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Research Associate

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CURRICULUM VITAE

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RESEARCH INTERESTS

Evolutionary biology, speciation, adaptation and population connectivity of coral-reef ecosystem species in the context of fragmented, disturbed and changing habitats.

EDUCATION

- 2011 Ph.D. with honors: Genetic Biodiversity and Evolution**
Ecole Pratique des Hautes Etudes EPHE-CRIOBE-USR3278 - LABEX CORAIL, Perpignan, France
- 2006 Masters with honors: Oceanography, Biology and Marine Ecology**
University of Aix-Marseille II - Marseille, France
- 2004 Bsc. Biology of Marine organisms**
University of Aix-Marseille II - University Louis Pasteur of Strasbourg, France

RESEARCH EXPERIENCES

- 2015 – Present Research Associate - Harvard University, Dept. of Organismic and Evolutionary Biology, Cambridge, MA, USA.** PI: Pr. Gonzalo Giribet
Evolutionary Biology of marine invertebrates.
Ongoing projects:
- Phylogenomics of Pteriomorpha bivalves
 - Phylogenomics of Cardiidae (Bivalvia): Evolution of symbiosis
 - Phylogenomics of Bivalvia
 - Population genomics of Nautilidae in the Indo-Pacific
 - Genetic processes involved in shell regeneration in *Pinna carnea* (Bivalvia)
- 2012 – 2015 Post doctoral Fellow - Harvard University, Dept. of Organismic and Evolutionary Biology, Cambridge, MA, USA.** PI: Pr. Gonzalo Giribet
Evolutionary Biology of marine invertebrates.
- 2011 – 2012 Post doctoral Fellow - French National Center of Scientific Research (CNRS), Perpignan, France – Tahiti, French Polynesia.** PI: Drs. Serge Planes & Yannick Gueguen
- Transcriptomic processes leading to albinism and shell color variation in the pearl oyster *Pinctada margaritifera*.
- 2008 – 2011 Ph.D. Candidate - Ecole Pratique des Hautes Etudes (EPHE), Perpignan France – CRIOBE, Moorea French Polynesia.** PI: Dr. Serge Planes
- Genetic connectivity and historical demography of fragmented populations: tools to evaluate the impact of aquaculture on wild populations of the pearl oyster *Pinctada margaritifera* in French Polynesia.

- 2006 – 2008** **Research assistant - Research and Development Institute (IRD), ZONÉCO, Noumea, New-Caledonia.** PI: Dr. Philippe Borsa
- Implementing genetic tools to identify early life stage New Caledonian commercial reef fishes at the species level: Barcoding approach.
- 2004 – 2006** **Master research thesis - Marine Station of Endoume, Marseille, France.**
PI: Drs. Didier Aurelle & Philippe Borsa.
- Phylogeography of the reef fishes of the genus *Siganidae* in the Indo-Pacific
- 2004** **Bsc 3rd year research thesis - Marine Station of Endoume, Marseille, France.**
PI: Pr. Jean Vacelet, Drs. Nicole Boury-Esnault & Thierry Perez
- Histological identification of the different reproduction stages of sponges of the genus *Aplysina*.
- 2003** **Bsc 2nd year research thesis - Marine Station of Endoume, Marseille, France.**
PI: Dr. Carole Borchiellini
- Identification of genes from the Antennapedia family in Homoscleromorpha sponges: Evo-Devo approach

PEER-REVIEWED PUBLICATIONS

Total number of citations 130 / h-index: 6 / i10-Index : 4

15. **S Lemer**, V González, R Bieler, G Giribet,. Cementing mussels to oysters in the pteriomorphian tree: phylogenomic approach. *In review in Molecular Biology and Evolution*

14. PUPA. Gilbert, KD. Bergmann, CE. Myers, RT. DeVol, CY. Sun, AZ. Blonsky, J. Zhao, EA. Karan, E. Tamre, N. Tamura, MA. Marcus, AJ. Giuffre, **S. Lemer**, G. Giribet, JE. Eiler, AH. Knoll. Bivalve nacre preserves a physical indicator of paleotemperature. *In review in PNAS*

13. **S Lemer**, D. Saulnier, Y. Gueguen, S. Planes,. **2015**. Identification of genes associated with shell color in the black-lipped pearl oyster, *Pinctada margaritifera*. *BMC Genomics*, 16:568. DOI 10.1186/s12864-015-1776-x

12. **S. Lemer**, GY. Kawauchi, CS Andrade, MJ Boyle, G. Giribet,. **2015**. Re-evaluating the phylogeny of Sipuncula through transcriptomics. *Molecular Phylogenetics and Evolution*, 83: 174-183

