

JOSÉ CERCA

PERSONALIA

Born: May 12th, 1990

Address: Department of Natural History, Schøninghuset, Kalvskinnet, A306, Kalvskinnet, Erling Skakkes gate 47A

E-mail: jose.cerca@gmail.com

Citizenship: Portuguese

Personal website: jcerca.github.io

Phone number: +47 459 51 359

ORCID: 0000-0001-7788-4367

KEY SKILLS

I combine **bioinformatics** and **genomics** (population genomics, comparative genomics and phylogenomics) to answer questions related to the evolutionary history of populations and species. This involves analysing **RADseq**, **whole-genome resequencing (high and low coverage)**, **genome assembly and annotation**, and **comparative genomics** data. So far, I have contributed to the **training of 4 BSc, 5 MSc students and 1 PhD student**, and managed **>250,000 € of project money**. I have published **8 first-author peer-reviewed papers**.

My approach to research consists in mobility and collaboration, benefiting from the direct expertise of leaders in different research fields. This has been valuable to my training, productivity in the form of authorship, acquired funding and expansion of my network.

Facing the future, I want my research to focus on the ability of species to evolve (evolvability), adapt (adaptability) and resilience. I aim to combine genomics, ecological niche information and phenotypic data to understand how species respond to novel environmental conditions. My **long-term** aim is to become an established evolutionary biologist, and lead my own research group.

PROFESSIONAL EXPERIENCE

Aug 2020 - <i>present</i>	Postdoctoral Researcher – Department of Natural History, Norwegian University of Science and Technology Project title: DarwinPlants: Probing the genomic basis of rapid evolutionary diversification in the Galápagos daisy trees (genus <i>Scalesia</i>) PI: Prof. Michael D. Martin Responsibility: Analysis of differential gene expression and transcriptomic networks, phylogenomics, population genomics, genome assembly & annotation	Trondheim, Norway
Aug 2019 – Jul 2020	Visiting Researcher – Berkeley Evolab, Department of Environmental Science, Policy & Management Project title: Genomic basis of the Hawaiian spiny-leg adaptive radiation PI: Prof. Rosemary Gillespie Responsibility: Whole genome re-sequencing, population genomics, genome assembly & annotation	Berkeley (CA), USA

EDUCATION

Dec 2015 – 5th Jun 2020 (PhD conclusion date)	PhD in Evolutionary Genomics and Zoology, University of Oslo (June 5 th 2020) Thesis title: On the origins of cryptic species Main advisor: Prof. Torsten H. Struck	Oslo, Norway
Sept 2012 - Jul 2014	MSc in Evolutionary Ecology - Specialization in research in ecology (grade: 19/20 – ‘A’), University of Coimbra Thesis title: Pollinator preferences in a generalist plant hybrid zone Main advisor: Prof. Rubén Torices	Coimbra, Portugal
Sept 2008 Jul 2012	BSc in Biology (grade: 16/20 – ‘A’), University of Coimbra	Coimbra, Portugal

MANUSCRIPTS IN PREPARATION OR SUBMITTED

- (2) *Submitted to Nature Communications:* **J. Cerca#**, Bent Petersen , José Miguel Lazaro Guevara , Angel Rivera-Colon , Siri Birkeland , Joel Vizueta , Siyu Li , João Loureiro , Chatchai Kosawang , Patricia Jaramillo Díaz , Gonzalo Rivas-Torres , Mario Fernández-Mazuecos , Pablo Vargas , Ross McCauley , Gitte

Petersen , Luisa Santos-Bay , Nathan Wales , Julian Catchen , Daniel Machado , Michael Nowak , Alexander Suh , Neelima Sinha , Lene Nielsen , Ole Seberg , Tom Gilbert , James H. Leebens-Mack , Loren Rieseberg , Michael D. Martin# The genomic basis of the plant island syndrome in Darwin's giant daisies
correspondent authors

Contribution: Experimental design, data analysis, writing

- (1) Submitted to Scientific Reports: J. Cerca[^], M. V. Westbury[^], O. V. Shpak, M. P. Heide-Jørgensen, Ø. Wiig, E. D. Lorenzen, C. Lydersen, K. Kovacs, L. Bachmann# High genomic diversity in the endangered East Greenland-Svalbard-Barents Sea stock of bowhead whales (*Balaena mysticetus*)

