

<b>Date:</b>	04.09.2018
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**Part A. PERSONAL DETAILS**

Name	EMILIO MARAÑÓN SAINZ		
ID:		Age	
Researcher ID	Researcher ID	F-3013-2013	
	Orcid code	0000-0003-1572-2121	

**A.1. Current employment**

Institution	Universidad de Vigo		
Department	Departamento de Ecología y Biología Animal		
Address	Campus Universitario de Vigo, 36310 Vigo		
Phone	986812629	E-mail address	<a href="mailto:em@uvigo.es">em@uvigo.es</a>
Position	Professor (Profesor Titular)	Start date	30.01.1999
UNESCO code	2510		
Keywords	Phytoplankton physiology and ecology, biological oceanography, diversity, microbial metabolism, primary production, photosynthesis, respiration, calcification, N <sub>2</sub> fixation, marine biogeochemical cycles		

**A.2. Academic degrees**

	University	Year
Bachelor Degree, Biology	Universidad de Oviedo	1990
PhD, Biology	Universidad de Oviedo	1995

**A.3. Indicators of scientific productivity**

Number of publications in SCI journals: 87  
 Number of publications in 1st-quartile (Q1) journals: 71  
*Scopus* metrics: h-index = 33; total citations = 3350; citations in 2017 = 439  
*Google Scholar* metrics: h-index = 39; total citations = 4460; citations in 2017 = 596  
 Number of 6-year research periods ('sexenios') awarded: 4  
 Date of last research period awarded: December 2017  
 Number of articles recommended by *F1000Prime*: 4  
 Number of PhD thesis supervised to completion: 7

**Parte B. FREE SUMMARY OF CURRICULUM**

I obtained my Bachelor Degree in Biology from Universidad de Oviedo in 1990 and my PhD degree from the same university in 1995. My PhD dissertation, entitled *Patterns of photosynthetic carbon allocation in natural phytoplankton assemblages*, was distinguished with the 'Doctorate Extraordinary Award'. From 1996 to 1998, I worked as a Marie Curie postdoctoral research fellow at the University of Southampton (UK). Since 1999, I am a Professor ('Profesor Titular') of Ecology at University of Vigo, where I lead the laboratory of phytoplankton ecology. Since 2005 I am also a research scientist (CR1) of the Centre National pour la Recherche Scientifique (CNRS) in France, where I worked for one year between 2005 and 2006. I have been a visiting scientist in the University of Southampton (Jun-Sep 1999 and March-May 2007) and the École Polytechnique Fédérale de Lausanne (Switzerland) (November 2017-January 2018).

My research deals with the diversity, metabolism and biogeochemical role of marine phytoplankton. The ultimate goal of this research is to obtain a mechanistic understanding of the linkage between natural and anthropogenic environmental variability, plankton community structure, and biogeochemical fluxes in the ecosystem. I use a combination of observational and experimental approaches, including in situ measurements of phytoplankton diversity and metabolic activity in oceanic and coastal environments, assays with natural communities and both batch and chemostat cultures, as well as database meta-analysis. Current topics under investigation include the size-scaling of phytoplankton abundance and growth, the role of temperature and resources in controlling microbial metabolism, the biogeography of planktonic size structure, nitrogen fixation, and calcification,

and the effects of global change on the metabolism and biogeochemistry of coastal and oceanic ecosystems.

I am author or co-author of 87 peer-reviewed articles published in SCI journals (h-index = 33) and 10 book chapters. I have been principal investigator of 11 research projects, including 7 projects funded by the Spanish National Plan for R+D and 2 projects funded by the EU, for a total grant income of >1.1 million €. I have supervised 7 PhD theses to completion and I am supervisor of 3 ongoing PhD theses. Currently I am Associate Editor of the journals *Biogeosciences* (since 2007) and *Journal of Plankton Research* (2008) as well as Faculty Member of *F1000Prime* (2017).

The most significant contributions of my scientific career can be summarised as follows: determination of the patterns of photosynthetic carbon allocation into macromolecules in natural phytoplankton assemblages; characterization of the large-scale variability in phytoplankton biomass, photosynthetic parameters, growth and productivity in the Atlantic ocean; quantification of the importance of photosynthetic production of dissolved organic carbon in contrasting ecosystems; identification of general patterns in the response of microbial plankton to Saharan dust inputs; characterization of the large-scale latitudinal variability and underlying mechanisms of nitrogen fixation in the Atlantic ocean; determination of general patterns in the relationship between phytoplankton cell size, abundance and biomass in coastal and oceanic environments; in situ determination of the size-scaling of phytoplankton photosynthesis; demonstration that in phytoplankton metabolic rates do not follow Kleiber's rule and growth rates are an unimodal function of cell size; demonstration of the cellular mechanisms underlying the unimodal relationship between cell size and phytoplankton growth; analysis of the large-scale variability between pelagic calcification and carbonate chemistry in the tropical ocean; assessment of the relative role of temperature and resources in the control of phytoplankton growth; and demonstration that nutrient limitation suppresses the temperature dependence of phytoplankton metabolic rates.

