

Marcela Alvarenga de Almeida Simões, MSc.

Brazilian (born at Rio de Janeiro, RJ) & Portuguese | Birth date: 27 Jan 1996

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Education and Research Experience

PhD in Biodiversity, Genetics and Evolution

Oct 2021 – ongoing

University of Porto | Research Centre in Biodiversity and Genetic Resources (CIBIO), EVOCHANGE Research Group | Portugal

Thesis: “Evolution and adaptive potential of seasonal camouflage in stoats (*Mustela erminea*) and long-tailed weasels (*Neogale frenata*)”

Advisors: Dr. José Melo-Ferreira and Dr. João Pimenta

PhD student visit

Sep 2023 – Nov 2023

University of Montana | Montana Evolutionary Genomics | United States

Activity: Evolutionary genomics of seasonal coat color change

Host: Dr. Jeffrey M. Good

Collaborator Researcher

Mar 2020 – Sep 2021

Federal University of Rio de Janeiro | National Centre for the Molecular Identification of Fisheries Products (CENIMP), Laboratory of Molecular Biodiversity (LBDM) | Brazil

▫ “GENOFISH: FISHERIES GENOMICS” | Mar 2020 – Sep 2021

Project leaders: Dr. Frederico Henning and Dr. Antonio Solé-Cava

Undergraduate students: Ananda D’elia, Clara Arantes and Graciane Santos under **Marcela Alvarenga** supervision

▫ “Metabarcoding application for monitoring illegal batoids trade” | Sep 2020 – Feb 2023

Project leaders: Dr. Frederico Henning and Dr. Antonio Solé-Cava

Undergraduate Student: Graciane Santos under **Marcela Alvarenga** supervision

Teaching Degree in Biological Sciences | Federal University of Rio de Janeiro | Brazil

Aug 2019 – Oct 2021

Master in Genetics

Mar 2018 – Feb 2020

Federal University of Rio de Janeiro | Laboratory of Molecular Biodiversity (LBDM), Department of Genetics | Brazil

Dissertation: “Molecular identification of sharks and rays meat (Chondrichthyes: Elasmobranchii) distributed in Rio de Janeiro”

Advisors: Dr. Frederico Henning and Dr. Antonio Solé-Cava

Master student visit

Aug 2018 – Nov 2018

State University of Rio de Janeiro (UERJ) | Laboratory of Elasmobranch Taxonomy, Department of Zoology | Brazil

Activity: Morphological identification and taxonomy of sharks

Host: Dr. Ulisses Leite Gomes and Marcele Moura

Bachelor in Genetics

Aug 2014 – Dec 2017

Federal University of Rio de Janeiro | Laboratory of Marine Phytoplankton, Department of Marine Biology | Brazil

Dissertation: “Genetic diversity of cyanobacteria from Abrolhos Reef System” | Supervisors: Paulo Salomon and Felipe Ribeiro

▫ “Use of a flow imaging cytometer (FlowCam) for monitoring algal blooms in Guanabara Bay” Advisor:

Dr. Paulo Salomon | Principal Investigator: MSc. Tatiana Villalba

▫ “Benthic cyanobacteria effect on the expulsion of zooxanthella in the coral *Mussismilia braziliensis* from Abrolhos”

Advisors: Dr. Paulo Salomon and MSc. Felipe Ribeiro

Publications

▫ Alvarenga, M.; Bunholi, I.V.; Brito, G.R.; Siqueira, M.V.B.M.; Domingues, R.R.; Charvet, P.; Foresti, F.; Solé-Cava, A.M. & Cruz, V.P. Under review. Fifteen years of elasmobranchs trade unveiled by DNA tools: Lessons for enhanced monitoring and conservation actions. *Biological Conservation*. Manuscript Number: BIOCON-D-23-01462. Pre-print: <https://doi.org/10.32942/X2N31X>

▫ **Alvarenga, M.**; D’elia, A.K.P.; Santos, G.R.S.; Arantes, C.A.; Henning, F.; Vasconcelos, A.T. & Solé-Cava, A.M. Under Review. Mitochondrial genome structure and composition in 70 fishes: a key resource for fisheries management in the South Atlantic. Under review. *BMC Genomics*. Pre-Print: <https://doi.org/10.22541/au.169173767.74268456/v2>

