

## PERSONAL INFORMATIONS

**Serena Mirra**

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## CURRENT POSITION

**Name of Institution** Stazione Zoologica Anton Dohrn, Napoli (Italy)  
**Current position** Tenured Researcher III level  
**Start date** 01/10/2023  
**Current Affiliation** Biology and Evolution of Marine Organisms (BEOM) Department

## RESEARCH EXPERIENCE

**2018 - 2023 Postdoctoral Fellow CIBERER** in the Human Molecular Genetics Laboratory  
 Advisor: Prof. Gemma Marfany  
 Department of Genetics, Microbiology and Statistics, Faculty of Biology  
 University of Barcelona (UB, Barcelona, Spain)  
Field of study: Human Genetics and Neurobiology  
**2013 – 2018 Postdoctoral Fellow (CIBERNED and UB)** in the Developmental Neurobiology and Regeneration Laboratory  
 Advisor: Prof. Eduardo Soriano  
 Department of Cell Biology, Faculty of Biology  
 University of Barcelona (UB, Barcelona, Spain)  
Field of study: Developmental Biology and Neurobiology  
**2009 – 2013 PhD Student** in the Developmental Neurobiology and Regeneration Laboratory  
 Advisor: Prof. Eduardo Soriano  
 Department of Cell Biology, Faculty of Biology  
 University of Barcelona, Institute for Research in Biomedicine (Barcelona, Spain)  
Field of study: Developmental Biology  
**2006 – 2008 Research Assistant** in the Human Molecular Genetics Laboratory  
 Advisor: Prof. Matilde Valeria Ursini  
 Institute of Genetics and Biophysics A. Buzzati Traverso (IGB)  
 Consiglio Nazionale delle Ricerche (CNR, Naples, Italy)  
Field of study: Human Genetics

## EDUCATION AND TRAINING

**2013 PhD - Biomedicine**, University of Barcelona  
 Date: 26/07/2013 Qualification: *with Honours*  
**2009 M.Sc. - Neuroscience**, University of Barcelona  
**2008 M.Sc. - Biology and technology of assisted reproduction**, University of Naples Federico II  
**2007 M.Sc. - Biology**, University of Naples Federico II  
 Date: 19/12/2007 Qualification: 110/110 with Honours  
**2005 B.Sc. - General and Applied Biology**, University of Naples Federico II  
 Date: 26/07/2005 Qualification: 110/110 with Honours

## COURSE AND CERTIFICATES

**2023 National Scientific qualification as Associate Professor** in the Italian higher education system, in the call 2021/2023 (Ministerial Decree n. 553/2021 and 589/2021) for the disciplinary field of 05/F1 - Experimental biology. (Academic Recruitment Field 05/F - Experimental biology, according to the national classification).553/2021 (Italy). Validity of the qualification. 2023-2034.  
**2018 Clinical Study Coordinator Course**, IUSC | International University Study Center, Barcelona  
**2017 Accredited as Lecturer**, *Agència per a la Qualitat del Sistema Universitari de Catalunya*  
**2016 Certificat de suficiència en llengua catalana per a la docència universitària (C1)**, *Serveis Lingüístics UB*

## AWARDED RESEARCH

## GRANTS (last 5 years)

**2025-2026 Euro-BiImaging SEELIFE** Open Call for User Access Funding 2025 "NeuroMITilus: Unraveling the role of mitochondria in coping with Hypoxia/Reoxygenation stress in *Mytilus galloprovincialis* nervous system" (PID: 4100)  
 PI: Serena Mirra, SZN  
 Funding entity or body: European Union's NextGenerationEU under the MUR call 3264/2021 PNRR M4/C2/L3.1.1 (Project No. IR0000023, CUP B53C22001810006)  
**2022-2023 ACCI 2021 - Terapia génica para la Retinitis Pigmentosa causada por mutaciones en CERKL: prueba preclínica mediante virus adenoasociados (AAVs) en el modelo de ratón *Cerkl<sup>KO</sup>***  
 PI: Serena Mirra, University of Barcelona  
 Total amount: 55600 €

**2020-2023 Targeting regulatory signalling pathways in retinal neurosensory genetic disorders: a window for therapy**

Co-PIs: Gemma Marfany and Serena Mirra, University of Barcelona

Total amount: 113740€

**2020-2021 ACCI 2019 – Dinámica mitocondrial y metabólica en un modelo de retinitis pigmentosa. ¿una nueva vía terapéutica?**

PI: Serena Mirra, University of Barcelona

Total amount: 39300 €

## AWARDS AND FELLOWSHIPS

(last 5 years)

