

Curriculum vitae

1. Personal informations

CLERISSI Camille

Date and place of birth: 13/04/1985, Miramas, France.

Address: CRIOBE USR3278 EPHE-CNRS-UPVD, Université de Perpignan via Domitia, 58 avenue Paul Alduy, 66860, Perpignan.

Email : camille.clerissi@ephe.sorbonne.fr

Professional activity: Assistant professor (Ecole Pratique des Hautes Etudes).

2. Education

- 2009-2012** **PhD “Diversity and distribution of *Prasinovirus (Phycodnaviridae)*: influence of environmental factors and evolutionary mechanisms”,** University Pierre et Marie Curie, Oceanological Observatory of Banyuls-sur-Mer, France.
- 2007-2009** **Master’s degree “Oceanography and marine environments”,** University Pierre et Marie Curie, Paris, France.
- 2003-2007** **Licence’s degree “Biology of Organisms”,** Université Montpellier 2, France.

3. Professional experience

Research

- 2018** **Assistant professor (Ecole Pratique des Hautes Etudes),** CRIOBE USR3278 EPHE-CNRS-UPVD, University via Domitia Perpignan, France.
- 2018** **Post-doctoral fellowship: “Genomic analyses of the *Acanthurus triostegus* holobiont in the Pacific Ocean”,** with S. Planes, CRIOBE

USR3278 EPHE-CNRS-UPVD, University via Domitia Perpignan, France.

2016-2017 **Post-doctoral fellowship: “Specificity and stability of microbial communities associated to *Crassostrea gigas* oysters”**, with E. Toulza and J. de Lorgeril, UMR 5244 CNRS-IFREMER-University Montpellier 2, University via Domitia Perpignan, France.

2013-2016 **Post-doctoral fellowship: “Genomic analysis of legume symbionts: comparison between experimental and natural evolution”**, with E.P.C. Rocha, Institut Pasteur, Paris, and C. Masson-Boivin, UMR 2594/441 CNRS-INRA, Castanet-Tolosan, France.

2009-2012 **PhD “Diversity and distribution of *Prasinovirus (Phycodnaviridae)*: influence of environmental factors and evolutionary mechanisms”**, with Y. Desdevises and N. Grimsley, UMR 7232 CNRS, University Pierre et Marie Curie, Oceanological Observatory of Banyuls-sur-Mer, France.

2009 **Master 2: “Strain specificity of Prasinoviruses and coevolution with their hosts, the *Prasinophyceae*”**, with Y. Desdevises and N. Grimsley, UMR 7232 CNRS, University Pierre et Marie Curie, Oceanological Observatory of Banyuls-sur-Mer, France.

2008 **Master 1: “The life cycles of bacteriophages and the physiology of prokaryotes associated with the mucus of corals from the Tulear lagoon (Madagascar)”**, with T. Bouvier, UMR 5119 CNRS, University Montpellier 2, France.

2007 **Bacterial diversity in the Thau lagoon**, voluntary training period with T. Bouvier, UMR 5119 CNRS, University Montpellier 2, France.

Teaching

2018 **Practical work of biodiversity analyses (4h)**, Master 2 EPHE. University via Domitia, Perpignan, France.

- 2018** **Lecture of biodiversity analyses (molecular tools) (6h)**, Master 1 Biology-Ecology-Evolution. University via Domitia, Perpignan, France.
- 2013** **Practical work of microbiology (16h)**, Licence 2. University Paul Sabatier Toulouse 3, Toulouse, France.
- 2010** **Practical work of biology of the development and reproduction (35h)**, Licence 2 Biology and Ecology. University via Domitia, Perpignan, France.
- 2010** **Practical work of data analysis (Ordination: PCA and CA; Clustering) (8h)**, Master 1 Oceanography and marine environments, University Pierre et Marie Curie, Oceanological Observatory of Banyuls-sur-Mer, France.

