



**ALONZO ALFARO-NÚÑEZ, MSc, PhD**

### Abstract

I was born in Costa Rica, but I came to Denmark nearly 15 years ago where I did my entire undergrad, masters and PhD. Now, I am trying to return with work all what Denmark has giving me (including a beautiful family) but keeping always my international nature to address global issues. I have a wide experience in evolutionary genomics, environmental pollution with particular focus on co-evolution of associated diseases in the Oceans. I seek to apply the gained knowledge and learned tools to contribute society by addressing issues related to the environmental pollution, genetics and climate. Skills that I have achieved are mostly on research, with particular on sequencing technologies, teaching, personnel and field expeditions management, laboratory routines, reporting results to senior staff, performing analytical measurements under time-constraints, implementing statistical quality control and transferring knowledge (communication) to the public. As a goal, I want to establish my own research group in the future focused on *Environmental Genomics and Sustainable Oceanic Management*.

### Teaching portfolio

As I did most of my studies (masters and PhD) in a research of group in Denmark, one of the two most recognized worldwide groups working with ancient DNA, it was mandatory during my PhD to teach the course on Ancient DNA. Besides that and during the last years I have achieved wide experience in teaching by giving lectures in specialized courses such as Bioinformatics, Virology, Population Genetics, Evolution; but at the same time I have been in charged of undergrad general courses as Biochemistry, Biology I and II, Marine Biology and Zoology. And so, I believe I have a very broad spectrum of interest and I would be able to adapt to the teaching needs I would be required to fulfil.

### Academic

1. – PhD degree, University of Copenhagen, 2014
2. – M.Sc. degree, University of Copenhagen, 2009
3. – B.A degree, University of Copenhagen, 2006

### Work Experience

1. *November 2017-present*: Associate Professor at the School of Biological Sciences and Engineering of Yachay Tech University, Urcuquí, Ecuador.
2. *March 2016-present*: Honorary Associate Researcher at the Centre for GeoGenetics, Natural History Museum of Denmark, University of Copenhagen, Denmark.
3. *May 2016-October 2017*: Research Professor, Laboratorio de BioMedicina, Facultad Ciencias de la Vida, Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador.
4. *November 2014-January 2015*: Intership in experimental and mathematical modelling of ecotoxicology with environmental data and DNA quantification new methods at the Department of Plant and Environmental Sciences, University of Copenhagen, Denmark.
5. *August 2014-December 2014*: After completing his PhD, he decided to take a short break from academia in order to implement and apply the methods and techniques developed during his research, into conservation and environmental organizations from his network. And thus, he was invited as a research guest, speaker and advisor to Germany, Italy and Mexico, where different groups are currently using his validated method for viral detection in non-clinical wild populations of marine turtles.
6. *October 2010-July 2014*: PhD researcher in next generation sequencing (NGS) technologies using platforms such as Illumina, HiSeq and FLX Roche and regular PCR. During this period he developed and validated virology detection methods. Moreover, a large set of normal tissue and tumour samples were sequenced, resulting in a vast database of viral, nuclear and mitochondrial DNA; and this in order to investigate the co-evolutionary process between host-herpesviruses. Furthermore, collaboration through his former supervisor gave him the privilege to be part of the Avian Consortium where his functions apart from data analysis were mostly to do the genomic DNA extractions for all the birds used in this project.



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7. *November 2009-October 2010*: Research assistant in FLX platform sequencing technology. Entire mitochondrial genomes of a group of birds and marine turtles were sequenced. This project resulted in two peer-review publications. Zoological Museum, University of Copenhagen
8. *May-October 2009*: Fieldwork research assistant in electromagnetic and imaging field measurements and collection of environmental soil samples. COWI A/S, Denmark
9. *April-October 2007*: Research scientist assistant and coordinator for the Caribbean Conservation Corporation (CCC) research project at Tortuguero National Park, Costa Rica. During the same period he did the fieldwork and recollection of tissue samples for his Master thesis project later on back in Copenhagen, Denmark.
10. *September 2005-February 2007*: Customer support services for I-series products and CATIE software (part time job during his undergrad scholarship education). IBM Denmark A/S.
11. *May-August 2005*: Summer internship, laboratory and field work on the effects of pesticides substances on marine organisms, under the supervision of Prof. Nina Cedergreen, Department of Plant and Environmental Sciences, University of Copenhagen. This intership eventually resulted in his Bachelor degree project.

