

BIOGRAPHICAL SKETCH

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NAME Veronica Ghiglieri		POSITION TITLE Associate professor	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Cagliari	B.Sc and Master degree	2000	Biological Sciences
University of Rome Tor Vergata	Ph.D.	2007	Neuroscience

A. Personal Statement

My research is focused on the behavioral and electrophysiological characterization of different experimental models of movement disorders. After a first experience with in vivo extracellular recordings in anesthetized and in awake head-restrained and in freely-moving rats, I moved to in vivo and ex vivo electrophysiology to investigate how striatal and hippocampal synaptic plasticity change in neurological conditions and in neurodegenerative diseases, including Parkinson's disease (PD), Huntington's disease, stroke, epilepsy, Down syndrome.

My PhD project was aimed at characterizing the electrophysiological profile of a genetic model of epilepsy lacking the presynaptic protein Bassoon, and I was able to describe the striatal cell-type-specific plastic changes that occur in an early-onset epileptic syndrome. These changes correlate with decreased procedural learning, morphological alterations of dendritic spines in the striatal spiny projection neurons and altered distribution of BDNF receptor trkB in different striatal populations. I am interested in the role of interneurons and glial cells in the striatal microcircuitry and the behavioral correlates of different types of plasticity expressed in distinct neuronal populations.

In the last years I have gained experience in generating and validating experimental models of PD and L-Dopa-induced dyskinesias (LIDs), in which I am investigating the early mechanisms of striatal dysfunctions. My research focuses on identifying structural and functional markers of disease and deciphering the molecular and cellular correlates of prodromal behavioral alterations in toxin-based and genetic models of PD. The main aim is to optimize the use of pharmacological and non-pharmacological approaches (transcranial magnetic stimulation, treadmill exercise, environmental enrichment) to counteract neurodegeneration and reduce motor and non-motor symptoms, thus limiting the emergence of side effects of current therapies.

B. Positions and Honors

▪ Positions and Employment

- 2001 – 2005: Visiting fellow at the Laboratory of Neurophysiological Pharmacology Section, Experimental Therapeutics Branch, NINDS, National Institutes of Health, Bethesda, MD – USA (Director Dr. Judith R. Walters).
- 2005 - 2007: Ph.D student at the University of Tor Vergata c/o Laboratory of Neurophysiology, IRCCS Santa Lucia Foundation, Rome, Italy (Director Prof. Paolo Calabresi).
- April 2006 - September 2009: Research fellow at the Laboratory of Neurophysiology, Santa Lucia Foundation, Rome, Italy

- October 2009-December 2012: Postdoctoral fellow at the Laboratory of Neurophysiology, Santa Lucia Foundation, Rome, Italy within the EU project: European Community contract number 222918 (REPLACES) FP7 - Thematic priority HEALTH
- December 2012 - November 2016: Postdoctoral Fellow and PI on MOH-funded project, Laboratory of Neurophysiology, Santa Lucia Foundation, Rome, Italy.
- June 2014 – June 2019: Researcher fellow/Adjunct Professor in Psychobiology, Dept. of Philosophy, Social, Human and Educational Sciences, University of Perugia, Perugia, Italy.
- December 2019 – June 2020: Research Fellow, Dept. of Medicine, University of Perugia, Perugia, Italy (within research agreement with Fondazione Santa Lucia IRRCS, Rome, Italy).
- July 2020 – current: Associate professor in Physiology, University of San Raffaele, Rome
- March 2016 – current: extramural member of the Disciplinary Committee of the University of Rome “La Sapienza”, for evaluation of faculty misconduct and violations of discipline code.

▪ Other Experience and Professional Memberships

- 2001-present: Member of the Society for Neuroscience (SfN)
- 2005-present: Member of the Federation of European Neuroscience Societies (FENS).
- 2005-present: Member of the Italian Society of Neuroscience (Società Italiana di Neuroscienze, SINS).
- 2020-present: Member of the Movement Disorders Society/Italian Society of Neuroscience (MDS).

▪ Honors/Awards

- June 2001: Fogarty International Center Fellowship Award - Experimental Therapeutics Branch, NINDS, National Institutes of Health, Bethesda, MD – USA.
- November 2004: PhD student Fellowship Award - University of Rome Tor Vergata, Rome – Italy.
- March 2018: "Fresco Basic Science Research" Award - Marlene and Paolo Fresco Institute for Parkinson's and Movement Disorders and New York University Langone Medical Center, New York City, NY – USA.

