochondrial Dysfunction: A Cybrid Model. J Vis Exp. 2022 Mar 9;(181). doi: 10.3791/63452. PMID: 35343952.*

*4- Danese A, Patergnani S, Maresca A, Peron C, Raimondi A, Caporali L, Marchi S, La Morgia C, Del Dotto V, Zanna C, Iannielli A, Segnali A, Di Meo I, **Cavaliere A**, Lebiedzinska-Arciszewska M, Wieckowski MR, Martinuzzi A, Moraes-Filho MN, Salomao SR, Berezovsky A, Belfort R Jr, Buser C, Ross-Cisneros FN, Sadun AA, Tacchetti C, Broccoli V, Giorgi C, Tiranti V, Carelli V, Pinton P. Pathological mitophagy disrupts mitochondrial homeostasis in Leber's hereditary optic neuropathy. Cell Rep. 2022 Jul 19;40(3):111124. doi: 10.1016/j.celrep.2022.111124. PMID: 35858578; PMCID: PMC9314546.*

- During my research activities in Dr Mora and Dr Maggi's group, I was involved in the analysis of nuclear DNA variants causing muscle diseases using NGS.

*1- Iannibelli E, Gibertini S, Cheli M, Blasevich F, **Cavaliere A**, Riolo G, Ruggieri A, Maggi L. VCP-related myopathy: a case series and a review of literature. Acta Myol. 2023 Mar 31;42(1):2-13. doi: 10.36185/2532-1900-244. PMID: 37091525; PMCID: PMC10115396.*

D. Scholastic Performance

YEAR	COURSE TITLE	GRADE
2016	Biotechnology	101/110
2019	Neurobiology	110/110 cum laude

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