**2023 Tenured researcher position**

Winner of tenured researcher position at the “Stazione Zoologica Anton Dohrn”, Naples, Italy

**2022 STM (Short Term Mobility)**

Aims: Invited Researcher; Awarding entity: Consiglio Nazionale delle Ricerche (CNR)

Conferral date: 2022; Duration: 10 days (August-September 2022)

Entity where activity was carried out: IGB-CNR, Naples (Italy)

**2022 EMBO Scientific Exchange Grant**

Aims: Postdoctoral Mobility; Awarding entity: EMBO

Conferral date: 2021; Duration: 2 months (January-February 2022)

Entity where activity was carried out: Telethon Institute of Genetics and Medicine (TIGEM), Naples (Italy)

**2021 International Short Mobility Fellowship 2021**

Aims: Postdoctoral Mobility; Awarding entity: CIBER ENFERMEDADES RARAS (CIBERER)

Conferral date: 28/05/2021; Duration: 3 months (October-December 2021)

Entity where activity was carried out: IGB-CNR, Naples (Italy)

## SCIENTIFIC MEETINGS

(last 5 years)

1. **European Society for Evolutionary Biology (ESEB)**, Barcelona (Spain). 17-22/08/2025. Poster presentation.
2. **EMBO workshop “Mitochondria in the Nervous System”**, Engelberg (Switzerland). 28/09-02/10/2025. Poster presentation.
3. **Ciaramella Workshop 2025**, Naples (Italy). 13-14/11/2025. Poster.
4. **Neapolitan Brain Group (NBG) Meeting XIII**, Naples (Italy). 21/11/2025. Poster.
5. **Seminars at Fundació Sant Joan de Déu**, Barcelona (Spain). 27/06/2022. Oral communication.
6. **XII Simposi de neurobiologia, Sociedad Catalana de Biología**, Barcelona, (Spain). 06-08/06/2022. Poster presentation.
7. **Reunión Anual CIBERER 2022**. Castelfelers, (Spain). 26-27/05/2022. Oral communication.
8. **Reunión Anual CIBERER 2021**. Virtual Meeting. 29-30/06/2021. Oral communication.

## PUBLICATIONS

**Publication Metrics**Source: *Scholar citation*, 30/03/2026

H-Index: 15

Citations: 569

\* Equal contribution; ± Corresponding authors

TA. van Gelderen, E. D'Aniello, A. Macina, A. Gallo, S. Carrella, S. Mirra. **Effect of hypoxia and reoxygenation on the nervous system of the Mediterranean mussel *Mytilus galloprovincialis***, 16 February 2026, PREPRINT (Version 1) available at Research Square DOI: <https://doi.org/10.21203/rs.3.rs-8775360/v1>

C. Casale, A. Colella, M. Cruoglio, S. Mirra, E. Iaccarino, MB. Lioi, F. Fusco, A. Sandomenico, A. Leonardi, F. Zazzeroni, A. Pescatore. **GADD45β inhibits RIPK3-mediated NF-κB activation by interfering with NEMO-RIPK1-RIPK3 interactions**. *Cell Death Discov.* 2025 Dec 7. DOI: [10.1038/s41420-025-02894-y](https://doi.org/10.1038/s41420-025-02894-y).

V. Toulis, G. Marfany, S. Mirra±. **Marine Derived Strategies Against Neurodegeneration**. *Mar. Drugs.* 31/07/2025 DOI: <https://doi.org/10.3390/md23080315>

I. Izquierdo-Villalba\*, S. Mirra\*, Y. Manso\*, (...) A. López de Munain, E. Soriano, AM. Aragay. **A mammalian-specific Alex3/Gαq protein complex regulates mitochondrial trafficking, dendritic complexity, and neuronal survival**. *Sci Signal.* 06/02/2024 DOI: [10.1126/scisignal.abq1007](https://doi.org/10.1126/scisignal.abq1007).

S. Mirra, G. Marfany. **From beach to the bedside: harnessing mitochondrial function in human diseases using new marine-derived strategies**. *Int. J. Mol. Sci.* 01/2024. DOI: [10.3390/ijms25020834](https://doi.org/10.3390/ijms25020834).

R. García-Arroyo, E. Borrego-Domenech, C. Herrera-Úbeda, MA Asensi, C. Núñez de Arenas, JM Cuezva, J. Garcia-Fernández, FV. Pallardó, S. Mirra±, G. Marfany ±. **Exacerbated response to oxidative stress in the Retinitis Pigmentosa Cerkl<sup>KD/KO</sup> mouse model triggers retinal degeneration pathways upon acute light stress**. *Redox Biol.* 28/08/2023 DOI: [10.1016/j.redox.2023.102862](https://doi.org/10.1016/j.redox.2023.102862).

