

Isabel Marín Beltrán; PhD

Postdoctoral researcher (March 2019 – present). Research project: *Microplastics in the Aquatic environment: Sources and Sinks*. Centro do Ciências de Mar do Algarve (CCMAR), Universidade do Algarve, Faro (Portugal). Advisor: Prof Clara Costa

PhD Marine Sciences (July 2017). Research project: *Effects of atmospheric deposition on microbial dynamics and composition in two anthropogenically-influenced contrasted coastal sites*. Universitat Politècnica de Catalunya, Barcelona (Spain). Supervisor: Dr Franz Peters

MSc Marine Sciences (September 2011). Research project: Determination of *Caretta caretta* foraging areas within the Mediterranean Sea based on their isotopic signature. Universitat de Barcelona – Universitat Politècnica de Catalunya, Barcelona (Spain). Supervisor: Dr Luis Cardona

BSc Marine Sciences (June 2010). Specialty in Oceanography and Marine Environment. Universidad de Cádiz, Cádiz (Spain).

BSc Geology (September 2007). Universidad de Zaragoza, Zaragoza (Spain).

Research IDs:

- ORCID: 0000-0002-8389-0859
- Google Scholar: [ugdYBaEAAAAAJ&hl](https://scholar.google.com/citations?user=ugdYBaEAAAAAJ&hl)
- Ciência ID (PT): <https://www.cienciavita.pt/portal/F113-4C9D-8C31>
- Research Gate: https://www.researchgate.net/profile/Isabel_Marin

ABOUT ME

I am a passionate and hard-working researcher with a broad background from Geology to Marine Sciences, lately specialized in marine biogeochemistry, atmosphere-ocean interaction, microbiology, and environmental pollution. My current research focuses on the impacts of anthropogenic pressures on the environment, mainly those derived from plastic production and mismanagement. I am keen advocate that citizens are key actors to achieve a better ecological and socio-economical model. That is the reason why I find outreach activities of outstanding importance in the area of Environmental Sciences.

PUBLICATIONS

A) Doctoral dissertation

I. Marín Beltrán, 2017. Effects of atmospheric deposition on microbial dynamics and composition in two anthropogenically-influenced contrasted coastal sites. Universitat Politècnica de Catalunya, Barcelona. 257 pp.

B) Peer-reviewed journals

- I. Marín-Beltrán and M. C. Costa. Citizen perception on plastic pollution during the COVID-19 pandemic. *In prep.*
- I. Marín-Beltrán, I. Sánchez del Río and M. C. Costa. Atmospheric deposition of microplastics in Southern Portugal. *In prep.*

