

## Miguel Méndez Sandín, Ph.D.

Last update: 2024/10/04

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| <b>Born</b>             | 07/09/1990 in Gijón, Spain   |  |
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| <b>ORCID ID</b>         | 0000-0002-0602-7613  |  |
| <b>Personal website</b> | <a href="https://MiguelMSandin.github.io">MiguelMSandin.github.io</a>          |  |
| <b>Other websites</b>   | Research Gate: <a href="#">Miguel-Mendez-Sandin</a>                            | Google Scholar: <a href="#">Miguel Mendez Sandin</a> |
|                         | Protocols.io: <a href="#">miguel-mendez-sandin1</a>                            | GitHub: <a href="#">MiguelMSandin</a>                |
|                         | Mastodon: <a href="#">@SandinMM@ecoevo.social</a>                              | Figshare: <a href="#">Miguel_Mendez_Sandin</a>       |

### Professional experience

|                         |   |
|-------------------------|---|
| 2024/09/01 - 2026/08/31 | <b>Marie Skłodowska-Curie Actions Postdoctoral Fellow</b> , Institute of Evolutionary Biology, CSIC - UPF, Spain<br><i>Hosts:</i> <a href="#">Daniel J. Richter</a> and <a href="#">Ramon Massana</a><br><i>Project:</i> The hidden majority: high-resolution imaging and genomics of the most ecologically important microbial eukaryotes in the ocean   |
| 2023/03/01 - 2024/08/31 | <b>Beatriu de Pinos Postdoctoral Fellow</b> , Institute of Evolutionary Biology, CSIC - UPF, Spain<br><i>Hosts:</i> <a href="#">Daniel J. Richter</a> and <a href="#">Ramon Massana</a><br><i>Project:</i> The hidden majority: high-resolution imaging of the most ecologically important microbial eukaryotes in the ocean  |
| 2022/09/08 - 2023/02/28 | <b>Parental leave</b>   |
| 2020/09/15 - 2022/09/07 | <b>Postdoctoral researcher</b> , Dept. of Organismal Biology, Uppsala University, Sweden<br><i>Advisor:</i> <a href="#">Fabien Burki</a><br><i>Project:</i> Eco-evolution of microbial eukaryotes, insights from metabarcoding surveys<br><i>Experience:</i> Diversification analysis, networks analysis, large data mining, lecturer, workshop organisation, fluorescence in situ hybridization  |
| 2016/10/01 - 2019/11/30 | <b>Ph.D. Student</b> , Biological Station of Roscoff, CNRS - Sorbonne University, France<br><i>Supervisor:</i> <a href="#">Fabrice Not</a><br><i>Project:</i> Diversity and Evolution of Nassellaria and Spumellaria (Radiolaria)<br><i>Experience:</i> Single-cell molecular approaches, phylogenetics, molecular clock, metabarcoding and next generation sequencing analysis, scanning electron and confocal microscopy, student supervision |
| 2016/03/01 - 05/31      | <b>Research assistant</b> , Biological Station of Roscoff - Sorbonne University, France<br><i>Supervisor:</i> <a href="#">Sophie Martin</a><br><i>Project:</i> Impact of global and local changes in Maerl, red algae<br><i>Experience:</i> Experimental development  |
| 2015/10/05 - 2016/01/29 | <b>Research assistant</b> , Oviedo University, Spain<br><i>Supervisor:</i> <a href="#">Eva Garcia-Vazquez</a><br><i>Project:</i> Top-down regulation in freshwater communities suggested from environmental DNA. A case study in mountain stream communities<br><i>Experience:</i> Field work, environmental DNA sampling and analysis  |
| 2015/01/12 - 06/30      | <b>Master thesis</b> , Oviedo University, Spain<br><i>Supervisor:</i> <a href="#">Consolación Fernández</a><br><i>Project:</i> Long-term changes in low intertidal rocky shore assemblages in the coast of Cape Peñas (North of Spain).<br><i>Experience:</i> Multivariate analysis   |