11. **S. Lemer** & G. Giribet,. **2014**. Occurrence of a Bivalve-inhabiting marine hydrozoan (Hydrozoa, Hydroidolina, Leptothecata) in the amber pen-shell *Pinna carnea* Gmelin, 1791 (Bivalvia, Pteriomorphia, Pinnidae) from Bocas del Toro. *Journal of Molluscan Studies*, 80: 464-468, DOI: 10.1093/mollus/eyu059

10. G. Giribet, **S. Lemer**,. **2014**. On the occurrence of *Tuleocaris neglecta* Chace, 1969 (Decapoda, Palaemonidae, Pontoniinae) in *Echinometra lucunter* (Linnaeus, 1758) (Echinodermata, Echinoidea, Echinometridae) in the archipelagos of Bocas del Toro, Panama. *Crustaceana*, 87: 634-638

9. **S. Lemer** & S. Planes,. **2014**. Effects of habitat fragmentation on the genetic structure and connectivity of the black-lipped pearl oyster *Pinctada margaritifera* populations in French Polynesia. *Marine Biology*, 161: 2035-2049

8. R. Fernandez*, **S. Lemer***, G. Giribet,. **2014**. Comparative phylogeography and population genetic structure of three widespread mollusc species in the Mediterranean and near Atlantic. *Marine Ecology*, 16: 701-715, DOI: 10.1111/maec.12178

* **Shared first authorship**

7. **S. Lemer**, B Buge, A. Bemis, G. Giribet. **2014**. First molecular phylogeny of the circumtropical bivalve family Pinnidae (Mollusca, Bivalvia): evidence for high levels of cryptic species diversity. *Molecular Phylogenetics and Evolution*, 75: 11-23

6. **S. Lemer** & S. Planes,. **2012**. Translocation of wild populations: conservation implications for the genetic diversity of the black-lipped pearl oyster *Pinctada margaritifera*. *Molecular Ecology*, 21: 2949-2962
5. A.C. Stier, M.A. Gil, C.S. McKeon, **S. Lemer**, M. Leray, S.C. Mills, C.W. Osenberg,. **2012**. Housekeeping mutualisms: do more symbionts facilitate host performance? *PLoS ONE* 7(4):e32079. doi:10.1371/journal.pone.0032079
4. **S. Lemer**, E. Rochel, S. Planes,. **2011**. Correction method for null alleles in species with variable microsatellite flanking regions, a case study of the black-lipped pearl oyster *Pinctada margaritifera*. *Journal of Heredity*, 102 (2) 243-246
3. S. Planes & **S Lemer** ,. **2011**. Individual-based analysis opens new insights into understanding population structure and animal behaviour. *Molecular Ecology*, 20: 187-189
2. P. Borsa, **S Lemer**, D. Aurelle,. **2007**. Patterns of lineage diversification in rabbitfishes. *Molecular Phylogenetics and Evolution*, 44: 427-435.
1. **S. Lemer** , D. Aurelle, L. Vigliola, J.D. Durand, P. Borsa,. **2006**. Cytochrome b barcoding, molecular systematics, and geographic differentiation in rabbitfishes (Siganidae). *Comptes Rendus Biologies*, 330 (1): 86-94.

CONFERENCES

2015 Gordon Conference, Maine, USA

- Population genomics of nautilids. D. Combosch, **S. Lemer**, P. Ward, N. Landman, G. Giribet. Poster

2015 Evolution Meeting, Guarujá, Brazil

- Systematics of a diverse and global clade of vetigastropods, the keyhole and slit limpets (Fissurellidae, Gastropoda, Mollusca). T. Junqueira Cunha, **S. Lemer**, G. Giribet. Poster

2013 World Congress of Malacology, Ponta Delgada, Azores

- Patterns of lineage diversification in the family Pinnidae. **S. Lemer** & G. Giribet. Talk
- Transcriptomic processes leading to albinism and shell color variation in the pearl oyster *Pinctada margaritifera*. **S. Lemer**, D. Saulnier, Y. Gueguen, C. Lo, S. Planes. Poster

2012 International Coral Reef Symposium (ICRS), Cairns, Australia

- Reconstructing the historical demography of inner reef sessile marine invertebrate populations in relation to Pleistocene sea-level fluctuations in the South Pacific. **S. Lemer** & S. Planes. Talk

2010 International Society of Reef Symposium (ISRS), Wageningen, Netherlands

- Genetic Connectivity and Diversity of the Black Lipped Pearl Oyster, *Pinctada margaritifera* across the French Polynesian archipelagos: **S. Lemer** & S. Planes. Poster

