CURRICULUM VITAE

PERSONAL INFORMATION

First and Last Name	Luca Bonini
Date and Place of Birth	19/01/1979 – Correggio (RE), Italy
Office Phone	+39 0521 906290
Office Address	Via Volturno 39/E, Parma (PR), Italy
Email	luca.bonini@unipr.it
Website	www.boninilab.unipr.it
Scholar Profile	https://scholar.google.com/citations?user=q-2oxwgAAAAJ&hl=it&oi=ao
	Academic seniority: 17 years post-PhD
	Included in the World's Top 2% Scientists according to 2024 Stanford/Elsevier's list.
Bibliometric indices (Scopus)	51 authored documents: 68% as main and corresponding author (10% first, 52% last, 6% single author) and 32% as co-author. H-index: 27. Citations: 2248.
	Measures of impact: 61.3% (n=19) of the documents in the top 25% most cited documents worldwide.
Current Position	Full Professor of Psychobiology
Institutional Roles	Delegate for International Research of the Department of Medicine and Surgery
	Coordinator of the PhD Program in Neuroscience at the University of Parma

EDUCATION

2003-2008	PhD in Neuroscience, University of Parma
2003	Degree in Psychology, summa cum laude, University of Parma

PREVIOUS POSITIONS

2017-2022	Animal Welfare Delegate at the Primate Facility of the University of Parma.
2016-2021	Associate Professor of Psychobiology, University of Parma
2010-2016	Post-doc at the Italian Institute of Technology (IIT)
2008-2010	Fellowship at the Department of Neuroscience, University of Parma

Recognitions & Awards

2025	University of Parma Outstanding Researcher Award 2025 (1st edition)
2018	National Scientific Qualification as Full Professor in Psychobiology
2017	National Scientific Qualification as Full Professor in Physiology
2013	Travel Award of the Federation of European Neuroscience Societies (FENS)
1999 – 2000 - 2003	Top student (out of ~ 600) in the Psychology program at the University of Parma

Direction of Funded Research projects > 5 mln

2023	€ 59.500 – PRIN 2022 (MUR) "Visual awareness without visual cortex: from monkey neurophysiology to human patients". Unit coordinator.
2023	€ 370.000 - BRIEF – "Biorobotics Research and Innovation Engineering Facilities", led by Sant'Anna School of Advanced Studies (Pisa), Prof. Silvestro Micera and Alberto Mazzoni. Coordinator of the Biorobotic Lab at Unipr.
2022	€ 255.000 – National Recovery Fund Project MNESYS – "Multiscale integrated approach to the study of the nervous system in health and disease". Total budget € 114.000.000. Member of the Scientific Committee and Leader of Spoke 1 "Neurodevelopment, Social Cognition, and Interaction" (Spoke budget € 10.443.790)
2022	€ 399.000 – FARE Grant (MIUR) "CIRCEM – Local Circuitries and Neuronal Classes for Social and Emotional Affordance Processing in the Freely Moving Monkey". Principal Investigator (PI).
2021	€ 1.999.231 – ERC Consolidator Grant "EMACTIVE – The interactive side of emotion: A neuroethological approach in freely-moving monkeys". PI.
2020	€ 150.000 – ERC PoC "FUTURE-NHP – Flexible and user-defined Technologies for Unconstrained Neural Recording Experiments in Non-human Primates". PI. Collaboration with Prof. Patrick Ruther, IMTEK, Freiburg (Germany).
2019	€ 104.000 – Scientific Responsible of the Agreement between Unipr and Unito for the ERC Consolidator Grant "Lightup – Turning the cortically blind brain to see: from neural computations to system dynamics generating visual awareness in humans and monkeys". PI Prof Marco Tamietto.
2017	€ 239.000 - FARE Grant (MIUR) "GANGLIA – Motor and Cognitive Functions of cortico-basal ganglia circuits in the monkey: from the laboratory to free social interactions". PI.
2016	€ 1.499.338 – ERC Starting Grant "WIRELESS – Motor and Cognitive Functions of the Monkey Premotor Cortex during Free Social Interactions".

Main Participation in Funded Research Projects

2010 - 2015	ERC Advanced Grant (FP7 – 250013 – Cogsystem). PI Prof. Giacomo Rizzolatti.
2013 - 2017	EU FET Project "NeuroSeeker". PI Prof Guy Orban.