4. Supervision

- 2017** **Workshop for PhD students**, University via Domitia, Perpignan. “Statistical and multivariate analyses of microbiota”.
- 2017** **Erwan Harscouet, voluntary training period post-Licence’s degree, 3rd year**, University of Montpellier. Supervision with E. Toulza and G. Mitta. “Statistical and multivariate analyses of microbial communities”.
- 2014** **François Li, Master’s degree, 2nd year**, Master Biotechnology and Biology of Plants, University of Bordeaux. Supervision with D. Capela. “Metabolic changes associated to the experimental evolution of a plant pathogen into a legume symbiont”.
- 2012** **Manon Denjean, Licence’s degree, 2nd year**, ESTBB, Lyon. Supervision with Y. Desdevises. “Fingerprinting of algal virus communities”.
- 2011** **Jérémie Garnodier, Licence’s degree, 3rd year**, ESTBB, Lyon. Supervision with Y. Desdevises. “Design of a fingerprinting technique for algal virus communities”.

5. Thesis committee

2018 Pierre-Louis Stenger, University of French Polynesia. “Plasticity and chromatic diversity of the pearl oyster *Pinctada margaritifera*”.

6. Publications

Summary: 16 articles (7 as first author).

1. Karsenti E, Acinas SG, Bork P, Bowler C, de Vargas C, Raes J, Sullivan MB, Arendt D, Benzoni F, Claverie J-M, Follows M, Gorsky G, Hingamp P, Iudicone D, Jaillon O, Kandels-Lewis S, Krzic U, Not F, Ogata H, Pesant S, Reynaud EG, Sardet C, Sieracki ME, Speich S, Velayoudon D, Weissenbach J, Wincker P, and the Tara Oceans Consortium (Abergel C, Arslan D, Audic S, Aury JM, Babic N, Beaufort L, Bittner L, Boss E, Boutte C, Brum J, Carmichael M, Casotti R, Chambouvet A, Chang P, Chica C, Clerissi C, Colin S, Cornejo-Castillo FM, Da Silva C, De Monte S, Decelle J, Desdevises Y, Dimier C, Dolan J, Duhaime M, Durrieu de Madron X, d'Ortenzio F, d'Ovidio F, Ferrera I, Garczarek L, Garet-Delmas MJ, Gasmi S, Gasol JM, Grimsley N, Heilig R, Ignacio-Espinoza J, Jamet JL, Karp-Boss L, Katinka M, Khalili H, Kolber Z, Le Bescot N, Le Goff H, Lima-Mendez G, Mahé F, Mazzocchi MG, Montresor M, Morin P, Noel B, Pedrós-Alió C, Pelletier E, Perez Y, Picheral M, Piganeau G, Poirot O, Poulain J, Poulton N, Prejger F, Prihoda J, Probert I, Rampal J, Reverdin G, Romac S, Romagnan JB, Roullier F, Rouviere C, Samson G, Santini S, Sarmiento H, Sciandra A, Solonenko S, Stemmann L, Subirana L, Sunagawa S, Tanaka A, Testor P, Thompson A, Tichanné-Seltzer V, Tirichine L, Toulza E, Tozzi S, Veluchamy A, Zingone A). 2011. A holistic approach to marine eco-systems biology. *PLoS Biology*, 9 (10):e1001177. doi:10.1371/journal.pbio.1001177.
2. Clerissi C, Desdevises Y, Grimsley N. 2012. Prasinoviruses of the marine green alga *Ostreococcus tauri* are mainly species-specific. *Journal of Virology*, 86 (8): 4611. doi:10.1128/JVI.07221-11.
3. Clerissi C, Grimsley N, Desdevises Y. 2013. Genetic exchanges of inteins between prasinoviruses. *Evolution*, 67 (1): 18-33. doi:10.1111/j.1558-5646.2012.01738.x.

