

CURRICULUM VITAE

Part A. PERSONAL INFORMATION

CV date	30/01/2024
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First name	Maria Teresa		
Family name	Boquete Seoane		
Gender (*)	Female	Birth date	15/10/1985
ID number	44839623L		
e-mail	teresa.boquete@gmail.com	URL Web: https://teresaboquete.weebly.com/	
Open Researcher and Contributor ID (ORCID)	0000-0002-5886-7374		

A.1. Current position

Position	Maria Zambrano Postdoctoral Researcher		
Initial date	01/01/2022		
Institution	University of Santiago de Compostela (USC)		
Department/Center	Functional Biology	Faculty of Biology	
Country	Spain	Teleph. number	653400863
Key words	Abiotic stress, adaptation, bryophytes, ecology, epigenetics, genomics, heavy metals, macroalgae, phenotypic plasticity, reproductive biology		

A.2. Previous positions (research activity interruptions, see call)

Period	Position/Institution/Country/Interruption cause
01/02/2020-31/12/2021	<u>Juan de la Cierva Incorporación</u> Postdoc / Estación Biológica de Doñana-CSIC / Spain
01/07/2016-25/08/2019	<u>Marie S. Curie</u> Postdoc / EBD-CSIC / Spain
06/11/2013-31/03/2015	Predocctoral Researcher / Univ. of Santiago de Compostela / Spain
04/11/2009-03/11/2013	<u>FPU</u> Predoc / Univ. of Santiago de Compostela / Spain
01/09/2008-31/07/2009	<u>Xunta de Galicia Predoc</u> / Univ. Santiago de Compostela / Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Biology	Univ. of Santiago de Compostela / España	2015
Diploma of Advanced Studies	Univ. of Santiago de Compostela / España	2010
Graduate Degree in Biology	Univ. of Santiago de Compostela / España	2008

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Overall summary of merits: (1) **37 peer-reviewed publications with 905 citations** (Google Scholar): 33 in international SCI journals (81% in Q1; 32% of these in D1; 1st and corr. author in 52% and 1st author in 55%); 2 book chapters (both as 1st author); 2 in national SCI journals (both as senior author; one *In Press*). (2) **9 competitive research projects**: 4 international (1 as PI); 5 national (1 as PI and 1 as CoPI); 1 autonomic. (3) **4 R&D contracts**: 2 with public entities; 2 with private entities. (4) **9 individual competitive research grants/contracts (total = 488,676€)**: 4 as postdoc (3 contracts – Marie S. Curie 2015, Juan de la Cierva Incorporación 2018, María Zambrano 2021 – and 1 stay abroad – José Castillejo 2022); 5 as predoc (2 contracts – Xunta de Galicia 2008, FPU 2009 –, 2 stays abroad – FPU 2012, Fundación Barrié 2013 –, and 1 to collaborate in research activities at USC – Xunta de Galicia 2008). (5) **5 research stays abroad (total = 3.4 years)**: 3 as postdoc (USA – 26 months, Austria – 2 months, Sweden – 6 months); 2 as predoc (Italy – 3 months, USA – 4 months). (6) **17 contributions to conferences**: 4 national (3 talks, 1 poster); 13 international (9 talks - 1 invited & 1 best postdoc talk award -, 4 posters). (7) **5 scientific event organizations**: 1 international conference; 3 international symposia; 1 national meeting. (8) **14 service provision activities**: 1 time External Project Reviewer for the French National Research Agency (ANR; 2023); 1 time Member of the committee of evaluation of the final degree projects (TFG) defended at the Faculty of Biology (USC; 2023); 1 time Member of the committee of evaluation of the Doctoral Thesis defended by Dr. Sofía Debén García at USC (2018); 5 times representative of non-permanent assistant professors and research trainees at the USC (ongoing); review editor for 3 international SCI journals (ongoing); 3 times Cash Auditor for the International Molecular Moss Science society (iMOSS; 2019-2021). (9) **379 h of officially certified teaching**: at