Supervision of Students, PhD Candidates, and Post-docs

2008 to date	More than 60 undergraduate Master Degree students in Psychology, Neurobiology or Pharmachology for the preparation and defense of their thesis.

21 PhD Students.

2008 to date — 9 PhD students have already earned their doctoral degrees, all of them still involved in scientific research in Italy or abroad.

Currently 13 PhD students enrolled, supervised by myself (n=7) or in collaboration with colleagues in Italy (n=3) or abroad (n=3)

2008 to date — 9 PostDocs, 3 of whom are currently enrolled, while 3 have obtained positions as tenure-track (n=2) or fixed-term (n=1) researchers.

National & International Scientific Collaborations

2025 — Blackrock Neurotech, private company based in Salt Lake City (USA), and University of Milan (prof. Lorenzo Bello, Gabriella Cerri, and Luca Fornia). Collaboration to achieve single neuron recordings in humans, 1 co-supervised and co-funded PhD.

2025 — Prof Mark Eldridge, Newcastle University, Newcastle upon Tyne (UK). Collaboration in 1 international project, 1 PhD co-supervised.

2024 to date — Dr. Paolo Papale and Prof. Pieter Roelfsema, Netherland Institute of Neuroscience, Amsterdam (Netherland). Collaboration in 1 international project, 1 PhD co-supervised.

2024 to date — Prof. Matteo di Volo, Université Claude-Bernard, Lyon (France). Collaboration in 1 international project, 1 PhD co-supervised.

2024 to date — Prof. Pier Francesco Ferrari, Institute des Sciences Cognitives Marc Jeannerod (CNRS), Lyon (France). Collaboration in 1 international project, 1 PhD and 1 Post-doc in co-supervision, 1 recently co-authored book chapter.

2023 to date — Prof. David Leopold, National Institute of Health, Bethesda (USA). Collaboration in 2 international projects, 1 PhD in co-supervision.

2021 to date — Prof. Wim Vanduffel, KU Leuven (Belgium). Collaboration in 1 international project, 1 PhD (now Post-doc) in co-supervision.

2021 to date — Prof. Silvestro Micera and Alberto Mazzoni, Sant'Anna School of Advanced Studies in Pisa (Italy). Collaboration in 2 national projects, and 2 co-authored publications.

2019 to date — Prof Marco Tamietto, Univ of Turin (Italy). Collaboration in 2 National and 1 international Project and 2 co-authored publications.

2016 to date — Prof Patrick Ruther, Dept of Microsystems Engineering, Univ Freiburg (Germany). Collaboration in 2 International Projects and 6 co-authored publications.

Research Group Composition

My research group currently includes 21 members, divided as follows:

1 Tenure Track Researcher (Monica Maranesi)

1 Fixed-term Researcher (Davide Albertini)

To date — 3 Post-doctoral fellows (Cristina Rotunno, Alessia Sepe, Mattia Delgrosso)

13 PhD Students (Chiara Campanello, Gemma Ballestrazzi, Elena Ferretti, Luca Guglielmi, Anna Mitola, Matilde Reni, Cristina Solinas, Rossella Sini, Riccardo Spanu, Ebrahim Ismaiel, Sara Cavuoti Cabanillas, Alessandro Becchini, Matteo Di Mario).

4 Research Fellows (Stefania Picciallo, Rebecca Moretti, Fosca Mastrandrea, Cristina Gentile)

TEACHING

Sept 2024 – August 2026 — 24-month sabbatical period to manage research activities and projects.

2020 to date — Teacher and member of the Academic Board of the PhD Program in Neuroscience of the University of Parma.

2017 - 2020 — Teacher and member of the Academic Board of the joint PhD Program in Neuroscience of the Universities of Parma and Modena & Reggio Emilia.

2017 – 2024 — Professor of Animal and Comparative Psychobiology in the Master's Degree Program in Psychobiology and Cognitive Neuroscience at the University of Parma.

2016 - 2024 — Professor of Psychobiology and Psychology I in the Bachelor's Degree Program in Speech Therapy at the University of Parma

2016 - 2024 — Professor of Neuroscience (Module B) in the inter-university Bachelor's Degree Program (Unipr/Unimore) in Psychological Sciences and Techniques.

