Eros Quarta

Post-doctoral fellow ·

Dept. of Physiology and Pharmacology, Sapienza University of Rome

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Education

University of Florence — *Florence, Italy*
PhD in Biomedical Sciences (Physiology) — *20-03-2015*
- Advisor: Prof. Diego Minciacchi

National Institutes of Health — *Frederick, MD, USA*
Graduate Partnership Programme — *2012-2014*
- Advisor: Dr. Lino Tessarollo

University of Florence — *Florence, Italy*
BSc & MSc in Human Movement Sciences — *2009, 2011*
- Advisor: Prof. Diego Minciacchi

Paris Descartes University — *Paris, France*
Erasmus and Erasmus Placement — *2009-2011*
- Human Motor Control
- Research advisor: Prof. Sylvain Hanneton

Fachoberschule für Sozialwesen — *Munich, Germany*
High School Diploma — *2005*

Main Research Experience

2021-	**Post-Doctoral Fellowship**, Dept. of Physiology and Pharmacology. Sapienza University of Rome. PI Prof. A Battaglia-Mayer
09/2020-02/2021	**Short-term Fellowship**, Dept. of Experimental and Clinical Medicine, University of Florence (UniFi). PI Prof. D Minciacchi
05/2016-04/2020	**Post-Doctoral Fellowship**, Dept. of Physics and Astronomy and European Laboratory for Non-linear Spectroscopy, UniFi. PI Prof. FS Pavone
03/2016-10/2015	**Short-term Fellowship**, Dept. of Experimental and Clinical Medicine, University of Florence (UniFi). PI Prof. MA Bagni

Publications

Published

Novembre G, Lacal I, Benusiglio D, **Quarta E**, Schito A, Grasso S, Caratelli L, Caminiti R, Battaglia-Mayer A, Iannetti GD. A cortical mechanism linking saliency detection and motor reactivity in rhesus monkeys. bioRxiv. doi.org/10.1101/2023.01.31.526437.

Quarta E, Scaglione A, Lucchesi J, Sacconi L, Allegra Mascaro AL, Pavone FS. 2022. Distributed and localized dynamics emerge in the mouse neocortex during reach-to-grasp behavior. J Neurosci. JN-RM-0762-20. doi: 10.1523/JNEUROSCI.0762-20.2021.

Bravi R, Caputo S, Jayousi S, Martinelli A, Biotti L, Nannini I, Cohen EJ, **Quarta E**, Grasso S, Lucchesi G, Righi G, Del Popolo G, Mucchi L, Minciacchi D. 2021. An inertial measurement unit-based wireless system for shoulder motion assessment in patients with cervical spinal cord injury: A validation pilot study in a clinical setting. Sensors. 21(4):1057. doi: 10.3390/s21041057.

Quarta E, Cohen EJC, Bravi R, Minciacchi D. 2020. Future portrait of the athletic brain: mechanistic understanding of human sport performance via animal neurophysiology of motor behavior. Front. Syst. Neurosci. doi: 10.3389/fnsys.2020.596200.

Quarta E, Bravi R, Minciacchi D, Cohen EJC. Circle drawing and tracing dataset for evaluation of fine motor control. Data Brief. 35:106763. doi: 10.1016/j.dib.2021.106763.

Quarta E, Fulgenzi G, Bravi R, Cohen EJ, Yanpallewar S, Tessarollo L, Minciacchi D. 2018. Deletion of TrkB.T1 restores the number of CA1 parvalbumin-positive neurons and rescues long-term potentiation in pre-symptomatic mSOD1(G93A) ALS mice. Mol Cell Neurosci. 89:33-41. doi: https://doi.org/10.1016/j.mcn.2018.03.010.

Cohen EJ, **Quarta E**, Bravi R, Granato A, Minciacchi D. 2017. Neural plasticity and network remodeling: from concepts to pathology. Neuroscience. 344: 326-345. doi: 10.1016/j.neuroscience.2016.12.048.

Yanpallewar S, Wang T, Koh DC, **Quarta E**, Fulgenzi G, Tessarollo L. 2016. Nedd4-2 haploinsufficiency causes hyperactivity and increased sensitivity to inflammatory stimuli. Sci Rep. 6:32957. doi: 10.1038/srep32957.

