

# JOSÉ CERCA

## PERSONALIA

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**Born:** May 12<sup>th</sup>, 1990

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**E-mail:** [jose.cerca@gmail.com](mailto:jose.cerca@gmail.com)

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## KEY SKILLS

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As part of my **PhD in Evolutionary Genomics** and a **Vising Researcher in Berkeley** I mastered principles of **computational biology** (bioinformatics), **genomics** (population genomics, comparative genomics and phylogenomics), **morphological evolution**, and **ecology**. I have developed a skillset in **RAD-seq**, **whole-genome resequencing**, genome **assembly and annotation**, and **comparative genomics** independent of my advisors, contributed to the **training of 3 BSc, 2 MSc students**, and managed **~85,000 € of project money**, including **~40,000 € from 14 grants I obtained myself**, and published **5 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, and acquired funding. My collaborators include **Julian Catchen** (RADseq; University of Illinois) **Mark Blaxter** (Genome assembly; University of Edinburgh), **Mark Ravinet** (Evolution of commensalism in Sparrows).

Facing the future, I want my research to focus on the ability of species to evolve (evolvability), focusing on island systems and adaptive radiations. I aim to combine genomics, with 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

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

## EDUCATION

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

## MANUSCRIPTS IN PREPARATION OR SUBMITTED

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- (4) *In prep for **Molecular Biology and Evolution** (manuscript in prep): J. Cerca\**, E. E. Armstrong\*, S. Prost, M. Blaxter, R. Gillespie, D. Petrov: Spider genomes uncover expansions in feeding-metabolism and sensory perception  
**Contribution:** Genome annotation, functional & comparative genomic analyses, writing  
 \* Joint first authors
- (3) *Submitted to **Methods in Ecology & Evolution**: J. Cerca\**, M. F. Maurstad\*, N. Rochette, A. Rivera-Colón, N. Rayamajhi, J. Catchen, T. H. Removing the bad apples: a simple bioinformatic method to improve loci-recovery in *de novo* RADseq data for non-model organisms  
 \* Joint first authors  
**Contribution:** Experiment design, RADseq genomic data generation, population genomics and phylogenomics data analysis, writing
- (2) *Submitted to **PeerJ**: J. Cerca\**, M. Ravinet, M. Nowak, T. H. Struck Incomplete lineage sorting explains morphological similarity in a complex of cryptic species  
**Contribution:** Experiment design, RADseq genomic data generation, population genomics and phylogenomics data analysis, writing
- (1) *In review at **Molecular Ecology** (manuscript format):* W. Sowersby\*, **J. Cerca\***, B. Wong, M. Barluenga, M. Ravinet The role of admixture in the spread of the thick-lip ecotype in a cichlid fish radiation.  
 \* Joint first authors  
**Contribution:** RADseq genomic data generation, population genomics data analysis, writing

## PEER REVIEWED PUBLICATIONS

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- Bibliometric analysis according to Google Scholar (citations), Journal Citation Reports (Impact factor) and Scimago (rank) and AltMetric (altmetric score)
- 2020 **J. Cerca**, C. Meyer, G. Purschke, T. H. Struck. Delimitation of cryptic species reduces the geographical range of marine ghost-worms (*Stygocapitella*; Annelida, Sedentaria), ***Molecular Phylogenetics and Evolution***  
 7  
 Cit = 2, IF (5 year) = 4.201, Q1 (top 6%) in Ecology, Evolution, Behavior and Systematics, Q1 (top 15%) in Genetics  
**Contribution:** Fieldwork, wet-laboratory work and sequencing, data analysis, writing
- 2020 **J. Cerca**, C. Meyer, D. Stateczny, D. Siemon, J. Wegbrod, G. Purschke, D. Dimitrov, T. H. Struck. Deceleration of morphological evolution in a cryptic species complex and its links to paleontological stasis, ***Evolution***  
 6  
 Cit = 1, IF (5 year) = 4.201, Q1 (top 5%) in Agricultural and Biological Sciences (miscellaneous), Q1 (top 5%) in Ecology, Evolution, Behavior and Systematics, Q1 (top 14%) in Genetics, AltMetric = 61 (top 25% of all research outputs)  
**Contribution:** Fieldwork, wet-laboratory work and sequencing, data analysis, writing
- 2019 **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***  
 5  
 Cit = 1, 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 **J. Cerca**, G. Purschke, T. H. Struck; Marine connectivity dynamics: Clarifying cosmopolitan distributions of marine interstitial invertebrates and the meiofauna paradox. ***Marine Biology***  
 4  
 Cit = 16, 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
- 2018 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***, 33 (3): 153-163  
 3  
 Cit = 126, 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 1<sup>st</sup> author, contribution to the literature review, writing

- 2014 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*, 101 (5): 892-898  
Cit = 10, 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
- 2013 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*, 70: 39-47  
Cit = 6, IF (5 year) = 0.68, AltMetric = 2  
**Contribution:** Field collection, flow-cytometry analysis, laboratory work and writing