2016 — Professor of Sport Psychobiology in the Bachelor's Degree Program in Exercise and Sports Sciences at the University of Parma.

2014 - 2022 — Professor of Neurophysiology at the "Academy of Developmental Neuropsychology" (ANSVI), Parma.

2009 - 2010 — Adjunct Professor of:
Social and Cognitive Neuroscience - Univ of Urbino;
Anatomical and Physiological Foundations of Mental Activity, Univ of Urbino;
Cognitive Psychobiology, Univ of Parma;
Neurophysiology, Univ of Urbino;
Neuroscience, University of Parma.

MEMBERSHIP IN SCIENTIFIC SOCIETIES

2025 to date — Society for the Neural Control of Movement (NCM)

2024 to date — International Society for Neuroethology (ISN)

2023 to date — EUSIMIA - European CNRS Network about non-human primate research - Member of the steering and Scientific committees

2019 to date — Italian Society of Physiology (SIF). Since 2024 Member of the “Animal Research Group”.

2017 to date — Italian Society for Neuroscience (SINS). From Jan 1st 2022 Member of the Governing Board of the Society.

2008 to date — Society for Neuroscience (SfN)

EDITORIAL AND REVIEWING ACTIVITIES

Member of the Editorial Board of Scientific Reports (NPG)

Reviewer for various international research funding agencies:

1. EU projects (FET, ERC, EIC Accelerator)
2. FWO (Research Foundation Flanders, BE)
3. ANR (Agence Nationale de la Recherche, FR)
4. BSF (Binational Science Foundation, Israel/USA)
5. Registered expert reviewer for the Italian Ministry of University (Reprise

Register).

Reviewer for various indexed international journals (alphabetical order)

1. Advanced Science
2. Cell Reports
3. Cerebral Cortex
4. Current Biology
5. Current Research in Neurobiology
6. eLife
7. European Journal of Neuroscience
8. Experimental Brain Research
9. Frontiers in Neuroscience
10. Imaging Neuroscience
11. Journal of Applied Physics
12. Journal of Cognitive Neuroscience
13. Journal of Neural Engineering
14. Journal of Neurophysiology
15. Journal of Neuroscience Methods
16. Nature Communications
17. Neuroimage
18. PloS Biology
19. PloS One
20. PNAS
21. Proceedings of the Royal Society of London B
22. Science
23. Science Translational Medecine
24. Scientific Reports
25. Social Neuroscience
26. Trends in Cognitive Sciences (TICS)

ADVOCACY ACTIVITIES FOR COMMUNICATING ANIMAL RESEARCH

Oct 24, 2025	Chair of the public workshop "Animals in Biomedical Research: Resources, Challenges, and Perspectives. A discussion with Monica Di Luca, Andrea Grignolio, and Tommaso Di Paolo, moderated by Luca Bonini. Festival "Futuro Presente", Oct 24-26, 2025, Parma.
2024	Reference person for the European Animal Research Association (EARA) for the University of Parma
Nov 14, 2024	"The costs of transparency and of the lack of it". Public workshop on Transparency in animal research organized with EARA in the Main Hall of the University of Parma
2021-2023	"Crisis communication in the field of animal experimentation". Free of charge lessons at master "COSE", Science Communication of the University of Parma.
2021, 2023	Series of lessons on "Brain Research and Animal models" for children at "UniJunior"
March, 2021	"Non-human primate in biomedical research: past, present and future". Webinar organized by the University of Cagliari
Nov 19, 2018	Co-organizer of a workshop in the Main Hall of the University of Parma on "Animals in Research: Ethics, Science and Society" as a Member of the University Center for Bioethics.
2018 to date	Public lessons on "animal models in biomedical research" in primary, middle, and high schools in the provinces of Reggio Emilia, Parma, and Piacenza.