Univ. de Santiago de Compostela and Univ. de Sevilla. (10) **12 mentored students**: 1 PhD student (co-supervised); 11 **Biology degree students** (TFGs; 2 ongoing). (11) **4 academic distinctions**: **I3 certificate** (AEI, Jan. 2023); **Prof. Contratada Dra., Prof. Ayudante Dra., and Prof. de Universidad Privada** (ANECA, Sept. 2015); (12) **12 science outreach activities to society**: “STEMbach” and “A Ponte entre o Ensino Medio e a USC” programs at USC that involve high school student mentoring and scientific talks at secondary and high schools (2022-ongoing); hands-on workshops at primary schools within “International day for women and girls in science” (11F, 2020-2021) and at the *European researchers Night* (2018, 2020).

My research seeks to advance our knowledge about plants’ response to environmental challenge, a highly relevant subject in the current context of global change. My research activity has mainly been developed at the University of Santiago de Compostela (USC; 2008-2015; 2022-now), University of South Florida (USF; 2016-2018), and Estación Biológica de Doñana (EBD-CSIC; 2018-2021). I also developed far-reaching international collaborations that expanded the breadth of my research during shorter stays at the Università degli Studi di Napoli Federico II (Italy; 3 months in 2012), Duke University (USA; 4 months in 2014), and Swedish Museum of Natural History (Sweden; 6 months in 2023-2024).

During my PhD (2010-2015) as an FPU researcher, **my investigation focused on air and water quality biomonitoring**. My research significantly advanced this field by identifying the main limitations of the moss technique, commonly used to quantify the atmospheric deposition of heavy metals in terrestrial ecosystems, and proposing measures to overcome them and improve data collection and interpretation (results disseminated in 18 articles in SCI journals and 5 international conferences).

As a postdoc (2015-on), **I co-supervised a PhD student** (thesis defended in 2019 with Outstanding Cum Laude and the Extraordinary PhD Award at USC) whose project developed the methodology using macroalgae to monitor marine pollution. This work entailed characterization of the natural variation of pollutant concentrations in macroalgae, the development of potential adaptations to pollution, and the optimization of multiple methodological aspects (results disseminated in 5 articles in SCI journals).

As a postdoc, **I developed my own independent research line aimed at providing new insights on the molecular mechanisms of plant adaptation to stress**. I secured funding to support this research through the European Union’s H2020 program (Marie S. Curie Individual Global Fellowship; 2016-2019). In this research, I use state-of-the-art molecular tools (DNA and RNA sequencing) to study the (epi)genetic basis of heavy metal tolerance in bryophytes. Epigenetics is a rapidly emerging area of evolutionary biology, and this novel line of my research has provided new insights into the role of epigenetic variation in non-model organisms’ adaptation to the environment (plants and birds) and into the mechanistic basis of heavy metal tolerance in bryophytes (results disseminated in 8 articles in SCI journals, 2 book chapters, and 6 contributions to international conferences - award for best postdoctoral talk in one and invited in other).

In 2023, I was awarded a 3-year National Project (Co-PI with Prof. Jesús R. Aboal from USC), **CoastProtect**, that will generate new insights on the response of brown foundation macroalgae to chronic pollutant exposure, its potential consequences on macroalgal fitness and, ultimately, on coastal ecosystem structure and functioning.

