Alexis **Simon**

PhD · Evolutionary biology

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Education

University of Montpellier, Institut des sciences de l'évolution - Montpellier (ISEM) — *Montpellier, France*

PhD: evolutionary and biodiversity sciences — *Sept. 2016 – Dec. 2019*

Dissertation: Genomics of anthropogenic hybridization in *Mytilus spp.* mussels and hybrid fitness.

École Normale Supérieure (ENS), University Paris VI — *Paris, France*

Master's degree: ecology, biodiversity & evolution (EBE) — *2013 – 2016*

The *École Normale Supérieure* is a prestigious institution of higher education providing specialized training to students who will become researchers and professors in their field.

École Normale Supérieure (ENS) — *Paris, France*

Bachelor's degree: life sciences — *2012 – 2013*

Classe préparatoire — *Caen, France*

subjects: Biology, Mathematics, Chemistry, Physics, Geology — *2010 – 2012*

A two-year intensive course preparing for highly competitive, national entrance examinations to French *Grandes Écoles* (including the ENS, veterinary schools and engineering schools). Admitted to the ENS.

Research experience

Institut des sciences de l'évolution - Montpellier (ISEM) — *Montpellier, France*

Post-doctoral researcher with Nicolas Bierne — *Feb. 2020 – present*

Molecular evolution of the *Mytilus* transmissible cancer.

- Genome assembly for three species using long-reads technology
- Analyses of genomes of transmissible cancers: variants, mutation spectra

Institut des sciences de l'évolution - Montpellier (ISEM) — *Montpellier, France*

Graduate researcher with Nicolas Bierne and John Welch (Cambridge) — *Sept. 2016 – Dec. 2019*

Genomics of anthropogenic hybridisation in *Mytilus spp.* mussels and hybrid fitness.

- Field sampling, DNA extraction and preparation
- Population genetics and genomics analyses: hybrid zones and admixture
- Five cumulative months spent in the genetics department of Cambridge University with John Welch: Use of Fisher's geometric model to obtain analytical results for the fitness of hybrids

Institut des sciences de l'évolution - Montpellier (ISEM) — *Montpellier, France*

Intern with Nicolas Bierne — *Feb. – July 2016*

Biological invasion with hybridization in the *Mytilus edulis* species complex.

Biological institute of the ENS, eco-evolutionary mathematics team — *Paris, France*

Intern with David Claessen and Boris Sauterey. — *Feb. – July 2015*

Implementation of a trait diffusion model of phytoplankton-zooplankton co-evolution in a 1D version of the MIT general circulation model.

Marine ecology laboratory, Adelaide University — *Adelaide, Australia*

Intern with Claudia Junge and Bronwyn Gillanders. — *Sept. 2014 – Jan. 2015*

Population genetics of two shark species, *Carcharhinus obscurus* and *Carcharhinus brachyurus*.

Cawthron Institute — *Nelson, New-Zealand*

Intern With Ingrid Richter and Andrew Fidler — *Feb. – July 2014*

Detecting environmental petroleum pollutants and associated chemicals using tunicate xenobiotic receptors as sensor elements in modified yeast strains.

French National Museum of Natural History (MNHN) — *Paris, France*

Intern With Pierrick Barbier and Tarik Meziane — *June – July 2013*

Recruitment variability of Bivalvia in the habitat of *Glycymeris glycymeris* in the archipelago of Chausey (France)

Grants

2018	**Junior research team**, Labex CEMEB, 5000€, local funding for a PhD student to form a junior research team with a graduate student to expand a new topic of the PhD.	*Montpellier, France*

Teaching and mentoring

2020	**Co-supervision of a Master's student**, Evolutionary history and introgression heterogeneity in a speciation continuum of partially isolated mussels *Mytilus spp.*	*Uni Montpellier*
2018	**Co-supervision of a Master's student**, Evolutionary genetics and genomics of transmissible cancer in the *Mytilus edulis* species complex.	*Uni Montpellier*
2018	**Teaching fellow**, tutorials for data analysis in ecology - statistics, HLMA408	*Uni Montpellier*