SELECTED INVITED LECTURES

June 12, 2025	"*From the Localization of Cortical Motor Functions to Understanding Ethological Actions: A Nonlinear Path*". CNR, Pisa, Italy.
June 2-5, 2025	"*From Policies to Public Opinion: Public Engagement and the Future of Non-Human Primate Research*". FELASA Congress, Athens, Greece.
May 8-9, 2025	"*Social Affordances: from Cortical to Subcortical Pathways*". Mindful Connctions meeting, Turin, Italy.
Apr 28-May 2, 2025	"Neuroethology of bodily and manual actions in freely moving primates". NCM meeting, Panama City, Panama.
Nov 21-22, 2024	"*Primate Neuroethology: opportunities for Science and Outreach*". 1st EuSimia Meeting, Lyon, France.
May 9-11, 2024	"*Objects, actions, and beyond: neural bases of pragmatic remapping". CAOs* Workshop, Rovereto, Italy.
Sept 14, 2023	"*Viewing for acting and interacting in space*". ANFA 20th Anniversary Congress, San Diego, CA, USA.
Nov 30 – Dec 2, 2022	"*Beyond mirror neurons: the social affordance hypothesis*". National Institute for Physiological Sciences (NIPS), 52nd International Symposium on Frontiers in Primate Systems Neuroscience, Japan.
Jun 1 – 3, 2022	"*The biggest dilemma: nonhuman primates in neuroscientific basic research*". European Federation for Primatology, Arnhem, Netherland.
Sept 23, 2022	"*Nonhuman primates' welfare in neuroscientific research*". Associazione Italiana di Primatologia (API), Turin.
Sept 9-14, 2022	"*Social remapping in a comparative perspective*". Comparative Neurobiology of higher cognitive functions workshop. Erice (Sicily), Italy. Co-organizer of the workshop with P.F. Ferrari and A. Genovesio.
Oct 15, 2021	"*Beyond mirror neurons: the social affordance hypothesis*". CNRS Lyon, Oct. 15, 2021, Lyon (France).
Oct 1-8, 2021	"*Triggering and defusing protests against nonhuman primate neuroscientific research*". Workshop "Communicating science in a democratic society", Lorentz Center, Leiden (NL).
Sept 17, 2021	"*Space-constrained cortical processing of objects and actions in the monkey*". International Conference on Spatial Cognition (ICSC) Symposium Sept. 17, 2021, Rome (Italy).
Jan 21, 2019	"*The human brain in the mirror: motor and social neurophysiology in non-human primates*". International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste (Italy).
Nov 15, 2018	"*Representations objects for self and other's action in the monkey cortical motor system*". Italian Society of Pyschophysiology and Cognitive Neurosciences (SIPF). Turin (Italy).
Sept 4-8. 2018	"*Pragmatic and social processing of objects in the monkey prieto-frontal motor system*". 19th World Congress of the International Organization of Psychophysiology, Lucca (Italy).
Oct 16-17, 2017	"*Refinement methods in neuroscience research on non-human primates*". The 3Rs principle: applications and innovation. Istituto Superiore di Sanità, Rome.
Jul 18, 2017	"*Mirroring of actions and action contexts in the monkey's extended cortical grasping network*". University of Verona, Verona.
June 9, 2017	"*From mirroring of other's action to mirroring of action contexts in the monkey's extended cortical grasping network*". Italian Institute of Technology,

Genova.

Dec 1-2, 2014 — "*Mirroring others' actions in the monkey frontal cortex*". Action, Brain, Language, & Evolution (ABLE) Meeting, Rome.

Mar 14, 2014 — "*Neuroni specchio, apprendimento sociale ed evoluzione*". Unistem Day, Federico II University, Naples.

Apr 29 – Maj 2, 2013 — "*Using U-Probe for recording in awake monkey*". 30th Plexon Anniversary Technical Workshop, Dallas, TX (USA).

Sept 13 – 17, 2012 — "*Influence of the sight of monkey's own acting hand on the motor discharge of ventral premotor mirror neurons*". 16th World Congress of the International Organization of Psychophysiology, Pisa.

Nov 10, 2011 — "*Neural mechanisms underlying the encoding of grasping acts during the execution of goal directed actions"*. Dept. of Neurobiology and Behavior, Stony Brook University, NY (USA).

Jun 25-28, 2010 — "*Comparing mirror systems in human and non-human primates in relation to higher cognitive functions*". New Studies of Neurobehavioral Evolution, Washington, DC (USA).

March 18-20, 2009 — "*Comprendere gli altri attraverso i neuroni specchio"*. Brain Awareness Week, 18-20 Marzo 2009 – Stazione zoologica Anton Dohrn, Napoli

March 13-14, 2008 — "*I neuroni specchio*". Brain Awareness Week – Stazione zoologica Anton Dohrn, Napoli.