Part C. RELEVANT MERITS

C.1. Publications

- Boquete M.T.**, Schmid M.W., Wagemaker N.C.A.M., Carey S.B., McDaniel S.F., Richards C.L., Alonso C. (2022). *Molecular basis of intraspecific differentiation for heavy metal tolerance in the copper moss *Scopelophila cataractae**. *Environ Exp Bot*, 201: 104970. **Q1; D1; N° Cit.: 9; CA; 1/7.**
- Mounger J., van Riemsdijk I., **Boquete M.T.** et al., Richards C.F. (2022). *Genetic and epigenetic differentiation across intertidal gradients in the foundation plant *Spartina alterniflora**. *Front. Ecol. Evol.* 10:868826. **Q1; N° Cit.: 1; 3/18.**
- Boquete M.T.**, Lang I., Weidinger M., Richards C.L., Alonso C. (2021). *Patterns and mechanisms of heavy metal accumulation and tolerance in two terrestrial moss species with contrasting habitat specialization*. *Environ. Exp. Bot.*, 182: 104336. **Q1; N° Cit.: 35; CA; 1/5.**
- Boquete M.T.**, Muyle A., Alonso C. (2021). *Plant epigenetics: phenotypic and functional diversity beyond the DNA sequence*. *Am. J. Bot.*, 108(4): 1-6. **Q1; N° Cit.: 28; CA; 1/3.**
- Mounger J. *, **Boquete M.T.** *, Schmid M. *, et al., Richards C.F. (2021). *Inheritance of methylation differences in the mangrove *Rhizophora mangle**. *Evol. Dev.*, 23, 351– 374. **Q3; N° Cit.: 18; 2/12; *: shared first author.** Wiley Top downloaded article during its first 12 months.



6. García-Seoane R., Aboal J.R., **Boquete M.T.**, Fernández J.A. (2020). [Phenotypic differences in heavy metal accumulation in populations of the brown macroalgae *Fucus vesiculosus*: A transplantation experiment](#). *Ecological Indicators*, 111: 105978. **Q1; D1; N° Cit.: 9; 3/4.**
7. **Boquete M.T.**, Ares A., Fernández J.A., Aboal J.R. (2020) [Matching times: trying to improve the correlation between heavy metal levels in mosses and bulk deposition](#). *Sci. Tot. Environ.*, 715: 136955. **Q1; D1; N° Cit.: 11; CA; 1/4.**
8. Heer K., Mounger J., **Boquete M.T.**, Richards C.L., Opgenoorth L. (2018). [The diversifying field of plant epigenetics](#). *New Phytol.*, 217: 988–992. **Q1; D1; N° Cit.: 12; 3/5.**
9. **Boquete M.T.**, Aboal J.R., Carballeira A., Fernández J.A. (2014). [Effect of age on the heavy metal concentration in segments of *Pseudoscleropodium purum* and the biomonitoring of atmospheric deposition of metals](#). *Atmos. Environ.*, 86: 28-34. **Q1; N° Cit.: 60; CA; 1/4.**
10. **Boquete M.T.**, Wagemaker N.C.A.M., Vergeer P., Mounger J., Richards C.L. (2020). [Epigenetic approaches in non-model plants](#). Chapter 14 in *Plant Epigenetics and Epigenomics: Methods and Protocols*, 2nd Edition, Eds. Spillane C., McKeown P. ISBN: 978-1-0716-0178-5. **Book chapter; N° Cit.: 8; CA; 1/5.**

C.2. Congress

PARTICIPATION

1. [Heavy Metal Tolerance in Bryophytes: A Transcriptomics Study](#). **Boquete M.T.**, Schmid M.W., Wagemaker N.C.A.M., Carey S.B., McDaniel S.F., Richards C.L., Alonso C., Herrera C.M. Workshop: “Non-seed plants” in the **international conference “Plant & Animal Genomes XXIX”**. 8-12 January **2022**. Virtual. **Invited oral communication**.
2. [Changes in DNA methylation and gene expression in response to copper stress in bryophytes](#). **Boquete M.T.**, Alonso C., Richards C.L., Schmid M.W., Herrera C.M. **International conference “EpiDiv2021: Linking Ecology, Molecular Biology and Bioinformatics in Plant Epigenetic Research”**. Sept. 29th to Oct. 1st **2021**. Sevilla (Spain). **Oral communication**.
3. [Epigenetic modifications in response to heavy metal stress in two terrestrial bryophytes](#). **Boquete M.T.**, Alonso C., Richards C.L., Schmid M.W., Herrera C.M. **International conference “Virtual Botany 2020”**, 27-31 July **2020**. **Oral communication**.
4. [BRY”O”MICS: Application of high-sensitive and high-throughput molecular tools to disentangle the mechanisms of heavy metals accumulation and tolerance in mosses: epigenetic and transcriptomic approaches](#). **Boquete M.T.**, Alonso C., Richards C.L., Herrera C.M. **International conference of the International Molecular Moss Science Society, iMOSS**. 4-6 June **2018**. Saint Petersburg (Florida, USA). **Oral Communication** (awarded best postdoctoral talk).