R. García-Arroyo, A. Gavaldà-Navarro, F. Villarroja; G. Marfany±, S. Mirra±. **CERKL, a Retinal Dystrophy Gene, Regulates Mitochondrial Transport and Dynamics in Hippocampal Neurons**. *International Journal of Molecular Sciences.* 30/09/2022.

DOI: <https://doi.org/10.3390/ijms231911593> Accession Number WOS:000867757100001

S. Mirra<sup>\*</sup>, L. Sánchez-Bellver, C. Casale, A. Pescatore, G. Marfany<sup>\*</sup>. **Ubiquitin Specific Protease USP48 Destabilizes NF- $\kappa$ B/p65 in Retinal Pigment Epithelium Cells.** *International Journal of Molecular Sciences*. 26/08/2022.

DOI: <https://doi.org/10.3390/ijms23179682> Accession Number WOS:000851128200001

Gavaldà-Navarro, S. Mirra, Y. Manso, D. Sanchez-Infantes, M. Giralt, E. Soriano, F. Villarroya. **The armadillo-repeat containing X-linked protein 3, ARMCX3, is a negative regulator of the browning of adipose tissue associated with obesity.** *International Journal of Obesity*. 15/06/2022.

DOI: <https://doi.org/10.1038/s41366-022-01169-1> Accession Number WOS:000811447500001

Luque J, Mendes I, Gómez B, (...) , CIBERER Network (including Mirra S); Lapunzina P. **CIBERER: Spanish national network for research on rare diseases: A highly productive collaborative initiative.** *Clin Genet*. 01/05/2022.

DOI: 10.1111/cge.14113; Accession Number WOS:000750972100001

R. García-Arroyo, A. Gavaldà-Navarro, F. Villarroya; G. Marfany<sup>\*</sup>, S. Mirra<sup>\*</sup>. **Overexpression of CERKL Protects Retinal Pigment Epithelium Mitochondria from Oxidative Stress Effects.** *Antioxidants (Basel)*. 19/12/2021.

DOI: 10.3390/antiox10122018; Accession Number WOS:000735481700001

S. Mirra<sup>\*†</sup>; R. García-Arroyo; E. B-Domènech; A. Gavaldà-Navarro; C. Herrera-Úbeda; C. Oliva; J. Garcia-Fernàndez; R. Artuch; F. Villarroya; G. Marfany<sup>\*</sup>. **CERKL, a retinal dystrophy gene, regulates mitochondrial function and dynamics in the mammalian retina.**

DOI: 10.1016/j.nbd.2021.105405; Accession Number WOS:000677548100003.

S. Mirra<sup>\*</sup>, A. Gavaldà-Navarro<sup>\*</sup>, Y. Manso, M. Higuera, R. Serrat, M. Salcedo, F. Burgaya, J.M. Balibrea, E. Santamaría, I. Uriarte, C. Berasain, M.A. Avila, B. Mínguez, E. Soriano and F. Villarroya. **ARMCX3 Mediates Susceptibility to Hepatic Tumorigenesis Promoted by Dietary Lipotoxicity.** *Cancers*. 13(5), 1110, 05/03/2021.

DOI: <https://doi.org/10.3390/cancers13051110>; Accession Number WOS:000627947800001.

Aísa-Marín I, García-Arroyo R, Mirra S, Marfany G. **The alter retina: alternative splicing of retinal genes in health and disease.** *Int. J. Mol. Sci.* 02/2021

DOI: <https://doi.org/10.3390/ijms22041855>; Accession Number WOS:000623794900001.

E. Navas-Pérez<sup>\*</sup>; C. Vicente-García<sup>\*</sup>; S. Mirra<sup>\*</sup>; D. Burguera; N. Fernández-Castillo; A. Rodríguez-Moreno; J.L. Ferrán; M. López-Mayorga; M. Alaiz-Noya; I. Suárez-Pereira; E. Antón-Galindo; F. Ulloa; P. Cuscó; R. Falcón-Moya; S. D'Aniello; B. Cormand; G. Marfany; E. Soriano; Á.M. Carrión; J.J. Carvajal; J. Garcia-Fernàndez. **A transposon domestication shared by placental mammals with relevance to autism spectrum disorder.** *Genome Biology*, 21 - 1, 26/10/2020.

DOI: 10.1186/s13059-020-02172-3; Accession Number WOS:000582561300001.