Quarta E, Bravi R, Scambi I, Mariotti R, Minciacchi D. 2015. Increased anxiety-like behavior and selective learning impairments are concomitant to loss of hippocampal interneurons in the presymptomatic SOD1(G93A) ALS mouse model. J Comp Neurol 523:1622-1638. doi: 10.1002/cne.23759.

Cohen EJ, **Quarta E**, Fulgenzi G, Minciacchi D. 2015. Acetylcholine, GABA and neuronal networks: a working hypothesis for compensations in the dystrophic brain. Brain Res Bull 110:1-13. doi: 10.1016/j.brainresbull.2014..10.004.

Bravi R, Cohen EJ, **Quarta E**, Martinelli A, Minciacchi D. 2016. Effect of Direction and Tension of Kinesio Taping Application on Sensorimotor Coordination. Int J Sports Med. 37:909-914. doi: 10.1055/s-0042-109777.

Bravi R, **Quarta E**, Del Tongo C, Carbonaro N, Tognetti A, Minciacchi D. 2015. Music, clicks, and their imaginations favor differently the event-based timing component for rhythmic movements. Exp Brain Res 233:1945-1961. doi:10.1007/s00221-015-4267-z.

Bravi R, **Quarta E**, Cohen EJ, Gottard A, Minciacchi D. 2014. A little elastic for a better performance: kinesiotaping of the motor effector modulates neural mechanisms for rhythmic movements. Front Syst Neurosci. 8:181. doi: 10.3389/fnsys.2014..00181.

In Review

Novembre G, Lacal I, Benusiglio D, **Quarta E**, Schito A, Grasso S, Caratelli L, Caminiti R, Battaglia-Mayer A, Iannetti GD. A cortical mechanism linking saliency detection and motor reactivity in rhesus monkeys. Under review in J Neurosci.

In Prep

Lacal, **Quarta E** et al., The cost of acting together in non-human primates: a behavioral study

Awards, Fellowships, & Grants

2022	**Research Grant**, Sapienza University of Rome	*€3,350*
2022	**Participation to the "Primate Cognitive Neuroscience Summer School"**, German Primate Center, Bad Beversen, Germany	
2018	**Award to attend the winter school "The Neural Bases of Action – from cellular microcircuits to large-scale networks and modelling"**, School of Brain Cells & Circuits "Camillo Golgi", Erice, Italy	*€200*
2012	**Award to attend the summer school "The Invertebrate Brain: from Neurons to Behavior"**, Italian Society of Neuroscience, SISSA, Trieste, Italy	*€500*

Presentations

Invited Talks

June 2022. *Circuit- and mesoscale-level neural dynamics for motor behavior*. Middle East Technical University, Ankara, Turkey (online)

Contributed Presentations (selected)

Bianco R, Zuk N, Bigand F, **Quarta E**, Grasso S, Arnese F, Battaglia-Mayer A, Novembre G. 2023. Neural encoding of musical expectations in non-human primates. Cognitive Neuroscience Society (CNS 2023), San Francisco, USA

Bianco R, **Quarta E**, Grasso S, Chait M, Battaglia-Mayer A, Novembre G. 2023. Tracking Structural Changes in Sound Sequences: A Comparative EEG Study Across Human and Non-Human Primates. Association for Research in Otolaryngology (ARO), 2023, Orlando, USA

Somerveil R, **Quarta E**, Perovic S, Bufacchi RJ, Benusiglio D, Battaglia-Mayer A, Iannetti GD. 2022. Phenomenology and functional significance of the Vertex Potential. 13th FENS Forum. Paris, France

Battaglia-Mayer A, **Quarta E**, Grasso S, Caminiti R. 2022. Two brains in action: Joint-action Coding in Parietal Cortex of Macaques. 13th FENS Forum. Paris, France

Lacal I, **Quarta E**, Schito A, Grasso S, Caratelli L, Battaglia-Mayer A. 2022. Acting alone or together? Evaluating the cost of inter-individual motor coordination in macaques. 13th FENS Forum. Paris, France