## Education

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|---------------------------|---|
| 2016/10/01 - 2019/11/31   | <b>Ph.D. in molecular diversity and evolution</b> , Biological Station of Roscoff - Sorbonne University, France. <i>Supervisor: Fabrice Not.</i><br>Awarded on <b>November 22, 2019</b> |
| - 2019/01/28 - 02/09      | Visiting scientist: Institute of Marine Science, CSIC, Barcelona (Spain)  |
| - 2018/10/15 - 12/07      | Visiting scientist: National Institute of Water and Atmospheric Research, Wellington (New Zealand)  |
| - 2017/10/30 - 11/03      | Visiting scientist: Tropical Biosphere Research Center, Okinawa (Japan)   |
| - 2016/10/05 - 10/28      | Visiting scientist: Oceanographic Observatory of Villefranche sur Mer, CNRS (France)  |
| 2013/09/02 - 2015/06/30   | <b>International MSc in Marine Biodiversity and Conservation (EMBC+)</b>  |
| - 2015/01/12 - 06/30      | Oviedo University, Spain. Master Thesis. <i>Supervisor: Consolación Fernández</i>   |
| - 2014/09/01 - 12/19      | Sorbonne University, France   |
| - 2014/04/07 - 04/18      | Gothenburg University, Sweden. Spring School. <i>Supervisor: Rick Officer</i>   |
| - 2013/09/02 - 2014/06/27 | Algarve University, Portugal  |
| 2008/09/29 - 2013/06/04   | <b>BSc in Biology</b> , Ecology speciality. 311 ECTS. Oviedo University, Spain  |
| - 2013/01/14 - 07/31      | Student intern: Ecology department. <i>Supervisor: Jose Luis Acuña</i>  |
| - 2012/09/03 - 12/21      | ERASMUS: Klaipeda University, Lithuania   |
| 2006/09/04 - 2008/06/31   | <b>International Baccalaureate</b> , IES Real Instituto de Jovellanos, Gijón, Spain   |

## Fellowships and awards

|             |  |
|-------------|--|
| 2023        | <b>Marie Skłodowska-Curie Actions - Postdoctoral Fellowship</b> (MSCA-2022-PF 101103530): 181 152.96 € (2 years); score: 98.6% |
| 2022        | <b>Postdoctoral fellowship Beatriu de Pinós</b> (2021 BP 00068): 144 300 € (3 years); score: 87.3%                             |
| 2022/05/10  | International Society Of Protistologists (ISOP) <b>grant</b> to attend Protistology Nordics                                    |
| 2020/01/22  | <b>Best oral presentation award</b> in Young Researchers Day (JJC) Biological Station of Roscoff, France                       |
| 2019        | The Micropalaeontological Society: Microfossil Image Competition & Calendar 2019   |
| 2018/12/07  | <b>3<sup>rd</sup> best oral presentation award</b> in Young Researchers Day (JJC) Biological Station of Roscoff, France        |
| 2017/10/24  | <b>Best oral presentation for Young Scientists</b> in InterRad XV, Japan   |
| 2017/05/15  | Young Research Association (AJC, Biological Station of Roscoff) <b>grant</b> to attend InterRad XV, France                     |
| 2016 - 2019 | <i>Agence Nationale de la Recherche</i> (ANR) and the Brittany Region Grants, France, to carry out doctoral studies (PhD)      |
| 2008 - 2013 | Scholarship to study BSc from the National Ministry of Education, Spain  |

## Skills and qualifications

|                    |   |                        |  |
|--------------------|---|------------------------|--|
| <b>Languages</b>   | Spanish: Native<br>English: Working knowledge<br>French: Conversational<br>Portuguese: Basics | <b>Softwares</b>       | LibreOffice: Extensive experience<br>Inkscape: Advanced<br>Fiji and GIMP: User-level |
| <b>Programming</b> | R and python: Advanced<br>Bash, UNIX/LINUX: Intermediate<br>HTML & CSS: Basics                | <b>Driving licence</b> | B  |
|                    |   | <b>Diving</b>          | GUE fundamentals (Nitrox 32)<br>SSI advanced and scientific                          |

## Professional training

|                         |   |
|-------------------------|---|
| 2019/06/24 - 06/28      | Evolutionary Networks, AIRE Team, Sorbonne University   |
| 2018/05/14 - 05/18      | Metabarcoding Analysis, IFREMER   |
| 2018/18/01 - 19/01      | Data Management With Python, ABiMS, Biological Station of Roscoff   |
| 2017/05/16 - 05/17      | Advanced Linux, ABiMS, Biological Station of Roscoff  |
| 2017/03/02              | Advanced R Language, ABiMS, Biological Station of Roscoff   |
| 2017/03/06 - 03/10      | Phylogenetic Analysis Using R, Barcelona  |
| 2015/11/27 - 12/06      | International Summer School: New challenges for research in biodiversity and ecology of micro- and macro-algae. ECIM, Las Cruces, Chile |
| 2015/01/19 - 03/14      | Statistical Online Course: Statistical Learning. Stanford University  |
| 2013/10/02 - 2014/04/14 | Diving: GUE Fundamentals (Nitrox 32), Advanced & scientific diver 1 (SSI)   |