## AWARDS

- 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 4<sup>th</sup> 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

2019	Peder Sather Grant Program (under R. Gillespie and T. H. Struck)	24,000 US\$ (~22,000 €)
2019	Internationalization fund – UiO:Life Sciences	48,800 NOK (~5,000 €)
2018	NORBIS international travel funds	31,500 NOK (~3,200 €)
2018	Travel grant - Global Invertebrate Genomics Alliance	~2,000 US\$ (~1,720 €)
2018	European Society of Evolutionary Biology – Godfrey Hewitt Award	1 230 €
2018	Internationalization Support - UiO:Life Sciences	45,000 NOK (~4,700 €)
2018	Erasmus+ Staff Mobility for Training	961 €
2018	MatNat-Stipend (Travel funding)	10,000 NOK (~1,050 €)
2018	ForBio Outgoing Travel Grant	5,000 NOK (~525 €)
2017	Erasmus+ Staff Mobility for Training	675 €
2017	Programming for Evolutionary Biology Stipend	500 €
2017	ForBio Outgoing Travel Grant	5,000 NOK (~ 525 €)
2016	Den Grevelige Hjelmstjerne-Rosencroneske Stiftelse ved U. i Oslo	14,500 NOK (~ 1500 €)
2016	Ragen Award, Friday Harbor Laboratories, Washington University	1,000 US\$ (~ 850 €)

## FUNDING AS THIRD PARTY

2020	California Conservation Genomics Project: Urban evolution in Californian Black widow spiders (PI: Rosemary Gillespie) <b>Role:</b> Bioinformatician (experimental design, data analysis)	50,000 US\$
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## NON-PEER REVIEWED PUBLICATIONS (INCL. BOOK CHAPTERS AND RESPONSES)

- 2020 *In press* T.H. Struck, **J. Cerca**; What are cryptic species? – A process-driven perspective; Proceedings of the Systematics Association, special volume on Cryptic Species  
 5  
**Contribution:** Writing, literature survey
- 2019 T.H. Struck, **J. Cerca**; Evolutionary Significance of Cryptic Species; *Encyclopaedia of Life Sciences*  
 4  
Cit = 2; **Contribution:** Writing, figure design
- 2018 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; Cryptic Species – More Than Terminological Chaos: A Reply to Heethoff *Trends in Ecology & Evolution*; 33 (5): 310-312  
 3  
Cit = 6; **Contribution:** Writing
- 2012 J. Loureiro, M. Castro, **J. M. de Oliveira**, P. Antunes, J. Canhoto, S. Castro; Aplicações da Citometria de Fluxo em Horticultura. *Revista da Associação Portuguesa de Horticultura* 108: 25-28 (*In Portuguese*)  
 2  
Cit = 2; **Contribution:** Flow cytometry data generation and writing
- 2012 S. Perkins, J. Perkins, **J.C. de Oliveira**, M. Castro, S. Castro, J. Loureiro; Weighing in: Discovering the ploidy of hybrid elepidote rhododendrons. *Rhododendrons, Camellias and Magnolias* 34-48.  
 1  
Cit = 0; **Contribution:** Flow-cytometry data generation and writing

## INVITED ORAL COMMUNICATIONS

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^ denotes international conferences; x - declined

- 2019 California Academy of Sciences (talk on morphological stasis in cryptic species, 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

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

## RESEARCH STAYS (> 3 MONTHS)

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- 2019** **Blaxter lab** at the University of Edinburgh (Scotland; 3 months);  
Jan-Mar **Purpose:** Acquire knowledge in genome assembly and improve my bioinformatics  
**2018** **Catchen lab** at the University of Illinois at Urbana Champaign (USA; 4 months);  
May-Aug **Purpose:** Acquire knowledge in RADseq data analyses, population genomics and bioinformatics

## SERVICE

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- 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

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- 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)

## STUDENT SUPERVISION

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- 2020- **MSc student:** Nina Casillas (tbd) MSc project co-advisor  
2022 (NTNU)  
2020- **MSc student:** Jaime Morin Lagos (“A comprehensive mitogenome  
2021 phylogeny of the avian tribe Arini with emphasis in *Ara* species”) MSc project co-advisor (NTNU)

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

## PEER REVIEW EXPERIENCE

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2020	Reviewer for Heredity (1); Molecular Phylogenetics and Evolution (1)
2019	Reviewer for Heredity (1); Systematics and Biodiversity (1)
2018	Reviewer for Zoologica Scripta (1); Junior reviewer (joint review with senior) for Evolution (1)

## SCIENCE COMMUNICATION

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2020	<b>J. Cerca</b> , 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> <a href="http://dererummundi.blogspot.com/">http://dererummundi.blogspot.com/</a>	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

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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)