

# Lucie Gallot-Lavallée

POST-DOCTORAL RESEARCHER · EVOLUTIONARY BIOLOGIST

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Postdoctoral position in Evolutionary Genomics - Archibald Lab, Dalhousie University

## Research Interests

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Genome Evolution, Host/Pathogen Co-evolution, Evolution of Viruses and Selfish Elements, Paleovirology, Eukaryotic Biodiversity, Endosymbiosis

## Research Experience

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### Postdoctoral position in Evolutionary Biology; Archibald lab, Institute for Comparative Genomics ( former Center for Comparative Genomics and Evolutionary Bioinformatics ) , Dalhousie University

Halifax, Canada

VIRAL SEQUENCES AND SELFISH ELEMENTS IN EUKARYOTIC GENOMES - ORIGIN, EVOLUTION AND DIVERSITY

March 2018 - Now

MICROBIAL EUKARYOTES DIVERSITY, LATERAL GENE TRANSFERS IN MICROBIAL EUKARYOTES

- inferred long term evolution of selfish mobile elements in eukaryotic genomes
- characterized viral inserts in eukaryotic genomes
- identified and described laterally transferred genes in various genomes
- used the Oxford Nanopore technology MinION to obtain long reads for a eukaryotic genome and used state-of-the-art bioinformatic methods to produce an assembly of the genome
- established cultures of heterotrophic eukaryotes and applied wet lab technics to extract their DNA for sequencing

### Ph.D. in Genomics, Bioinformatics and Evolutionary Biology; Genomic and Structural Information Laboratory, CNRS

Marseille, France

GENOMICS OF GIANT VIRUSES, OF VIROPHAGES, AND GENETIC EXCHANGES WITH THEIR EUKARYOTIC HOSTS

Oct. 2014 - Sept. 2017

- detected genomic exchanges between viruses and eukaryotes
- reconstructed gene history, applied technics of phylogeny
- annotated newly sequenced giant virus genomes

### Undergraduate research in Metagenomics and Ecology; Genomic and Structural Information Laboratory, CNRS

Marseille, France

BIODIVERSITY AND DISTRIBUTION OF MARINE GIANT VIRUSES OF EUKARYOTES USING TARA OCEAN METAGENOMES

Jan. 2014 - Jul. 2014

- assigned a taxonomy of metagenomic reads by Phylogenetic placement
- determined environmental factors determinant for Giant Viruses distribution by metagenomic sample clustering

### Undergraduate Research in multi-domains protein Evolution; Genomic and Structural Information Laboratory, CNRS

Marseille, France

CLARIFICATION OF THE EVOLUTIONARY HISTORY OF ALGAL [FeFe] HYDROGENASE

Feb. 2013 - Apr. 2013

- reconstructed phylogeny of algal hydrogenases catalytic domain
- analyzed domain composition
- inferred the pattern of domain loss and gain

### Undergraduate Research in Aging Genetic; H. Aguilaniu team, ENS Lyon

Lyon, France

ANALYZED RESPIRATORY PROFILE OF C.ELEGANS MUTANT PRESENTING DIVERSE LONGEVITY PHENOTYPES

Apr. 2010 - Jun. 2010

- measured nematods oxygen consumption

## Education

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2017 **Ph.D in Bioinformatics, Genomics and Evolutionary Biology**, Aix-Marseille University

Marseille, France

THESIS DIRECTORS: JEAN-MICHEL CLAVERIE AND GUILLAUME BLANC

2014 **Master degree in Bioinformatics and Genomics**, Aix-Marseille University

Marseille, France

2010 **Bachelor Degree in Biochemistry**, Claude Bernard University

Lyon, France

## Publications

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Salas-Leiva D, Tromer D, Curtis B, Jerlström Hultqvist J, Kolisko M, Yi Z, Salas-Leiva J, Gallot-Lavallee L, Williams S, Kops G, Archibald J, Simpson A, and Roger A. (2021). Genomic analysis finds no evidence of canonical eukaryotic DNA processing complexes in a free-living protist. *Nat. Commun.*

Gallot-Lavallée L, Archibald JM. (2020). Evolutionary Biology: Viral Rhodopsins Illuminate Algal Evolution. *Curr Biol.* 30(24):R1469-R1471.