### Relevant Grants

1. Director principal (PI) del proyecto y convenio de la RedCEDIA CEPRA-XII-2018-02 (\$70.000) "*Evaluación de contaminación de microplástico en el Pacífico Ecuatoriano a través de química analítica e identificación (eDNA) de especies marinas más vulnerables, y sus efectos nocivos de bioacumulación en la salud humana*"
2. Travel grants to provide advice and implementation services by Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México; and Istituto Zooprofilattico Sperimentale del Mezzogiorno, Napoles (*July-December 2014*)
3. PhD project funded by the Lundbeck Foundation Grant R52-A5062 (*October 2010-July 2014*)
4. Two travel grants by the Kuwait Turtle Conservation Project, sponsored by TOTAL Foundation and TOTAL Kuwait (*June-August 2011*)
5. State Education Grant "SU" 101076-3033 by the Danish Ministry of Education (Uddannelses- og Forskningsministeriet) (*August 2006-July 2009*)
6. International Grant and Scholarship from the Costa Rican Ministry of Education and Science (*June 2004-May 2006*)

### Research Expeditions and Invited presentations

1. Invited research guest, and external advisor to three different research groups which are currently using my validated method for viral detection in non-clinical wild populations of marine turtles in Germany, Italy and Mexico (*July-December 2014*)
2. Invited Speaker at the 34<sup>th</sup> Annual Symposium on Sea Turtle Biology and Conservation in New Orleans, USA. Research oral presentation topic: Co-evolution of marine turtles and the fibropapillomatosis-associated herpesvirus (*April 2014*)
3. Field expedition and invited researcher for multiple meetings and sample collection in Qaru Island, Kuwait; and Masirah Island, Oman (*June-August 2011*)
4. Invited speaker at the 2011 Annual Meeting of the Wider Caribbean Sea Turtle Conservation Network (WIDECAST) in San Diego, California (*April 2011*)
5. Research scientist and field expedition in the conservation and monitoring project at Tortuguero National Park, Costa Rica (*March-October 2007*)
6. Multiple poster presentations at the 26<sup>th</sup>, 27<sup>th</sup>, 32<sup>nd</sup> and 34<sup>th</sup> International Sea Turtles Symposium
7. More than 10 years experience in field expeditions, research assistant and volunteer work at Baulas Marine National Park and Gandoca Research Field station in Costa Rica (*1992-2004*)



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### Supervising, mentoring activities

1. Nathalie Mauroo, PhD candidate, Department of Pathology, University of Hong Kong (*ongoing*)
2. Jurjan van der Zee, PhD candidate, Groningen Institute for Evolutionary Life Sciences, University of Groningen, The Netherlands (*ongoing*)
3. Joana Hancock, PhD Candidate, Centre for Ecology, Evolution and Environmental Changes, Lisbon, Portugal (*ongoing*)
4. Rocío Álvarez, PhD Candidate, Departamento de Ecosistemas y Medio Ambiente Facultad de Agronomía e Ingeniería Forestal, Pontificia Universidad Católica de Chile (*ongoing*)
5. Isabel Højgaard Rasmussen, MSc, University of Copenhagen. Experienced researcher designed and supervised Miss Rasmussen master thesis (2012)

### Language skills

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| • Danish               | Fluent spoken/Intermediate written, Level 5 Studeskolen Kbh K |
| • English              | Fluent, second native language                                |
| • Spanish              | Native language   |
| • Portuguese & Italian | Intermediate  |

### Contact References

- Kyle S. Van Houtan, Director of Science, Monterey Bay Aquarium, California, USA. Tel: (+1) 808 725 5707 [kvanhoutan@mbayaq.org](mailto:kvanhoutan@mbayaq.org)
- Anders J. Hansen, Director of Research and Associate Professor, Natural History Museum of Denmark. Tel: (+45) 2875 6134 [ajhansen@snm.ku.dk](mailto:ajhansen@snm.ku.dk)
- Thomas M. P. Gilbert, Professor, Natural History Museum of Denmark. Tel: (+45) 353-22222 [mtpgilbert@gmail.com](mailto:mtpgilbert@gmail.com)
- Ellen Ariel, Senior Lecturer, James Cook University, Australia. Tel: (+61) 747 81 4123 [Ellen.Ariel@jcu.edu.au](mailto:Ellen.Ariel@jcu.edu.au)
- Lawrence H. Herbst, Professor at Albert Einstein College of Medicine, NY, USA. Tel: (+1) 718 839 7135 [lawrence.herbst@einstein.yu.edu](mailto:lawrence.herbst@einstein.yu.edu)

