

Part A. PERSONAL INFORMATION

CV date 13/01/2021

First and Family name	Mattia Bramini		
Social Security, Passport, ID number		Age	36
Researcher codes	WoS Researcher ID (*)	Q-6130-2016	
	SCOPUS Author ID(*)	45760963100	
	Open Researcher and Contributor ID (ORCID) **	0000-0002-0381-9391	

(*) At least one of these is mandatory

(**) Mandatory

A.1. Current position

Name of University/Institution	University of Granada		
Department	Cell Biology		
Address and Country	C/Fuentenueva s/n, 18071, Granada		
Phone number	E-mail	mbramini@ugr.es	
Current position	Ramon y Cajal Researcher	From	01/05/2021
Key words	Nanomedicine, Neuroscience, Biomaterials, Cell Biology		

A.2. Education

Bachelor/Master/PhD	University	Year
Phd in Bionanointeractions	University College Dublin, School of Chemistry and Chemical Biology	2014
Master Degree in Medical and Pharmaceutical Biotechnology	Università degli Studi di Modena e Reggio Emilia	2009
Bachelor Degree in Biotechnology	Università degli Studi di Modena e Reggio Emilia	2007

A.3. General quality indicators of scientific production:

30 publications in peer-reviewed journals, including 2 Nature Nanotechnology (*IF*: 33.4), 2 ACS Nano (1st author, *IF*: 13.9), 1 Nano Letters (1st and corresponding author, *IF*: 12.3), 1 Small (1st and corresponding author, *IF*: 10.9)

Total time cited > 1000; h-index: 17; i10-index: 19

Total *IF*: 250.22, *IF* per document on journals: 8.27

2 book chapters

Oral Contributions: (i) 6 invited seminars; (ii) 4 invited talks at international conferences; (iii) 7 selected talks after peer-review at international conferences

Part B. CV SUMMARY

I got a PhD in Bionano-interactions (2014) from the Centre for BioNano Interactions (CBNI), School of Chemistry and Chemical Biology, University College Dublin (Ireland). In my PhD, I have been focused in understanding the behavior of nanoparticles in biological conditions (in particular the translocation through a human *in vitro* model of blood-brain barrier), by applying advanced light and fluorescence microscopy, cellular and molecular biology approaches. In April 2014 I joined the Italian Institute of Technology (IIT), Center for Synaptic Neuroscience and Technology, as a post-doc within the European Graphene Flagship project. I also gave a yearly PhD-course of 2 CFU titled: "Neuronal-nanotechnology: a systematic review of the bionano interactions in the central nervous system". Scientifically, I have been the link between the neuroscience group and material scientist in IIT, leading to new collaborations and grant proposal writing. In November 2019 I joined the University of Granada, Faculty of Science (Department of Applied Physics) as a Marie Curie-MSCA COFUND Athenea3i Fellow, working on the development of new nanomedicine techniques for neuronal regeneration. As teaching activities, I gave 2 credits of Physics I (Theory) for the Degree of Chemical Engineer, 2 credits of Biophysics and 2.5credits of Thermodynamics (Practical Labs for the Degree in Physics). I



have tutored 1 TFM and 2 TFGs. Starting May 1st, 2021, I am a Ramon y Cajal Researcher at the Department of Cell Biology (UGR) leading a new research line on nanomaterials applications for neurobiology.

Part C. RELEVANT MERITS

C.1. Publications (including books)

