BIOGRAPHICAL SKETCH

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NAME: Valeria Tiranti

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

POSITION TITLE: Associate Professor, Foundation IRCCS Neurological Institute C. Besta, Milan, Italy

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)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Milan	BSc	10/1989	Biological Sciences
University of Milan	Medical Specialization	07/2001	Medical Genetics

A. Personal Statement

I have a long−standing expertise in mitochondrial and metabolic disorders, including identification of disease genes, biochemical evaluation of respiratory chain activities, molecular and cellular biology, and identification of pathogenic mechanisms of diseases. My group performed the characterization of different mouse models and attempted pharmacological treatments in some of them. Recently we started a series of experiments devoted to the generation of induced pluripotent stem cells (iPSCs) derived neurons from fibroblasts of patients affected by neurodegenerative diseases (NBIA) and genetic optic atrophy (LHON and DOA). The main focused of my research is to understand the role of mitochondria and to define metabolomics profiling in neurodegeneration.

B. Positions and Honors

Positions and Employment

2022-present Deputy director of the Scientific Director, Fondazione IRCCS Istituto Neurologico C. Besta, Milan, Italy
2020-present Head of the Functional Department of Experimental Neuroscience, Fondazione IRCCS Istituto Neurologico C. Besta, Milan, Italy
2018-present Responsible for the Unit of Molecular Pathology of Mitochondrial Disorders
2002-present Research Associate Professor (Dirigente Biologo), Unit of Molecular Neurogenetics, Foundation IRCCS Neurological Institute C. Besta, Milan, Italy
2003-present Faculty member of the DIMET PhD program (Translational and Molecular Medicine, http://www.dimet.org/), University of Milano Bicocca, Milan Italy

Other Experience and Professional Memberships

2017 National Academic Qualification as Associate Professor for Medical Genetics
2017 National Academic Qualification as Associate Professor for Genetics
2014 National Academic Qualification as Associate Professor for Applied Biology
2008 – present Scientific Board of the Foundation IRCCS Neurological Institute C. Besta

Honors

1995 "Best Presentation" award at the 4° Meeting of the European Neurological Society
1998 Young Researcher Award at the 1st National Congress of the Italian Society of Human Genetics (SIGU)

2004 Honourable Mention San Raffaele H Research for the paper published on Am J Hum Genet
"Ethylmalonic encephalopathy is caused by mutations in ETHE1, a gene encoding a mitochondrial matrix protein".

C. Contributions to Science

I originally identified or contributed to the identification of new disease genes responsible for mitochondrial and neurodegenerative disorders (SURF1, ANT1, TWINKLE, ETHE1, MPV17, FASTKD2, C19ORF12, CoASY, SLC39A14, MECR, SLC25A10) and I identified and characterized novel mutations in already known genes (POLG, EFG1, EF-Tu, PUS1, COX15, SQSTM1/p62, PSEN-1) as well as in the mitochondrial DNA (mtDNA). A relevant discovery in my career was the identification of the SURF1 gene as the genetic cause of Leigh Syndrome associated with COX deficiency (Tiranti et al, Am.J.Hum.Genet, 1998). Then, I identified the gene responsible for a severe infantile metabolic syndrome, named Ethylmalonic Encephalopathy (EE). Then I discovered the pathogenetic mechanism underlining this devastating disorder (Tiranti et al, Nat Med 2009). This discovery was really crucial since it led to the identification of possible pharmacological therapeutic approaches in patients (Viscomi et al, Nat Med 2010) and, recently, of liver transplant in a baby patient affected by EE with encouraging results, opening concrete therapy for this devastating disorder (Dionisi-Vici et al., Brain 2016). My new studies concerned neurodegenerative disorders associated with brain iron accumulation (NBIA syndromes), focused on the PKAN form (Pantothenate Kinase Associated neurodegeneration) due to mutations in a gene coding for a mitochondrial protein. I characterized the mitochondrial profile in this disorders using iPSC derived neurons (Orellana et al, EMBO Mol Med 2016) and mouse models (Di Meo et al, Sci. Rep. 2017) and performed a metabolomics approach in plasma and fibroblasts derived from patients (Leoni et al, MGM 2012; Aoun et al, MGM 2017). We recently produced and characterized iPSC, neuronal precursors and neurons for mitochondrial optic neuropathies (MONs), the major being Leber's hereditary optic neuropathy (LHON) and dominant optic atrophy (DOA). My goal is to investigate pathogenic mechanisms in the disease target cells, the retinal neurons, and test therapeutic strategies.
The complete list of publication is available at:
https://www.ncbi.nlm.nih.gov/pubmed/?term=Tiranti+V

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

-Telethon-Italy 2016-2019
Implementation of human neuronal cultures and mouse models of Pantothenate kinase 2 deficiency to investigate pathogenic mechanisms of iron-related neurodegeneration and evaluate Coenzyme A therapeutic efficacy.
A specific set of experiment is dedicated to understand how mitochondrial dysfunction contributes to neurodegeneration.
Role: Co-Investigator

-Italian Ministry of Health (Current Research) 01/01/2017-31/12/12019
Investigation of the pathogenic mechanisms involved in mitochondrial optic neuropathies through the implementation of cellular models
This project is dedicated to the generation of hiPSCs derived neurons and retinal ganglion cells from LHON and DOA patients.
Role: PI

-Lombardy project for R&D 2017-2019
GenePark: development and validation of innovative cellular models for Parkinson's disease with human neurons derived from reprogrammed stem cells for the pharmaceutical and biotechnological industry.
Role: Co-Investigator

Completed Research Support

-Grant from AISNAF Foundation 2016-2017
Therapeutic approaches in PKAN experimental mouse model
Role: PI

-Marie Curie Initial Training Networks (ITN) Call:
FP7-PEOPLE-2012-ITN, MEET
(Mitochondrial European Educational Training) 2014-2017

This project translated scientific and technical advances of eight world-leading basic science and clinical centers of excellence in mitochondrial field into education and training in fundamental and clinically oriented aspects of mitochondrial medicine.
Role: Co-Investigator

-TIRCON, FP7 project 2011-2015

This project established a registry of patients and a biobank; performed metabolomics analysis; discovered new drugs; and carried out clinical trial for childhood-onset neurodegenerative diseases.
Role: Co-Investigator