

Maria Giovanna Garone

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Education

- Nov 2018-
Oct 2021 **PhD student in Life Sciences *Doctor Europaeus*** program, Sapienza University, Italy
Supervisor: Prof. Alessandro Rosa (alessandro.rosa@uniroma1.it)
Thesis title: *RNA-binding protein network alteration causes aberrant axon branching and growth phenotypes in FUS-ALS mutant motor neurons.*
- Oct 2016-
March 2018 **Master's Degree early completion in Genetics and Molecular Biology**, Sapienza University, Italy
Supervisor: Prof. Alessandro Rosa
Thesis title: *Development of new motor neuron differentiation protocols from human iPS cells to investigate RNA binding protein dynamics in ALS.*
110/110 cum laude
- 2018 **Path of Excellence in Genetics and Molecular Biology**, Sapienza University, Italy
The Honour program in which the student is required to take the additional exams relating to the special activities into scientific research, in addition to the exams on the ordinary courses of the study program.
Supervisor: Silvia Di Angelantonio (silvia.diangelantonio@uniroma1.it)
Thesis title: *The brain-gut-microbiota axis.*
- Oct 2013-
Oct 2016 **Bachelor's Degree in Biological Science**, Sapienza University, Italy
Supervisor: Prof. Giorgio Camilloni
Thesis title: *Regulatory aspects of three-dimensional components of the nucleus.*
110/110 cum laude

Research Experience

- Nov 2021-
present **Postdoctoral Researcher** at Dept. of of Biology and Biotechnology, Sapienza University of Rome, Italy. present
Supervisor: Alessandro Rosa (alessandro.rosa@uniroma1.it).
- Nov 2018-
Oct 2021 **PhD Student**, Rosa Lab, Sapienza, Italy; studying the role of RNA binding proteins in ALS.
- May 2019-
Sept 2019 **Visiting University College London (UCL) Institute of Neurology**, United Kingdom
Supervisor: Dr. Pietro Fratta (p.fratta@ucl.ac.uk); studying ALS in mouse primary neurons and setting up iPSC work in the lab.
- March 2018-
Oct 2018 **Research fellowship**, Dept. of Physics, Center for Nano Life Science, Sapienza University, Italy
Supervisor: Giancarlo Ruocco; studying gene expression of non-coding RNA in iPSC-derived motor neurons.
- Sept 2016-
March 2018 **Master internship**, Rosa Lab, Sapienza, Italy; studying the crosstalk between FUS and HuD proteins in ALS-motor neurons and generation of new differentiation protocol to obtain iPSC-derived cranial and spinal motoneurons.

Grant

- 2021 **FENS conference travel grant**
- 2021 **"Start of Research for Young"**
Pilot grant lasting 1 year
Title: *A brave new trace of correlation between RNA-binding proteins: the centric role of HuD.*
Protocol number: AR120172B8833C40
- 2020 **"Research Project _medium project"**
Pilot grant lasting 2 year
Title: *Ultrafast energy transfer in photosynthetic materials.*
Protocol number: RM11916B79D319C7
- 2019 **EMBO travel grant**
- 2016 **Study Grant** in partnership with Department of Biology and Biotechnology, Sapienza University, Italy.
- 2014 **Study Grant** awarded for Bachelor's Degree in Biological Science. Sapienza University of Rome, Italy.

Award

- 2018 **"Excellent Graduate"** of the Faculty of Mathematical, Physical and Natural Sciences: The best student of the academic year 2017-2018. Sapienza University of Rome.
- 2018 **IV edition PriSLA-Award thesis about Amyotrophic Lateral Sclerosis.**

Courses

- 2020 Advanced online course in "Writing in the Sciences". Stanford University. Graduation grade: 100/100 cum laude.
- 2020 Advanced online course with certificate in "Statistics and R". Harvard University. Graduation grade: 98/100.
- 2019 Microscopy course in "Two-Photon Laser Scanning Microscopy". CLNS_Istituto Italiano di Tecnologia (IIT).

Technical Experience

Cell culture:	human induced Pluripotent Stem Cell (hiPSC), hiPSC-derived motoneurons, hiPSC-derived skeletal muscle cells, HeLa cells, mouse primary motoneurons preparation and culturing on coverslips and microfluidic devices, stable cell line culturing (electroporation and lipofection), differentiation protocols.
Imaging:	confocal microscopy
Biochemistry:	co-immunoprecipitation, protein-pull down, RNA binding protein mapping (RNA Immunoprecipitation, monitored eCLIP), <i>in vitro</i> binding and competition assays.
Molecular biology:	cloning design, gene editing, real-time PCR, Proximity ligation assay (PLA), fluorescence in situ hybridization (FISH), metabolic labeling (AHA), luciferase assay, western blotting (WB), RNA interference (RNAi), immunofluorescence staining.
Bioinformatic Analysis:	R-studio, Python.

Conference attendance

- 2021 **RNA Mechanisms and Brain Disease.** FENS conference. Selected for **Oral Presentation.** Denmark, 20-23 October 2021.
- 2021 Mechanistic insights into the pathophysiology of ALS. Dementia Research Institute conference. Selected for **Spotlight Oral Presentation.** United Kingdom, 26-28 May 2021.
- 2019 **Neuroscience Symposium: Lighting up the brain.** Sapienza University of Rome conference. Selected for **Oral Presentation.** Rome, 4th July 2019.
- 2019 **Cell Biology of Neuron: Polarity, Plasticity and Regeneration.** EMBO Workshop. Selected for **Oral Presentation.** Heraklion, Greece 7-10 May 7-10 2019.
- 2018 **FISV Congress.** Selected for **Oral Presentation.** Rome, September 2018.
- 2021 **BraYn. Brainstorming Research Assembly for YOUNG Neuroscientists.** Selected for **Poster Presentation.** Genoa, June 2018.