- A. Nobahar, A. Bejiga Melka, I. Marín-Beltrán, L. Neves, M. C. Costa, J. Carlier. Combination of chemical and biological processes for zinc recovery from extreme acid mine drainage after copper extraction. *Under review in Metallurgy*.
- N. Fernández de Villalobos, M. C. Costa and I. Marín-Beltrán. Are marine bacterial communities able to biodegrade petroleum-based and biobased microplastics? *Under review in Marine Pollution Bulletin*.
- I. Marín-Beltrán, F. Demaria, C. Ofelio, L. M. Serra, A. Turiel, W. J. Ripple, S. A. Mukul, M. C. Costa. Scientists' Warning Against the Society of Waste, 2022. *Science of the Total Environment*, 811, 151359. <https://doi.org/10.1016/j.scitotenv.2021.151359>.
- I. Marín-Beltrán, J. B. Logue, A. F. Andersson, F. Peters, 2019. Atmospheric deposition impact on bacterial community composition in the NW Mediterranean. *Frontiers in Microbiology* 24. <https://doi.org/10.3389/fmicb.2019.00858>.
- I. Marín, S. Nunes, E. D. Sánchez-Pérez, C. Antequera, M. M. Sala, C. Marrasé, F. Peters, 2017. Coastal bacterioplankton metabolism is stimulated stronger by anthropogenic aerosols than Saharan dust. *Frontiers in Microbiology* 8, 2215. <https://doi.org/10.3389/fmicb.2017.02215>.
- I. Marín, S. Nunes, E. D. Sánchez-Pérez, F. L. Aparicio, M. Estrada, C. Marrasé, T. Moreno, T. Wagener, X. Querol, F. Peters, 2017. Anthropogenic versus mineral aerosols in the stimulation of microbial planktonic communities in coastal waters of the northwestern Mediterranean Sea. *Science of the Total Environment* 574, 553–568. <http://dx.doi.org/10.1016/j.scitotenv.2016.09.005>.
- E. D. Sánchez-Pérez, I. Marín, S. Nunes, L. Fernández-González, F. Peters, M. Pujo-Pay, C. Pascal, C. Marrasé, 2017. Aerosol inputs affect the optical signatures of dissolved organic matter in NW Mediterranean coastal waters. *Scientia Marina* 80 (4), 437–446. <http://dx.doi.org/10.3989/scimar.04318.20B>.
- I. Marín, P. Goñi, A.M. Lasheras, M.P. Ormad, 2015. Efficiency of a Spanish Wastewater Treatment Plant for removal potentially pathogens: characterization of bacteria and protozoa along water and sludge treatment lines. *Ecological Engineering* 74, 28–32. <https://doi.org/10.1016/j.ecoleng.2014.09.027>.
- L. Cardona, M. Clusa, E. Eder, A. Demetropoulos, D. Margaritoulis, A. F. Rees, A. A. Hamza, M. Khalil, Y. Levy, O. Türkozan, I. Marín, A. Aguilar, 2014. Distribution patterns and foraging ground productivity determine clutch size in Mediterranean loggerhead turtles. *Marine Ecology Progress Series* 497, 229–241. <https://doi.org/10.3354/meps10595>.
- E. Eder, A. Ceballos, S. Martins, H. Pérez-García, I. Marín, A. Marco, L. Cardona, 2012. Foraging dichotomy in loggerhead sea turtles *Caretta caretta* off northwestern Africa. *Marine Ecology Progress Series* 470, 113–122. <https://doi.org/10.3354/meps10018>.

C) Invited book chapter

P. Goñi, R. Mosteo, M. T. Fernández, I. Marín, A. M. Lasheras, J. Gómez, M. P. Ormad, 2017. Microorganisms in Wastewater Purification Processes and Reuse of Water and Sludge. Environmental Sciences and Engineering. Studium Press LLC (USA) 4, 144-163.

D) Insights published in the journal *Science* as part of the “Nextgen Voices” series

- J. H. Ellwanger, M. D. Stanley Lekgoathi, K. Nemani, M. A. Tarselli, A. Al Harraq, A. Uzonyi, K. Dutton-Regester, R. Yoho, S. Srivastava, M. Strong, Y. Li, J. Fu, K. Waiho, I. Marín Beltrán, A. Mukherjee and T. D. P. Brunet, 2020. News from a postpandemic world. *Science* 369: 6499, 26-29. DOI: 10.1126/science.abd1320.
- I. Marín Beltrán (and others). Social media: Good or evil? *Science* 375: 6581, 608-609. DOI: 10.1126/science.abo2409

E) Publications in newspapers

- I. Marín. A las víctimas olvidadas del franquismo. *El País*, November 20th, 2017 (<https://www.elperiodico.com/es/entre-todos/participacion/a-las-victimas-olvidadas-del-franquismo-150854>).

REVIEWING SERVICE

I have served as reviewer for the following journals:

- Deep Sea Research Part I
- Environmental Science and Pollution Research
- Environmental Science and Technology
- FEMS Microbiology Ecology
- Journal of Geophysical Research (Biogeosciences)
- Marine Pollution Bulletin
- Science of the Total Environment

I have also been invited to review a report prepared by the Instituto Português do Mar e da Atmosfera (IPMA) as part as the EU Marine Strategy Framework Directive, as an expert on marine litter. IPMA, 2021. *Programa de Monitorização da Diretiva-Quadro “Estratégia Marinha” subdivisão do Continente*.

