

PERSONAL DETAILS

Name: Tânia Raquel dos Santos Aires
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ORCID: orcid.org/0000-0002-1964-6819
Nationality: Portuguese
Birth Date: 28th April 1979

EDUCATION

2007 – 2012 University of Algarve, Faro, Portugal
PhD degree in Molecular Ecology
Muito Bom com Distinção e Louvor

1997 - 2004 University of Évora, Portugal
BSc(Hons), Major: Biology [Pre-Bologna]
Final Classification 15 values (0-20)

PROFESSIONAL EXPERIENCE

- 2002 **Volunteer** - Classic University of Lisbon, Faculty of Sciences, Portugal
*Study of demographic parameters of the Berlengas Island's lizard *Podarcis carbonelli berlengensis* Vicente 1985 (*Sauria, Lacertidae*), BSc(Hons) Biology by Vânia Proença*
- 2003 - 2004 **Undergrad Student** - Institute of Hygiene & Tropical Medicine, Lisbon, Portugal
Lyme Borreliosis in Portugal. Study of the agents, vectors and transmission risks, BSc(Hons) Biology; Supervisor: Dr. Margarida Collares-Pereira
Final Classification: 19 (0-20)
- 2004 - 2005 **Research Technician** - Gulbenkian Institute of Science, Oeiras, Lisbon, Portugal
Experimental evolution and the genetic basis of adaptation: analysis of candidate genes during reverse evolution (POCTI/BSE/48228/2002); PI: Dr. Henrique Teotónio
- 2006 - 2007 **Research Technician** - Center of Marine Sciences (CCMAR), Faro, Portugal
NETWORK– Genetic Networks and Evolution: from individuals to populations (POCI/MAR/57342/2004); PI: Dr. Sophie Arnaud-Haond
- 2006 - 2007 **Research Technician** - Center of Marine Sciences (CCMAR), Faro, Portugal
DIVSTAB - Neutral and non-neutral genes: population diversity and stability (POCI/MAR/60179/2004); PI: Dr. Sophie Arnaud-Haond
- 2007 – 2012 **PhD Student** - Center of Marine Sciences (CCMAR), Faro, Portugal
*Biotic interactions and the success of invasions: bacterial communities in invasive versus native species of algae (*Caulerpa* sp.) and seagrasses (*Posidonia* sp.) (PTDC/MAR/64749/2006); Supervisors: Dr. Sophie Arnaud-Haond (IFREMER, Brest, France), Prof. Dr. Ester Serrão (CCMAR, Faro, Portugal), Dr. Carlos Duarte (IMEDEA, Palma de Mallorca, Spain).*

2012 – 2014 **Postdoctoral Fellow** - University of Rhode Island (URI) and Salve Regina University (SRU), RI, USA

Climate-driven impacts on the formation and persistence of macroalgal blooms: Bringing Ulva bloom biology into the genomics era. PIs: Professor Carol Thornber (URI) and Professor JD Swanson (SRU).

Sept 2013 – Jan 2014 **Adjunct Professor** of Introductory Ecology (BIO 262) in the University of Rhode Island, Kingston, USA.

Febr 2014 – Oct2016 **Postdoctoral Fellow** - Center of Marine Sciences (CCMAR), Faro, Portugal

Involved in two different European Projects: *Diversity and functioning of coastal marine biomes under siege: implications of Seaweed Proliferations across three oceans* (SEAPROLIF - Netbiome/FCT), and *Invasive seaweeds in rising temperatures: impacts and risk assessments.* (INVASIVES- SEAS-ERA/FCT). PI: Dr. Aschwin Engelen.

Oct 2016 – Dec 2016 **Visitor Scientist** - Microbial Systems Ecology (MSE), Department of Aquatic Microbiology (AMB), Institute for Biodiversity and Ecosystem Dynamics (IBED), University of Amsterdam(UvA). Invitation by Professor Gerard Muyzer.

August 2017 – Present **FCT Postdoctoral Fellow (SFRH/BPD/116774/2016)** - CCMAR, Faro, Portugal

“Marine macrophytes holobionts: acclimation and adaptation mechanisms across oceans in a global change scenario”

TEACHING EXPERIENCE

During my first year as a Postdoc research fellow in the University of Rhode Island (URI) and Salve Regina University, USA, I had 4 undergrad students under my supervision. My role as a co-supervisor was to ensure they learn the molecular techniques involved in this project, know how to analyze the results and as well as they develop writing skills in order to write their final thesis.

Research mentoring record:

BSc. students: 3 (since 2012):

Amy Battocletti [Ulva rigida bloom formation in Narragansett Bay - finished in 2013 University of Rhode Island].