2009 11th Pacific Science Inter-Congress, Tahiti French Polynesia

- Population Structure of the Black Lipped Pearl Oyster, *Pinctada margaritifera*, in French Polynesia. **S. Lemer**, E. Rochel, S. Planes. Talk
- Effect of the fragmented habitats of the French Polynesian lagoons associated with commercial exploitation on the genetic diversity and wild population structure of the pearl oyster: *Pinctada margaritifera*. **S. Lemer**, E. Rochel, S. Planes. Poster

WORKSHOPS

- 2014 **Next-generation sequencing for phylogenetics and phylogeography** - NESCent Academy, Duke University, NC
- 2012 **Evolution workshop** - Sao Paulo School of Advance Science, Ilha Bella, Brazil
- 2010 **Marine Genomics Europe Summer Course 2010** - Roscoff Biological Station, France
- 2009 - 2011 **Ocean Bridges Partner University Fund** - Gainesville University, FL, USA; Ecole Pratique des Hautes Etudes, Moorea, French Polynesia

TEACHING EXPERIENCE

- 2014 - Present **Certified Lecturer**: for "**Biology of Organisms**" and "**Biology of populations and Ecology**": issued by the French Ministry of Advanced Education and Research.
- 2014 - 2016 **Life Science 1b: Genetics, Genomics and Evolution, Teaching Fellow**
Harvard University, Cambridge, MA, USA
- 201 -2013 **Invertebrate Zoology OEB 51 field class, Bocas del Toro, Panama (STRI), Teaching Fellow** -Harvard University, Cambridge, MA, USA
- 2013 - Present **Graduate student partial advisor** - Harvard University, Cambridge, MA, USA
- Reconstructing the phylogeny of species of the family Fissurellidae (Mollusca, Gasteropoda)
- 2014 **Undergraduate student advisor** - Harvard University, Cambridge, MA, USA
- Biogeography of Nautilidae
- 2013 **Highschool student advisor** - Cambridge Rindge and Latin School, Cambridge, MA, USA
- 2010 **Master student advisor**- Ecole Pratique des Hautes Etudes, Perpignan, France
- Identification of genes involved in albinism in the pearl oyster *Pinctada margaritifera* (Mollusca, Bivalvia)
- 2009– 2011 **Lecturer: Introduction to population genetics (undergraduate level)** - Ecole Pratique des Hautes Etudes, Perpignan France
- Connectivity in marine environments: the case study of a marine invertebrate *Pinctada margaritifera* in French Polynesia

FELLOWSHIPS AND AWARDS

- 2014 **Putnam Expedition Grant: Collecting Nautilidea in Thailand**: 10,970 USD
The Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA
- 2014 **Unitas Malacologica Travel Grant**: 800 Euros
- 2013 **Putnam Expedition Grant: Collecting Pinnidae in Baja California Sur, Mexico**: 10,192 USD
The Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA
- 2013 **Postdoctoral Award for Professional Development**: 1000 USD
Faculty of Arts and Sciences, Harvard University, Cambridge, MA, USA
- 2012 **Putnam Expedition Grant: Collecting Pinnidae in the Philippines**: 7,500 USD
The Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA
- 2011 **Price for outstanding young Researchers**: 25,000 Euros
The Bettencourt-Schueller Foundation, France
- 2006 **Merit based scholarship**: 4,000 Euros
The Ministry of National Education, Advanced Education and Research, France

PUBLIC OUTREACH EVENTS AND PUBLICATIONS

EVENTS:

- 2014 Descience-Research on the runway** - MIT Media Lab, Cambridge, MA, USA
- Under the Sea: Evolution of tropical marine invertebrates (<https://descience27.carbonmade.com/>)
- 2012 Direction of Marine Resources** - Tahiti, French Polynesia
- Oral Presentation: Controle génétique de l'apparition de la couleur de la nacre chez *P. margaritifera*. **S. Lemer**.
- 2011 French National Science Fair** - Paris, France
- Activity organizer and stand holding: Corals facing global warming. **S. Lemer**, T. Vignaud.

SCIENTIFIC OUTREACH REPORTS:

8. **S. Lemer. 2014.** Descience goes under the sea: The hurdle of Science communication. by Scientist Sarah Lemer from Team Abyss-Moana. <http://www.fashiondescience.com/#!DESCIENCE-GOES-UNDER-THE-SEA-by-Scientist-Sarah-Lemer-from-Team-Abyss-Moana/c12kd/0984E601-7450-4C87-AFCF-1FB00ED54B73>.
7. C. Belliard, H. Bichet, C. Blay, M. Demoy-Schneider, A. Fougerouse, N. Gaertner-Mazouni, P. Garen, Y. Gueguen, C. Herbinger, CL. Ky, E. Lacoste, H. Leduc, **S. Lemer**, G. Le Moullac, C. Lo, A. Lo-Yat, S. Planes, D. Saulnier, M. Sham Koua, V. Teaniniuraitemoana. **2014.** Project: BIODIPERL, Préservation de la biodiversité des stocks d'huîtres perlières *Pinctada margaritifera* en Polynésie française pour une exploitation durable de la ressource en perliculture. Final Report.
8. **S. Lemer** & F. Sotto. **2013.** Harvard University Postdoctoral fellow collaborates with marine research station. University San Carlos Marine Research Station, Cebu, Philippines. <https://uscmarineres.wordpress.com/2013/06/06/harvard-u-postdoctoral-fellow-collaborates-with-marine-research-station/>
5. **S. Lemer. 2012.** Project: Analyse du déterminisme génétique de la couleur de la nacre par les processus conduisant à l'albinisme. Final Report. Department of Fisheries of French Polynesia.
4. Y. Gueguen, M. Demoy-Schneider, P. Garen, C. Herbinger, G. Le Moullac, **S. Lemer**, A. Lo-Yat, S. Planes. **2012.** Projet : REGENPERL "Ressources génétiques de la Perliculture polynésienne". Final Report
3. Y. Gueguen, E. Bachere, JP. Cuif, J. Guezennec, G. Gutierrez, CL. Ky, JM. Lebel, G. Lecellier, **S. Lemer**, G. Le Moullac, B. Marie, F. Marin, C. Montagnani, C. Pavat, D. Piquemal, S. Planes, D. Saulnier, M. Serrar, C. Simon-Colin. **2011.** Project: GDR ADEQUA, Amélioration de la qualité des perles de *Pinctada margaritifera* de Polynésie française. Final Report ANR, France.
2. P. Borsa, **S. Lemer**, WJ Chen, A. Collet, L. Carassou, D. Ponton. **2009.** Identification par barcode (séquences nucléotidiques d'un fragment de gène du cytochrome b) des larves de *Lethrinidea* capturées en baies de Dumbéa et Ouano (Nouvelle-Calédonie). Final Report ZoNéCo. IRD, Nouméa, IRD Nouméa Report, 60pp.
1. P. Borsa, M. Kulbicki, A. Collet, **S. Lemer**, G. Mou-Tham. **2009.** Biologie et écologie du bec de cane, *Lethrinus nebulosus* (Forsskal), en Nouvelle-Calédonie. Final Report ZoNéCo. IRD, Nouméa. IRD Nouméa Report, 67 pp.

ADMINISTRATIVE AND COLLECTIVE DUTIES

- 2014-2015** **Organizer:** bi-monthly seminar series "Harvard Museum of Comparative Zoology lunchtime seminars".
- 2014-2015** **Member:** Unitas Malacologica, International Society for Reef Studies.
- 2013-2015** **Member:** Harvard Graduate Women in Science and Engineering Organization.
- 2008-2011** Graduate student representative École Pratique des Hautes Etudes, France.

Scientific reviewer for: Molecular Ecology, Molecular Ecology Resources, Molecular Phylogenetic and Evolution, Marine Ecology, Plos One, Journal of Molluscan Studies, Evolutionary Biology, Peer J, Gene, Animal Genetics, Zoological Journal of the Linnean Society.

GENERAL AND TECHNICAL SKILLS

Languages: English: fluent, French: mother tongue

Scuba diving: 2 stars CMAS, Professional scientific diver diploma

Licenses: Car, Boat, Sailboat

Laboratory techniques: Sanger sequencing, Next Generation Sequencing Illumina technologies (transcriptome, genome, RAD-Seq), Real time quantitative PCR.

Bioinformatics techniques: Treatment and analyses of Next Generation Sequencing data (transcriptome, genome, RAD-Seq) for phylogeny, population genetic and gene expression analyses under linux environment. Python and Perl scripting: familiar.

Analysis software: Phylogeny (Geneious, MEGA, BEAST, RaxML, PhyML, ExaBayes, Mr Bayes, jModelTest, FigTree, Bucky), Species delimitation (BP&P, GMYC, bGMYC, PTT), Population genetics (Structure, Network, GeneClass, Genepop, Arlequin, DNAsp, Fstat, Genetix), Statistics (R, SPSS, Primer 5).

REFERENCES

Pr. Gonzalo Giribet

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Dr. Serge Planes

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Dr. Rudiger Bieler

The Field Museum, Chicago, IL, USA
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Dr. Yannick Gueguen

Ifremer UMR 5244 IPHE, UPVD, CNRS, Montpellier, France
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Pr. Philippe Bouchet

Muséum National d'Histoire Naturelle, CP51, Paris, France
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Pr. Pupa Gilbert

University of Wisconsin-Madison, Madison, WI, USA
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