TEACHING EXPERIENCE

01/09/2021 (1h 30 minutes). “Biodegradação de plásticos: Progressos e desafios”. This was a seminar as part of a course on Blue Technology. Universidade do Algarve, Faro, Portugal.

11/06/2018 – 13/08/2018. I spent two 2 months working in the Galapagos Islands (Ecuador) as Naturalist and Environmental educator. Main duties included to develop an educational programme on the ecology and geology of the islands that included both theoretical and practical lessons; guided tours to explain about the geology and key species inhabiting the islands; to

develop a bird ID and tracking survey and a debris survey that included an extensive classification of plastic debris; etc.

SELECTED PEER-REVIEWED CONFERENCE PROCEEDINGS

- I. Marín-Beltrán, F. Bessa, M. Correia, C. Lourenço and Paula Sobral. Plastic Pirates: Go Europe! Encontro Nacional de Ciência Cidadã. November 2021. Online Meeting. Oral presentation.
- I. Marín-Beltrán. Potential of marine bacteria to biodegrade conventional and biobased microplastics. Invited talk at the 4th Annual Meeting of the International Joint Research Center of Marine Biology. November 2021. Online meeting.
- I. Marín-Beltrán, 2020. Monitoring atmospheric microplastics: looking for a standardized methodology. ICYMARE – International Conference for Young Marine Researchers. Online Meeting. Oral presentation.
- I. Marín, J. B. Logue, A. F. Andersson, F. Peters. 2019. Natural and anthropogenic atmospheric deposition and their effects on bacterial community assembly in the northwestern Mediterranean. 2019 IMBeR Open Science Conference. Brest, France. Poster presentation.
- I. Marín, F. Peters, R. Gallisai, F. L. Aparicio, C. Marrasé, R. Leardi, X. Querol. Nutrient deposition in coastal waters of the northwestern Mediterranean, 2016. XXXII Trobades científiques de la Mediterrània – Planeta Oceà. Institut Menorquí d'estudis, Maó, Spain. Oral presentation.
- I. Marín, S. Nunes, E. D. Sánchez-Pérez, E. Txurruka, C. Marrasé, M. Estrada, T. Moreno, X. Querol, F. Peters, 2015. Microbial planktonic communities response to Saharan dust and anthropogenic atmospheric inputs in a low-nutrient low-chlorophyll region. Aquatic Sciences Meeting. American Society of Limnology&Oceanography (ASLO). Palacio de Exposiciones y Congresos de Granada, Spain. Oral presentation.

FUNDING RECEIVED

- January 2020 – present. Funding provided by the CCMAR through national funds from **FCT (Foundation for Science and Technology)**; project UID/04326/2020 (2500 €).
- March 2019 – present. **Individual postdoctoral fellowship - Scientific Employment Stimulus**. Centro de Ciências de Mar (CCMAR) do Algarve, Faro, Portugal. Funder: Fundação para a Ciência e a Tecnologia (Code: CEECIND/03072/2017; 18 million €). Advisor: Prof Clara Costa.
- April 2016 – July 2016. Secondment at **Univeristà degli studi di Genova, Dipartimento di Farmacia**, Genova, Italy. Funder: Spanish *Ministerio de Economía y Competitividad* (MINECO) (Grant code: EEBB-I-16-11380; 4,222€). Advisor: Prof Riccardo Leardi.
- October 2015 – December 2015. Secondment at **KTH Royal Institute of Technology of Stockholm**, Sweden. Funder: MINECO (Grant code: EEBB-I-15-09845; 3,866€). Advisor: Dr Anders Andersson.

- September 2014 – November 2014. Secondment at **Institut Méditerranéen d'Océanologie (MIO) of Marseille**, France. Funder: MINECO (Grant code: EEBB-I-14-08612; 4,240€). Advisor: Dr Thibaut Wagener.
- December 2012 – November 2016. Pre-doctoral fellowship at **Institut de Ciències del Mar**, Barcelona, España. Funder: MINECO (Grant code: BES-2012-0529; 7670,408€). Supervisor: Dr Franz Peters.
- During the last year of my BSc in Marine Sciences (2009-2010), I received funding from two different sources to complete my degree in international institutions:
 1. 27/01/2010 – 20/06/2010 **Aarhus Universitet** (Aarhus, Denmark) – Erasmus scholarship (3,750€).
 2. 10/08/2009 – 27/12/2009 **Universidad Autónoma de Baja California** (Ensenada, Mexico) – *Bancaja* scholarship in agreement with the Universidad de Cádiz (2,500€).