### **Part C. MOST RELEVANT MERITS (2008-2018)**

#### **C.1. Peer-reviewed articles** (10 selected articles from a total of 52 published since 2008)


**Marañón E**, Pérez-Lorenzo M, Cermeño P, Mouriño-Carballido B (2018) Nutrient limitation suppresses the temperature dependence of phytoplankton metabolic rates. *The ISME Journal*, 12:1836-1845. Citations (Scopus): **0**

**Marañón, E.** Balch, W. M., Cermeño, P., González, N., Sobrino, C., Fernández, A., Huete-Ortega, M., López-Sandoval, D. C., Delgado, M., Estrada, M., Álvarez, M., Fernández-Guallart, E., Pelejero, C. (2016) Pelagic calcification is independent of carbonate chemistry in the tropical ocean. *Limnology and Oceanography*, 61:1345-1357. Citations: **7**

**Marañón, E.**, Cermeño, P., Latasa, M., Tadonlécé, R. (2015) Resource supply alone explains the variability of marine phytoplankton size structure. *Limnology and Oceanography*, 60:1848-1854 Citations: **8**


**Marañón, E.** (2015) Cell size as a key determinant of phytoplankton metabolism and community structure. *Annual Review of Marine Science*, 7:241-264. Citations: **74**


**Marañón, E.**, Cermeño, P., Huete-Ortega, M., López-Sandoval D. C., Mouriño-Carballido, B., Rodríguez-Ramos, T. (2014) Resource supply overrides temperature as a controlling factor of marine phytoplankton growth. *PLOS ONE*, 9 (6), e99312. Citations: **21**

**Marañón, E.**, Cermeño, P., López-Sandoval, D. C., Rodríguez-Ramos, T., Sobrino, C., Huete-Ortega, M., Blanco, J. M., Rodríguez, J. (2013) Unimodal size-scaling of phytoplankton growth and the size-dependence of nutrient uptake and use. *Ecology Letters*, 16:371-379. Article recommended by  Citations: **106**

Moore, C. M., Mills, M. M., Arrigo, K. R., Berman-Frank, I, Bopp, L, Boyd, P. W. Galbraith, E. D., Geider, R. J., Guieu, C., Jaccard, S. L., Jickells, T. D., La Roche, J., Lenton, T., Mahowald, N. M., **Marañón, E.**, Marinov, I., Moore, J. K. Nakatsuka, T., Oschlies, A., Saito, M. A., Thingstad, T. F., Tsuda, A., Ulloa, O., Wallace, D. (2013). Oceanic nutrient limitation: processes, patterns and potential for change. *Nature Geoscience*, 6:701-710. Citations: **422**

**Marañón, E.**, Cermeño, P., Latasa, M., Tadonlécé, R. M. (2012) Temperature, resources and phytoplankton size structure in the ocean. *Limnology and Oceanography*, 57:1266-1278. Citations: **67**

**Marañón, E.**, Fernández, A., Mouriño-Carballido, B., Martínez-García, S., Teira, E., Cermeño, P., Chouciño, P., Huete-Ortega, M., Fernández, E., Calvo-Díaz, A., Morán, X. A. G., Bode, A., Moreno-Ostos, E., Varela, M. M., Patey, M. D., Achterberg, E. P. (2010). Degree of oligotrophy controls the response of microbial plankton to Saharan dust. *Limnology and Oceanography*, 55:2339-2352. Article recommended by  Citations: **54**

**Marañón, E.** (2008) Inter-specific scaling of phytoplankton production and cell size in the field. *Journal of Plankton Research*, 30:157-163. Article recommended by  Citations: **43**

## **C.2. Projects directed as principal investigator**

Title: Role of temperature and resources in the control of the metabolism and community structure of phytoplankton

Duration: 2015-2018

Funding agency: Ministry of Economy and Competitiveness (CTM2014-53582-R)

Principal Investigator: **E. Marañón**

Grant amount (€): 181.500

Title: Circumnavigation Expedition Malaspina 2010: Global change and exploration of the biodiversity of the global ocean

Duration: 2008-2012

Funding agency: Ministry of Science and Innovation (CSD 2008-00077, Consolider Program)