4. Hingamp P, Grimsley N, Acinas SG, Clerissi C, Subirana L, Poulain J, Ferrera I, Sarmiento H, Villar E, Lima-Mendez G, Faust K, Sunagawa S, Claverie J-M, Moreau H, Desdevises Y, Bork P, Raes J, de Vargas C, Karsenti E, Kandels-Lewis S, Jaillon O, Not F, Pesant S, Wincker P, Ogata H. 2013. Exploring nucleo-cytoplasmic large DNA viruses in *Tara Oceans* microbial metagenomes. *The ISME Journal*, doi:10.1038/ismej.2013.59.
5. Clerissi C, Grimsley N, Ogata H, Hingamp P, Poulain J, Desdevises Y. 2014. Unveiling of the diversity of prasinoviruses (*Phycodnaviridae*) in marine samples by using high-throughput sequencing analyses of PCR-amplified DNA polymerase and Major Capsid Protein genes. *Applied and Environmental Microbiology*, 80(10): 3150-3160. doi:10.1128/Aem.00123-14.
6. Bellec L, Clerissi C, Edern R, Foulon E, Simon N, Grimsley N, Desdevises Y. 2014. Cophylogenetic interactions between marine viruses and eukaryotic picophytoplankton. *BMC Evolutionary Biology*, 14: 59. doi:10.1186/1471-2148-14-59.
7. Clerissi C, Grimsley N, Subirana L, Maria E, Oriol L, Ogata H, Moreau H, Desdevises Y. 2014. *Prasinovirus* distribution in the Northwest Mediterranean Sea is affected by the environment and particularly by phosphate availability. *Virology*, doi:10.1016/j.virol.2014.07.016.
8. Remigi P, Capela D, Clerissi C, Tasse L, Torchet R, Bouchez O, Batut J, Cruveiller S, Rocha EPC, Masson-Boivin C. 2014. Transient hypermutagenesis accelerates the evolution of legume endosymbionts following horizontal gene transfer. *PLoS Biology*, doi:10.1371/journal.pbio.1001942.
9. Clerissi C, Desdevises Y, Romac S, Audic S, de Vargas C, Acinas SG, Casotti R, Poulain J, Wincker P, Hingamp P, Ogata H, Grimsley N. 2015. Deep sequencing of amplified *Prasinovirus* and host green algal genes from an Indian Ocean transect reveals interacting trophic dependencies and new genotypes. *Environmental Microbiology Reports*, 7 (6): 979-989. doi:10.1111/1758-2229.12345.
10. Marchetti M, Clerissi C, Yousfi Y, Gris C, Bouchez O, Rocha EPC, Cruveiller S, Jauneau A, Capela D, Masson-Boivin C. 2017. Experimental evolution of rhizobia

may lead to either extra- or intracellular symbiotic adaptation depending on the selection regime. *Molecular Ecology*, doi:10.1111/mec.13895.

11. Capela D, Marchetti M, Clerissi C, Perrier A, Guetta D, Gris C, Valls M, Jauneau A, Cruveiller S, Rocha EPC, Masson-Boivin C. 2017. Recruitment of a lineage-specific virulence regulatory pathway promotes intracellular infection by a plant pathogen experimentally evolved into a legume symbiont. *Molecular Biology and Evolution*, 34 (10): 2503-2521. doi:10.1093/molbev/msx165.
12. Brener-Raffalli K, Clerissi C, Vidal-Dupiol J, Adjeroud M, Bonhomme F, Pratlong M, Aurelle D, Mitta G, Toulza E. 2018. Thermal regime and host clade, rather than geography, drive *Symbiodinium* and bacterial assemblages in the scleractinian coral *Pocillopora damicornis sensu lato*. *Microbiome*, 6: 39. doi:10.1186/s40168-018-0423-6.
13. Mouahid G, Clerissi C, Allienne J-F, Chaparro C, Yafae SA, Nguéma RM, Ibikounlé M, Moné H. 2018. The phylogeny of the genus *Indoplanorbis* (Gastropoda, Planorbidae) from Africa and the French West Indies. *Zoologica Scripta*, doi:10.1111/zsc.12297.
14. Clerissi C, Touchon M, Capela D, Tang M, Cruveiller S, Genthon C, Lopez-Roques C, Parker MA, Moulin L, Masson-Boivin C, Rocha EPC. 2018. Parallels between experimental and natural evolution of legume symbionts. *Nature Communications*, doi:10.1038/s41467-018-04778-5.
15. Clerissi C, Brunet S, Vidal-Dupiol J, Adjeroud M, Lepage P, Guillou L, Escoubas J-M, Toulza E. 2018. Protists within corals: the hidden diversity. 2018. *Frontiers in Microbiology*, doi:10.1038/s41467-018-04778-5.
16. De Lorgeril J, Lucasson A, Petton B, Toulza E, Montagnani C, Clerissi C, Vidal-Dupiol J, Chaparro C, Galinier R, Escoubas J-M, Haffner P, Degremont L, Charrière GM, Lafont M, Delort A, Vergnes A, Chiarello M, Faury, Rubio TP, Leroy M, Pérignon A, Régler D, Morga B, Alumno-Bruscia M, Boudry P, Le Roux F, Destoumieux-Garzón D, Gueguen Y, Mitta G. 2018. Immune-suppression by OsHV-1 viral infection causes fatal bacteremia in Pacific oysters. *Nature Communications*, doi:10.1038/s41467-018-06659-3.