### Peer Review Publications

- Joelly Espinoza, Elsa Hernández, María Mónica Lara-Uc, Eduardo Reséndiz, **Alonzo Alfaro-Núñez**, Sawako Hori-Oshima and Gerardo Medina-Basulto (2018) (In-Review). DETECTION AND GENETIC COMPARISON OF CHELONID HERPESVIRUS 5 IN MARINE TURTLES FROM BAJA CALIFORNIA PENINSULA, MEXICO. **Diseases of Aquatic Organisms**
- **Alfaro-Núñez A** and Bermudez R (2018). The scientific problem of plastic pollution: an ocean of reports with little standardization of procedures. **Bionatura**, Vol. 3 (3) DOI: 10.21931/RB/2018.03.03.1
- Cárdenas DM, Cucalón RV, Medina-Magües LG, Jones K, Alemán RA, **Alfaro-Núñez A** and Cárdenas W (2018). FIBROPAPILLOMATOSIS IN A GREEN SEA TURTLE (CHELONIA MYDAS) FROM THE SOUTHEASTERN PACIFIC. **Journal of Wildlife Diseases** (IF: 0.76) 55(1), DOI: 10.7589/2017-12-295
- **Alfaro-Núñez A**, Bojesen AM, Frost MB, Balazs GH, and Gilbert MTP (2016). HIGH LEVELS OF CHELONID HERPESVIRUS 5 (CHHV5) DNA DETECTED IN CLINICALLY HEALTHY MARINE TURTLES. **PeerJ** (IF: 2.18) DOI: [10.7717/peerj.2274](https://doi.org/10.7717/peerj.2274)
- **Alfaro-Núñez A**, Jensen MP and Abreu-Grobois FP (2015). Does polyandry really pay off?: The effects of multiple mating and number of fathers on morphological traits and survival of nesting green turtles at Tortuguero. **PeerJ** (IF: 2.18) 3:e880; DOI 10.7717/peerj.880
- Jarvis, ED; Mirarab, S; Aberer, A; Houde, P; Li, C; Ho, S; Faircloth, BC; Nabholz, B; Howard, JT; Suh, A; Weber, CC; Fonseca, RR; **Alfaro-Núñez, A**; Narula, N; Liu, L; Burt, D; Ellegren, H; Edwards, SV; Stamatakis, A; Mindell, DP; Cracraft, J; Braun, EL; Warnow, T; Jun, W; Gilbert, MTP; Zhang, G (2015). PHYLOGENOMIC



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ANALYSES DATA OF THE AVIAN PHYLOGENOMICS PROJECT <http://gigadb.org/dataset/101041>.  
**GigaScience** (IF: 7.46) 12, 4