Principal Investigator at Universidad de Vigo: **E. Marañón**

Grant amount (€) en UVIGO: 239.313

Title: PERSEO – Sampling onboard B/O Mytilus (Supporting Action)

Duration: 2010-2011

Funding agency: Ministry of Education and Science (CTM2009-08134-E)

Principal Investigator: **E. Marañón**

Grant amount (€): 16.000

Title: Macroecological patterns in marine phytoplankton (PERSEO)

Duration: 2009-2011

Funding agency: Ministry of Science and Innovation (CTM2008-03699/MAR)

Principal Investigator: **E. Marañón**

Grant amount (€): 235.103

Title: Production of dissolved organic carbon in the Mediterranean Sea

Duration: 2008-2009

Funding agency: Ministry of Science and Innovation (CTM2007-31097-E/MAR)

Principal Investigator: **E. Marañón**

Grant amount (€): 25.000

Title: Taxonomic composition and cell size of marine eukaryotic phytoplankton

Duration: 2007-2009

Funding agency: European Union (OIF Marie Curie grant nº 039993, 6th FP).

Principal Investigator: **E. Marañón**

Grant amount (€): 244.369

Title: Network of Excellence EUROCEANS (European Network of Excellence for Ocean Ecosystem Analysis)

Duration: 2005-2008

Funding agency: European Union (6th Framework Program, grant EU-012-04)

Principal Investigator at UVIGO: **E. Marañón**

Grant amount (€): 12.987

Title: Incentive to project 'Trichodesmium spp. and N<sub>2</sub> fixation in the tropical Atlantic ocean'

Duration: 2006-2008

Funding agency: Xunta de Galicia (Ref PGIDIT 05PXIC 31201PN)

Principal Investigator: **E. Marañón**

Grant amount (€): 30.000

Title: *Trichodesmium* spp. and N<sub>2</sub> fixation in the tropical Atlantic ocean (TRYNITROP)

Duration: 2005-2007

Funding agency: Ministry of Education and Science (Ref CTM2004-05174-C02)

Principal Investigator: **E. Marañón**

Grant amount (€): 69.000

Title: Incentive to project 'Size structure, production and respiration of microbial plankton in Ría de Vigo'

Duration: 2002-2004

Funding agency: Xunta de Galicia (Ref PGIDIT 02PXIC 30102PN)

Principal Investigator: **E. Marañón**

Grant amount (€): 30.000

Title: Size structure, production and respiration of microbial plankton in Ría de Vigo

Duration: 2001-2003

Funding agency: Ministry of Science and Technology (Ref REN2000-1248 MAR)

Principal Investigator: **E. Marañón**

Grant amount (€): 62.814

### **C.3 Recent invited lectures (selected)**

2017. Size scaling and temperature dependence of phytoplankton growth: patterns from observations and experiments. University of Bremen, Bremen (Germany).

2016. Environmental control of phytoplankton size structure and growth. University of Bristol, Bristol (UK).

2015. Temperature- and size-dependence of phytoplankton metabolism and growth. Swiss Federal Institute of Aquatic Science and Technology, Dübendorf (Switzerland).

2013. Patterns in phytoplankton size structure: abundance, biomass and production in coastal and open-ocean waters. The 45th International Liège Colloquium, Liège (Belgium).

2012. Effects of atmospheric nutrient deposition on the surface ocean's biology: community structure, metabolic rates, and biogeochemical fluxes. SOLAS Open Science Conference, Cle Elum, Washington State (USA).

### **C.4 Other merits**

Habilitation for the Degree of Full Professor, awarded by the Spanish Council of Universities (December 2011).

Principal investigator in two major oceanographic expeditions on board R/V *Hespérides*, carried out in the tropical and subtropical Atlantic ocean in 2007 and 2008.

Editor of two special issues in *Biogeosciences* and Guest Editor of one special issue in *Estuarine, Coastal, and Shelf Science*.

Member of the Selection Committee of scientific proposals submitted to the National Plan for Research and Development in the area of Biodiversity, Earth Sciences and Global Change (2016).

Member of the Commission of Experts to evaluate proposals submitted to the 'Environment' call of the European Union 7<sup>th</sup> Framework (2010).

Member of the Selection Committee of scientific proposals submitted to the National Plan for Research and Development in the discipline of Natural Resources, sub-discipline Marine Sciences and Technologies (2002 and 2009).

Reviewer of scientific proposals submitted to, among other agencies, FP7 Cooperation Work Programme (EU), Spanish Agency for Evaluation and Prospective (ANEP), National Plan for Research and Development (Spain), National Science Foundation (USA), Swiss National Research Foundation, Agence National de la Recherche (ANR, France) and National Environmental Research Council (NERC, UK).