7. Communications

Oral presentations:

1. Clerissi C, Grimsley N, Desdevises Y. Specificity, evolution, diversity and distribution of prasinoviruses. Oral presentation at the *Workshop for the Center of Sea Sciences and PhD students of the University Pierre et Marie Curie*, Les Cordeliers, Paris, France, 12-15 sept. 2011 (Chairman of the Physiology and Adaptation session).
2. Clerissi C, Grimsley N, Desdevises Y. Specificity and genetic exchanges of inteins between Prasinoviruses. Oral presentation at the *Aquatic Virus Workshop 6 (AVW6)*, Texel, The Netherlands, 30 oct.-3 nov. 2011.
3. Clerissi C, Grimsley N, Desdevises Y. Diversity and distribution of prasinoviruses. Oral presentation at the Association Francophone d'Ecologie Microbienne (AFEM), Hammamet, Tunisia, 14-16 nov. 2011.
4. Clerissi C, Torchet R, Cruveiller S, Capela D, Gris C, Rocha EPC, Masson-Boivin C. Genomics of adaptation during experimental evolution of a plant pathogen into a legume symbiont. Oral presentation at the *11th Plant-bacteria Meeting*, Aussois, France, 3-7 feb. 2014.
5. Clerissi C, Capela D, Marchetti M, Torchet R, Cruveiller S, Gris C, Rocha EPC, Masson-Boivin C. Omics of endosymbiosis adaptation during experimental evolution of legume symbionts. Oral presentation at the *Congress of the European Society for Evolutionary Biology (ESEB)*, Lausanne, Switzerland, 10-14 august 2015.
6. Clerissi C, de Lorgeril J, Petton B, Lucasson A, Escoubas J-M, Gueguen Y, Mitta G, Toulza E. Deciphering links between oyster fitness and microbial composition. Oral presentation at the *Interdisciplinary Workshop on Holobionts*, Bordeaux, France, 6-8 nov. 2017.

Posters:

7. Clerissi C, Grimsley N, Desdevises Y. Caractérisation de la spécificité des virus d'*Ostreococcus tauri*. Poster presented at the *Association Francophone d'Ecologie Microbienne (AFEM)*, "Les interactions microbiennes passées et présentes", Marseille, France, 4-5 may 2010.