Noe Mercado [Gene Expression Patterns in Different Stages of Ulva sp (Chlorophyta) Blooms Accessed by Real Time PCR - finished in 2013 Salve Regina University].

Shennel Gelin [Uncovering the Functional Genetics of Macroalgal Ulva Blooms using Transcriptome Analysis - Finished in 2014 Salve Regina University].

MSc. students: 1 (Co-Supervisor)

Anita Klæui [Characterization of the Microbiome of an Invasive Marine Brown Alga - EMBC Master Thesis - Finished in June 2015].

Jens Boyen [DNA Sequencing and Genetic Analysis of *Lobophora* spp. samples from the Caribbean and East-Atlantic Islands - Field and Laboratory Methods in Marine Biology, Lab Rotation - Finished in June 2016]

I was also teaching Introduction to Ecology (BIO 262), in the University of Rhode Island, invited by Dr. Evan Preisser.

As part of my postdoc fellowship functions, in CCMAR, Algarve, working on the INVASIVES project (SEAS ERA/FCT, PI: Dr. Aschwin Engelen), I am also responsible for the mentoring of the PhD student from the Doctoral Program on Marine Ecosystem Health and Conservation [MARES] with the thesis title: "Acclimation and Adaptation of invasive seaweeds" PhD Code: MARES_13_08.

KEY SKILLS

- Spoken fluent languages: Portuguese (native) and English
- Spoken basic languages: French and Spanish
- Full computer literacy in word processing, spreadsheet, and graphic presentation packages
- Software: ABI PRISM 377 DNA Analyzer, BEAST, BioEdit, ClustalX, FigTree, Geneious, jModelTest, Modeltest, Mr. Bayes, PAUP, Phylip, PhyML, Garli, STRand, QIIME [Quantitative Insights Into Microbial Ecology], MG-RAST, PICRUSt, CLC Genomics Workbench, Metahit, Bowtie2 and CheckM.
- Continued experience in travel, both local and international, with a nicely built network of contacts in the scientific area.
- Molecular Biology Techniques: DNA and RNA extraction and amplification in a range of different organisms, cloning, microsatellites genotyping, RFLP and T-RFLP, DGGE and radioactive probing, Real Time PCR, etc.
- Field sampling experience even in harsh conditions
- Good connections with several people around the world working in my research area
- Driving license
- Diving license PADI Open Water Diver

COURSES AND WORKSHOPS

September 17 Training School in Analytical Chemistry "Exploring the chemical nature of seaweed-microbial interactions. Jena, Germany.

September 17 COST Action workshop: Crossing the kingdoms: Macroalgae-Bacteria Interactions. Jena, Germany.

September 16 Black Forest Summer School – NGS for Phylogenetics. Black Forest, Germany.

May 16 R for absolute beginners. CCMAR, Faro, Portugal, by Isabel Duarte and Ramiro Magno.

- January 09** “Workshop on Molecular Evolution, Europe”. Cesky Krumlov, Czech Republic (3 weeks winter school)
- June 09** MESQUITE software, Center of Marine Sciences, University of Algarve, Faro, Portugal, by André Levy, PhD.
- May 08** BEAST software, Center of Marine Sciences, University of Algarve, Faro, Portugal, by Philippe Lemey, PhD & Beth Shapiro, PhD.
- December 06** ‘Scientific Writing Workshop’, Center of Marine Sciences, University of Algarve, Faro, Portugal, by Stewart Grant
- April 06** Course on Genetic Identification, Institute of Molecular Pathology and Immunology of the University of Porto (IPATIMUP), Porto, Portugal
- October 02** Organization of the VII Iberian Conference in **Herpetology**, University of Évora, Évora, Portugal
- February 01** Course on Molecular Biology, University of Évora, Évora, Portugal

PRIZES AND AWARDS RECEIVED

2016 Fellowship to the Summer School in Functional Genomics and Transcriptomics (Black Forest, Germany) – **Promoted by COST – PHYCOMORPH.**

PRESENTATIONS

ORAL PRESENTATIONS BY INVITATION

Aires T., Serrão EA., Duarte CM., Arnaud-Haond S. Invasion is a community affair: clandestine followers in the bacterial community associated to the alga *Caulerpa racemosa* track the invasion source. Biological & Environmental Sciences Seminar Series, March 1st 2013, University of Rhode Island, Kingston, RI, USA.

Aires T., Serrão EA., Duarte CM., Arnaud-Haond S. Biotic interactions and the success of invasive species: the case of the bacterial flora of *Caulerpa taxifolia*. NEAS- 52st Annual Northeast Algal Society Symposium. April 19-21, 2013, Mystic, CT, USA.