[^] Joint first authors; # correspondent author

Contribution: Data analysis

PEER REVIEWED PUBLICATIONS

Bibliometric analysis according to Google Scholar (citations), Journal Citation Reports (Impact factor) and Scimago (rank) and AltMetric (altmetric score)

Statement about publishing: Science depends on taxpayers' money. We owe them that our science is free, inclusive, and that our funds do not end up in the pockets of stockholders. I therefore prioritize publishing in society-ran journals, where profits flow back to the research community, and with open access options.

s = society journal; oa = open access; u = undergraduate student; c = correspondent author

2022

- 12 J. Cerca, E. E. Armstrong, S. Prost, M. Blaxter, R. Gillespie, D. Petrov: The *Tetragnatha kawaiensis* genome sheds light on spider genome evolution; **Genome Biology and Evolution**
s / oa Cit = 0, IF (5 year) = 1.7, **Q1 (top 6%)** in Ecology, Evolution, Behavior and Systematics,
/ c **Contribution:** Experimental design, genome annotation, functional & comparative genomic analyses, writing
- 11 V. I. Radashevsky, V. V. Pankova, V. V. Malyar, J. Cerca, T. H. Struck; A review of the worldwide distribution of *Marenzelleria viridis*, with new records for *M. viridis*, *M. neglecta* and *Marenzelleria* sp. (Annelida: Spionidae); **ZooTaxa (in press)**
Cit = 0, IF (5 year) = 0.621, **Q2** in Animal Science and Zoology
Contribution: DNA molecular work

2021

- 10 J. Cerca^{*}, W. Sowersby^{*}, B. Wong, T. Lehtonen, D. Chapple, M. Leal-Cardín, M. Barluenga[^], M. Ravinet[^]
c The role of admixture in the spread of the thick-lip ecotype in a cichlid fish radiation. **Molecular Ecology**
^{*} Joint first authors; [^] joint senior authors
Cit = 0, IF (5 year) = 6.185, **Q1 (top 3%)** in Ecology, Evolution, Behavior and Systematics
Contribution: RADseq genomic data analysis, population genomics data analysis, writing
- 9 J. Cerca^{*}, M. F. Maurstad^{*u}, N. Rochette, A. Rivera-Colón, N. Rayamajhi, J. Catchen[^], T. H. Struck[^]
s/ Removing the bad apples: a simple bioinformatic method to improve loci-recovery in *de novo* RADseq data
oa/u for non-model organisms, **Methods in Ecology and Evolution**
/ c Cit = 6, IF (5 year) = 6.514, **Q1 (top 2%)** in Ecology, Evolution, Behavior and Systematics
^{*} Joint first authors; [^] joint senior authors
Contribution: Experimental design, Student supervision, RADseq genomic data analysis, writing
- 8 J. Cerca, A. Rivera-Colón, M. Ferreira, M. Ravinet, M. Nowak, J. Catchen, T. H. Struck Incomplete lineage
oa / sorting and ancient admixture, and speciation without morphological change in ghost-worm cryptic species,
c **PeerJ**
Cit = 3, IF (5 year) = 2.379, **Q1 (top 12%)** in Agricultural and Biological Sciences
Contribution: Experimental design, RADseq genomic data generation, population genomics and phylogenomics data analysis, writing

2020

- 7 J. Cerca, C. Meyer, G. Purschke, T. H. Struck. Delimitation of cryptic species reduces the geographical
oa / range of marine ghost-worms (*Stygocapitella*; Annelida, Sedentaria), **Molecular Phylogenetics and Evolution**
c Cit = 16, IF (5 year) = 4.201, **Q1 (top 6%)** in Ecology, Evolution, Behavior and Systematics,
Contribution: Experimental design, fieldwork, wet-laboratory work and sequencing, data analysis, writing
- 6 J. Cerca, C. Meyer, D. Stateczny, D. Siemon, J. Wegbrod, G. Purschke, D. Dimitrov, T. H. Struck.
s/oa Deceleration of morphological evolution in a cryptic species complex and its links to paleontological stasis,
/c **Evolution**

Cit = 14, **IF** (5 year) = 4.201, **Q1 (top 5%)** in Agricultural and Biological Sciences (miscellaneous), **Q1 (top 5%)** in Ecology, Evolution, Behavior and Systematics, **AltMetric** = 61 (top 25% of all research outputs)