- Jarvis ED, Mirarab S, Aberer AJ, Li B, Houde P, Li C, Ho SYW, Faircloth BC, Nabholz B, Howard JT, Suh A, Weber CC, da Fonseca RR, Li J, Zhang F, Li H, Zhou L, Narula N, Liu L, Ganapathy G, Boussau B, Bayzid MS, Zavidovych V, Subramanian S, Gabaldón T, Capella-Gutiérrez S, Huerta-Cepas J, Rekepalli B, Munch K, Schierup M, Lindow B, Warren WC, Ray D, Green RE, Bruford M, Zhan X, Dixon A, Li S, Li N, Huang Y, Derryberry EP, Bertelsen MF, Sheldon F, Brumfield RT, Mello C, Lovell PV, Wirthlin M, Samaniego JA, Vargas Velazquez AM, **Alfaro-Núñez A**, Campos PF, Petersen B, Sicheritz-Ponten T, Pas A, Bailey T, Scofield P, Bunce M, Lambert D, Zhou Q, Perelman P, Driskell AC, Shapiro B, Xiong Z, Zeng Y, Liu S, Li Z, Liu B, Wu K, Xiao J, Yinqi X, Zheng Q, Zhang Y, Yang H, Wang J, Smeds L, Rheindt FE, Braun M, Fjeldsa J, Orlando L, Barker K, Jønsson KA, Johnson W, Koepfli K-P, O'Brien S, Haussler D, Ryder OA, Rahbek C, Willerslev E, Graves GR, Glenn TC, McCormack J, Burt D, Ellegren J, Alström P, Edwards SV, Stamatakis A, Mindell DP, Cracraft J, Braun EL, Warnow T, Jun W, Gilbert MTP, Zhang G (2014). WHOLE GENOME ANALYSES RESOLVE THE EARLY BRANCHES IN THE TREE OF LIFE OF MODERN BIRDS. **Science** (IF: 34.4) 12, 1320-1331
- Zhang G, Li C, Li Q, Li B, Larkin DM, Lee C, Storz JF, Antunes A, Greenwold MJ, Meredith RW, Ödeen A, Cui J, Zhou Q, Xu L, Pan H, Wang Z, Jin L, Zhang P, Hu H, Yang W, Hu J, Xiao J, Yang Z, Liu Y, Xie Q, Yu H, Lian J, Wen P, Zhang F, Li H, Zeng Y, Xiong Z, Liu S, Zhou L, Huang Z, An N, Wang J, Zheng Q, Xiong Y, Wang G, Wang B, Wang J, Fan Y, da Fonseca RR, **Alfaro-Núñez A**, Schubert M, Orlando L, Mourier T, Howard JT, Ganapathy G, Pfenning A, Whitney O, Rivas MV, Hara E, Smith J, Farré M, Narayan J, Slavov G, Romanov MN, Borges R, Machado JP, Khan I, Springer MS, Gatesy J, Hoffmann FG, Opazo JC, Håstad O, Sawyer RH, Kim H, Kim K-W, Kim HJ, Cho S, Li N, Huang Y, Bruford MW, Zhan X, Dixon A, Bertelsen MF, Derryberry E, Warren W, Wilson RK, Li S, Ray DA, Green RE, O'Brien SJ, Griffin D, Johnson WE, Haussler D, Ryder OA, Willerslev E, Graves GR, Alström P, Fjeldsá J, Mindell DP, Edwards SV, Braun EL, Rahbek C, Burt DW, Houde P, Zhang Y, Yang H, Wang J, Jarvis ED, Gilbert MTP, Wang J & Avian Genome Consortium (2014). COMPARATIVE GENOMICS ACROSS MODERN BIRD SPECIES REVEAL INSIGHTS INTO AVIAN GENOME EVOLUTION AND ADAPTATION. **Science** (IF: 34.4) 12, 1311-1320.
- **Alfaro-Núñez A**, Frost MB, Bojesen AM, Rasmussen I, Zepeda-Mendoza L, Olsen MT and Gilbert MTP (2014). GLOBAL DISTRIBUTION OF CHELONID FIBROPAPILOMA-ASSOCIATED HERPESVIRUS AMONG CLINICALLY HEALTHY SEA TURTLES. **BMC Evolutionary Biology** (IF: 3.41) 14:206
- **Alfaro-Núñez A** and Gilbert MTP (2014). Validation of a sensitive PCR assay for the detection of Chelonid fibropapilloma-associated herpesvirus (CFPHV) in latent turtle infections. **Journal of Virological Methods** (IF: 2.14) 206, 38-41
- Duchene S, Frey A, **Alfaro-Núñez A**, Dutton PH, Gilbert MTP, and Morin PA (2012). MARINE TURTLE MITOGENOME PHYLOGENETICS AND EVOLUTION. **Molecular Phylogenetics and Evolution** (IF: 4.02)65, 1:241-250
- White NE, Phillips MJ, Gilbert T, **Alfaro-Núñez A**, Willerslev E, Mawson PR, Spencer PBS and Bunce M (2011). THE EVOLUTIONARY HISTORY OF COCKATOOS (PSITTACIFORMES: CACATUIDAE). **Molecular Phylogenetics and Evolution** (IF: 4.02) 59, 615-622

Work in progress

- **Alfaro-Núñez A**, Nguyen N, Catanach TA, Gilbert MTP and Hansen AJ. FULL GENOME-SCALE RAXML PHYLOGENETIC TREE ANALYSIS OF HERPESVIRUSES: THE SILENCE AND SUCCESSFUL EVOLUTION IN HIDING. (In preparation with expected submission December 2018: *PNAS*)
- Van Houtan K S, **Alfaro-Núñez A**, Page-Karjian A, and Smith C M. ARGININE AMINO ACID PROFILES CORRELATION WITH VIRAL LOADS IN THE FORMATION OF TUMOURS IN MARINE TURTLES. (In preparation with expected submission last trimester 2018: *Plos Pathogens* (IF: 8.05))

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