OTHER ORAL PRESENTATIONS

Baptista S., Quaresma A., **Aires T.**, Kurtenbach K., Santos-Reis M., Nicholson M., Collares-Pereira M. Lyme Borreliosis in Portugal: an emerging tick-borne infection. National Congress of Microbiology, Micro'2003. 29 Nov-2 Dec 2003, Tomar, Portugal.

Baptista S., Nicholson M., Quaresma A., **Aires T.**, Henriques G., Collares-Pereira M. Borreliose de Lyme em Portugal: Estudo dos vectores, agentes e áreas de risco. Aplicação dos SIG na saúde pública. VIII Meeting of SIG Users (ESIG'2004). 2 - 4 de June 2004, Oeiras, Portugal.

Aires T., Thornber C., Swanson JD. Differential Gene Regulation Patterns, during Bloom and Non-Bloom Time Periods, of *Ulva rigida* in Narragansett Bay (Rhode Island, USA), 10th International Phycological Congress, 4-10 August, 2013, Orlando, FL, USA.

Mercado NB., **Aires T.**, Allen H., Roosa TS., Thornber C., Swanson JD. Expression Analysis of the LhcSR Gene under Stress Conditions in Macroalga, *Ulva rigida* and *Ulva compressa*. 6th Annual Northeast Undergraduate Research and Development Symposium, University of New England, March 8-9, 2014, Biddeford, Maine, USA.

Mercado NB., Roosa TS., **Aires T.**, Allen H., Thornber C., Swanson JD. LhcSR Gene Expression Analysis in Macroalga, *Ulva rigida* and *Ulva compressa*. 5th Annual SRYOU Student Exposition, Salve Regina University, March 21, 2014, Newport, RI, USA.

Mercado NB., Roosa TS., **Aires T.**, Allen H., Thornber C., Swanson JD. Elucidation of LhcSR Gene Expression in Macroalga, *Ulva rigida* and *Ulva compressa*. 53rd Annual Northeast Algal Society Symposium, Salve Regina University, April 25-27, 2014, Newport, RI, USA.

Moalic Y., **Aires T.**, Serrão A. E., Jebbara M., Arnaud-Haond S. Co-occurrence Network of Bacterial Communities Reveals Species-Specific Patterns of Modularity Inside Siphonous Algae of the genus *Caulerpa* in the Mediterranean Sea. Conférences Jacques Monod, Roscoff (Brittany), France, June 22-26, 2015.

Engelen AH., Klæui A., **Aires T.**, Serrão EA. The Microbiome of a Seaweed Invader Across its Introduced European Range. Sixth European Phycological Congress (EPC6), London, UK, August 23-28, 2015.

Aires T., Engelen AH., Serrão EA. Differentiation in Bacterial Communities Associated to the Red seaweed Genus *Asparagopsis* in the Northeastern Atlantic and their Potential Drivers. Sixth European Phycological

Congress (EPC6), London, UK, August 23-28, 2015.

Serebryakova A., **Aires T.**, Viard F., Serrão E.A., Engelen AH. Effects of ocean acidification on the microbiome of an invasive brown seaweed and the gutmicrobiome of a native isopod consumer. MARES Conference. Olhão, Portugal, February 1-5, 2016.

Engelen AH, **Aires T**, Muyzer G, Serrão EA (2016) Revealing the functional potential of seaweed and mesoherbivore-associated microbiomes. International Seaweed Symposium. Copenhagen, Denmark, 19-24 June 2016.

Buonomo R, Chefaoui R, Bermejo RL, **Aires T**, Engelen AH, Airoidi L and Serrão EA. Marine Canopies in a Changing Environment: projecting the distribution of species of *Cystoseira* under alternative climatic scenarios. 11th International Temperate Reefs Symposium. University of Pisa, Pisa, Italy. June 26-30 2016.

Engelen AH, **Aires T**, Muyzer G, Serrão EA (2016) Microbiomes of macrophytes in the marine realm across species, tissues, latitudes and environmental conditions. Macumba conference. Berlin, Germany, 27-30 June 2016.

Engelen AH, **Aires T**, Muyzer G, Serrão E (2016) *Halophila stipulacea* microbiomes from Curaçao. EuroMarinera foresight workshop on the invasive seagrass *Halophila stipulacea*. Eilat, Israel, 3-6 July 2016.

Engelen AH, **Aires T**, Muyzer, G, Serrão EA (2016) Seagrass microbiome shifts under experimental eutrophication and algal blooms. Int. Seagrass Biology Workshop. Nant Gwrtheyrn, Wales, 16-21 October.