▫ Marques, J.P.; Alves, P.C.; Amorim, I.R.; Lopes, R.J.; Moura, M.; Myers, E.W.; Sim-Sim, M.; Sousa-Santos C.; Alves, M.J.; Borges, P.A.V.; Brown, T.; Carneiro, M.; Carrapato, C.; Ceríaco, L.M.P.; Ciofi, C.; Silva, L.P.; Diedericks, G.; Diroma, M.A.; Farelo, L.; Formenti, G.; Gil, F.; Grilo, M.; Leitão, H.G.; Ianucci, A.; Máguas, C.; McCartney, A.M.; Mendes, S.L.; Moreno, J.M.; Morselli, M.; Mouton, A.; Natali, C.; Pereira, F.; Rego, R.; Resendes, R.; Roxo, G.; Svardal, H.; Trindade, H.; Vicente, S.; Winkler, S.; **Alvarenga, M.**; Amaral, A.J.; Antunes, A.; Campos, P.F.; Canário, A.V.M.; Castilho, R.; Castro, L.F.C.; Crottini, A.; Cunha,

M.V.; Themudo, G.E.; Esteves, P.J.; Faria, R.; Fernandes, C.R.; Ledoux, J-B.; Louro, B.; Magalhães, S.; Paulo, O.S.; Pearson, G.A.; Pimenta, J.; Pina-Martins, F.; Santos, T.L.; Serrão, E.; Melo-Ferreira, J.; Sousa, V.C. Building a Portuguese Coalition for Biodiversity Genomics. Peer Reviewed Pre-Print: <https://doi.org/10.32942/X20W3Q>

- Seminara, C.I.; Barbosa-Filho, M.L.V.; Hauser-Davis, R.A.; Souza, G.B.B; **Alvarenga, M.**; Profice, C.C. & Siciliano, Salvatore. In press – Accepted Paper. Artisanal Fisher Knowledge on the Social and Environmental Impacts of Destructive and Illegal Practices on The Southern Coast Of Bahia, Brazil. *Marine Policy*. Manuscript Number: JMPO-D-22-00827
- Ribeiro, F.V.; Caires, T.A.; **Simões, M.A.A.**; Hargreaves, P.I.; Villela, L.B.; Fistarol, G.O.; Caselgrandi, A.B.; Pereira-Filho, G.H.; Moura, R.L.; Pereira, R.C. and Salomon, P.S. 2022. Benthic Cyanobacterial Diversity and Antagonistic Interactions in Abrolhos Bank: Allelopathy, Susceptibility to Herbivory, and Toxicity. *Frontiers in Marine Science*. <https://doi.org/10.3389/fmars.2021.790277>
- **Alvarenga, M.**; Solé-Cava, A.M. and Henning, F. 2021. What's in a name? Phylogenetic species identification reveals extensive trade of endangered guitarfishes and sharks. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2021.109119> | Media coverage: [Jornal Nexo](#), [YouTube](#), [National Geographic](#)

Peer Review Activity

- **Reviewer:**
 - Marine Policy: 2023 (3)

Awards and Fellowships

- **Award for the 3rd best oral presentation (Atlantoraja castelnaui Award)** in the Brazilian Symposium [ELASMulheres](#) | Work title: Anos de consumo amplo e inadvertido de tubarões e raias ameaçadas de extinção no brasil desvendados através da análise de DNA: Podemos fazer melhor? | 2022
- **Grant** – Sampling expedition | Synthesys of Systematic Resources - Transnational Call 4 | Project title: Museomics as a powerful tool to dissect the genetic basis and evolution of winter coat colour polymorphism in stoats, a good model to study adaptation to climate change | Description: collect museum samples of *Mustela erminea* | Institution: LiB, Zoologisches Forschungsmuseum Alexander Koenig (ZFMK) | Supervisor: Jan Decher | Working days: 7 (23/11/22 – 01/12/22) | October
- **Small Grant** – Congress Attendance | European Society for Evolutionary Biology | May
- **Award for the 1st best oral presentation (Hypanus marianae Award)** in the Brazilian Symposium [ELASMulheres](#) | 2021 **Work title:** DNA na conservação de tubarões e raias: Filogenia revela comércio ilegal de espécies ameaçadas e captura genômica subsidia manejo pesqueiro
- **Project Grant** (Cação is Shark Campaign) | Instituto Linha D'água | Nov 2021 – Oct 2022
- **PhD's Fellowship** | Portuguese Foundation for Science and Technology (FCT) | Oct 2021 – Sep 2025
- **Small Grant** to cover conference and course charges in the II Latin American Congress on Genetics for Conservation | 2021
- **Honors Degree** cum laude in Biological Sciences (Genetics) | 2018
- **Master's Fellowship** | Brazilian Research Council (CAPES) | Mar 2018 – Feb 2020
- **Junior Scientist Fellowship** | Research Council of Rio de Janeiro (FAPERJ) | Apr 2016 – Feb 2018
- **Technological and Industrial Junior Fellowship** | Brazilian Research and Technological Council (CNPq) | Sep 2015 – Mar 2016

