

# Elena G. González, PhD

egacuimara@gmail.com • +1 412-482-7831 • LinkedIn.com/in/elenaguacuimara • elenaguacuimara.com  
Pittsburgh, PA • Green Card / Permanent US Resident

Senior scientist with over 18 years of international experience in molecular biology, genetics, and human disease. Strong publication record of 37 peer-reviewed articles/book chapters and 1 patent. Proficient in molecular biology pipelines (experimental) and computational (bioinformatics) work addressing cancer. Solid international experience working, collaborating, and coordinating interdisciplinary research and data scientist teams in genomics, oncology, and innovative drug discovery. Passionate, enthusiastic, and collaborative colleague able build trust and establish rapport among team members. Eager to apply my scientific background and core competences in the drug discovery pipeline for the benefit of human health.

## SKILLS

### *Wet Laboratory Experience*

- **Molecular Biology:** DNA-RNA extraction, oligo design, DNA amplification (PCR, Q-PCR, RT-PCR), Southern blotting, fingerprint (REP-PCR), microsatellite and SNPs markers for individual typing, and gene expression analysis. Construction, quality assesment, and sequencing of genomic libraries (target enrichment, and metagenomics). Sequencing technologies: Sanger, Illumina.
- **Proteomics and antibody chemistry:** Antibody preparation, purification and validation. Protein purification and selective protein tagging/bioconjugation. Quantitative proteomics (2D-DIGE), gel electrophoresis (SDS-PAGE, Western blotting).
- **Microbiology:** bacterial culture and isolation, antimicrobial susceptibility testing (AST) methods, MIC assessment.
- **Virology:** Herpetovirus production, plaque assays and transfections of mammalian cell lines (VERO).

### *Bioinformatics Experience*

- Experience in the use of R and Mosix-based cluster environments, HPC clusters, Linux, Mac OS. Experience in data management, Machine Learning applications, strong analytical and (bio) statistical skills and good understanding of High-Throughput data analysis (e.g. Bionumerics, Spotfire). Extensive management of and contribution to scientific collections and databases: Silva, GenBank.

### *Scientific Production*

- Strong publication record of 1 patent (first-author) and 35 peer-reviewed publications, 2 book chapters and various reports, including *Marine Drugs*, *Environmental Biology*, and *Methods of Molecular Biology* (citations: 1017, h-index: 17, source: *Google Scholar*). For a full list of publications: <http://elenaguacuimara.com>.

## ACCOMPLISHMENTS

### *Leadership & Collaborative Research*

- Dramatically improved the performance of the isolation and screening of marine bacteria for the purpose of discovering novel molecules with antitumor activity at PharmaMar (Spain). Improvements were achieved by designing and implementing a genetic (m-PCR and RT-PCR) assay, together with Machine Learning predictive and analytic approaches, to perform taxonomic species discrimination.
- Managed the acquisition, performance monitoring, and technical functions of molecular biology instrumentation at PharmaMar (Spain). Collaborated with industry peers to implement advanced laboratory processes and devised fresh workflow solutions that had a major impact on the functioning and efficiency of the lab.
- Defined and reported the short- and medium-term objectives related to projects within the drug discovery process at PharmaMar (Spain) in a concise and clear manner, greatly enhancing communication between team members.
- Concieved of and wrote 2 grant proposals to national research funding agencies in the fields of biotechnology, biodiversity, and conservation, successfully attracting 173M Euros. The approved projects operated within time and budgetary constraints and according to good scientific practice (GsP) to deliver a total of 7 research peer-reviewed publications.
- Led the Spanish team within a research project funded by the European Commission (3Million € EC) which was formed by a consortium of 15 Universities and Research Institutes from 8 EU countries and Russia, to build on advanced technologies for fish product traceability and policy-related monitoring in the fisheries sector. Prepared policy and report documents for both scientific and non-specialist audiences. Studies resulted in 5 peer-reviewed publications, such as *Nature Commun*, *Journal of Proteomics*, etc.
- Spearheaded new applications of population proteomics for fish traceability based on differential 2D-fluorescence (DIGE) protein expression, benchmarking its applicability by the characterization of new antibodies for marine fish of high commercial interest. As a result, one patent was published.