E. Borrego-Domenech; R. Andres; M.J. Lopez-Iñiesta; S. Mirra; R. Garcia-Arroyo; S. Milla; F. Sava; J. Andilla; P. Loza-Alvarez; P. De la Villa; R. Gonzales-Duarte; G. Marfany. **A new *Cerkl* mouse model generated by CRISPR-Cas9 shows progressive retinal degeneration and altered morphological and electrophysiological phenotype.** <https://doi.org/10.1167/iovs.61.8.14>. 61 - 8, pp. 14. *IOVS*, 13/07/2020.

DOI: 10.1167/iovs.61.8.14; Accession Number WOS:000554499000016.

Mirra S; Marfany G; Garcia-Fernàndez J. **Under pressure: cerebrospinal fluid contribution to the physiological homeostasis of the eye.** *Seminars in Cell and Dev Biology*, 06/2020.

DOI: [doi.org/10.1016/j.semcdb.2019.11.003](https://doi.org/10.1016/j.semcdb.2019.11.003); Accession Number WOS:000534484400006.

Mirra S<sup>\*</sup>; Marfany G<sup>\*</sup>. **Mitochondrial gymnastics in retinal cells: a resilience mechanism against oxidative stress and neurodegeneration.** *Adv Exp Med Bio*, 2019.

DOI: 10.1007/978-3-030-27378-1\_84.1185; Accession Number WOS:000514087200085

S. Mirra; F. Ulloa; I. Gutierrez-Vallejo; E. Marti; E. Soriano. **Function of *Armcx3* and *Arm10/SVH* genes in the regulation of progenitor proliferation and neural differentiation in the chicken spinal cord.** *Frontiers in Cellular Neuroscience*, 01/04/2016

DOI: 10.3389/fncel.2016.00047. Accession Number WOS:000371293500001.

D.J. Barbosa<sup>\*</sup>; R. Serrat<sup>\*</sup>; S. Mirra; M. Quevedo; E. Gómez de Barreda; J. Àvila; E. Fernandes; M. de Lourdes Bastos; J.P. Capela; F. Carvalho; E. Soriano. **MDMA impairs mitochondrial neuronal trafficking in a Tau- and Mitofusin2/Drp1-dependent manner.** 88-8, pp.1561-1572. *Archives of Toxicology*, 08/2014.

DOI: 10.1007/s00204-014-1209-7; Accession Number WOS:000339898700009.

D.J. Barbosa<sup>\*</sup>; R. Serrat<sup>\*</sup>; S. Mirra; M. Quevedo; E. Gómez de Barreda; J. Àvila; L.M. Ferreira; P. Sérgio Branco; E. Fernandes; M. de Lourdes Bastos; J. Paulo Capela; E. Soriano; F. Carvalho. **The mixture of "ecstasy" and its metabolites impairs mitochondrial fusion/fission equilibrium and trafficking in hippocampal neurons, at in vivo relevant concentrations.** *Toxicological Sciences*, 06/2014.

DOI: 10.1093/toxsci/kfu042; Accession Number WOS:000337075900013.

R. Serrat <sup>\*</sup>; S. Mirra<sup>\*</sup>; J. Figueiro-Silva; E. Navas-Pérez; M. Quevedo; G. López-Doménech; P. Podlesniy; F. Ulloa; J. Garcia-Fernàndez; R. Trullas; E. Soriano. **The *Armc10/SVH* gene: genome context, regulation of mitochondrial dynamics and protection against Abeta-**

**induced mitochondrial fragmentation.** *Cell Death and Disease*, 04/2014.  
DOI: 10.1038/cddis.2014.121; Accession Number WOS:000335450400009.

R. Serrat\*; G. López-Doménech\*; S. Mirra; M. Quevedo; J. Garcia-Fernández; F. Ulloa; F. Burgaya; E. Soriano. **The non-canonical Wnt/PKC pathway regulates mitochondrial dynamics through degradation of the arm-like domain-containing protein Alex3.** *PLoS One*, 02/07/2013.  
DOI: 10.1371/journal.pone.0067773; WOS:000321341000095.

G. López-Doménech\*; R. Serrat\*; S. Mirra; S. D'Aniello; I. Somorjai; A. Abad; N. Vitreira; E. García-Arumí; M. Alonso; M. Rodríguez-Prados; F. Burgaya; A. Andreu; J. García-Sancho; R. Trullas; J. Garcia-Fernández; E. Soriano. **The Eutherian Armcx genes regulate mitochondrial trafficking in neurons and interact with Miro and Trak2.** *Nat.Communications*, 05/2012.  
DOI:10.1038/ncomms1829.3-814; Accession Number WOS:000304611400014.