Dec 13, 2007 — "*Functional organization and control of intentional actions in monkey parieto-frontal circuits*". Annual symposium of the IAP meeting, Leuven (Belgium).

Co-author/Presenter of Poster in International Conferences

2006 to date — Presenter or co-author of more than 50 posters at international conferences, primarily the Society for Neuroscience (SfN) meetings and the Federation of European Neuroscience Societies (FENS) meetings.

Publications – Book Chapters

2024 — **Bonini, L.**, Ferrari, P.F. (2024) Parieto-frontal circuits underlying motor and cognitive functions. Encyclopedia of the Human Brain.

2018 — **Bonini, L.**, Gerbella (2018) Controllo motorio riflesso e tono muscolare. In: Fondamenti anatomo-fisiologici dell'attività psichica. Poletto Editore.

2015 — Fogassi, L., **Bonini, L.** (2015) The role of mirror neurons in goal coding and intention understanding. In Ferrari, P.F., Rizzolatti, G. (ed.) New frontiers in mirror neurons research. Oxford University Press.

Publications – International Journal Articles

2025 — Sepe A. Panormita M. Zhu Q. Li X. Leopold D.A.* Tamietto M.* **Bonini L.*** Vanduffel W.* (2025) Lateralized visuotopic organization in the macaque superior colliculus revealed by fMRI. *Progress in Neurobiol* doi.org/10.1016/j.pneurobio.2025.102842 *Co-senior authors

2025 — Tili F. Maranesi M. Lanzilotto M. Ferroni C.G. Livi A. **Bonini L.** Albertini D. (2025). Mirror Neurons in Monkey Frontal and Parietal Areas. *Scientific Data*

2025 Lanzarini F. Maranesi M. Rondoni E.H. Albertini A. Ferretti E. Lanzilotto M. Micera S. Mazzoni A. **Bonini L.** (2025). Neuroetholgy of natural actions in freely moving monkeys. *Science* 387(6730):214-220.

2025 Lanzilotto M. Dal Monte O. Diano M. Panormita M. Battaglia S. Celeghin A. **Bonini L.** Tamietto M. (2025). Learning to fear novel stimuli by observing others in the social affordance framework. *Neurosci Biobehav Rev.* 7:106006.

2024 Maranesi M. Lanzilotto M. Arcuri E. **Bonini L.** (2024). Mixed selectivity in monkey anterior intraparietal area during visual and motor processes. *Prog Neurobiol.* 236:102611.

2024 Rondoni E.H. Pizzinga M. Lanzarini F. Maranesi M. Albertini D. **Bonini L.** Russo E. Mazzoni A. (2024). Unsupervised identification of stereotypical premotor firing patterns for the decoding of hand and mouth movements. *IEEE Workshop on Complexity in Engineering*, COMPENG 2024.

2023 Giordano N. Alia C. Fruzzetti, L. Pasquini M. Palla G. Mazzoni A. Micera S. Fogassi L. **Bonini L.** Caleo M. (2023). Fast-spiking interneurons of the premotor cortex contribute to initiation and execution of spontaneous actions. *J Neurosci. 43(23):4234-4250.*

2023 **Bonini L.** Rotunno C. Arcuri E. Gallese V. (2023). The mirror mechanism: linking perception and social interaction. *Trends in Cognitive Sciences*. 27(3):220-21

2023 Rondoni E.H. Pizzinga M. Lanzarini F. Bonini L. Mazzoni A. (2023). K-medoid clustering of premotor firing patterns supports fine decoding of macaque reach-and-grasp. *Convegno Nazionale di Bioingegneria*, 2023.

2022 **Bonini L.** Rotunno C. Arcuri E. Gallese V. (2022). Mirror neurons 30 years later: implication and applications. *Trends in Cognitive Sciences* 26(9):767-781.

2022 Caloni F. Nevelli F. **Bonini L.** Calleri M. Calvillo L. De Angelis I. Failla C.M. Giuliani A. Granata P. Kuam M. Lecce F. Letasiova S. (2022). Replacement, Reduction, Refinement: 3 days for 3Rs. *Altex* 39(3):519-521.