## Teaching

|                    |  |
|--------------------|--|
| 2022/04/06         | <b>Lecturer:</b> 2.5 hours: Diversity of single-celled marine eukaryotes, Uppsala University, Sweden. Bachelor students year 1.  |
| 2021/11/29 - 12/03 | <b>Invited teacher assistant:</b> 30 hours. Novel methods for exploring molecular microbial diversity: long-read sequencing. Masters " <i>Océanographie et Environnements Marins</i> " (OEM), Biological Station of Roscoff, France  |
| 2021/04/15         | <b>Lecturer:</b> 1.5 hours: Diversity of single-celled marine eukaryotes, Uppsala University, Sweden. Bachelor students year 1.  |
| 2021/01/19         | <b>Organiser and lecturer:</b> 8 hours: An introduction to Sequence Similarity Networks, Uppsala University, Sweden. Systematic Biology.   |
| 2018/04/12 - 04/13 | <b>Teacher assistant:</b> 12 hours. Single-cell molecular approaches for studying mixotrophs, Biological Station of Roscoff, France. MixITiN MSCA-ITN.   |
| 2017/11/20 - 11/24 | <b>Teacher assistant:</b> 30 hours. Marine MICROorganisms: MOlecular approaches to their taxonomic and functional diversity (MICROMOL). Masters " <i>Océanographie et Environnements Marins</i> " (OEM) and "Marine Biodiversity and Conservation" (EMBC), Biological Station of Roscoff, France |

## Supervision

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|--------------------|---|
| 2024/04 - 2024/09  | <u>Natalia Morales</u> , Master thesis: Integrating DNA Sequencing and Oceanographic Simulations to Trace the Origins of Planktonic Communities in the Caribbean Sea. Master: " <i>Oceanografía y Gestión del Medio Marino</i> ", Barcelona University, Spain |
| 2022/03/31         | <u>Thomas M. Huber</u> , Master thesis: Little big data - extending plastid genome databases using marine planktonic metagenomes. Master: Erasmus Mundus Master Programme in Evolutionary Biology, Uppsala University, Sweden. <b>Opponent</b>                |
| 2018/01/08 - 06/18 | <u>Elsa Gadoin</u> , Master thesis: Molecular diversity of microalgae in symbiosis with Nassellaria and Spumellaria (Radiolaria). Master: " <i>Océanographie et Environnements Marins</i> ", Sorbonne University, France                                      |

## Outreach

|                    |   |
|--------------------|---|
| 2021/10/01 - 10/11 | <i>Fête de la Science</i> : interactive poster: Rhizaria (Ocean Touch), Brest, France |
| 2020/02/13         | Introducing biodiversity and DNA to high-school students, Morlaix, France             |
| 2019/10/06         | <i>Fête de la Science</i> : Introducing plankton to the public, Morlaix, France       |
| 2017/10/15         | <i>Fête de la Science</i> : Introducing plankton to the public, Roscoff, France       |

## Expeditions & Fieldworks

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|--------------------|--|
| 2018/10/21 - 11/21 | <b>TAN1810</b> expedition, 5 weeks, <i>Tangaroa</i> Ocean Research Vessel, New Zealand       |
| 2017/09/11 - 09/24 | <b>Bio-MOOSE</b> expedition, 2 weeks, <i>L'atalante</i> Ocean Research Vessel, France        |
| 2013/04/28 - 05/04 | <b>BioCant 3</b> expedition, 1 week, <i>Sarmiento de Gamboa</i> Ocean Research Vessel, Spain |