C. Selected Peer-reviewed Publications (*15 best peer-reviewed publications, § corresponding author*)

1. Natale G, Pignataro A, Marino G, Campanelli F, Calabrese V, Cardinale A, Pelucchi S, Marcello E, Gardoni F, Viscomi MT, B. Picconi B, Ammassari-Teule M, Calabresi P, Ghiglieri V§. (2021) Transcranial magnetic stimulation exerts "rejuvenation" effects on corticostriatal synapses after partial dopamine depletion. *Mov Disord*, accepted article in production (doi: 10.1002/mds.28671).
2. Calabrese V, Di Maio A, Marino G, Cardinale A, Natale G, De Rosa A, Campanelli F, Mancini M, Napolitano F, Avallone L, Calabresi P, Usiello A, Ghiglieri V§, Picconi B. (2020) Rapamycin, by inhibiting mTORC1 signaling, prevents the loss of striatal bidirectional synaptic plasticity in a rat model of L-DOPA induced dyskinesia. *Frontiers Aging Neurosci* 12:230.
3. Mineo D, Cacace F, Mancini M, Vannelli A, Campanelli F, Natale G, Marino G, Cardinale A, Calabresi P, Picconi B, Ghiglieri V§. (2019) Dopamine drives binge-like consumption of a palatable food in experimental parkinsonism. *Mov Disorders* 34(6):821-831.
4. Ghiglieri V§, Calabrese V, Calabresi P. (2018) Alpha-Synuclein: From Early Synaptic Dysfunction to Neurodegeneration. *Front Neurol*. 9:295.
5. Cacace F, Mineo D, Viscomi MT, Latagliata EC, Mancini M, Sasso V, Vannelli A, Pascucci T, Pendolino V, Marcello E, Pelucchi S, Puglisi-Allegra S, Molinari M, Picconi B, Calabresi P, Ghiglieri V§. (2017) Intermittent theta-burst stimulation rescues dopamine-dependent corticostriatal synaptic plasticity and motor behavior in experimental parkinsonism: possible role of glial activity. *Mov Disord* 32(7):1035-1046.
6. Calabresi P, Pisani A, Rothwell J, Ghiglieri V, Obeso JA, Picconi B. (2016) Hyperkinetic disorders and loss of synaptic downscaling. *Nat Neurosci* 19(7):868-75.

7. Ghiglieri V, Napolitano F, Pelosi B, Schepisi C, Migliarini S, Di Maio A, Pendolino V, Mancini M, Sciamanna G, Vitucci D, Maddaloni G, Giampà C, Errico F, Nisticò R, Pasqualetti M, Picconi B, Usiello A. (2015) Rhes influences striatal cAMP/PKA-dependent signaling and synaptic plasticity in a gender-sensitive fashion. *Sci Rep* 5:10933.
8. Calabresi P, Picconi B, Tozzi A, Ghiglieri V, Di Filippo M. (2014). Direct and indirect pathways of basal ganglia: a critical reappraisal. *Nature Neuroscience* 17(8):1022-30.
9. Ghiglieri V, Bagetta V, Pendolino V, Picconi B, Calabresi P. (2012) Corticostriatal Plastic Changes in Experimental L-DOPA-Induced Dyskinesia. *Parkinsons Dis.* 2012:358176.
10. Ghiglieri V, Pendolino V, Sgobio C, Bagetta V, Picconi B, Calabresi P. (2012) Theta-burst stimulation and striatal plasticity in experimental parkinsonism. *Exp Neurol.* 236(2):395-8.
11. Ghiglieri V, Sgobio C, Costa C, Picconi B, Calabresi P. (2011) Striatum-hippocampus balance: from physiological behavior to interneuronal pathology. *Prog Neurobiol.* 94(2):102-14.
12. Calabresi P, Di Filippo M, Ghiglieri V, Tambasco N, Picconi B (2010) Levodopa-induced dyskinesias in patients with Parkinson's disease: filling the bench-to bedside gap. *Lancet Neurol.* 9(11):1106-17.
13. Ghiglieri V, Sgobio C, Patassini S, Bagetta V, Fejtova A, Giampà C, Marinucci S, Heyden A, Gundelfinger ED, Fusco FR, Calabresi P, Picconi B. (2010) TrkB/BDNF-dependent striatal plasticity and behavior in a genetic model of epilepsy: modulation by valproic acid. *Neuropsychopharmacology.* 35(7):1531-40.
14. Ghiglieri V, Picconi B, Sgobio C, Bagetta V, Barone I, Paille' V, Di Filippo M, Polli F, Gardoni F, Altmann W, Gundelfinger ED, De Sarro G, Bernardi G, Ammassari-Teule M, Di Luca M, Calabresi P. (2009). Epilepsy-induced abnormal striatal plasticity in Bassoon mutant mice. *Eur J Neurosci.* 29(10):1979-93.
15. Gardoni F, Picconi B, Ghiglieri V, Polli F, Bagetta V, Bernardi P, Cattabeni F, Di Luca M, Calabresi P. (2006) A critical interaction between NR2B and MAGUK in L-DOPA induced dyskinesia. *J Neurosci* 26(11):2914-22.

D. Research Support

▪ Ongoing Research Support

- March 2018-ongoing, Marlene and Paolo Fresco Institute for Parkinson's and Movement Disorders at New York University Langone Medical Center "Basic Science Research Grant with Fresco Network of Excellence Italy Sites". Project title: "Effects of transcranial magnetic stimulation on dopamine levels management in a model of Parkinson's Disease and L-Dopa-induced dyskinesia". Role: Principal investigator. Amount: \$225.000,00 (USD).

▪ Completed Research Support

- Italian Ministry of Health (Ministero della Salute) "Ricerca Finalizzata – Giovani Ricercatori 2010" Grant No. GR-2010-2316671. Project title: Functional and structural changes induced by repetitive transcranial magnetic stimulation on corticostriatal pathway in models of Parkinson's disease and LID. Role: Principal investigator. Amount: € 196.500,00.
- Italian Ministry of Education, University and Research (Ministero dell'Istruzione, dell'Università e della Ricerca, MIUR) "FIRB, futuro in ricerca 2013" Grant No. RBF13S4LE_002. Project title: Involvement of mTORC1 activation in striatal maladaptive changes underlying L-Dopa-induced dyskinesia. Role: Research Unit Leader. Amount: €251.410,00 (to research unit); €790.821,00 (whole project).