Publications

- Tiago T, Hummel B, Galli V, Vinet J, Morelli FF, Basile V, Mediani L, Antoniani F, Pomella S, Cassandri M, **Garone MG**, Silvestri B, Cimino Marco, Mouly M, Poser Ina, Rosa A, Alberti S, Rota R, Ben-Zvi A, Sawarkar R, Carra S. Small heat-shock protein HSPB3 promotes myogenesis by regulating the Lamin B receptor. *Cell Death Dis* 12, 452 (2021). <https://doi.org/10.1038/s41419-021-03737-1>.
- Garone MG**, Birsa N, Rosito M, Salaris F, Mochi M, de Turreis V, R. Nair, Cunningham TJ., Fisher E M. C., Fratta P, Rosa A. RNA-binding protein network alteration causes aberrant axon branching and growth phenotypes in FUS ALS mutant motoneurons. *bioRxiv* 2020.08.26.268631; doi: <https://doi.org/10.1101/2020.08.26.268631>. Under review on *Communication Biology*.
- Birsa N *, Ule AM*, **Garone MG**, Tsang B, Mattedi F, Chong PA, Humphrey J, Jarvis S, Pisiren M, Wilkins OG, Nosella M, Devoy A, Bodo C, Fernandez de la Fuente R, Fisher EMC, Rosa A, Viero G, Forman-Kay JD, Schiavo G, Fratta P. FUS-ALS mutants alter FMRP phase separation equilibrium and impair protein translation. *bioRxiv* 2020.09.14.296038; doi: <https://doi.org/10.1101/2020.09.14.296038>. Under review on *Science Advance*.
- Garone MG**, D'Antoni C, Rosa A. Culture of human iPSC-derived motoneurons in compartmentalized microfluidic devices and quantitative assays for studying axonal phenotypes. *Methods in Molecular Biology* (Nature Springer) 2021.
- Garone MG** and Rosa A. PiggyBac vectors in pluripotent stem cell research and applications. *Handbook of Advances in Stem Cell Biology. Methods in iPSC Technology.* <https://doi.org/10.1016/B978-0-323-85766-6.00003-6>. Elsevier 2021.
- Garone MG**, Alfano V, Salvatori B, Braccia C, Peruzzi G, Colantoni A, Bozzoni I, Armirotti A, Rosa A. Proteomics analysis of FUS mutant human motoneurons reveals altered regulation of cytoskeleton and other ALS-linked proteins via 3'UTR binding. *Sci Rep.* 2020 Jul 16;10(1):11827. doi:10.1038/s41598-020-68794-6. PMID: 32678235; PMCID: PMC7366621.
- Humphrey J, Birsa N, Milioto C, McLaughlin M, Ule AM, Robaldo D, Eberle AB, Kräuchi R, Bentham M, Brown AL, Jarvis S, Bodo C, **Garone MG**, Devoy A, Soraru G, Rosa A, Bozzoni I, Fisher EMC, Mühlemann O, Schiavo G, Ruepp MD, Isaacs AM, Plagnol V, Fratta P. FUS ALS causative mutations impair FUS autoregulation and splicing factor networks through intron retention. *Nucleic Acids Res.* 2020 Jul 9;48(12):6889-6905. doi: 10.1093/nar/gkaa410. PMID: 32479602; PMCID: PMC7337901.
- Rea J, Menci V, Tollis P, Santini T, Armaos A, **Garone MG**, Iberite F, Cipriano A, Tartaglia GG, Rosa A, Ballarino M, Laneve P, Caffarelli E. HOTAIRM1 regulates neuronal differentiation by modulating NEUROGENIN 2 and the downstream neurogenic cascade. *Cell Death Dis.* 2020 Jul 13;11(7):527. doi:10.1038/s41419-020-02738-w. PMID: 32661334; PMCID: PMC7359305.
- Garone MG**, de Turreis V, Soloperto A, Brighi C, De Santis R, Pagani F, Di Angelantonio S, Rosa A. Conversion of Human Induced Pluripotent Stem Cells (iPSCs) into Functional Spinal and Cranial Motor Neurons Using PiggyBac Vectors. *J Vis Exp.* 2019 May 1;(147). doi: 10.3791/59321. PMID: 31107442.
- De Santis R, Alfano V, de Turreis V, Colantoni A, Santini L, **Garone MG**, Antonacci G, Peruzzi G, Sudria-Lopez E, Wyler E, Anink JJ, Aronica E, Landthaler M, Pasterkamp RJ, Bozzoni I, Rosa A. Mutant FUS and ELAVL4 (HuD) Aberrant Crosstalk in Amyotrophic Lateral Sclerosis. *Cell Rep.* 2019 Jun 25;27(13):3818-3831.e5. doi: 10.1016/j.celrep.2019.05.085. PMID: 31242416; PMCID: PMC6613039.
- De Santis R, **Garone MG**, Pagani F, de Turreis V, Di Angelantonio S, Rosa A. Direct conversion of human pluripotent stem cells into cranial motor neurons using a piggyBac vector. *Stem Cell Res.* 2018 May;29:189-196. doi:10.1016/j.scr.2018.04.012. Epub 2018 Apr 27. PMID: 29729503.

"Autorizzo la pubblicazione del mio curriculum vitae e il trattamento dei dati personali in esso contenuti in base all'art. 13 del D. Lgs. 196/2003 e all'art. 13 GDPR 679/16".