Contribution: Experimental design, fieldwork, wet-laboratory work and sequencing, data analysis, writing
2019

- 5 s / c **J. Cerca**, A. Agudo, S. Castro, A. Afonso, I. Alvarez, R. Torices. Fitness benefits and costs of floral advertising traits: insights from rayed and rayless phenotypes of *Anacyclus* (Asteraceae), *American Journal of Botany*
Cit = 3, **IF** (5 year) = 3.06, **Q1 (top 13%)** in Ecology, Evolution, Behavior and Systematics, **Q1 (top 10%)** in Plant Science, **AltMetric** = 7 (top 25% of all research outputs)
Contribution: Experimental design, fieldwork, ecological data-analysis in R, writing

2018

- 4 c **J. Cerca**, G. Purschke, T. H. Struck; Marine connectivity dynamics: Clarifying cosmopolitan distributions of marine interstitial invertebrates and the meiofauna paradox. *Marine Biology*
Cit = 30, **IF** (5 year) = 2.2, **Q1 (top 18%)** in Aquatic sciences, **Q1 (top 23%)** in Ecology, Evolution, Behaviour and Systematics, **Q1 (top 20%)** in Ecology, **AltMetric** = 13 (top 25% of all research outputs)
Contribution: Lead author, data-scoring of 1000+ publications, writing
- 3 c T. H. Struck, J. Feder, M. Bendiksby, S. Birkeland, **J. Cerca**, V. Gussarov, S. Kistenich, K. Larsson, L.H. Liow, M. Nowak, B. Stedje, L. Bachmann, D. Dimitrov; 2018 Finding evolutionary processes hidden in cryptic species. *Trends in Ecology & Evolution*
Cit = 219, **IF** (5 year) = 19.3, **Q1 (top 1%)** in Ecology, Evolution, Behavior and Systematics, **AltMetric** = 40 (top 5% of all research outputs)
Contribution: weekly discussions with 1st author, contribution to the literature review, writing

2014-2013 (undergraduate researcher)

- 2 s A. Afonso, S. Castro, J. Loureiro, L. Mota, **J. Cerca**, R. Torices (2014). The effects of achene type and germination time on plant performance in the heterocarpic *Anacyclus clavatus* (Asteraceae). *American Journal of Botany*
Cit = 14, **IF** (5 year) = 3.06, **Q1 (top 13%)** in Ecology, Evolution, Behavior and Systematics, **Q1 (top 10%)** in Plant Science, **AltMetric** = 2
Contribution: Experimental design, data collection and writing
- 1 J. Loureiro, M. Castro, **J. Cerca**, L. Mota, R. Torices (2013) Genome size variation and polyploidy incidence in the alpine flora from Spain. *Anales del Jardín Botánico de Madrid*
Cit = 7, **IF** (5 year) = 0.68, **AltMetric** = 2
Contribution: Field collection, flow-cytometry analysis, laboratory work and writing

AWARDS

- 2021 Best PhD/MSc paper award by the Natural History Museum in Oslo (~500 €)
2019 Best poster award, XV EMPSEB (European Meeting of PhD Students in Evolutionary Biology; ~500 €)
2018 Science communication Instagram Photo Competition #phdlifemn (9,7-inch, 32 GB iPad)
2017 Best poster award, NORBIS annual meeting (500 NOK; ~ 52.5 €)
2016 Best poster and speed presentation award, Forbio annual meeting (5 000 NOK; ~ 525 €)
2014 4th best individual speaker at national level - Portuguese National Debating Competition
2014 “Top 3% student” of the Faculty for Sciences and Technology, University of Coimbra (~2.500 €)

FUNDING

- 2021 DIKU - NORPART-2021/10475 Exchanges between Norway and Latin America to facilitating excellent joint graduate education in biodiversity genomics (co-leader with Michael D. Martin) ~8,400,000 NOK (817,021€)
- 2021 «Adaptation in the Anthropocene: the Iago Sparrow genome as a key to understand adaptation to anthropogenic environments», **Peder Sather** (PIs: José Cerca NTNU & Rauri Bowie, UC Berkeley) ~225,000 NOK (22,000 €)
- 2021 «Ecological speciation, polyploidy, and the rewiring of transcriptomic networks: untangling the drivers for genomic novelty and genomic functionality», **Norwegian Research Council** 1,691,000 NOK (165,000 €)
- 2019 «Genomics of Convergent Invertebrate Morphology» **Peder Sather Grant** (under R. Gillespie and T. H. Struck) ~200,000 NOK (22,000 €)