## Conferences and Seminars

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|------------|--|
| 2024/09/02 | Comparative genomics of unicellular eukaryotes: Interactions and symbioses, Sant Feliu de Guixols, Spain: <b>Talk</b>    |
| 2024/05/10 | The Life of Retaria Seminar Series, Online Meeting: <b>Kick-off presentation</b> , on behalf of the organising committee |
| 2023/07/11 | IX ECOP - ISOP Joint meeting, Rome, Italy: <b>Talk</b>   |
| 2023/07/05 | <i>Jornada de Biología Evolutiva</i> , Barcelona, Spain: <b>Talk</b>   |
| 2023/01/20 | International Society for Evolutionary Protistology (ISEP), virtual meeting: <b>Talk</b>                                 |
| 2022/09/13 | 16th InterRad congress, Ljubljana, Slovenia: <b>Talk</b> (Previously recorded)   |
| 2022/06/22 | Systematic Biology Seminar Series, Uppsala University, Sweden: <b>Talk</b>   |
| 2022/05/10 | Protistology Nordics, Natural History Museum of Oslo, Norway: <b>Talk</b>  |
| 2021/10/21 | Systematic Biology Seminar Series, Uppsala University, Sweden: <b>Talk</b>   |
| 2020/01/22 | Young Researchers Day, Biological Station of Roscoff, France: <b>Talk &amp; Poster</b>                                   |
| 2019/07/30 | VIII ECOP - ISOP Joint meeting, Rome, Italy: <b>Talk</b>   |
| 2018/12/07 | Young Researchers Day, Biological Station of Roscoff, France: <b>Talk &amp; Poster</b>                                   |
| 2017/10/24 | 15th InterRad congress, Niigata, Japan: <b>Talk</b>  |
| 2016/12/08 | Young Researchers Day, Biological Station of Roscoff, France: <b>Flash-Talk</b>  |

## Scientific services

Reviewer of [Journal of Plankton Research](#), [ISME](#), [Molecular Ecology Resources](#), [PNAS](#) and [Protist](#) since 2020

Expert curator of PR2, Radiolaria: [pr2-database.org/team/](https://pr2-database.org/team/)

Co-organiser of The Life of Retaria Seminar Series: [thelifeofretaria.github.io/](https://thelifeofretaria.github.io/)

Software contributor in GitHub: [github.com/MiguelMSandin](https://github.com/MiguelMSandin)

## Other scientific output

A total of 16 Silhouettes of Radiolaria available to the public domain for further presentations, manuscripts and outreach purposes: available at [phylopic.org/](https://phylopic.org/)

A pipeline for the high throughput design of specific primers/probes: [github.com/MiguelMSandin/oligoN-design](https://github.com/MiguelMSandin/oligoN-design)

An introduction to Sequence Similarity Networks: [github.com/MiguelMSandin/SSNetworks](https://github.com/MiguelMSandin/SSNetworks)

A practical guide to phylogenetic analyses: [miguelmsandin.github.io/phylogeniesQuickStart](https://miguelmsandin.github.io/phylogeniesQuickStart)

A set of scripts and functions to deal with common DNA fasta files and phylogenetic trees through the command line: [github.com/MiguelMSandin/random](https://github.com/MiguelMSandin/random)

A tool to estimate the entropy of a multiple sequence alignment (published in Sandin et al., 2021)

[github.com/MiguelMSandin/DNA-alignment-entropy](https://github.com/MiguelMSandin/DNA-alignment-entropy)

A wet-laboratory protocol for single-cell rDNA amplification of Nassellaria (doi: [10.17504/protocols.io.t5req56](https://doi.org/10.17504/protocols.io.t5req56)) and Spumellaria (doi: [10.17504/protocols.io.xwvfpe6](https://doi.org/10.17504/protocols.io.xwvfpe6))

A protocol for cleaning and staining of radiolaria skeletons to be imaged in a confocal microscope (doi: [10.17504/protocols.io.t5qeq5w](https://doi.org/10.17504/protocols.io.t5qeq5w))

A protocol for scanning electron microscopy imaging of opaline silica single-cell skeletons (Polycystine Radiolaria: doi: [10.17504/protocols.io.ug9etz6](https://doi.org/10.17504/protocols.io.ug9etz6))

## Publications

Total citations: 311

H-index: 10

(Excluding self-citations: 9)

## Pre-prints

**Sandin MM**, Renaudie J, Suzuki N, Not F (2024) Diversity and evolution of Radiolaria: Beyond the stars of the ocean. *bioRxiv*. 2024.10.02.614131; doi: [10.1101/2024.10.02.614131](https://doi.org/10.1101/2024.10.02.614131)

Llopis-Monferrer N, Romac S, Laget M, Nakamura Y, Biard T, **Sandin MM** (2024) Gelatinous matrix, an original strategy to cope with oligotrophy in Nassellaria (Radiolaria). *bioRxiv*. 2024.01.22.576765 doi: [10.1101/2024.01.22.576765](https://doi.org/10.1101/2024.01.22.576765)