2021 Albertini D. Lanzilotto M. Maranesi M. **Bonini L.** (2021). Largely shared neural codes for biological and nonbiological observed movements but not for executed actions in monkey premotor areas. *J Neurophysiol*. 126(3):906-912.

2021 Orban G.A. Sepe A. **Bonini L.** (2021). Parietal maps of visual signals for bodily action planning. *Brain Struct Funct* 226(9):2967-2988.

2021 Ferroni C.G. Albertini D. Lanzilotto M. Livi A. Maranesi M. **Bonini L.** (2021). Local and system mechanisms for action execution and observation in parietal and premotor cortices. *Curr Biol* S0960-9822(21)00547-9.

2021 Orban G.A. Lanzilotto M. **Bonini L.** (2021). From observed action identity to social affordances. *TICS* doi: 10.1016/j.tics.2021.02.012.

2021 Gerbella, M., Borra, E., Pothof, F., Lanzilotto, M., Livi, A., Fogassi, L., Paul, O., Orban, G.A., Ruther, P., **Bonini, L.** (2021). Histological assessment of a chronically implanted cylindrically-shaped, polymer-based neural probe in the monkey. *J Neural Eng* doi: 10.1088/1741-2552/abdd11.

2020 Lanzilotto, M., Maranesi, M., Livi, A., Ferroni, C.G., Orban, G.A., **Bonini, L.** (2020). Stable readout of observed actions from format-dependent activity of monkey's anterior intraparietal neurons. *Proceedings of the National Academy of Sciences* 117(28):16596-16605.

2020 Albertini D. Gerbella M. Lanzilotto M. Livi A. Maranesi M. Ferroni C.G. **Bonini L.** (2020). Connectional gradients underlie functional transitions in monkey pre-supplementary motor area. *Progress in neurobiology* 184; 101699.

2019 **Bonini L**. (2019). Refinement Techniques in non-human primate neuroscientific research. *Ann Ist Super Sanità* 55(4): 408-412.

2019 Maranesi M. Bruni S. Livi A. Donnarumma F. Pezzulo G. **Bonini L.** (2019).

	Differential neural dynamics underlying pragmatic and semantic affordance processing in macaque ventral premotor cortex. *Sci Rep* 9(1):11700.
2019	Lanzilotto M. Giulia Ferroni C. Livi A. Gerbella M. Maranesi M. Borra E. Passarelli L. Gamberini M. Fogassi L. **Bonini L.*** Orban G.A.* (2019). Anterior intraparietal area: a hub in the observed manipulative action network. *Cereb Cortex* 29(4):1816-1833. *Co-senior authors
2019	Livi A. Lanzilotto M. Maranesi M. Fogassi L. Rizzolatti G. **Bonini L.** (2019). Agent-based representations of objects and actions in the monkey pre-supplementary motor area. *Proceedings of the National Academy of Sciences* 116(7):2691-2700.
2018	Bruni S. Gerbella M. **Bonini L.** Borra E. Coudé G. Ferrari P.F. Fogassi L. Maranesi M. Rodà F. Simone L. Serventi F.U. Rozzi S. (2018). Cortical and subcortical connections of parietal and premotor nodes of the monkey hand mirror neuron network. *Brain Struct Funct* 223(4):1713-1729.
2017	Ferroni, C.G., Maranesi, M., Livi, A., Lanzilotto, M., **Bonini, L.** (2017). Comparative performance of linear multielectrode probes and single-tip electrodes for intracortical microstimulation and single-neuron recording in macaque monkey. *Front Syst Neurosci*. 10.3389/fnsys-2017.00084.
2017	Maranesi, M., Livi, A., **Bonini, L.** (2017) Spatial and viewpoint selectivity for others' observed actions in monkey ventral premotor mirror neurons. *Sci Rep*. 7(1):8231
2017	**Bonini L.** (2017) The extended mirror neuron network: anatomy origin and functions. *Neuroscientist* 23(1):56-57.
2017	Barz F. Livi A. Lanzilotto M. Maranesi M. **Bonini L.** Paul O. Ruther P. (2017) Versatile modular 3D microelectrode arrays for neuronal ensemble recordings: from design to fabrication assembly and functional validation in non-human primates. *J Neural Eng*. 14(3):036010.
2016	Lanzilotto M. Livi A. Maranesi M. Gerbella M. Barz F. Ruther P. Fogassi L. Rizzolatti G. **Bonini L.** (2016) Extending the cortical grasping network: pre-supplementary motor neuron activity during vision and grasping of objects. *Cereb Cortex* 26(12):4435-4449.
2016	Pothof F. **Bonini L.** Lanzilotto M. Livi A. Fogassi L. Orban G.A. Paul O. Ruther P. (2016) Chronic neural probe for simultaneous recording of single-unit multi-unit and local field potential activity from multiple brain sites. *J Neural Eng*. 13(4):046006.
2015	Bruni S. Giorgetti V. Fogassi L. **Bonini L.** (2015) Multimodal encoding of goal-directed actions in monkey ventral premotor grasping neurons. *Cereb Cortex* [Epub ahead of print] PMID:26494802].
2015	Maranesi M. Livi A. **Bonini L.** (2015) Processing of own hand visual feedback during object grasping in ventral premotor mirror neurons. *J Neurosci* 35(34):11824-11829.
2015	Bruni S. Giorgetti V. **Bonini L.** Fogassi L. (2015) Processing and integration of contextual information in monkey ventrolateral prefrontal neurons during selection and execution of goal-directed manipulative actions. *J Neurosci* 35(34):11877-11890.
2014	Maranesi M. Livi A. Fogassi L. Rizzolatti G. **Bonini L**. (2014) Mirror neuron activation prior to action observation in a predictable context. *J Neurosci.* 34(45):14827-32.
2014	**Bonini L.** Maranesi M. Livi A. Fogassi L. Rizzolatti G. (2014) Ventral premotor neurons encoding representations of action during self and others' inaction. *Curr Biol.* 24(14):1611-1614.
2014	**Bonini, L.**, Maranesi, M., Livi, A., Fogassi, L., Rizzolatti, G. (2014) Space-dependent representation of objects and other's action in monkey ventral