Skills

Programming	R, Python, C/C++, LaTeX, Snakemake
Bioinformatics	Variant calling, genome assembly, demographic inference, pipeline development
Languages	English (proficient), French (native)

Conference oral presentations

Evolution (II Joint Congress on Evolutionary Biology)	2018
Marine Evolution	2018
Sfecologie - International Conference on Ecological Sciences	2018
GDRi on Marine connectivity (MarCo)	2016, 2017, 2018
French meeting of the GDR biological invasions	2018
SMBE regional meeting, Lyon, Interdisciplinary Approaches for Molecular Evolution	2017
"Petit pois déridé", French meeting of population geneticists	2017
Advances in Marine Mussel Research (AMMR)	2016, 2017
European Elasmobranch Association Conference	2015

Reviewing activity

Evolutionary Applications	1 manuscript
Molecular Ecology Resources	1 manuscript
PLOS Genetics	1 manuscript
ICES Journal of Marine Science	1 manuscript
Molecular Ecology	1 manuscript
Ecology and Evolution	1 manuscript

Publication list

Published

Replicated Anthropogenic Hybridisations Reveal Parallel Patterns of Admixture in Marine Mussels
Simon, A., C. Arbiol, E. E. Nielsen, J. Couteau, R. Sussarellu, T. Burgeot, I. Bernard, J. W. P. Coolen, J.-B. Lamy, S. Robert, M. Skazina, P. Strelkov, H. Queiroga, I. Cancio, J. J. Welch, F. Viard, and N. Bierne
Evol. Appl. 13.3 pp. 575–599. 2020

Implementation of Various Approaches to Study the Prevalence, Incidence and Progression of Disseminated Neoplasia in Mussel Stocks
Burioli, E., S. Trancart, **A. Simon**, I. Bernard, M. Charles, E. Oden, N. Bierne, and M. Houssin
Journal of Invertebrate Pathology 168 p. 107271. 2019

Comparative Population Genomics Confirms Little Population Structure in Two Commercially Targeted Carcharhinid Sharks
Junge, C., S. C. Donnellan, C. Huveneers, C. J. A. Bradshaw, **A. Simon**, M. Drew, C. Duffy, G. Johnson, G. Cliff, M. Braccini, S. C. Cutmore, P. Butcher, R. McAuley, V. Peddemors, P. Rogers, and B. M. Gillanders
Mar. Biol. 166.2. 2019

A Single Clonal Lineage of Transmissible Cancer Identified in Two Marine Mussel Species in South America and Europe
Yonemitsu, M. A., R. M. Giersch, M. Polo-Prieto, M. Hammel, **A. Simon**, F. Cremonte, F. T. Avilés, N. Merino-Véliz, E. A. V. Burioli, A. F. Muttray, J. Sherry, C. Reinisch, S. A. Baldwin, S. P. Goff, M. Houssin, G. Arriagada, N. Vásquez, N. Bierne, and M. J. Metzger
eLife 8 e47788. 2019

Coadapted Genomes and Selection on Hybrids: Fisher's Geometric Model Explains a Variety of Empirical Patterns
Simon, A., N. Bierne, and J. J. Welch
Evol. Lett. 2.5 pp. 472–498. 2018

Digest: Demographic Inferences Accounting for Selection at Linked Sites
Simon, A. and M. Duranton
Evolution. 2018

Weird Genotypes? Don't Discard Them, Transmissible Cancer Could Be an Explanation
Riquet, F., **A. Simon**, and N. Bierne
Evol. Appl. 10 pp. 140–145. 2017

In review

How Do Species Barriers Decay? Concordance and Local Introgression in Mosaic Hybrid Zones of Mussels
Simon, A., C. Fraïsse, T. El Ayari, C. Liautard-Haag, P. Strelkov, J. J. Welch, and N. Bierne
J. Evol. Biol. 2020

Preprint

DILS : Demographic Inferences with Linked Selection by Using ABC
Fraisse, C., I. Popovic, J. Romiguier, E. Loire, **A. Simon**, N. Galtier, L. Duret, N. Bierne, X. Vekemans, and C. Roux
bioRxiv. 2020