### Communication

- Communicated research results at 30+ international scientific conferences (5 as invited speaker).
- Invited to give a seminar at a International Summer course on “Hands-on-Proteomics” (Sardegna, Italy).

### Teaching and Mentorship

- Supervised the data analyses and writing of 1 research associate in PharmaMar (Spain) in his pursuit of a Ph.D. degree within the pharmaceutical industry.
- Trained and mentored 3 undergraduate students in project planning, laboratory techniques, and data analysis at the Natural History Museum (Madrid, Spain) and Autonoma University of Madrid (UAM, Spain). One student obtained the Best Student Award in 2013 by UAM.

## WORK EXPERIENCE

- 2017–2021 **Senior Scientist | Oncology**  
Pharmamar SA, Microbiology Department, Spain
- 2013–2016 **Research Scientist | Molecular Biology and Genomics**  
Natural History Museum, Spain
- 2011–2013 **Senior Postdoctoral Researcher | Molecular Biology and Genomics**  
Centre for Marine Sciences, University of Algarve, Portugal
- 2008– 2011 **Postdoctoral Researcher | Biochemistry and Evolutionary Biology**  
Complutense University of Madrid, Spain
- 2001–2007 **Graduate Researcher | Molecular Biology**  
Autonoma University of Madrid and Natural History Museum, Spain

## EDUCATION

- 2007 **Ph.D. | Molecular Biology** - *Summa cum laude* - Autonoma University of Madrid and Natural History Museum, Spain
- 2004 **M.Sc. | Conservation Genetics** - Autonoma University of Madrid and Natural History Museum, Spain
- 2000 **B.Sc. | Biology** - Autonoma University of Madrid

## PATENTS

**E. G. Gonzalez** & J. M. Bautista. 2015. Development of specific antibodies for European hake (*Merluccius merluccius*) and a method to assign individuals to its population of origin. ES 2 526 468 A1.

## RECENT PUBLICATIONS

Benitez, X; **Gonzalez, E.G.**, *et al.* **2021**. Detection of a pederin-like compound using a dilution-to-extinction-based platform for the isolation of marine bacteria in drug discovery strategies. *Microbial Biotechnology* 14 (1), 241-250.

Kačar, D; Cañedo, L; Rodríguez, P; **Gonzalez, E. G.**, *et al.* **2021**. Identification of trans-AT polyketide clusters in two marine bacteria reveals cryptic similarities between distinct symbiosis factors. *Environmental Biology* 23(5):2509-2521.

Benitez, X; **Gonzalez, E. G**; Garcia, J; F. de la Calle. **2021**. Dilution-to-extinction platform for the isolation of marine bacteria-producing antitumor compounds. *Methods in Molecular Biology* 2296:77-87

## SCIENTIFIC SERVICE

- Expert evaluator in 3 panels for research proposals for NOAA-NMFS projects in the USA.
- Worked as an external consultant on the writing of a report on sustainability of aquatic genetic resources for the Fisheries Agency Organization (FAO).
- Service as referee in peer-reviewed scientific journals: *Journal of Molecular, Evolution, Hydrobiologia, Marine Biology, Journal of Fish Biology, Journal of Experimental Marine Biology and Ecology*.
- Recruited as an Assistant Professor and Professor at Public and Private Universities by the official accreditation agencies of Spain.

## LANGUAGES

**Languages: English** (full professional proficiency), **Spanish** (mother tongue), **Portuguese** (familiar)

## ALL PUBLICATIONS

### Articles

**[36] Detection of a pederin-like compound using a dilution-to-extinction-based platform for the isolation of marine bacteria in drug discovery strategies**

Authors: X. Benitez, E. G. Gonzalez, J. Garcia, P. Zuñiga, F. de la Calle & C. Cueva

Published: 2021 in Microbial Biotechnology

DOI: 10.1111/1751-7915.13679

**[35] Identification of trans-AT polyketide clusters in two marine bacteria reveals cryptic similarities between distinct symbiosis factors**

Authors: D. Kačar, L.M. Cañedo, P. Rodríguez, E. G. Gonzalez, B. Galán, C. Schleissner, S. Leopold-Messer, J. Piel, C. Cuevas, F. de la Calle, J. L. García