premotor grasping neurons. *J. Neurosci.* 34(11):4108-4119.

2014 Pothof, F., Anees, S., Leupold, L., **Bonini, L.**, Paul, O., Orban, G.A., Ruther, P. (2014) Fabrication and Characterization of a High-Resolution Neural Probe for Stereoelectroencephalography and Single Neuron Recording. Engineering in Medicine and Biology Society (EMBC), Annual Int. Conf. of the IEEE, Chicago; 08/2014.

2014 Maranesi, M., **Bonini, L.**, Fogassi, L. (2014) Cortical processing of object affordances for self and others' action. *Front Psychol.* 5:538 doi: 10.3389/fpsyg.2014.00538.

2014 **Bonini L.** Maranesi M. Livi A. Bruni S. Fogassi L. Holzhammer T. Paul O. Ruther P. (2014) Application of floating silicon-based linear multielectrode arrays for acute recording of single neuron activity in awake behaving monkeys. *Biomed Tech (Berl)* 59(4):273-81.

2013 **Bonini L.** Ferrari P.F. Fogassi L. (2013) Neurophysiological bases underlying the organization of intentional actions and the understanding of others' intention. *Conscious Cogn. 22(3):1095-1104*.

2013 Maranesi M. Ugolotti Serventi F. Bruni S. Bimbi M. Fogassi L. **Bonini L.** (2013) Monkey gaze behaviour during action observation and its relationship to mirror neuron activity. *Eur J Neurosci.* 38(12):3721-3730.

2012 **Bonini L.** Ugolotti Serventi F. Bruni S. Maranesi M. Bimbi M. Simone L. Rozzi S. Ferrari P.F. Fogassi L. (2012) Selectivity for grip type and action goal in macaque inferior parietal and ventral premotor grasping neurons. *J Neurophysiol 108(6):1607-19.*

2012 Maranesi M. Rodà F. **Bonini L.** Rozzi S. Ferrari P.F. Fogassi L. Coudé G. (2012) Anatomo-functional organization of the ventral primary motor and premotor cortex in the macaque monkey. *Eur J Neurosci 36(10):3376-87.*

2012 Macellini S. Maranesi M. **Bonini L.** Simone L. Rozzi S. Ferrari P.F. Fogassi L. (2012) Individual and social learning processes involved in the acquisition and generalization of tool-use in macaques. *Phil Trans R Soc 367(1585):24-36.*

2011 **Bonini L.** Ugolotti Serventi F. Simone L. Rozzi S. Ferrari P.F. Fogassi L. (2011) Grasping neurons of monkey parietal and premotor cortices encode action goals at distinct levels of abstraction during complex action sequences. *J Neurosci* 31(15): 5876-86.

