CURRICULUM VITAE

PERSONAL DETAILS

Name**: Gisela Gaina**
Researcher unique identifier(s): https://orcid.org/0009-0007-2582-3248,
https://www.brainmap.ro/gisela-gaina

- **Education and key qualifications**

11/04/2009	PhD, Faculty of Biology, University of Bucharest, Bucharest, Romania; Thesis: *Molecular characterization of proteins involved in muscular dystrophies*
09/07/1997	Bachelor's degree in Biology Faculty of Science, University of Pitesti, Arges

- **Current position(s)**

2024 - present	Scientific Researcher grade II, Cell Biology, Neurosciences and Experimental Myology Laboratory, Victor Babeș National Institute of Pathology Bucharest, Romania
2022 - present	Assistant Professor of Cell & Molecular Biology and Histology, Faculty of Medicine/Cell, Molecular Biology and Histology, Carol Davila University of Medicine and Pharmacy Bucharest, Romania

- **Previous position(s)**

2014 - 2024	Scientific Researcher grade III, Cell Biology, Neurosciences and Experimental Myology Laboratory, Victor Babes National Institute of Pathology Bucharest, Romania
2011 – 2014	Scientific Researcher grade III, Pathological Anatomy Laboratory, Victor Babes National Institute of Pathology Bucharest, Romania
2009 - 2019	Scientific Researcher grade III, Department of Biochemistry and Molecular Biology, Faculty of Biology, University of Bucharest, Romania

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

My research focuses on the molecular and cellular mechanisms of muscular dystrophies and neurodegenerative diseases, with a particular interest in muscle regeneration and translational biomarkers. Across the selected publications, I contributed my expertise in molecular and cellular biology, supporting experimental design, data generation and validation of results in this field. The technical competencies applied in these studies include nucleic acid isolation and purification from biological samples, nucleic acid electrophoresis, conventional and fluorescence-based PCR, PCR-RFLP (polymerase chain reaction–restriction fragment length polymorphism), MLPA (multiplex ligation-dependent probe amplification) and MS-MLPA (methylation-specific multiplex ligation-dependent probe amplification), high-resolution melting (HRM) analysis, sequencing and droplet digital PCR (ddPCR). In addition, I contributed to cellular and tissue-based analyses by performing cryosectioning of various biological specimens, followed by histological and immunolabeling experiments for protein expression analysis, as well as western blot assays for protein detection and quantitative assessment. This integrated technical expertise enabled the correlation of molecular findings with morphological and protein expression data and supported multidisciplinary investigations of disease-related molecular mechanisms.

Representative research outputs include:

Peer-reviewed journal articles (selected)

- Ioghen OC, **Gaina G**, Lambrescu I, Manole E, Pop S, Niculescu TM, Mosoia O, Ceafalan LC, Popescu BO. Bacterial products initiation of alpha-synuclein pathology: an in vitro study. ***Sci Rep***. 2024 Dec 5;14(1):30306. doi: 10.1038/s41598-024-81020-x. PMID: 39639092;

- Pablo Iruzubieta, Alberto Damborenea, Ioghen M, **Gaina G**, Bastian A, Streata A, Pikatza-Menoio O, Walter MC, Müller-Felber W, Muelas N, Moragón S, Bastida N, López-Cortajarena A, Gereñu G, Alonso-Martin S, Volker Straub, Juan Jesús Vílchez. David de Sancho, Raluca Teleanu, Adolfo López de Munain and Blázque L; Biallelic variants in SNUPN gene cause a limb girdle muscular dystrophy with myofibrillar-like features, ***2024, Brain,*** Feb 15: DOI: 10.1093/brain/awae046
- E Manole, **G Gaina**, LC Ceafalan, ME Hinescu Skeletal Muscle Stem Cells in Aging: Asymmetric/Symmetric Division Switching, ***Symmetry*** 14 (12), 2676; 2022; https://doi.org/10.3390/sym14122676
- Lambrescu I, Popa A, Manole E, Ceafalan LC, **Gaina G**. Application of Droplet Digital PCR Technology in Muscular Dystrophies Research. ***Int J Mol Sci***. 2022 Apr 27;23(9):4802. doi: 10.3390/ijms23094802.
- **Gaina G,** RHAM Vossen, E Manole, DA Plesca, E Ionica Combining Protein Expression and Molecular Data Improves Mutation Characterization of Dystrophinopathies; Frontiers in Neurology, 2021, Frontiers in Neurology 12, 718396-718396 , https://doi.org/10.3389/fneur.2021.718396
- **Gaina G**, Alexandra Popa: Muscular dystrophy: experimental animal models and therapeutic approaches, ***Exp Ther Med.***, 2021 Jun; 21(6): 610. doi: 10.3892/etm.2021.10042
- Hammond S, Aartsma-Rus A, Alves S, Borgos S, Buijsen R, Collin R, Covello G, Denti M, Desviat L, Echevarría L, Foged C, **Gaina G**, Garanto A, Goyenvalle A, Guzowska M, Kholodnyuk IH, D Jones, Krause S, Lehto T, Montolio M, van Roon-Mom W: Delivery of Oligonucleotide-Based Therapeutics: Challenges and Opportunities, ***EMBO Molecular Medicine***, 2021. 13: e13243https://doi.org/10.15252/emmm.202013243

Sole editor of the following books:

- ***Molecular diagnosis, Current Approaches and their Clinical Application,*** 2025; Editura InTechOpen, doi10.5772/intechopen.1006439, ISBN978-1-83635-048-4, 116 pages
- ***Potential Therapeutic Strategies for Muscular Dystrophy,*** 2023, Editura InTechOpen, doi: 10.5772/intechopen.102255; ISBN 978-1-83768-156-3, PRINT ISBN 978-1-83768-155-6; EBOOK (PDF) ISBN 978-1-83768-157-0, 114 pages
- ***Muscular Dystrophy - Research Updates and Therapeutic Strategies,*** 2020, Editura InTechOpen, Publicata in 23 Decembrie 2020, ISBN: 978-1-83968-475-3; Print ISBN: 978-1-83968-474-6; eBook (PDF) ISBN: 978-1-83968-476-0; doi:0.5772/intechopen.87261, 176 pages

Patent applications

- ***OSIM Nr. A/01065/2018/ Patent*** (134326/30.07.2020): Cismasiu V, Gaina G, Ionescu V. Set of two primers and two probes and a digital PCR method in emulsion, for the specific detection, in exon 14 of the FLT3 gene, of the duplication of a region with the terminal sequence GAGAATATGAATATGATCTCA
- ***OSIM A2020 00820/2020*** Cismasiu V, Gaina G, Ionescu V, Gruianu A, Lambrescu I, Amprentarea genetică umană prin detecția și dozarea unor mutații de tipul inserțiilor și delețiilor
- ***OSIM A2019/00719*** Valeriu Cismasiu, Gisela Gaina, Dan Soare, Ionescu Victor, Ioana Lambrescu. Set of two primers and two probes for the detection and determination of mutant NPM1 gene expression

Peer recognition

- **Specialized training fellowship at the Centre for Human and Clinical Genetics, Leiden University Medical Center (The Netherlands)**, focused on advanced molecular diagnostics for muscular dystrophies (MLPA, HRM and sequencing). *This competitive training provided me with the opportunity to acquire advanced molecular methods and to support the transfer of advanced diagnostic methodologies to my home institution.*
- **Specialized training fellowship at the Cyprus Institute of Neurology and Genetics (CING), Nicosia, Cyprus**, focused on methylation analysis using MS-MLPA. *This fellowship enabled the acquisition of advanced epigenetic diagnostic expertise relevant to neuromuscular and genetic disorders.*
- **TREAT-NMD training fellowship – Institute of Myology, Hôpital de la Salpêtrière, Paris, France**, providing advanced training in myology and neuromuscular disease research. *This fellowship reflects recognition by the international neuromuscular research community and strengthened my translational research expertise.*
- **COST Action CA17103 – Short-Term Scientific Mission (STSM) fellowship at BioCruces Health Research Institute, Barakaldo, Spain**, focused on exon-skipping therapies and antisense

oligonucleotide approaches. *This competitive fellowship supported international collaboration and advanced training in emerging RNA-based therapeutic strategies.*

- **National Representative** and **Management Committee Member – COST Action BM1207** ***Networking towards clinical application of antisense-mediated exon skipping*****.**
- **National Representative** and **Management Committee Member – COST Action CA17103** ***Delivery of Antisense RNA Therapeutics*****.**
- **Invited reviewer** for international peer-reviewed journals, including ***International Journal of Molecular Sciences*****,** ***Cells*****,** ***Biomolecules*****,** ***Life, STAR Protocols*****.**

ADDITIONAL INFORMATION

Total number of publications: 19
Total number of citations (excluding self-citations): 670 (Google Scholar)
h-index: 10 (Google Scholar).

Career breaks, unconventional career paths and major life events

No career breaks, unconventional career paths or major life events to declare.

Other contributions to the research community

- **Transfer and implementation of advanced molecular diagnostic methodologies** in my home institution (MLPA, MS-MLPA, HRM, Sanger sequencing), enabling their routine use in research and translational studies in neuromuscular and neurodegenerative diseases.
- **Training and supervision of junior researchers and students in molecular and cellular biology** techniques, laboratory workflows, data quality control and interpretation of molecular and imaging data. Within two institutional research projects, EXCELSAN (31PFE/2021–2024) and 7PFE (2018–2021), I was responsible for coordinating and conducting laboratory activities for participating students (Medicine, Pharmacy and Biology), including hands-on training in laboratory techniques, experimental workflows and the interpretation of molecular and cellular data.
- I delivered two invited **hands-on workshops** at student professional organizations, at the invitation of the organizers. At the **Military Medical Students' Association**, I conducted the workshop ***Molecular diagnosis – from DNA isolation to result***, focusing on practical molecular diagnostic workflows and specific laboratory techniques. In addition, at the **Bucharest Medical Students' Society (SSMB)**, I delivered the workshop ***Muscular dystrophy – from diagnosis to personalized therapies***, including practical demonstrations and discussions of disease-oriented molecular and cellular techniques. These workshops contributed to student training and knowledge transfer in molecular diagnostics and neuromuscular research.
- I have served as **coordinator** and **supervisor** for **undergraduate** and **master's theses** in the fields of molecular and cellular biology and neuromuscular research, providing scientific guidance on experimental design, selection and application of appropriate molecular and cellular techniques, data analysis and interpretation, as well as support in scientific writing. Through this activity, I contributed to the training of students in Biology, and supported the development of their research skills and academic competencies in translational biomedical research.