Published: 2021 in Environmental Microbiology

DOI: 10.1111/1462-2920.15470

**[34] Isolation of *Labrenzia alexandrii* strains producing a pederin-like compound using a dilution to extinction methodology in 384 microplate format**

Authors: X. Benitez, J. Garcia, P. Zuñiga, E. G. Gonzalez, F. de la Calle & C. Cueva

Published: 2020 in Marine Drugs. Meeting Abstract. 1:8. publons.com/p/34007676/

**[33] Influence of historical and human factors on genetic structure and diversity patterns in peripheral populations: implications for the conservation of Moroccan trout**

Authors: S. Perea, M. Al Mouri, E. G. Gonzalez, L. Alcaraz, A. Yahyaoui & I. Doadrio

Published: 2020 in BioRxiv

DOI: 10.1101/2020.04.06.027219

**[32] Lack of genetic differentiation between two sympatric species of *Astyanax* (Characidae:Teleostei) in Lake Catemaco, Mexico**

Authors: P. Ornelas, E. G. Gonzalez, D. Tautz & I. Doadrio

Published: 2020 in Reseach Square

DOI: 10.21203/rs.2.22839/v1

**[31] Author correction: Gene-associated markers provide tools for tackling illegal fishing and false eco-certification**

Authors: E. E. Nielsen, A. Cariani, E. M. Aoidh, G. E. Maes, I. Milano, E. G. Gonzalez, et al

Published: 2019 in Nature Communications

DOI: 10.1038/S41467-019-13399-5

**[30] Phylogeography and population genetic analyses in the Iberian toothcarp (*Aphanius iberus* Valenciennes, 1846) at different time scales**

Authors: E. G. Gonzalez, C. Cunha, H. R. Ghanavi, F. J. Oliva-Paterna, M. Torralva & I. Doadrio

Published: 2018 in Journal of Heredity

DOI: 10.1093/JHERED/ESX076

**[29] Phylogenetic relationships of freshwater fishes of the genus *Capoeta* (Actinopterygii, Cyprinidae) in Iran**

Authors: H. R. Ghanavi, E. G. Gonzalez & I. Doadrio

Published: 2016 in Ecology and Evolution

DOI: 10.1002/ECE3.2411

**[28] Genetic and demographic recovery of an isolated population of brown bear *Ursus arctos* L., 1758**

Authors: E. G. Gonzalez, J. C. Blanco, F. Ballesteros, L. Alcaraz, G. Palomero & I. Doadrio

Published: 2016 in Peer Journal

DOI: 10.7717/PEERJ.1928

**[27] Comparative population genetic structure and demographic patterns of two killifish species (*Aphanius baeticus* and *Aphanius iberus*) at the Iberian Peninsula**

Authors: E. G. Gonzalez, C. Pedraza, C. Cunha, F. J. Oliva-Paterna, M. Torralva & I. Doadrio

Published: 2015 in *Frontiers Marine Science*

DOI: 10.3389/FCONF.2015.03.00084

**[26] Patterns of genetic variation of the endangered European mink (*Mustela lutreola* L., 1761)**

Authors: M. T. Cabria, E. G. Gonzalez, B. J. Gómez-Moliner, J. R. Michaux & R. Zardoya

Published: 2015 in *BMC Evolutionary Biology*

DOI: 10.1186/S12862-015-0427-9

**[25] Contrasting demographic history and gene flow patterns of two mangrove species on either side of the Central American Isthmus**

Authors: I. Cerón-Souza, E. G. Gonzalez, A. Schwarzbach, D. Salas-Leyva, E. Rivera-Ocasio, N. Toro-Perea, E. Bermingham & W. O. McMillan

Published: 2015 in *Ecology and Evolution*

DOI: 10.1002/ECE3.1569

**[24] Comparative pattern of genetic structure in two Mediterranean killifishes (*Aphanius fasciatus* and *Aphanius iberus*) inferred from both mitochondrial and nuclear data**

Authors: A. M. Pappalardo, E. G. Gonzalez, C. Tigano, I. Doadrio & V. Ferrito

Published: 2015 in *Journal of Fish Biology*

DOI: 10.1111/JFB.12693

**[23] Island survivors: population genetic structure and demography of the critically endangered giant lizard of La Gomera, *Gallotia bravoana***