ORGANIZATION

1. **Co-organizer of the international symposium “The biological meaning of SNPs”** within the international conference **ESEB2022** (the European Society for Evolutionary Biology meeting), 14-19 August of **2022**.
2. **Co-organizer of the international conference “EpiDiv2021: Linking Ecology, Molecular Biology and Bioinformatics in Plant Epigenetic Research”**. Sept. 29th to Oct. 1st of **2021**. Sevilla (Spain). **I also chaired two scientific sessions** (S2 and S3) within the conference.
3. **Co-organizer of the international symposium “Plant epigenetics: phenotypic and functional diversity beyond the DNA sequence”** within the international conference **“Virtual Botany 2020”**, 27-31 July of **2020**.

C.3. Research projects

1. **Title:** “CoastProtect” *Desvelando el impacto de la exposición crónica a metales pesados en especies de macroalgas fundacionales: un enfoque multidisciplinario e integrador*. **Funding organism:** Ministerio de Ciencia, Innovación y Universidades. **Project ID:** PID2022-142802NB-I00. **PI:** **M. Teresa Boquete** (Co-PI: Jesús R. Aboal). **N° researchers:** 6. **Duration:** 01/09/2023-31/08/2026. **Total amount:** 111,250€. **Participation:** Co-PI. **I am leading tasks 9 (WP1), 11 (WP2), 12 and 13 (WP3), 14 and 15 (WP4) and 16 and 17 (WP5) related to the study of the algal microbiome, the genetic and epigenetic analyses, physiological and reproductive performance assessments, as well as project outreach activities and management.**
2. **Title:** Unravelling heavy metal tolerance strategies in bryophytes. **Funding organism:** Ministerio de Ciencia, Innovación y Universidades. **Project ID:** IJC2018-035018-I - Supplementary aid of the contract Juan de la Cierva-Incorporación. **PI:** **M. Teresa Boquete**. **Duration:** 01/02/2020 -