Grasso S, Bravi R, **Quarta E**, Sorgente V, Cohen EJ, Lucchesi G, Mucchi L, Minciacchi D. 2021. Markerless pose estimation with DeepLabCut for shoulder motion assessments in patients with cervical spinal cord injury. XII Congresso Nazionale della Società Italiana Scienze Motorie e Sportive, Padova, Italy

Quarta E, Vichi G, Sorgente V, Bravi R, Cohen EJ, Minciacchi D. 2021. Remote monitoring of motor performance via smartphone applications and markerless tracking. Global Connectome: A Virtual Event. Society for Neuroscience

Bravi R, Sorgente V, Grasso S, Germondari F, Cohen EJ, **Quarta E**, Minciacchi D. 2021. Visual-motor control during dynamic single-limb balance tasks in female athletes after anterior cruciate ligament reconstruction. 30th Annual Meeting of the Society for the Neural Control of Movement (NCM), Virtual meeting

Sorgente V, Vichi G, Grasso S, Bravi R, Cohen EJ, **Quarta E**, Minciacchi D. 2021. Developing a novel, cost-effective and location-independent approach to investigate upper limb kinematics: Remote monitoring of an unrestricted reaching task via smartphone application. 30th Annual Meeting of the NCM, Virtual meeting

Quarta E, Allegra Mascaro AL, Lucchesi J, Campaioli C, Sacconi L, Pavone FS. Mesoscale Imaging of Cortical Dynamics during Motor Skill Learning. Optics and the Brain 2018. Hollywood, Florida, USA (Oral communication)

Quarta E, Allegra Mascaro AL, Campaioli C, Sacconi L, Pavone FS. 2017. Wide-field imaging of cortical activity in mice performing reach-to-grasp movements. Society for Neuroscience annual meeting. Washington, DC, USA (Oral communication)

Conti E, Allegra Mascaro AL, Resta F, **Quarta E**, Sacconi L, Lai S, Micera S, Pavone FS. 2017. Optogenetic rehabilitation promotes functional remodelling after stroke: An In vivo imaging study. Society for Neuroscience annual meeting. Washington, DC, USA

Quarta E, Bravi R, Allegra Mascaro AL, Conti E, Pavone FS, Minciacchi D. 2016. An innovative cylinder test: semi-automated behavioral response acquisition and kinetic analysis device with time series analysis to assess movement in animal models of brain disorders. 10th FENS Forum. Copenhagen, Denmark

Quarta E, Yanpallewar S, Minciacchi D, Tessarollo L. 2014. Deletion of the BDNF receptor TrkB.T1 rescues hippocampal parvalbumin positive interneurons in a mouse model of Amyotrophic Lateral Sclerosis. Society for Neuroscience annual meeting. Washington, DC, USA

Quarta E, Bravi R, Cohen EJ, Franchini M, Minciacchi D. 2014. The entorhino-hippocampal neurons of presymptomatic SOD1(G93A) mice. 9th FENS Forum. Milan, Italy

Quarta E, Minciacchi D, Hanneton S. 2011. Exploring emotional interrelations with motor performance: adjustments to visual distortion during a visuo-motor task. IBRO 8th Congress. Florence, Italy

Experimental and analytical skills

Design and execution of experiments investigating neural activity and motor behavior in mice, non-human primates (NHP), and humans. Surgical preparations for in-vivo imaging of neuronal activity and ex-vivo tract-tracing from rodents. Ex-vivo analysis of hippocampal neurons and dendritic spines. Wide-field imaging of neocortical activity during behavior, also from freely-moving mice. Preprocessing and analysis of neural (single-unit, LFP, LTP, calcium imaging, EEG) data. Modeling of behavioral choice data. Markerless tracking with DeepLabCut, trajectory reconstruction and kinematic analysis of movement. Programming languages: MATLAB, Python, R. Prototyping: Freecad, Arduino, Rasberry Pi.

Peer Reviewing

Peer-reviewing of manuscripts submitted to Nature Neuroscience, Journal of Neuroscience, Acta Neuropathologica, Neuroscience, Frontiers in Systems Neuroscience, Frontiers in Neuroscience. Review Editor for Frontiers in Neuroscience – Neuroprosthetics.