2018	«On the origin of cryptic species: Insights from the <i>Stygocapitella</i> subterranea species complex» European Society of Evolutionary Biology – Godfrey Hewitt Award	~15,000 NOK (1,230 €)
2019-16	12 funded grants (including travel grants, student-oriented funding and stipends) as part of my PhD project	~ 200,000 NOK (20,000 €)

FUNDING AS THIRD PARTY

2020	«Urban evolution in Californian Black widow spiders» California Conservation Genomics Project (PI: Rosemary Gillespie) Role: Bioinformatician (experimental design, data analysis)	50,000 US\$
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JOURNAL COVERS

- 1 Evolution, January 2020, for “Deceleration of morphological evolution in a cryptic species complex and its links to paleontological stasis”

NON-PEER REVIEWED PUBLICATIONS (INCL. BOOK CHAPTERS AND RESPONSES)

- 5 *In press* T.H. Struck, **J. Cerca** (2020) What are cryptic species? – A process-driven perspective; Proceedings of the Systematics Association, special volume on Cryptic Species
Contribution: Writing, literature survey
- 4 T.H. Struck, **J. Cerca** (2019) Evolutionary Significance of Cryptic Species; *Encyclopaedia of Life Sciences* Cit = 16; **Contribution:** Writing, figure design
- 3 T. H. Struck, J. Feder, M. Bendiksby, S. Birkeland, **J. Cerca**, V. Gussarov, S. Kistenich, K. Larsson, L.H. Liow, M. Nowak, B. Stedje, L. Bachmann, D. Dimitrov (2018) Cryptic Species – More Than Terminological Chaos: A Reply to Heethoff *Trends in Ecology & Evolution*; 33 (5): 310-312
Cit = 9; **Contribution:** Writing
- 2 J. Loureiro, M. Castro, **J. M. de Oliveira**, P. Antunes, J. Canhoto, S. Castro; Aplicações da Citometria de Fluxo em Horticultura (2012). *Revista da Associação Portuguesa de Horticultura (In Portuguese)*
Cit = 2; **Contribution:** Flow cytometry data generation and writing
- 1 S. Perkins, J. Perkins, **J.C. de Oliveira**, M. Castro, S. Castro, J. Loureiro; Weighing in: Discovering the ploidy of hybrid elepidote rhododendrons (2012). *Rhododendrons, Camellias and Magnolias* 34-48.
Cit = 0; **Contribution:** Flow-cytometry data generation and writing

INVITED ORAL COMMUNICATIONS

	△ denotes international conferences; x - declined
2022	University of Iceland
2022x	Plant and Animal Genome (PAG) Conference in San Diego, Asteraceae Genome evolution session
2021	University of Hawai'i at Hilo Tropical Conservation Biology and Environmental Science Graduate Program
2021	The International Compositae Alliance (TICAtalks; audience of 50)
2021	ITQB, U. Nova de Lisboa, Portugal (audience of 70)
2019	California Academy of Sciences (audience of 15)
2019x	Evolutionary Genomics Seminars, Centre for GeoGenetics, Natural History Museum of Denmark
2018	Department of organismal biology, Uppsala University (Uppsala, Sweden; audience of 30)
2017△	BioSyst.EU Meeting, Gothenburg, Sweden (audience of ~60)

ORAL COMMUNICATIONS

2020	Virtual Genomics Social Hour – Long read sequencing & Genome Assembly (8 th May)
2020	Virtual Genomics Social Hour – RADseq & population genetics (3 rd April)
2019	European Meeting of PhD Students in Evolutionary Biology. Pedrogão, Portugal (26 th May -1 st June)
2019	Forbio annual meeting. Trondheim, Norway (8 th -10 th April)
2018	GIGAiii (Global Invertebrate Genomics Alliance). Curaçao, Dutch Antilles (19 th -21 st October)
2018	Forbio annual meeting. Tromsø, Norway (12 th -14 th February)
2017	Young Systematics Forum. Natural History Museum, England (1 st December)
2017	ForBio annual meeting. Bergen, Norway (24 th -26 th April)
2015	IV Congresso Ibérico de Ecologia. Coimbra, Portugal (16 th -19 th July)