- 1. Scientific paper.** Matteo Moschetta; et al; (11/12). 2021. Hydrogenated Graphene Improves Neuronal Network Maturation and Excitatory Transmission. *Advanced Biology*. Wiley-VCH GmbH.
- 2. Scientific paper.** Nara Liessi; et al. (4/6). 2021. Isobaric Labeling Proteomics Allows a High-Throughput Investigation of Protein Corona Orientation. *Analytical Chemistry*. ACS Publications. 93-2, pp.784-791.
- 3. Scientific paper.** Andrea Capasso; et al. (11/13). 2020. Interactions between Primary Neurons and Graphene Films with Different Structure and Electrical Conductivity. *Advanced Functional Materials*. Wiley-VCH GmbH.
- 4. Scientific paper.** Jose Fernando Maya Vetencourt; et al. (5/25). 2020. Subretinally injected semiconducting polymer nanoparticles rescue vision in a rat model of retinal dystrophy. *Nature Nanotechnology*. Springer Nature. 8, pp.698-708.
- 5. Scientific paper.** Giuseppe Maria Paternò; et al; (8/14). 2020. Membrane Environment Enables Ultrafast Isomerization of Amphiphilic Azobenzene. *Advanced Science*. Wiley - VCH. 7-8.
- 6. Review paper.** Raluca-Elena Munteanu; et al. (3/4). 2020. 2D materials in electrochemical sensors for in vitro or in vivo use. *Analytical and Bioanalytical Chemistry*. Springer. 413-3, pp.701-725.
- 7. Scientific paper.** Fabio Candotto Carniel; et al. (13/7). 2020. Beyond graphene oxide acidity: Novel insights into graphene related materials effects on the sexual reproduction of seed plants. *Journal of Hazardous Materials*. Elsevier. 393.
- 8. Scientific paper.** Miriam Marquitan; et al. (6/3). 2020. Polymer/enzyme-modified HF-etched carbon nanoelectrodes for single-cell analysis. *Bioelectrochemistry*. Elsevier. 133.
- 9. Scientific paper.** Mattia Lorenzo DiFrancesco; et al. (23/5). 2020. Neuronal firing modulation by a membrane-targeted photoswitch. *Nature Nanotechnology*. Springer Nature.
- 10. Scientific paper.** Elisa Banchi; et al. (12/5). 2019. Graphene-based materials do not impair physiology, gene expression and growth dynamics of the aeroterrestrial microalga *Trebouxia gelatinosa*. *Nanotoxicology*. Taylor & Francis. 13-4, pp.492-509.
- 11. Scientific paper.** Mattia Bramini; et al. (11/1). 2019. An Increase in Membrane Cholesterol by Graphene Oxide Disrupts Calcium Homeostasis in Primary Astrocytes. *Small*. Wiley-VCH. 13-4, pp.492-509.
- 12. Scientific paper.** Gambardella, Chiara; et al. 2018. Ecotoxicological effects of polystyrene microbeads in a battery of marine organisms belonging to different trophic levels. *Marine environmental research*. 141, pp.313-321.
- 13. Scientific paper.** Chiacchiaretta, Martina; et al. (10/2). 2018. Graphene Oxide Upregulates the Homeostatic Functions of Primary Astrocytes and Modulates Astrocyte-to-Neuron Communication. *Nano Letters*. 18-9, pp.5827-5838. ISSN 1530-6992.
- 14. Review paper.** Bramini, Mattia; et al. (9/1). 2018. Interfacing Graphene-Based Materials With Neural Cells. *Frontiers in Systems Neuroscience*. 12-12, pp.1-22. ISSN 1662-5137.
- 15. Scientific paper.** Piccini, Alessandra; et al. (18/7). 2017. APACHE Is an AP2-Interacting Protein Involved in Synaptic Vesicle Trafficking and Neuronal Development. *Cell Reports*. 12-12, pp.3596-3611. ISSN 2211-1247.
- 16. Scientific paper.** Gambardella, Chiara; et al. 2017. Effects of polystyrene microbeads in marine planktonic crustaceans. *Ecotoxicology and Environmental Safety*. 145, pp.250-257.
- 17. Scientific paper.** Ye, Dong; et al. (7/2). 2017. Low uptake of silica nanoparticles in Caco-2 intestinal epithelial barriers. *Beilstein Journal of Nanotechnology*. 8, pp.1396-1406.
- 18. Scientific paper.** Chiacchiaretta, Martina; et al. (7/3). 2017. Neuronal hyperactivity causes Na⁺/H⁺ exchanger-induced extracellular acidification at active synapses. *Journal of Cell Science*. 130, pp.1435-1449. ISSN 1477-9137.
- 19. Scientific paper.** Antognazza, Maria Rosa; et al. (19/19) 2016. Characterization of a Polymer-Based, Fully Organic Prosthesis for Implantation into the Subretinal Space of the Rat. *Advanced Healthcare Materials*. 5-17, pp.2271-2282.