Authors: E. G. Gonzalez, I. Cerón-Souza, J. A. Mateo & R. Zardoya

Published: 2014 in *BMC Genetics*

DOI: 10.1186/S12863-014-0121-8

**[22] Genetic diversity and population history of the endangered killifish (*Aphanius baeticus* Doadrio, Carmona & Fernández-Delgado, 2002)**

Authors: E. G. Gonzalez, C. Pedraza & I. Doadrio

Published: 2014 in *Journal of Heredity*

DOI: 10.1093/JHERED/ESU034

**[21] Development and characterization of twelve new polymorphic microsatellite loci in the Iberian Ribbed newt, *Pleurodeles waltl* (Caudata: Salamandridae), with data on cross-amplification in *P. nebulosus***

Authors: J. Gutierrez, E. G. Gonzalez & I. Martínez-Solano

Published: 2014 in *Amphibia Reptilia*

DOI: 10.1163/15685381-00002926

**[20] Gene-associated markers provide tools for tackling illegal fishing and false eco-certification**

Authors: E. E. Nielsen, A. Cariani, E. M. Aoidh, G. E. Maes, I. Milano, E. G. Gonzalez, et al

Published: 2013 in *Nature Communications*

DOI: 10.1038/ncomms1845

**[19] High levels of relatedness between Brown-headed cowbird nestmates in a heavily-parasitized host community**

Authors: J. W. Rivers, S. Young, E. G. Gonzalez, B. Horton, & R. C. Fleischer

Published: 2012 in *The Auk*

DOI: 10.1525/AUK.2012.11236

**[18] Evolutionary history of the genus *Trisopterus***

Authors: E. G. Gonzalez, R. L. Cunha, R. G. Sevilla, H. R. Ghanavi, G. Krey & J. M. Bautista

Published: 2012 in *Molecular Phylogenetics and Evolution*

DOI: 10.1016/J.YMPEV.2011.11.032

[17] **Improving collection and sharing of information on aquatic genetic resources (AqGR) for food and agriculture**  
Authors: J. Benzie, S. Abura, N. Bailly, D. Bartley, J. M. Bautista, R. Brummett, L. Collette, M. A. Encinas, R. Garcia, E. G. Gonzalez, et. al.  
Published: 2011 at FAO  
URL: <http://www.fao.org/3/am647e/am647e.pdf>

[16] **Quaternary geographical sibling speciation and population structuring in the Eastern Atlantic skates (suborder Rajoidea) *Raja clavata* and *R. straleni***  
Authors: P. Pasolini, C. Ragazzini, Z. Zacaro, A. Cariani, G. Ferrara, E. G. Gonzalez, M. Landi, I. Milano & F. Tinti  
Published: 2011 in Marine Biology  
DOI: 10.1007/S00227-011-1722-7

[15] **Isolation and characterization of novel polymorphic microsatellite loci for the white-clawed crayfish, *Autropotamobius italicus* (Faxon, 1914)**  
Authors: C. Pedraza-Lara, E. G. Gonzalez, P. Bloor & I. Doadrio  
Published: 2007 in Molecular Ecology Notes  
DOI: 10.1111/J.1471-8286.2006.01640.X

[14] **Population proteomics of the European hake (*Merluccius merluccius*)**  
Authors: E. G. Gonzalez, G. Krey, M. Espiñeira, A. Diez, A. Puyet & J. M. Bautista  
Published: 2010 in Journal of Proteome Research  
DOI: 10.1021/PR100683K

[13] **Polymorphic microsatellite markers for the critically endangered Balearic shearwater, *Puffinus mauretanicus* (Procellariidae)**  
Authors: E. G. Gonzalez, M. Genovart, D. Oro, R. Zardoya & J. Juste  
Published: 2009 in Molecular Ecology Resources  
DOI: 10.1111/J.1755-0998.2009.02563.X

[12] **Patterns of gene flow and source-sink dynamics in high altitude populations of the common toad *Bufo bufo* (Anura, Bufonidae)**  
Authors: I. Martínez-Solano & E. G. Gonzalez  
Published: 2008 in Biological Journal of the Linnean Society  
DOI: 10.1111/J.1095-8312.2008.01098.X