Lectures

- Biodiversity Conservation in Focus: Application of genetics and genomics in a range of environmental research. BeGenDiv Seminars. Germany. 2022
- Cruzando o Oceano para descomplicar os desafios de fazer pesquisa no exterior. III Semana de Biotecnologia do Programa de Pós Graduação em Bioprodutos e Bioprocessos – Tema: Saúde e Biodiversidade. Brazil. 2022
- Turning obstacles into opportunities: Challenges of women scientists in sharks and rays research and changing strategies in the face of COVID-19. VIII Programa Futuras Cientistas - Centro de Tecnologias Estratégicas do Nordeste do Brasil (CETENE), Unidade de Pesquisa do Ministério Brasileiro da Ciência, Tecnologia e Inovações (MCTI). Brazil. 2022
- Genética para conservação dos tubarões e raias do Brasil. XII Semana Acadêmica De Biologia & IX Seminário De Pesquisas Ambientais - UNESPAR (Campus Paranaguá). Brazil. 2021
- Genética para a Conservação. Shark Week - Sea Shepherd Brasil NGO. Brazil. 2021

Oral Presentations

- **Alvarenga, M.**, Bunholi, I, Brito, G, Charvet, P, Domingues, R, Siqueira, M & Cruz, V. “Anos de consumo amplo e inadvertido de tubarões e raias ameaçadas de extinção no brasil desvendados através da análise de DNA: Podemos fazer melhor?”. III ELASMulheres. Online Event, BR. 2022
 - Bunholi, I, Reginato, LF, **Alvarenga, M** & Gonser RA. “Machine learning e conservação: Previsão de categorias de ameaça em elasmobrânquios com dados deficientes”. III ELASMulheres. Online Event, BR. 2022
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- **Alvarenga M.**, Farello L, Kitchener AC, Pimenta J, Melo-Ferreira, J. “Using museomics to dissect the genetic basis and evolution of winter colour polymorphism in stoats, a good model to study adaptation to climate change”. 34th European Mustelid Colloquium 2022. Online Event, UK. 2022
- D’Elia, A.K.; **Simões, M.A.A.**; Santos, G.R.S.; Arantes, C.A.; Solé-Cava, A.S. & Henning, F. Uso de captura genômica e análises filogenéticas de mitogenomas para a ampliação de bancos de dados genéticos de peixes latino-americanos. Primer Congreso Latinoamericano de Evolución (CLEVOL). Online. 2021.
- **Alvarenga, M.** & Santos, D.S. DNA na conservação de tubarões e raias: Filogenia revela comércio ilegal de espécies ameaçadas e captura genômica subsidia manejo pesqueiro. II ELASMulheres. Brazil. 2021
- **Alvarenga, M.**; Solé-Cava, A.M. & Henning, F. Urgent call for conservation action and where to start: DNA reveals illegal guitarfish trade and shark market characteristics. II Congreso Latinoamericano de Genética para la Conservación conference. Online. 2021
- Santos, G. R. S.; **Alvarenga, M.**; Solé-Cava, A.M. & Henning, F. Que raios tem Nessa casquinha? Aplicação de metabarcoding para monitorar o comércio ilegal de raias. XLII Jornada Giulio Massarani de Iniciação Científica, Tecnológica, Artística e Cultural. Brazil. 2021.
- **Simões, M.A.A.**; Souza, D.F.S.; Solé-Cava, A.M. & Henning, F. Molecular tools for identification of sharks and rays (Elasmobranchii) and their implications for the conservation of biodiversity. International Meeting on Amazonian Sharks and Batoids. MA, Brazil. 2019.