- 20. Scientific paper.** Bramini, Mattia; et al. (9/1). 2016. Graphene Oxide Nanosheets Disrupt Lipid Composition, Ca(2+) Homeostasis, and Synaptic Transmission in Primary Cortical Neurons. ACS Nano. 10-7, pp.7154-7171. ISSN 1936- 0851.
- 21. Scientific paper.** Gambardella, Chiara; et al. (10/7). 2015. Exposure of Paracentrotus lividus male gametes to engineered nanoparticles affects skeletal bio-mineralization processes and larval plasticity. Aquatic Toxicology. 158, pp.181-191.
- 22. Scientific paper.** Gambardella, Chiara; et al. (8/5). 2015. Multidisciplinary screening of toxicity induced by silica nanoparticles during sea urchin development. Chemosphere. 139, pp.486-495.
- 23. Scientific paper.** Zarschler, Kristof; et al. (8/5). 2014. Diagnostic nanoparticle targeting of the EGF-receptor in complex biological conditions using single-domain antibodies. Nanoscale. 6-11, pp.6046-6056.
- 24. Scientific paper.** Bramini, Mattia; et al. (7/1). 2014. Imaging approach to mechanistic study of nanoparticle interactions with the blood-brain barrier. ACS Nano. 8-8, pp.4304-4312.
- 25. Scientific paper.** Nic Raghnaill, Michelle; et al. (10/2). 2014. Paracrine signalling of inflammatory cytokines from an in vitro blood brain barrier model upon exposure to polymeric nanoparticles. The Analyst. 139, pp.923-930.
- 26. Scientific paper.** Ye, Dong; et al. (7/3). 2013. Nanoparticle accumulation and transcytosis in brain endothelial cell layers. Nanoscale. 13, pp.11153-11165.
- 27. Scientific paper.** Sterrenburg, Linda; et al. (10/5). 2011. Chronic stress induces sex-specific alterations in methylation and expression of corticotropin-releasing factor gene in the rat. PloS One. 6-11, pp. e28128.
- 28. Scientific paper.** Nic Raghnaill, Michelle; et al. (7/4). 2011. Internal benchmarking of a human blood-brain barrier cell model for screening of nanoparticle uptake and transcytosis. European Journal of Pharmaceutics and Biopharmaceutics. 77-3, pp.360-367.
- 29. Scientific paper.** Sterrenburg, Linda; et al. (8/5). 2011. Sex-dependent and differential responses to acute restraint stress of corticotropin-releasing factor-producing neurons in the rat paraventricular nucleus, central amygdala, and bed nucleus of the stria terminalis. Journal of Neuroscience Research. 90-1, pp.179-192.
- 30. Book chapter.** Mattia Bramini; et al. 2019. Neuronal Cultures and Nanomaterials In vitro neuronal networks. From culturing methods to neuro-technological applications. Springer. 22.
- 31. Book chapter.** Bramini, Mattia; et al. 2018. Interactions Between 2D Graphene-Based Materials and the Nervous tissue. 2D Materials: Characterization, Production and Applications. Taylor & Francis pp.62-86.
- 32. Scientific-technical report.** Michelle Nic Raghnaill; et al. (6/4). 2011. Nanotechnology: Environmental and Human Health Impacts Science, Technology, Research & Innovation for the Environment - STRIVE. Environmental Protection Agency (EPA). 79.

C.2. Grants

- 1. PROGRAMA DE AYUDAS RAMÓN Y CAJAL, 01/05/2021, MINISTERIO DE CIENCIA E INNOVACIÓN;** AGENCIA ESTATAL DE INVESTIGACIÓN (RYC2019-027692-I/AEI/10.13039/501100011033) y el FONDO SOCIAL EUROPEO. 01/05/2021-30/04/2026
- 2. MAG-NEUROREG:** Magnetic ferrofluid nanosystems as innovative neuro-interfaces to foster regeneration and restore network connectivity in neurodegenerative disorders (Universidad de Granada). 01/11/2019-30/04/2021.
- 3. Governing neuronal signalling: graphene-based interfaces to foster neuronal regeneration and restore network excitability in neurodegenerative disorders.** PI: Fabio Benfenati. (Istituto Italiano di Tecnologia). 01/01/2019-31/12/2021.
- 4. EPITOPEMAP** Mapping the detailed composition of surface adsorbed protein layers on biomaterials and nanoparticles - an alternative approach to biocompatibility and nanotoxicity. European Science Foundation (ESF). PI: Kenneth Dawson. (University College Dublin). 01/01/2010-31/05/2010.