RESEARCH STAYS (> 3 MONTHS)

2021-22 Nov-Feb	Galápagos Science Centre (S. Cristóbal, Galápagos) & Charles Darwin Foundation (S. Cruz, Galápagos) Purpose: Acquire knowledge in Galápagos Flora through fieldwork and collaboration
2019 Jan-Mar	Blaxter lab at the University of Edinburgh (Scotland; 3 months); Purpose: Acquire knowledge in genome assembly and improve my bioinformatics
2018 May-Aug	Catchen lab at the University of Illinois at Urbana Champaign (USA; 4 months); Purpose: Acquire knowledge in RADseq data analyses, population genomics and bioinformatics

SERVICE

2021	Three consulting sessions on RADseq & population genomics (Physalia research school)
2021	Genomics social hour, island adaptive radiations (invited speakers: Dr. Christine Parent – U. of Idaho, Dr. Matthew Knope – U. of Hawai'i, Dr. Anthony Geneva – Rutgers U.; 100 participants)
2020	Genomics social hour, urban evolution (invited speakers: Dr. Mark Ravinet – U. of Nottingham, Dr. Marta Szulkin – U. of Warsaw, Dr. Kristin Winchell – Washington U. in St. Louis; 30 participants)
2018-19	Member of the Graduate Student Advisory Committee of the Society of Study of Evolution
2018-19	Grant reviewer for the Graduate Research Excellence Grants - R.C. Lewontin Early Award of the Society of Study of Evolution. 33 proposals reviewed each year
2017-18	Grant reviewer for the “Marie Skłodowska-Curie Fellowships training program and potential hosts” workshop of the Norwegian Research School in Biosystematics (FORBIO). 5 proposals reviewed (in total)
2017	Intellectual, graphic design and writing input on the ITN Plant.ID – Molecular Evolution of Plants (funded ca. 4.000.000 €)
2016	Symposium organization “Elephant in the room: Evolutionary and Ecological implications of cryptic speciation”, University of Oslo (~60 participants)
2013-14	Treasurer , Debating Union, University of Coimbra
2013-14	Student representative , Master's in Ecology, University of Coimbra
2011-12	Committee member of the Ecological Group, University of Coimbra
2009-11	Vice-president , Biology Student's Union, University of Coimbra

TEACHING EXPERIENCE

2021	Oh-know: Online hosted-Kmer non-model organism workshop (Teacher; PhD level class; 50 students)
2021	Introduction to Bioinformatics (Course design & lecturer; Unix, R; 32 students)
2021	Biogeography (1 lecture on Island Biogeography; 30 students, BSc/MSc level, NTNU)
2019	Physalia: Rad-Seq data analysis (Teaching assistant; PhD level class; 30 students)
2019	ForBio Workshop: Proposal writing (Course design & lecturer; PhD level class; 25 students)
2018	Introduction to Bioinformatics for Biosystematics (Unix, Python, R; Teaching assistant PhD level class; 33 students)
2018	Evolution and systematics of the Animal kingdom (Master level class; 5 students; Lecturer)
2017	High Throughput Sequencing technologies and bioinformatics (Teaching assistant in the Transcriptomics module; MSc & PhD level class; 40 students)
2017	Phylogenomics (Teaching assistant in the R lesson ; PhD level class; 25 students)
2016-18	Molecular Evolution (Teaching assistant, lecturer; MSc & PhD class; 36 students)

PHD STUDENT SUPERVISION

2022-25	Jaime Morin (“Phylogenomics and population genomics of <i>Pyrrhura</i> parrots using ancient and modern DNA”)	Co-supervisor (NTNU)
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BSC / MSC STUDENT SUPERVISION

2021-22	BSc honors' student: Heidi Yang (“Evolution of transposable elements in the <i>Tetraglathia</i> radiation”)	Co-supervisor (UC Berkeley)
2020-22	MSc student: Nina Casillas (“Genomic basis for stripe morphs in European adders”)	Co-supervisor (NTNU)
2020-21	MSc student: Adel Dehkordi (“Population genomic signatures of glaciation in <i>Stygocapitella zecae</i> and <i>S. westheideri</i> ”)	Co-supervisor (University of Oslo)
2020-21	MSc student: Jaime Morin Lagos (“A comprehensive mitogenome phylogeny of the avian tribe Arini with emphasis in <i>Ara</i> species”)	Co-supervisor (NTNU)