- 31/12/2021. Total amount: 6,000€. Participation: PI. **This funding allowed me to continue my research on the mechanisms of heavy metal tolerance in bryophytes for which I collected multiple species in the mines located within the Faja Pirítica Ibérica, in the southwest of Spain and propagated them in laboratory common garden for experimentation.**
- Title: *Collaborative Research: Effects of Genetic Diversity, Epigenetic Change, and Root-associated Fungal Colonization on Trait Variation in the Foundation plant *Spartina alterniflora**. Funding organism: National Science Foundation (EEUU). Project ID: IOS-1556820. PI: Christina L. Richards. Nº researchers: 10. Duration: 15/02/2016-31/01/2019. Total amount: 380,536\$ Participation: Researcher. **I participated in the preparation of DNA sequencing libraries and I am currently working on the bioinformatic analyses.**
 - Title: *BRY"O"MICs: Application of high-sensitive and high-throughput molecular tools to disentangle the mechanisms of heavy metals accumulation and tolerance in mosses: epigenetic and transcriptomic approaches*. Funding organism: Comisión Europea. Project ID: 704141 I - Supplementary aid of the contract Marie S. Curie. PI: M. Teresa Boquete. Nº researchers: 1. Duration: 01/07/2016-25/08/2019. Total amount: 52,200€ Participation: Marie S. Curie Fellow. **I led the whole project including the scientific part (sample collection, common garden experiments, sample processing, data analysis, manuscript writing) and the economic part**
 - Title: *EAGER: Developing epigenetic genotyping-by-sequencing in the non-model invasive Japanese knotweed*. Funding organism: National Science Foundation (EEUU). Project ID: 1419960. PI: Christina L. Richards. Nº researchers: 6. Duration: 15/03/2014-28/02/2017. Total amount: 149,996\$. Participation: Researcher. **I participated in the preparation of DNA sequencing libraries and led the bioinformatic analyses.**
 - Title: *MOSSCLONE: Creating and testing a method for controlling the air quality based in a new biotechnological tool. Use of a devitalized moss clone as passive contaminant sensor*. Funding organism: European Commission. Project ID: 282952. PI: J. Ángel Fernández Escribano. Nº researchers: 6. Duration: 1/04/2012-31/03/2015. Total amount: 423,117€. Participation: Researcher. **I prepared moss transplants and exposed them in the field and run statistical analyses for several experiments.**
 - Title: *Biomonitorización de la calidad del aire con musgos terrestres: estandarización y optimización metodológica*. Funding organism: Ministerio de Ciencia e Innovación, 6 PN-Biología vegetal, animal y ecología. Project ID: CTM2011-30305. PI: J. Ángel Fernández Escribano. Nº researchers: 7. Duration: 1/01/2012-31/12/2014. Total amount: 130,680€. Participation: Researcher. **I run several field and laboratory experiments and participated in data analysis and manuscript writing.**
 - Title: *Adecuación del musgo como biomonitor de la calidad del aire ambiente: Efecto del crecimiento, adaptación al medio y relación deposición-bioconcentración*. Funding organism: Ministerio de Ciencia e Innovación, 6 PN-Biología vegetal, animal y ecología. Project ID: 2008-PN184. PI: Alejo Carballeira Ocaña. Nº researchers: 11. Duration: 1/09/2009-31/12/2011. Total amount: 109,868€. Participation: Researcher. **I run several field and laboratory experiments and participated in data analysis and manuscript writing.**

C.4. Contracts, technological or transfer merits

- Title: *Caracterización de metales pesados y análisis espaciotemporal de su distribución en la Red Autonómica de Biomonitorización de la Contaminación por Metales Pesados de La Rioja*; PI: Javier Martínez-Abaigar. Contract with: Gobierno de La Rioja. Funding: 32,313€. Nº researchers: 10. Duration: 25/04/2014-15/12/2015. Participation: researcher. **I did data analyses and participated in writing the final report.**
- Title: *Caracterización y análisis dentro de la red autonómica de biomonitorización de metales pesados de La Rioja*; PI: Javier Martínez-Abaigar. Contract with: Gobierno de La Rioja. Funding: 30,600€. Nº researchers: 11. Duration: 31/05/2012-15/12/2013. Participation: researcher. **I did data analysis and participated in writing the final report.**
- Title: *Biocontrol de flúor 2012. Diversos estudios de valoración en los terrenos próximos a la planta que la empresa tiene en San Cibrao (año 2012) (2012-CE218)*; PI: Alejo Carballeira. Contract with: Aluminio Español S.A. Funding: 13,320€. Nº researchers: 6. Duration: 13/06/2012-30/12/2012. Participation: researcher. **I did field work, data analysis and participated in writing the final report.**
- Title: *Diseño integral de un briocaptador para o control da qualidade da auga dos ríos*; PI: Alejo Carballeira. Contract with: Biovia Consultor Ambiental. Funding: 25,450€. Nº researchers: 8. Duration: 13/06/2012-30/12/2012. Participation: researcher. **I did field work and data analysis.**