PARTICIPATION IN NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- **01/09/2021 – present.** BIOEXTREMDEG: Bioaugmentation and conjugative plasmid transference using bacteria from extreme environments to enhance biodegradation of recalcitrant pollutants in WWTP granular sludge. Funder: Fundação para a Ciência e a Tecnologia (Code PTDC/CTA-AMB/7782/2020). PIs: Dr Jorge Diaz Carlier and Prof. Maria Clara Costa (CCMAR).
- **01/09/2020 – present.** PLASTIC PIRATES – Go Europe! This is a joint citizen science campaign by the German Federal Ministry of Education and Research (BMBF) in collaboration with the Portuguese Ministry of Science, Technology and Higher Education and the Slovenian Ministry of Education, Science and Sport within the context of the EU Trio-presidency in 2020. Coordinate institution: Kiel Science Factory (Germany). Partners: CCMAR (Portugal - PT), Ciência Viva (PT), CIIMAR (PT), DLR Projektträger (Germany), Ecologic (Germany) and MARE (PT). Project site: <https://www.plastic-pirates.eu/en>
- **01/09/2020 – present.** PROBIOMA: Prospección en ambientes subterráneos de compuestos bioactivos microbianos con uso potencial para la medicina, agricultura y medio ambiente. Funder: European Regional Development Fund (ERDF) within the framework of the EP - INTERREG V A España - Portugal program (POCTEP) (Code CTM2015-2339). PI: Dr. Cesareo Saiz (Agencia Estatal Consejo Superior de Investigaciones Científicas, Instituto de Recursos Naturales y Agrobiología de Sevilla). Partners: Universidade de Évora, Universidade do Algarve e SERVIÇOS MINEROS DE ANDALUCIA, S.L. (SEMA, S.L.). Project site: <https://probioma.org>
- **01/03/2019 – present.** MASS: Microplastics in the Aquatic Environment: Sources and Sinks. Funder: Fundação para a Ciência e a Tecnologia (Code: CEECIND/03072/2017). PI: Dr Isabel Marín Beltrán (CCMAR). Project site: <https://www.ccmар.ualg.pt/project/microplastics-aquatic-environment-sources-and-sinks>

- **01/01/2016 – 31/12/2019.** ANIMA: Atmospheric inputs as a source of organic Nutrients and microorganisms In MARine ecosystems. Funder: MINECO and ERDF (Code CTM2015-65720-R). PIs: Dr Franz Peters and Dr M. Montserrat Sala (Institut de Ciències del Mar).
- **01/01/2013 – 31/12/2015.** DOREMI: Dissolved Organic matter REmineralization in the ocean: MIcrobial and biogeochemical constraints. Funder: MINECO (Code CTM2012-34294). PI: Dr Cèlia Marrasé (Institut de Ciències del Mar).
- **01/12/2012 – 31/12/2015.** ADEPT: Aerosol deposition and ocean plankton dynamics. Funder: Spanish *Ministerio de Ciencia e Innovación* (Code CTM2011-23458). PI: Dr Franz Peters (Institut de Ciències del Mar). Project site: <https://www.facebook.com/adept.project/>

SUPERVISION AND MENTORING ACTIVITIES

I have supervised or co-supervised the work of the following students:

- Charlotte Van den Auwelant (January 2022 – present). Master thesis in progress. Title: *Tracking microplastic accumulation over time in sediments of coastal marine vegetated habitats*. International Master of Science in Marine Biological Resources (IMBRSea), Ghent University. Host institution: CCMAR. Role: **Co-supervisor**.
- Ines Sánchez del Río (January 2022 – present). Master thesis in progress. Title: *Atmospheric deposition as a source of microplastics to the Ria Formosa Natural Park*. International Master of Science in Marine Biological Resources (IMBRSea), Ghent University. Host institution: CCMAR. Role: **Main supervisor**.
- Alois Ngonyani (January 2022 – present). Master thesis in progress. Title *Determination of changes in the chemical structure of petroleum-based and biodegradable PET by micro-FTIR (Fourier Transform Infrared Spectroscopy) after exposure to microbial degradation*. Erasmus Mundus Master in Quality in Analytical Laboratories (EMQAL). Role: **Main supervisor**.
- Ines Sánchez del Río (May – June 2021). Professional practice on *Monitorization of microplastics in the Ria Formosa Natural Park*: <https://sites.google.com/view/inessanchezdelrio/home>. International Master of Science in Marine Biological Resources (IMBRSea), Ghent University. Host institution: CCMAR. Role: **Supervisor**.
- Nuria Fernández (January – June 2021). Master dissertation thesis in *Degradation of conventional and biodegradable microplastics by a consortium of marine bacteria*. International Master of Science in Marine Biological Resources (IMBRSea), Ghent University. Host institution: CCMAR. Role: **Main supervisor**.
- Inês Filipa Cabral Leal, 2021. *Absorbance-A tool in bioremediation*. MSc Molecular and Microbial Biology. Faculdade de Ciências e Tecnologia da Universidade do Algarve. Role: **Co-supervisor**.
- Hemilly Marquez (December 2019 – January 2020). I supervised practical laboratory tasks of this bachelor student, carried out in the framework of the “MASS” project (read above). CCMAR. Role: **Supervisor**.

- Helena Torné, 2015. *Effects of turbulence on marine bacterial processing of dissolved organic matter of different size*. BSc Biochemistry, Universitat de Barcelona. Role: **Co-supervisor**.
- Estibalitz Txurruka, 2014. Master dissertation thesis in *Análisis de las dinámicas de las poblaciones marinas de presas y depredadores microbianos y de los efectos provocados por la deposición atmosférica*. MSc Marine Science, Universitat de Barcelona. Role: **Co-supervisor**.

DISSEMINATION ACTIVITIES

- I have made several videos to promote the sustainable use of resources to reduce human pressures on the environment. They can be found on my Youtube channel:
 - *Scientists' Warning Against the Society of Waste*: <https://youtu.be/jc1Eu0jeGrI>. This video summarises the article by Marín-Beltrán et al. 2022 entitled "Scientists' Warning Against the Society of Waste". It addresses the main ecological and social problems the modern society is facing from its very roots: overconsumption and waste of natural resources, specially from a small sector of the population (i.e. the richest). As a main solution to face current environmental and social changes, the authors of the article propose to follow a sustainable degrowth strategy in industrialized countries, to reduce superfluous consumption and reduce socioeconomic inequalities. There is also a version of it in Spanish: <https://youtu.be/RtPfUEadAMg>.
 - *Estas navidades, como cada día: REDUCE, Reusa y recicla*: <https://youtu.be/Us0ZwspxiUI> (in Spanish). Las navidades deberían ser una época para disfrutar con nuestros seres queridos. En vez de ser así, se están convirtiendo cada vez más en una excusa para comprar cosas que no necesitamos y generar residuos. Nuestro sobreconsumo tiene un impacto negativo para el resto de especies que viven en el planeta. Por eso, estas navidades, quiero pedirte que disfrutes de los tuyos, pero que lo hagas pensando en el resto de especies que también dependen de los recursos que la Tierra nos ofrece.
 - *Galápagos iconic species*: <https://youtu.be/glsg5G9VwJY>. This is a short movie edited from pictures and videos taken at the Galápagos Islands between June and August 2018. Here I wanted to show some of the amazing species living there, and their conservation status. While most of these species are globally catalogued as "Least Concern" by the IUCN, their populations in Galápagos, as well as in other parts of the world, are decreasing primarily due to anthropogenic causes such as the alteration of the habitat, introduction of exotic species, illegal overfishing, finning and poaching, pollution, etc. Good news are we can all help to protect them. You can start with your daily actions: do not consume what you do not really need!