2011 **Bonini L.** Ferrari P.F. (2011). Evolution of mirror systems: a simple mechanism for complex cognitive functions. *Ann N Y Acad Sci 1225:166-175.*

2010 Macellini S. Ferrari P.F. **Bonini L.** Fogassi L. Paukner A. (2010) A modified mark test for own-body recognition in pig tailed macaques (Macaca nemestrina). *Animal Cognition* 13(4):631-9.

2010 **Bonini L.** Rozzi S. Ugolotti Serventi F. Simone L. Ferrari P.F. Fogassi L. (2010). Ventral premotor and inferior parietal cortices make distinct contribution to action organization and intention understanding. Cereb Cortex 20(6):1372-85.

2009 Ferrari P.F. **Bonini L.** Fogassi L. (2009). From monkey mirror neurons to primate behaviours: possible 'direct' and 'indirect' pathways. *Phil Trans R Soc* 364(1528): 2311-23.

2008 **Rozzi S**. Ferrari P.F. **Bonini L.** Rizzolatti G. Fogassi L. (2008). Functional organization of inferior parietal lobule convexity in the macaque monkey: electrophysiological characterization of motor sensory and mirror responses and their correlation with cytoarchitectonic areas. *Eur J Neurosci* 28(8): 1569-88.

RESEARCH ACHIEVEMENT AND FUTURE DIRECTIONS

During my PhD, I made key discoveries regarding the organization of voluntary action and the neuronal processing of others' observed action in the inferior parietal and ventral premotor cortices (*Bonini et al 2010 Cereb Cortex; Bonini et al 2011 J Neurosci*) and recognized the explanatory power of evolutionary and comparative perspectives (*Bonini & Ferrari 2011 Ann NY Acad Sci*).

Next, as a post-doc at IIT, I developed a complex setup to test multiple single-cell functional properties, revealing previously unknown, abstract features of monkey mirror neurons (*Bonini et al 2014 Curr Biol*) and advancing neurotechnologies within EU projects in collaboration with Patrick Ruther (Imtek, Freiburg) and Guy Orban (KU Leuven).

Leading my own research group, with consistent funding obtained by both the European Research Council and the Italian Ministry of University and Research, I could achieve several major breakthroughs:

1) We challenged simplistic models of the motor system based on discrete and segregated neuronal categories (e.g., motor, canonical, and mirror neurons - see *Bonini et al 2014 J Neurosci*).

2) We demonstrated that mixed selectivity is a key organizational principle of ventral and mesial premotor (*Livi et al 2019 PNAS*), anterior intraparietal (*Maranesi et al 2024 Prog Neurobiol*) and prefrontal (*Bruni et al 2015 Cereb Cortex & J Neurosci*) cortices, suggesting new mechanisms of sensorimotor integration in the parieto-frontal system.

3) While anatomical studies were mostly separated from the physiological ones (i.e. carried out in different animals), we introduced the routinary injection of neuronal tracers in the specific region where neurons were recorded, providing direct evidence of the architecture of the mirror neuron network (*Bruni et al 2018 Brain Struct Funct; Lanzilotto et al 2019 Cereb Cortex*).

4) We revealed how space and pragmatic valence shape the encoding of physical and social stimuli in the motor system, and formalizing these ideas as the "*social affordance hypothesis*" (*Orban et al 2021 TICS; Bonini et al 2022 & 2023 TICS*).

5) We pioneered neuroethological recordings in freely-moving monkey, opening new avenues for neurobehavioral research and setting a departing point for the future of neurophysiological studies in non-human primates (*Lanzarini et al 2025 Science*).

These results have been supported by over €5M in competitive funding (3 ERC grants and my role as Spoke Leader in the largest neuroscience project ever funded in Italy - https://mnesys.eu/).

My commitment to public engagement and avocacy for animal research has been featured in Science, Nature Italy, Quanta Magazine, Le Scienze, and various national journals.