International Training

- Attended the training “WORKSHOP ON GENOMICS”. Evolution and Genomics Intensive and Immersive Training Opportunities (evomics). Czechia. May 2023
- Attended the Global Wedgefish and Guitarfish Symposium. Nov 2021
- Attended the training “Unraveling the RADseq: from experimental design to data analysis”. Berlin Center for Genomics in Biodiversity Research (BeGenDiv) and São Paulo State University (UNESP) led by Dr. Larissa Arantes and Dr. Vanessa Paes. Nov 2020
- Attended the Latin-American extensive training “XIV Genetics Workshop for Conservation: Genetics as a management tool” led by Latin American Network of Conservation Genetics (ReGeneC) with an **oral presentation**. Federal University of Rio Grande do Norte. Dec 2019
- Attended I International Workshop on Marine Chemical Ecology and Bioproducts. Botanical Garden of Rio de Janeiro. Aug 2016

Relevant Poster Presentations

- **Alvarenga, M.**, Farello L, Kitchener AC, Pimenta J, Melo-Ferreira, J. White or brown? Using museomics to understand the evolution of winter coat colour polymorphism in stoats. Vila do Conde, PT. 2022
- **Alvarenga, M.**, Brito, G, Bunholi, I, Siqueira, M & Cruz, V. “Years of extensive and inadvertent consumption of endangered sharks and rays in Brazil unravelled through DNA analysis: How can we do better?”. Sharks International 2022. Valencia, ES. 2022
- **Alvarenga M.**, Farello L, Kitchener AC, Pimenta J, Melo-Ferreira, J. “Museomics as a powerful tool to dissect the genetic basis of winter coat colour polymorphism in stoats”. Congress of the European Society for Evolutionary Biology 2022. Prague, CZ. 2022
- Santos, D.S.; **Simões, M.A.A.** & Solé-Cava, A.M. So abundant to be true: Addressing the need to improve molecular data of vulnerable flounders (pleuronectiformes order) by assembling complete mitochondrial genome of seven species. Biodiversity Genomics 2021. Online. 2021
- **Simões, M.A.A.**; Souza, D.F.S.; Soares, R.G.; Solé-Cava, A.M. & Henning, F. Tools for molecular identification of sharks and rays (Elasmobranchii) and their implications for the conservation of biodiversity. 65th Brazilian Congress of Genetics. SP, Brazil. 2019.
- **Simões, M.A.A.**; Carneiro, B.L.R.; Viana, T.V.; Amario, M.; Menezes, R.B. & Salomon, P.S. A influência da salinidade no biovolume celular de *Chattonella subsalsa* (Raphidophyceae) na Baía de Guanabara. 1º Congresso de Biologia Marinha e Ambientes Costeiros. RJ, Brazil. 2018.
- **Simões, M.A.A.**; Carneiro, B.L.R.; Amario, M.; Menezes, R.B. & Salomon, P.S. Determinação do Biovolume Celular em Populações Naturais da Rafidoficea *Chattonella subsalsa* na Baía de Guanabara. 8ª Semana de Integração Acadêmica da UFRJ. RJ, Brazil. 2017.
- **Simões, M.A.A.**; Ribeiro, F.V.; Fistarol, G.O.; Soares, A.R.; Pereira, R.C. & Salomon, P.S. Efeito de cianobactérias bentônicas filamentosas sobre a expulsão de zooxantelas no coral *Mussismilia braziliensis* do Sistema Recifal dos Abrolhos, BA. 7ª Semana de Integração Acadêmica da UFRJ. RJ, Brazil. 2016.
- Co-Author of seven more Poster Presentations. 2016 – 2019

Teaching Experience

Teaching Assistant of Biology

Dec 2020 – Jun 2021

Relevant Workshops

- Led “**Application of genetics and genomics in elasmobranchs management**”. II Shark Week of Grupo de Estudos de Elasmobrânquios do Paraná. Federal University of Paraná (UFRJ). May 2021
- Attended “**Statistics applied to biology in R**”. Federal University of the State of Rio de Janeiro (UNIRIO). Apr 2017
- Attended “**37th Ecological Training Course**”. Defenders of the Earth Non-governmental Organization. Apr-Jun 2017
- Attended “**Bioinformática**”. Federal University of Rio de Janeiro (UFRJ). May 2016
- Attended “**Teorias Evolutivas no Século XXI**”. Federal University of Rio de Janeiro (UFRJ). May 2015