2019	BSc student: Kenzie Weiss-Mercord (“Parallel evolution, Convergence and adaptation in the <i>Tetragnatha</i> spider adaptive radiation”)	Supervisor (UC Berkeley)
2019	BSc student: Shi Lin (“Parallel evolution, Convergence and adaptation in the <i>Tetragnatha</i> spider adaptive radiation”)	Supervisor (UC Berkeley)
2019-21	BSc student: Marius Maurstad (“Removing the poisoned apples: a simple method to improve RADseq inference”)	Supervisor (University of Oslo)
2019-21	MSc student: Stian Helsem (“How old are these worms? Dating the Annelid phylogenetic tree”)	Co-supervisor (University of Oslo)
2018-20	MSc student: Astrid Bang (“Metabarcoding of Kinorhyncha from the Oslo Fjord”)	Co-supervisor (University of Oslo)

PEER REVIEW EXPERIENCE

Statement about reviewing: Science depends on taxpayers’ money. We owe them that our science is free, inclusive, and that our funds do not end up in the pockets of stockholders. I therefore prioritize reviewing society-ran journals, where profits flow back to the research community. **s** = society journal; **#** = total for that journal

2022	Review for IBIS (s ; 1); Molecular Ecology Resources (1)	
(2 papers)		
2021	Reviewer for Systematic Biology (s ; 1); Genome Biology and Evolution (s ; 4); Journal of Heredity (s ; 1);	
(10 papers)	Journal of Animal Ecology (s ; 1); Journal of Evolutionary Biology (s ; 2); Molecular Ecology (1)	
2020	Reviewer for PNAS (1); Heredity (s ; 1); Molecular Phylogenetics and Evolution (1); BMC Evolutionary	
(5 papers)	Biology (1); Journal of Animal Ecology (s ; 1)	
2019	Reviewer for Heredity (s ; 1); Systematics and Biodiversity (1)	
2018	Reviewer for Zoologica Scripta (s ; 1); Evolution (s ; 1)	

SCIENCE COMMUNICATION

2021 -	YouTuber in <i>PT</i> : Channel on data visualization (~50 followers)	2 videos
	YouTuber in <i>EN</i> : Channel on genomic data analyses (~50 followers)	>10 videos
2018 -	5 contributions to local high schools and talks to biology undergraduates about scientific careers and challenges	2 talks at high-schools, 3 talks towards undergraduates
2020	J. Cerca , A. Johnsen, T. H. Struck, L. Bachmann: Naturhistoriske samlinger i den molekylære æraen: En kostbar hobby eller en bærebjelke for moderne forskning? <i>Naturen</i>	Article about Natural History Collections in the journal ‘ <i>Naturen</i> ’
2017	Appointed as a blogger in <i>De Rerum Natura</i> http://dererummundi.blogspot.com/	Portugal’s most read science blog
2015-18	Several contributions to the Portuguese Society of Education and Promotion of Evolution (NEDE-APBE) and <i>Forskning.no</i> (Norway)	
2016	Chief Judge in the Debating competition “Brave New World” (focusing on scientific topics)	British Parliamentary Debate

RESEARCH EXPEDITIONS

2018	Volchanets, Far-East Russia (<u>Main organizer</u> – 2 weeks; Collection and identification of interstitial invertebrates)	
2018	Sylt, Germany (<u>Main organizer, alone in the field</u> – 2 weeks; Collection of Jaw-worms (Gnathostomulida) as part of a collaboration)	
2017	Bodø, Tromsø, Norway (<u>Main organizer, alone in the field</u> – 4 weeks; Collection and identification of interstitial invertebrates)	
2016	Massachusetts, Maine and Washington State, USA (<u>Main organizer, alone in the field</u> – 5 weeks; Collection and identification of interstitial invertebrates)	
2016	Plymouth, London, Cardiff, UK (<u>Main organizer, alone in the field</u> – 4 weeks; Collection and identification of interstitial invertebrates)	
2016	Roscoff, France (participant – 2 weeks; Collection and identification of interstitial invertebrates)	
2013	Andalucía, Spain (participant – 5 weeks; Observing and capturing pollinators for reference collection)	