- **January 2020 – present.** *Macro- e Microplásticos: uma ameaça global*. In the framework of the project “Cientificamente provável”, I give this talk about the problems of plastic pollution, with a *hands-on* session, across secondary schools in the Algarve region (Portugal).
- **14/12/2021.** Press release (in Portuguese): “Cientistas Alertam para os impactos do desperdício” (<https://www.ccmар.ualg.pt/news/cientistas-alertam-para-os-impactos-do-desperdicio>)
- **16/10/2021.** In the framework of “2ª Edição Limpeza da Ria Formosa”, we organized a workshop on marine litter and its impact on the environment. Organizing entities: Mar Shopping and CCMAR.
- **May – June 2021.** “3 minutos debaixo d’agua – Microplásticos”. Since it was difficult to carry out dissemination events in the context of the COVID-19 pandemic, the CCMAR came up with the idea of presenting our research to the public (mostly targeted to school students) by means of a short video: <https://www.facebook.com/CentrodeCienciasdoMar/videos/341347350785407>
- **20/05/2021.** *Tertúlia "Lixo marinho: Soluções ao alcance de todos"* (in Portuguese): https://www.youtube.com/watch?v=YeFB_NILX2A. I was invited to participate in an online debate among scientists and non-governmental associations on the impact of marine debris, and which actions the society can perform to tackle it. Organizing entity: Centro de Ciência Viva do Algarve, Faro (Portugal).
- **May 2019 – present.** I am part of the scientific committee of *CCMAR Inspires!* These are a series of events connecting science, society and politics. CCMAR, Faro (Portugal).
- **November 2019.** Research volunteer during the *Science Week*. We organized a series of activities aimed to secondary students, covering the topic of plastic pollution. Centro de Ciência Viva do Algarve, Faro (Portugal).
- **04/09/2019.** Volunteer at the event *8 Famílias, 8 Pegadas*. Event aimed at primary school students to raise awareness about the global problem of plastic pollution. CCMAR, Faro (Portugal).
- **19/11/2018.** I organised a discussion event and delivered a talk about the global problem of factory farming: *Sustainable and Compassionate Food Choices*. Stockbridge Library, Edinburgh (UK).
- **16/02/2017.** I organised and co-chaired a round table discussion entitled *Women and Science: past, present and future*. Bar ArteSants, Barcelona (Spain).
- **13/01/2017.** Scientific talk aimed to Biology undergraduate students: *Impact of atmospheric particles on marine bacteria*. Institut de Ciències del Mar, Barcelona, Spain.
- **17/11/2016.** Talk about climate change: *Climate change, why should we be concerned?* High school *Laia l'Arquera*, Mataró, Spain.
- **16/04/2015.** Collaboration in the *Gymkhana de los mares* project. Barcelona, Spain.

- **12/03/2014.** Volunteer at the *Saló de l'Ensenyament de la Fira de Barcelona*, as part of the *Consejo Superior de Investigaciones Científicas (CSIC)* team. Fira de Barcelona, Spain.
- **Spring – summer 2013.** Researcher participant for the *Planeta Blau* project. Centro Penitenciario de Jóvenes de Barcelona, Spain.

OTHER SKILLS

Languages

Spanish (native); English (C1); Portuguese (C1); Catalan (B1); Italian and French (A2); Swahili (A1).

IT skills:

- Proficiency with Microsoft Word, Excel and PowerPoint.
- High experience with JMP/SAS and iMovie.
- Medium/high experience programming in R environment.
- Medium/high experience with Adobe Illustrator, Ocean Data View, CellQuest and Paint-A-Gate.
- Medium experience programming in QIIME and MOTHUR.

Instrumental and analytical experience:

- Fourier Transform Infrared Spectroscopy coupled with Microscopy (micro-FTIR)
- DNA extraction and amplification using the polymerase-chain-reaction (PCR) methodology.
- Flow cytometry.
- Light and epifluorescence microscopy.
- Spectrofluorometry.
- Spectrophotometry.
- Voltammetry with an electrode of static mercury drop.

European driving licence (B).

Open Water (PADI) diving certificate.