8. Clerissi C, Grimsley N, Desdevises Y. Strain specificity of *Ostreococcus tauri* viruses. Poster presented at the *Viruses of microbes*, Institut Pasteur, Paris, France, 21-25 june 2010.
9. Clerissi C, Grimsley N, Desdevises Y. Genetic exchanges of inteins between Prasinoviruses. Poster presented at the *Alphy Meeting (Alignment and Phylogeny)*, Oceanological Observatory of Banyuls-sur-Mer, France, 19-21 march 2012.
10. Clerissi C, Subirana L, Moreau H, Ogata H, Grimsley N, Desdevises Y. Diversity and distribution of prasinoviruses at a large geographical scale. Poster presented at the *Viruses of Microbes*, Brussels, Belgium, 16-20 july 2012.
11. Clerissi C, Torchet R, Cruveiller S, Capela D, Gris C, Rocha EPC, Masson-Boivin C. Genomics of adaptation during experimental evolution of legume symbionts. Poster presented at the *Journées Ouvertes en Biologie, Informatique et Mathématiques (JOBIM)*, Toulouse, France, 1-4 july 2013.
12. Clerissi C, Torchet R, Cruveiller S, Capela D, Gris C, Rocha EPC, Masson-Boivin C. Genomics of adaptation during experimental evolution of legume symbionts. Poster presented at the *Congress of the European Society for Evolutionary Biology (ESEB)*, Lisbon, Portugal, 19-24 august 2013.
13. Clerissi C, Torchet R, Cruveiller S, Capela D, Gris C, Rocha EPC, Masson-Boivin C. Genomics of adaptation during experimental evolution of legume symbionts. Poster presented at the 3rd Meeting on Molecular Mechanisms in Nitrogen fixing Root Endosymbioses. Montpellier, France, 26-27 sept. 2013.
14. Clerissi C, Petton B, Escoubas J-M, Gueguen Y, Mitta G, De Lorgeril J, Toulza E. Specificity and stability of microbial communities associated to healthy and diseased *Crassostrea gigas* oysters. Poster presented at the *International Conference on Holobionts*, Paris, France, 19-21 april 2017.

Others congress, seminars or workshops:

15. Participation to *Phylogeny of communautes (PhyloCom)*, Montpellier, France, 3 may 2010.
16. Participation to *Journée biodiversité et bioinformatique*, Maison des sciences de l'Homme, Grenoble, France, 29 june 2011.

17. Participation to the 5^{ème} *microbiotoul*. Toulouse, France, 21-22 oct. 2013.
18. Participation to *Journées annuelles de la société française de systématique, Méthodes phylogénétiques comparatives: comment parler du process à partir du pattern?* Banyuls-sur-Mer, France, 25-27 oct. 2017.
19. Participation to *Integrated immunity in holobionts*. Montpellier, France, 15-16 oct. 2018.

8. Competences

Summary: high-throughput sequencing (metabarcoding, metagenomic, genomic, transcriptomic), Bioinformatic (bash, python), Biostatistics, Multivariate analyses, Phylogeny, Microbiology (bacteria, protists, viruses).

Data analyses

Analysis of sequences from high-throughput technologies: functional and population genomics (core-genome, pan-genome, polymorphism, BLAST, HMM profiles, COG categories and metabolism (KEGG and Metacyc)), transcriptomic analyses (differential expressions, links with quantitative traits), analysis of communities using metabarcoding (ampliconnoise for sequence cleaning; mothur, Qiime, FROGS to define operational taxonomic units (OTU) and their taxonomic annotations; Tax4Fun for functional annotations).

Analysis of sequences and molecular evolution: alignment and polymorphism analyses (mafft, muscle, Seaview, EMBOSS), recombination analyses (PHI, ClonalFrameML), signature of selection (codeml), lateral gene transfers (SH), *in silico* evolution of genomes, phylogenetic reconstructions using bayesian inference (MrBayes) and maximum likelihood (PhyML, IQ-TREE), cophylogenetic analyses (ParaFit, TreeMap, Jane), evolutionary analysis of gene content (losses, gains, gene duplications) (COUNT).

Biostatistics: parametric and non-parametric tests, permutational approaches, linear models, multidimensional analyses (Mantel test, principal component analysis, correspondance analysis, canonical correspondance analysis, redundancy analysis, linear discriminant analysis, partial least square regression, MANOVA). Analyses on R, xlstat and JMP.

Languages: Unix, R, notions of python programming.

Experiments

Molecular biology: DNA and RNA extraction (oysters, filters), polymerase chain reaction (PCR), design of specific and blocking primers for Sanger and high-throughput sequencing (454-Titanium, Illumina).