G. Napolitano; S. Mirra; J. Monfregola; A. Lavorgna; A. Leonardi; M.V. Ursini. **NESCA: a new NEMO/IKKgamma and TRAF6 interacting protein.** *Journal of Cellular Physiology*, 08/2009  
DOI: 10.1002/jcp.21782.; Accession Number WOS:000267555000017

## MENTORING AND TEACHING EXPERIENCE

1. **Invited Teacher** (Talk and Practical session) at the **Winter School “MytEED – *Mytilus galloprovincialis* meets Eco-Evo-Devo”** - Stazione Zoologica Anton Dohrn, Naples (Italy) 9-13/03/2026
2. **Doctoral Thesis and/or final year projects supervision** – direction or co-direction of 1 post-doc, 1 PhD thesis and 13 M.Sc. or B.Sc. projects.
3. **Adjunct Professor** - Department of Genetics, Faculty of Biology (UB), 2021-2022 (70,14 hours).
4. **Invited Professor** - Master in Biomedicine (UB), 2021-2021.
5. **Course of Developmental Biology (practical course)** - BSc in Biomedical Sciences and Biology (UB), 2018-2019 (48 hours/1.92 credits), 2019-2020 (60 hours/ 2.4 credits), 2020-2021 (45 hours/ 1.75 credits), 2021-2022 (15 hours/ 0.6 credits).
6. **Course of Neurobiology (practical course)** - BSc in Biomedical Sciences and Biology (UB), 2016-2017 (54 hours/2.16 credits) and 2017-2018 (32 hours / 1.28 credits).
7. **Course of Cell Biology (practical course)** - BSc in Biotechnology (UB), 2017-2018, (30 hours/1.2 credits).
8. **Member of the final examination committee** - MSc in Neuroscience, (UB) 2020-2021 and 2014-2015; BSc in Biology, Biotechnology and Biomedical Science, (UB) 2019-2020 (14.4 hours/0.576 credits).

## SCIENTIFIC DIVULGATION ACTIVITIES

1. Participation in **European Researchers' Night in Catalonia 2021**: Short talk as Sant Joan de Deu Research Institute member
2. Participation in the SEBBM (Sociedad Española de Bioquímica y Biología Molecular) **informative video on animal research** (Global Get on #BOARD Campaign -Be Open about Animal Research Day-; July 2021).
3. Publication of **scientific divulgation article**: “*Un nuevo estudio ayuda a comprender las bases moleculares de las distrofias de retina causadas por el gen CERKL*” (S. Mirra and G. Marfany; <https://genotopia.com/>; June 2021).
4. Selected in **Women and Girls in Science Day** as CIBER young woman researcher (CIBER; February 2021).
5. Participation in **Scientific photography competition** (CIBER-ER; February 2021).
6. Participation in **Science Communication Video competition** (#QueSigaLaCiencia; October 2020).
7. Participation in **Science Communication Video competition: meet the researchers CIBER**; October 2020).

## OTHERS

1. Member of the **SZN PhD Council** (PhD Open University program - Zoological Station), 2023-present
2. Member of the **examining commission** for the public competition “Research fellowship (Assegno di Ricerca) n. 6/2024”, “Research fellowship (Assegno di Ricerca) n. 26/2024”, “Research fellowship (Assegno di Ricerca) n. 47/2024”, “Research fellowship (Assegno di Ricerca) n. 51/2024”, “Research fellowship (Borsa) n. 5/2024”
3. Members of the **Scientific Technical Committee** (CTS) responsible for evaluating the technical-scientific reports of the PRIN 2022 PNRR Project “Development of an innovative combinatorial therapy to tackle age-related macular degeneration”, Principal Investigator: Ivana Trapani (Director Decree. n. 59bis/2024 of 05/09/2024).
4. **Reviewer activity** of articles in: Nature Communication, International Journal of Molecular Science, Journal of Neuroscience Research, Journal of Clinical Medicine, Biological Chemistry, Frontiers in aging neuroscience, Antioxidants, Brain Research.
5. **Organizer** of “CURSO NACIONAL DE GENETICA HUMANA 2019: GENES, ENFERMEDADES Y TERAPIAS” (2019) Type of activity: National Course; Convening entity: *Sociedad Española de Genética, SEG*; City convening entity: Barcelona, Spain.

## LANGUAGES

**Italian:** Native language  
**Spanish:** Excellent level (written and spoken)

**English:** Excellent level (written and spoken)  
**Catalan:** Excellent level (written and spoken)

Naples, 30 March 2026  
Serena Mirra