Engelen AH, **Aires T**, Muyzer G, Serrão EA (2016) Seagrass microbiomes. EuroMarinera foresight workshop "Bridging environmental and ecological data with integrated "omics" to understand and predict future seagrass ecosystems under global / climate change". Odense, Denmark, 12-14 December 2016.

Engelen AH, **Aires T**, Serrão EA (2017) Algal bacteriome characterization using high throughput sequencing. COST Action workshop: Crossing the kingdoms: Macroalgae-Bacteria Interactions. Jena, Germany, 11-12 September 2017.

Aires T, Klæui A, Serrão EA, Engelen AH. The microbiome of a seaweed invader across its introduced European range. COST Action workshop: Crossing the kingdoms: Macroalgae-Bacteria Interactions. Jena, Germany, 11-12 September 2017.

POSTERS

Aires T., Brites D., Teotonio H. The population genetics of laboratory adapted populations of *Drosophila melanogaster*. 10th Congress of the European Society for Evolutionary Biology (ESEB). 15-20 August 2005, Krakow, Poland.

Baptista S., Henriques G., **Aires T.**, Nicholson M., Walker H., Vieira M.L., Collares-Pereira M. *Ixodes ricinus* in Portugal – a five-year study on seasonal dynamics and infection rates with *Borrelia burgdorferi sensu lato* in a suitable habitat. 10th International Conference on Lyme Borreliosis and other tick-borne diseases. 11-15 September 2005, Vienne, Austria.

Aires T., Marba N., Serrao EA., Duarte CM., Arnaud-Haond S. Biotic interactions and the success of invasive species: the case of the bacterial flora of *Caulerpa taxifolia*, DIVERSITAS 2009- An International Program of Biodiversity Science. 13-16 Oct. 2009, Cape Town, South Africa.

Aires T., Marba N., Serrao EA., Duarte CM., Arnaud-Haond S. Biotic interactions and the success of invasive species: the case of the bacterial flora of *Caulerpa taxifolia*. TIBE- Trends in Biodiversity and Evolution. 9-10 Dec 2010, CIBIO, Vairão, Porto, Portugal.

Gelin S., **Aires T.**, Dostie K., Bresemen M., Mercado N., Stimpson C., Allen H., Battocletti A., Thornber C., Swanson JD. Uncovering the Functional Genetics of Macroalgal *Ulva* Blooms using Transcriptome Analysis. Plant and Animal Genome Meeting XXI, Jan 12-16, 2013, San Diego, CA, USA.

Mercado N.B., Allen H., **Aires T.**, Swanson J.D. Gene Expression of different stages of *Ulva rigida* (Chlorophyta) blooms assessed by real time PCR. 4th Annual SRyou Student Exposition, Salve Regina University, March 22, 2013, Newport, RI, USA.

Mercado NB., Allen H., Swanson JD., **Aires T.** Gene Expression of Different Stages of *Ulva rigida* (Chlorophyta) Blooms Assessed by Real Time PCR. NEAS- 52st Annual Northeast Algal Society Symposium. April 19-21, 2013, Mystic, CT, USA.

Battocletti A., Bishop E., Schollmeier T., Gelin S., Breseman M., Swanson JD., **Aires T.**, Thornber C. Investigating *Ulva rigida* bloom formation in Narragansett Bay RI. NEAS- 52st Annual Northeast Algal Society Symposium. April 19-21, 2013, Mystic, CT, USA.

Mercado NB., **Aires T.**, Swanson JD. Macroalgal Bloom Formation Patterns In Response To Temperature Thresholds Assessed by RT-qPCR. 6th Annual RI SURF Conference, August 2, 2013, University of Rhode

Island, Kingston RI, USA.

Breesman M., Mercado NB., Dostie K., Gelin S., **Aires T.**, Thornber C., Swanson JD. Next Generation Sequencing Analysis of the Polymorphic Nature of *Ulva rigida* and *Ulva compressa*. 6th Annual RI SURF Conference, August 2, 2013, University of Rhode Island, Kingston RI, USA.

Mercado NB., Allen H., **Aires T.**, Roosa TS., Thornber C., Swanson JD. An Analysis of Macroalgal Bloom Development in Correlation with LhcSR Gene Expression. 7th Annual NESP-BioNES Conference, Roger Williams University, December 6th, 2013, Bristol, RI, USA.