Gallot-Lavallée L, Archibald JM. (2020). Phagocytosis in a Shape-shifting Bacterium. *Trends Microbiol.* 28(6):428-430.

Gallot-Lavallée L, Blanc G, and Claverie J-M. (2017). Comparative genomics of Chrysochromulina Ericina Virus (CeV) and other microalgae-infecting large DNA viruses highlight their intricate evolutionary relationship with the established Mimiviridae family. *J. Virol.* JVI.00230-17.

Gallot-Lavallée L, and Blanc G. (2017). A Glimpse of Nucleo-Cytoplasmic Large DNA Virus Biodiversity through the Eukaryotic Genomics Window. *Viruses* 9.

Villain A, Gallot-Lavallée L, Blanc G, and Maumus F. (2016). Giant viruses at the core of microscopic wars with global impacts. *Curr Opin Virol* 17, 130–137.

Gallot-Lavallée L, Pagarete A, Legendre M, Santini S, Sandaa R-A, Himmelbauer H, Ogata H, Bratbak G, and Claverie J-M. (2015). The 474-Kilobase-Pair Complete Genome Sequence of CeV-01B, a Virus Infecting Haptolina (Chrysochromulina) ericina (Prymnesiophyceae). *Genome Announc* 3.

Blanc G, Gallot-Lavallée L, and Maumus F. (2015). Provirophages in the Bigelowiella genome bear testimony to past encounters with giant viruses. *Proc. Natl. Acad. Sci. U.S.A.* 112, E5318-5326.

## Conferences participation

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### Center for Comparative Genomics and Evolutionary Bioinformatics Retreat

CHAIR FOR THE 2ND SESSION OF THE RETREAT

*Halifax, Canada*

*Novembre 2019*

### Halifax Marine Microbe Symposium

ORAL PRESENTATION : Bioinformatic analysis of Halocafeteria seosinensis virophages and Polinton-like elements.

*Halifax, Canada*

*Septembre 2019*

### ECOP/ISOP joint meeting

ORAL PRESENTATION : Massive, unprecedented intein content in two Anaeramoeba genomes reveals new aspects of intein mobility in eukaryotes.

*Rome, Italy*

*August 2019*

### SMBE

POSTER PRESENTATION : Massive, unprecedented intein content in two Anaeramoeba genomes reveals new aspects of intein mobility in eukaryotes.

*Manchester, England*

*July 2019*

### CRC 1182 Junior Researchers Training Workshop

ORAL PRESENTATION : "Endosymbiotic" virophages and protist immunity: bioinformatic analysis of Halocafeteria seosinensis virophages.

*Kiel, Germany*

*May 2018*

### 8th Aquatic Virus Workshop

POSTER PRESENTATION : "Chrysochromulina ericina Virus highlights specific features of small-Mimiviridae and common themes in viral evolution."

*Plymouth, England*

*Jul. 2016*

### Junior Scientists Microbiology Meeting of Marseille 2016

ORAL PRESENTATION : "Chrysochromulina ericina Virus, a reduced giant?"

*Marseille, France*

*Mar. 2016*

## Awards

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### Holz-Conner Travel award

DELIVERED BY THE INTERNATIONAL SOCIETY OF PROTISTOLOGY FOR TRAVELLING TO THE ECOP/ISOP JOINT MEETING

*June 2019*

## Teaching experience

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TEACHING ASSISTANT Aix-Marseille University

### First year of Bachelor in Biology, Informatics for Biologists class

PRACTICAL WORK ON COMPUTER - CLASS OF 30 STUDENTS

- basis of algorithmic

*2014-2017*

*34 hours per years*

## Second year of Bachelor in Biology, Applied Bioinformatics class

PRACTICAL WORK ON COMPUTER - CLASS OF 20 STUDENTS

- sequence alignment, database search, phylogeny

2014-2017

30 hours per years

## Referees

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D.PR. JOHN M. ARCHIBALD, POST-DOCTORAL SUPERVISOR, DIRECTOR OF CENTRE FOR COMPARATIVE GENOMICS EVOLUTION-  
ARY BIOINFORMATICS, DALHOUSIE UNIVERSITY, HALIFAX, CANADA john.archibald@dal.ca, (902) 494-2536