Analytical and Laboratory Skills

- Programming: Linux bash shell scripting, Python (basic), R (basic statistical analysis, build graphs and figures)
- Laboratory: NGS (library prep, target-enrichment sequencing, whole genome sequencing), Sanger sequencing, Nanodrop, qPCR, DNA extraction, purification, gel electrophoresis, Qiaxcel, PCR multiplex, PCR RFLP, flow cytometry, flow image cytometry (FlowCam), microalgae and cyanobacteria cultivation, optical microscopy, taxonomy of sharks and rays
- Analytical: Phylogenetics, Mitogenome Assembly, Mapping and Annotation, Populational Analysis, Selection Scan
- Genetics Software: IQ-TREE, IGV, Bowtie2, BWA, SAMTools, SPAdes, Pilon, REAPR, Geneious, SeqMan, Popoolation2, ANGSD, PLINK, Picard Tools.
- Additional Software: Adobe (Illustrator and Lightroom), MS Office, Canva
- Languages: Portuguese (Native), English (Advanced; IELTS Band 7.5 – CEFR Level C1), Spanish (Basic)

Science Outreach and Volunteer Work

Cruzando Oceano

May 2022 – May 2023

- Owner and Administrator of this project to share how is to study abroad, helping other students to get a position
- Branding, Design, Copywrite, Coordination, Content Creator, Video Maker

Scientific Staff – Volunteer

Jun 2021 – ongoing

Sea Shepherd Brasil NGO | Brazil

- “[Cação is Shark Campaign](#)” | Project leader: Dr. Bianca Rangel

Mar, me leva!

Jul 2020 – May 2022

- Owner and Administrator of this science outreach project for biodiversity conservation and sustainability
- Coordinated a series of live talk shows with marine researchers, called “Sailing with Science” | Nov, Oct 2020

Media Outreach

Sep 2020 ongoing

- Invited for two live talk shows in 2021
- Interviewed in the ELASmoweek event in the channel of the Laboratory of Biology and Fisheries Technology to talk about women in elasmobranch research | Sep 2020

UFRJ Donates a Class

Apr 2019

Educational Project to deliver a free class to Brazilian public schools

- What cod is this? | NAVE High School, Brazil | Apr 2019

Biology at the Beach | Rio de Janeiro, Brazil

Mar – Oct 2016

- Organizing committee of this project aiming to protect the oceans by organizing annual environmental education stands at Brazilian beaches

Biology at the street | Rio de Janeiro, Brazil

2014 – 2017

Science Outreach project to expose Science advances on biology field for people

- Recycling ideas | 2014
- Plants curiosities: botany far beyond what we think of it! | 2015
- Did you know there is life in Guanabara Bay? | 2016

Volunteer Scientific Training at Laboratory of Molecular Virology (LVM), Department of Genetics, UFRJ Nov 2014 – Aug 2015

Research Expeditions

- Collection of Box turtle specimens (measurement, raw photographs and blood sampling). Manassas, VA, United States (George Mason University) | Aug 2023
- Sample collection of museum specimens (raw photographs and tissue sampling):
 - o Naturalis Biodiversity Center. Leiden, Netherlands | Aug 2023

o Museum Koenig Bonn (ZFMK). Bonn, Germany | Dec 2022

- Sample collection of oysters and sediment in eutrophic and non-eutrophic areas (Oyster collection in the shore and in the sea, measurement, tissue preparation on board and at the laboratory for DNA and RNA extraction). Niterói and Angra dos Reis, RJ, Brazil (Universidade Federal do Rio de Janeiro) | Apr 2018, Apr-May 2019, Oct 2019
 - Water collection from a non-eutrophic beach. Rio de Janeiro, RJ, Brazil (Universidade Federal do Rio de Janeiro) | Mar 2017
 - Sample collection of phytoplankton at distinct points of Guanabara Bay (Universidade Federal do Rio de Janeiro) | Rio de Janeiro, RJ, Brazil. 2016, 2017
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