## Peer reviewed publications

Llopis-Monferrer N, Biard T, **Sandin MM**, Lombard F, Picheral M, Elineau A, Guidi L, Leynaert A, Tréguer PJ, Not F (2022) Siliceous Rhizaria abundances and diversity in the Mediterranean Sea assessed by combined imaging and metabarcoding approaches. *Front. Mar. Sci.* 9:895995. doi: [10.3389/fmars.2022.895995](https://doi.org/10.3389/fmars.2022.895995)

**Sandin MM**, Romac S, Not F (2022) Intra-genomic rDNA gene variability of Nassellaria and Spumellaria (Rhizaria, Radiolaria) assessed by Sanger, MinION and Illumina sequencing. *Environ Microbiol.* 24(7):2979-2993. doi: [10.1111/1462-2920.16081](https://doi.org/10.1111/1462-2920.16081)

Xiao L, Johansson S, Rughöft S, Burki F, **Sandin MM**, Tenje M, Behrendt L (2022) Photophysiological response of Symbiodiniaceae single cells to temperature stress. *ISME J* doi: [10.1038/s41396-022-01243-6](https://doi.org/10.1038/s41396-022-01243-6)

Burki F, **Sandin MM**, and Mahwash J (2021) Diversity and ecology of protists revealed by metabarcoding. *Curr. Biol.* 31-19: R1267-R1280. doi: [10.1016/j.cub.2021.07.066](https://doi.org/10.1016/j.cub.2021.07.066)

**Sandin MM**, Biard T, Romac S, O'Dogherty L, Suzuki N, Not F (2021) A Morpho-molecular Perspective on the Diversity and Evolution of Spumellaria (Radiolaria). *Protist.* 172, 125806. doi: [10.1016/j.protis.2021.125806](https://doi.org/10.1016/j.protis.2021.125806)

Llopis-Monferrer N, Boltovskoy D, Tréguer P, **Sandin MM**, Not F, Leynaert A (2020) Estimating biogenic silica production of Rhizaria in the global ocean. *Global Biogeochemical Cycles*, 34, e2019GB006286. doi: [org/10.1029/2019GB006286](https://doi.org/10.1029/2019GB006286)

Nakamura Y, **Sandin MM**, Suzuki N, Somiya R, Tuji A, Not F (2020) Phylogenetic revision of the order Entactinaria—Paleozoic relict Radiolaria (Rhizaria, SAR). *Protist* 171. Doi: [10.1016/j.protis.2019.125712](https://doi.org/10.1016/j.protis.2019.125712)

**Sandin MM**. Diversity and Evolution of Nassellaria and Spumellaria (Radiolaria). Protistology. Sorbonne Université, 2019. **PhD Thesis**. HAL Id: [tel-03137926](https://tel.archives-ouvertes.fr/tel-03137926)

Qui-minet ZN, Coudret J, Davoult D, Grall J, Cariou T, **Sandin MM**, Martin S (2019) Combined effects of global climate change and nutrient enrichment on the physiology of three temperate maerl species. *Ecol.* 00, 1–21. doi: [10.1002/ece3.5802](https://doi.org/10.1002/ece3.5802)

**Sandin MM**, Pillet L, Biard T, Poirier C, Bigeard E, Romac S, Suzuki N, Not F (2019) Time Calibrated Morpho-molecular Classification of Nassellaria (Radiolaria). *Protist* 170, 187–208. doi: [10.1016/j.protis.2019.02.002](https://doi.org/10.1016/j.protis.2019.02.002) (**Journal cover**)

Villar E, Dani V, Bigeard E, Linhart T, **Sandin MM**, Bachy C, Six C, Lombard F, Sabourault C, Not F (2018) Symbiont Chloroplasts Remain Active During Bleaching-Like Response Induced by Thermal Stress in Collozoum pelagicum (Collodaria, Retaria). *Front. Mar. Sci.* 5, 1–11. doi: [10.3389/fmars.2018.00387](https://doi.org/10.3389/fmars.2018.00387)

Fernandez S, **Sandin MM**, Beaulieu PG, Clusa L, Martinez JL, Ardura A, García-Vázquez E (2018) Environmental DNA for freshwater fish monitoring: insights for conservation within a protected area. *PeerJ* 6 e4486. doi: [10.7717/peerj.4486X](https://doi.org/10.7717/peerj.4486X)

**Sandin MM**, Fernández C (2016) Changes in the structure and dynamics of marine assemblages dominated by Bifurcaria bifurcata and Cystoseira species over three decades (1977-2007). *Estuar. Coast. Shelf Sci.* 175, 46–56. doi: [org/10.1016/j.ecss.2016.03.015](https://doi.org/10.1016/j.ecss.2016.03.015)