[11] **Genetic structuring and migration patterns of Atlantic bigeye tuna (*Thunnus obesus*)**  
Authors: E. G. Gonzalez, P. Beerli & R. Zardoya  
Published: 2008 in BMC Evolutionary Biology  
DOI: 10.1186/1471-2148-8-252

[10] **As the raven flies: using genetic data to infer the history of invasive common raven (*Corvus corax*) populations in the Mojave Desert**  
Authors: R. C. Fleischer, W. I. Boarman, E. G. Gonzalez, A. Godines, K. Omland, S. Young & C. E. McIntosh  
Published: 2008 in Molecular Ecology  
DOI: 10.1111/J.1365-294X.2007.03532.X

[09] **Relative role of life-history traits and historical factors in shaping genetic population structure of sardines (*Sardina pilchardus*)**  
Authors: E. G. Gonzalez & R. Zardoya  
Published: 2007 in BMC Evolutionary Biology  
DOI: 10.1186/1471-2148-7-197

[08] **Microsatellite markers for the endangered European mink (*Mustela lutreola*) and closely related mustelids**  
Authors: M. T. Cabria, E. G. Gonzalez, B. J. Gómez-Moliner & R. Zardoya  
Published: 2007 in Molecular Ecology Notes  
DOI: 10.1111/J.1471-8286.2007.01825.X

**[07] Isolation and characterization of polymorphic microsatellites for the sardine, *Sardina pilchardus* (Clupeiformes: Clupeidae)**

Authors: **E. G. Gonzalez** & R. Zardoya  
Published: 2007 in Molecular Ecology Notes  
DOI: 10.1111/J.1471-8286.2006.01640.X

**[06] Novel highly polymorphic loci and cross-amplified microsatellites for the lesser kestrel, *Falco naumanni***

Authors: J. Ortego, **E. G. Gonzalez**, I. Sánchez, J. M. Aparicio & P. J. Cordero  
Published: 2007 in Ardeola

**[05] Signature of an early genetic bottleneck in a population of Moroccan sardines (*Sardina pilchardus*)**

Authors: T. Atarhouch, L. Rüber, **E. G. Gonzalez**, E. Albert, M. Rami, A. Dakkak & R. Zardoya  
Published: 2006 in Molecular Phylogenetics and Evolution  
DOI: 10.1016/J.YMPEV.2005.08.003

**[04] Genetic diversity and historical demography of Atlantic bigeye tuna (*Thunnus obesus*)**

Authors: P. Martínez, **E. G. Gonzalez**, R. Castilho & R. Zardoya  
Published: 2006 in Molecular Phylogenetics and Evolution  
DOI: 10.1016/J.YMPEV.2005.07.022

**[03] Novel polymorphic microsatellites for the red-legged partridge (*Alectoris rufa*) and cross-species amplification in *Alectoris graeca***

Authors: **E. G. Gonzalez**, A. M. Castilla & R. Zardoya  
Published: 2005 in Molecular Ecology Notes  
DOI: 10.1111/J.1471-8286.2005.00960.X

**[02] Microsatélites: sus aplicaciones en la conservación de la Biodiversidad.**

Authors: **E. G. Gonzalez**  
Published: 2003 in Graellsia

**[01] Thesis dissertation: Population genetics of two marine pelagic fishes European sardine, “*Sardina pilchardus*” (Walbaum, 1792) and bigeye tuna, “*Thunnus obesus*” (Lowe, 1839).**

*Chapters*

**[02] Dilution-to-extinction platform for the Isolation of marine bacteria-producing antitumor compounds**

Authors: X. Benitez, **E. G. Gonzalez**, J. Garcia, P. Zuñiga, F. de la Calle  
Published: 2021 Methods in Molecular Biology  
DOI: 10.1007/978-1-0716-1358-0\_5

**[01] Microsatellite DNA capture from enriched libraries**

Authors: **E. G. Gonzalez**, R. Zardoya  
Published: 2013 in Methods of Molecular Biology, Springer, New York. Vol. 1006. Pp: 67-87

*Patents*

**[01] Development of specific antibodies for European hake (*Merluccius merluccius*) and a method to assign individuals to its population of origin**

Authors: **E. G. Gonzalez** & J. M. Bautista  
Published: 2015  
Publication Number: ES 2 526 468 A1