C.3. Contracts

- 1. Ramon y Cajal,** AGENCIA ESTATAL DE INVESTIGACIÓN (RYC2019-027692-I/AEI/10.13039/501100011033) y el FONDO SOCIAL EUROPEO. 01/05/2021-30/04/2026
- 2. MSCA COFUND Athenea3i Fellow,** n. 754446 Marie Skłodowska-Curie grant and UGR Research and knowledge Transfer Found (Universidad de Granada). 01/11/2019-30/09/2022.



- 3. Post-Doc: Graphene-Flagship (CORE2) European project**, n. 696656 European Union (H2020). 01/04/2018-31/10/2019. *Italian Institute of Technology, Genova, Italy*
- 4. Post-Doc: Graphene-Flagship (CORE1) European project**, n. 696656 European Union (H2020). 01/04/2016-01/04/2018. *Italian Institute of Technology, Genova, Italy*
- 5. Post-Doc Graphene-Flagship European project**, EPUE008301 European Union (H2020). 01/04/2014-P2Y. *Italian Institute of Technology, Genova, Italy*
- 6. PhD student: NanoTransKinetics project** (EC-FP7), n. NMP4-2010-266737 European Union - FP7 programme. 01/02/2012-P2Y. *University College Dublin*
- 7. PhD student: NeuroNano Small Collaborative Project** - NNP4-SL-2008-214547 European Union - FP7 programme. 01/05/2010-P1Y7M. *University College Dublin*

C.4. Awards

- 1. 9th Nanotox 2018 outstanding oral contribution** (Neuss, Germany, 2018)
- 2. Best oral presentation** at the Dublin Chemistry Graduate Programme (Dublin, Ireland, 2013)
- 3. Best oral presentation** at the Irish Cytometry Society meeting (Galway, Ireland, 2012)
- 4. European Materials Research Society Young Scientist Award** in recognition of the outstanding oral contribution, E-Mrs Spring Meeting (Nice, France, 2011)

C.5. Editorial Assignments

Editorial Board Member: The Graphene Technology journal (Springer Nature); Biology (MDPI)

Reviewer for: ACS Nano, ACS Omega; 2D Materials, Biomedical Physics & Engineering Express; Nanoscale, RCS Advances; Carbon, Chemosphere, Synthetic Metals; Nanomedicine, Communication Biology, Advanced Biology

C.6. Dissemination activities

- 1. Pint of Science – Italy**, “Dalla Matita al Premio Nobel: La Favola del Grafene”, Genova, Italy, 2016 (<https://www.mentelocale.it/genova/articoli/69418-genova-pint-of-science-genova-2016-birra-scienza-al-pub.htm>)
- 2. Cineforum: Fra Cinema e Scienza**, “C’è tanta scienza in fondo”, seminar introduction to the movie “Transcendence”, Cinema Sivori, Genova, Italy, 2015
- 3. Huffington Post Science Blog – Italy**, 8 blogs published between 2015 and 2016 in the Huffington Post Italy (<https://www.huffingtonpost.it/author/mattia-bramini/>)
- 4. FameLab Italy**, “Nanotecnologie per applicazioni biomediche”, 3rd at the regional FameLab contest, 2015, Genova, Italy (<https://www.youtube.com/watch?v=BxpRy7BE8yA>)

C.7. Student Tutoring

- 1. PhD (Doctoral) Thesis:** Impact of graphene nanosheets on primary astrocytes; Università degli studi di Genova. Student: Martina Chiacchiaretta, 28/02/2018
- 2. Master Thesis:** (i) Magnetic ferrofluid nanosystems as innovative neuro-interfaces to foster regeneration and restore network connectivity in neurodegenerative disorders; UGR. Student: Paula Maria Garcia Franco, 14/07/2020 (ii) Biointeraction of graphene-related nanomaterials with an in vitro blood-brain barrier model; Università degli Studi di Genova. Student: Alice Podestà, 20/02/2019; (iii) Bio-interazione di nanomateriali di grafene ed ossido di grafene con astrociti primari; Università degli Studi di Genova. Student: Emanuele Giordano, 30/03/2016
- 3. Bachelor Thesis:** Antioxidant effects of platinum nanoparticles on primary rat cortical neurons; Università degli studi di Genova. Student: Giulia Borgonovo, 27/07/2018