Sampling: On board the *Tara* schooner (*Tara-Oceans* and *Tara-Pacific* projects), filtration, isolation using culture-dependent methods for microorganisms (bacteria, protist, virus), purification of environmental virus, physico-chemical measurements, fish dissection.

***in vitro* culture:** culture of microorganisms (bacteria, protists, viruses), microbial physiology (respiration, membrane integrity), phenotype microarrays of microbes (Omnilog, Biolog).

Imagery: flux cytometry, epifluorescence microscopy, fluorescence *in situ* hybridization (FISH).

Languages

French (native language), english and spanish (fluent).

Scuba diving

Level 2, CMAS.

9. Scientific formations

- 2018-2019** **Teaching practices (12h).** Internal school PSL University, France.
- 2018** **High performance computing for genomics (TGCC/CCRT) (13h).**
Persons in charge: A. Kourlaiev and N. Wiart. Place: TGCC, CEA, Bruyères-le-Châtel, France.
- 2014** **Transcriptomic analyses and detection of horizontal gene transfers (8h).** Persons in charge: S. Carrere, L. Legrand, and E. Sallet. Place: INRA, Castanet-Tolosan, France.
- 2014** **Programming in Python (21h).** Person in charge: J. Delamarche. Place: INRA, Castanet-Tolosan, France.
- 2013** **Genomic and transcriptomic (8h).** Persons in charge: S. Carrere, L. Legrand, and L. Cottret. Place: INRA, Castanet-Tolosan, France.
- 2013** **Practice of bioinformatic: introducing PYTHON (8h).** Persons in charge: F. Samson and S. Dèrozier. Place: INRA, Jouy-en-Josas, France.
- 2011** **Unix and course to use the computer cluster of the University Pierre et Marie Curie (12h).** Person in charge: M. Krawczyk. Place: Oceanological Observatory of Banyuls-sur-Mer, France.
- 2011** **Marine Ecological and Evolutionary Genomics (84h).** Marine genomics 4 Users. Person in charge: J. Collen, Biological Station of Roscoff, France.
- 2011** **Bioinformatic: “Next Generation Sequencing” (17h),** Bioinformatic platform “Genotoul”, Unity BIA, INRA Toulouse. Persons in charge: J. Mariette and C. Noirot. Place: Oceanological Observatory of Banyuls-sur-Mer, France.
- 2009** **Genomic analysis (30h).** Person in charge: F. Sabot. Place: University via Domitia, Perpignan, France.

10. Fellowships

- 2017** Fellowship from the “Holobiont challenge” of UMR 5244 (CNRS-IFREMER-University Montpellier 2-University via Domitia Perpignan) for the project “Protists within microbiota” (5500 €), University via Domitia, Perpignan, France.
- 2009-2012** Doctoral fellowship from the AXA Research Fund (120000 €).

11. Collaborations

- 2017-2018** Microbiota of the coral *Pocillopora damicornis*: L. Guillou (Biological station of Roscoff), M. Adjeroud (IRD Perpignan), J. Vidal-Dupiol, J.-M. Escoubas (University of Montpellier), P. Lepage, S. Brunet (Génome Québec, Montréal).
- 2017-2018** Phylogeny of *Indoplanorbis*: G. Mouahid, H. Mone (University via Domitia Perpignan).
- 2016-2017** Genomic of *Roseobacter*: R. Lami (Oceanological Observatory of Banyuls-sur-Mer), L. Urios (University of Pau).
- 2013-2016** Experimental evolution of legume symbionts: S. Cruveiller, R. Torchet, C. Médigue (CEA Génoscope, Evry), D. Capela, M. Marchetti (INRA, Castanet-Tolosan).
- 2009-2012** *Tara-Oceans*: H. Ogata (Institute of Chemical Research, Kyoto, Japon), P. Hingamp (University of Aix-Marseille), S. Acinas (Institut de Ciències del Mar, Barcelone, Espagne), R. Casotti (Stazione Zoologica, Naples, Italie), C. de Vargas, S. Audic, S. Romac (Biological station of Roscoff), J. Poulain, P. Wincker (CEA Génoscope, Evry).