Mercado NB., **Aires T.**, Allen H., Roosa T.S., Thornber C., Swanson J.D. Real Time qPCR Assessed Macroalgal Bloom Formation Patterns within the Genus *Ulva* (*U. rigida* & *U. compressa*) in Response to Temperature Thresholds. 22nd Annual Plant & Animal Genome Conference. January 10 - 15, 2014, San Diego, CA, USA.

Swanson JD., Gelin S., Mercado NB., Allen H., **Aires T.**, Thornber C. An Investigation into the Transcriptomics of Macroalgal Blooms. 22nd Annual Plant & Animal Genome Conference. January 10 - 15, 2014, San Diego, CA, USA.

Serebryakova A, **Aires T**, Engelen AH, Serrão EA. Seasonal variation of bacterial communities associated with the invasive brown seaweed *Sargassum muticum*. 11th International Phycological Congress (IPC11). Sceszyn, Poland, August 13-19, 2017.

Aires T, Muyzer G, Serrão EA, Engelen AH. The effects of grazing on the microbiome of an invasive brown seaweed (*Sargassum muticum*). 11th International Phycological Congress (IPC11). Sceszyn, Poland, August 13-19, 2017.

PUBLICATIONS IN PEERS REVIEW JOURNALS

Baptista S., Quaresma A., **Aires T.**, Kurtenbach K., Santos-Reis M., Nicholson M., Collares-Pereira M. 2004. Lyme Borreliosis spirochetes in questing ticks from mainland Portugal. *International Journal of Medical Microbiology*. 293(37): 109-116.

Aires T., Marbà N., Cunha R.L., Kendrick G.A., Walker D.I., Serrão E.A., Duarte C.M., Arnaud-Haond S. 2011. Evolutionary history of the seagrass genus *Posidonia*. *Marine Ecology Progress Series*, 421: 117-130.

Massa SI, Pearson GA, **Aires T**, Kube M, Olsen JL, Reinhardt R, Serrao EA, Arnaud-Haond S. 2011. Expressed sequence tags from heat-shocked seagrass *Zostera noltii* (Hornemann) from its southern distribution range. *Marine Genomics*, 4(3):181-188

Aires T, Marbà N, Serrão EA, Duarte CM., Arnaud-Haond S. 2012. Selective elimination of chloroplastial DNA for metagenomics of bacteria associated with the green alga *Caulerpa taxifolia* (Bryopsidophyceae). *Journal of Phycology*, 48(2):483-490.

Aires T, Serrão EA, Kendrick G, Duarte CM, Arnaud-Haond S (2013) Invasion Is a Community Affair: Clandestine Followers in the Bacterial Community Associated to Green Algae, *Caulerpa racemosa*, Track the Invasion Source. PLoS ONE 8(7): e68429.

Aires T, Moalic Y, Serrão EA, Arnaud-Haond S (2015) Hologenome theory supported by co-occurrence networks of species-specific bacterial communities in siphonous algae (*Caulerpa*). FEMS. DOI: <http://dx.doi.org/10.1093/femsec/fiv067>.

Paulino C, Neiva J, Coelho NC, **Aires T**, Marbà N, Krause-Jensen D, Serrão EA (2016) Characterization of 12 polymorphic microsatellite markers in the sugar kelp *Saccharina latissima*. J. of Applied Phycology. pp 1-4. DOI:10.1007/s10811-016-0811-x.

Vieira C, Engelen AH, Guentas L, **Aires T**, Houlbrequé F, Gaubert J, Serrão EA, De Clerck O and Payri CE (2016) Species Specificity of Bacteria Associated to the Brown Seaweeds *Lobophora* (Dictyotales, Phaeophyceae) and Their Potential for Induction of Rapid Coral Bleaching in *Acropora muricata*. Front. Microbiol. 7:316. doi: 10.3389/fmicb.2016.00316.

Aires T, Serrão EA and Engelen AH (2016) Host and Environmental Specificity in Bacterial Communities Associated to Two Highly Invasive Marine Species (Genus *Asparagopsis*). Front. Microbiol. 7:559. doi: 10.3389/fmicb.2016.00559.

Arnaud-Haond S, **Aires T**, Candeias R, Teixeira SJL, Duarte CM, Valero M, Serrão EA (2017) Entangled fates of holobiont genomes during invasion: nested bacterial and host diversities in *Caulerpa taxifolia*. Molecular Ecology. DOI: 10.1111/mec.14030

Greff S, **Aires T**, Serrão EA, Engelen AH, Thomas O. (2017) The interaction between the proliferating macroalga *Asparagopsis taxiformis* and the coral *Astroides calycularis* induces changes in microbiome and metabolomic fingerprints. Scientific Reports 7: 42625. doi:10.1038/srep42625