

Sophie Abby

French
Born in 1984

University of Vienna
Department of Ecogenomics and
Systems Biology/Archaea Biology
and Ecogenomics Division
Althanstrasse 14
1090 Wien

PhD in Bioinformatics

Phylogenomics & Molecular evolution

Comparative genomics

Metagenomics

Cellular machineries

Ecological adaptation

Education

2010 - PhD in evolutionary genomics: "Relevance of lateral gene transfers to understand the evolutionary history of prokaryotes". Supervisors: Dr V. Daubin and Dr M. Gouy (Bioinformatics and Evolutionary Genomics group, [Laboratory of Biometry and Evolutionary Biology](#), UMR CNRS 5558, University Lyon 1, France). Fellowship of the French Department of Research and Higher Education.

2006 - Bi-disciplinary Master degree (MCs and BCs), Biology and Computer sciences, Paris 7 University.

2004 - Diploma of Higher Education in Natural Sciences, University of Cergy-Pontoise (France).

Teaching/Supervision

2006-2010 - Teaching assistant at University Lyon 1, school of Biological Sciences:

- Applied mathematics for natural sciences (University Lyon 1)
- Biostatistics and Bioinformatics (University Lyon 1)
- Molecular phylogeny (INSA engineering school of Lyon)

I am currently co-supervising two Master students (Rémi Denise and Tobias Reinelt, Institut Pasteur and University of Vienna, respectively).

Research

2015: Postdoctoral position at the University of Vienna (Austria), in Prof. C. Schleper's "Archaea Biology and Ecogenomics" group. I'm currently focusing on the reconstruction of Thaumarchaeota genomes that are cultivated in the lab.

2010-2014: Post-doctoral position at the CNRS/Pasteur Institute (Paris, France) in Dr E. Rocha's "[Microbial evolutionary genomics](#)" lab. I was mostly interested in the detection (method development) evolution and diversification of protein secretion systems in bacteria.

2006-2010: PhD student at CNRS/University Lyon 1 (Lyon, France, see Education). I focused on prokaryotic phylogeny and lateral gene transfers (LGT). I developed a new method to detect LGT, and could show they are powerful phylogenetic markers, and thus are useful to evaluate phylogenies.

2006: Master thesis "Wide-scale analysis of phylogenetic trees congruence: development of a new method", under the supervision of Dr V. Daubin and Dr M. Gouy.

2005: 3 months trainee in the "Analytical Genomics" group of the lab INSERM-U511 (Paris, France), under the supervision of Dr A. Carbone. Development of an index to assess the quality of protein structures alignment.

2002: 2 months trainee as a computer scientist in the Apic company (Paris area, France), editor of Geographic Information Systems (GIS) in collaboration with the "Centre Scientifique des Îles du Lérins" (Cannes, France), on the use marine ecology data.

Publications

Year	Journal	Rank/Authors
Original articles		
2010	<i>BMC Bioinformatics</i>	1/4
2011	<i>Proceedings of the National Academy of Sciences</i>	3/4
2012	<i>Proceedings of the National Academy of Sciences</i>	1/4
2012	<i>Journal of Bacteriology</i>	2/4
2012	<i>PLoS Pathogens</i>	2/5

2012	<i>PLoS Genetics</i>	1/2
2012	<i>Proceedings of the National Academy of Sciences</i>	3/5
2014	<i>Frontiers in Microbiology</i>	1/5
2014	<i>PLoS ONE</i>	1/5
2014	<i>Nucleic Acids Research</i>	3/6
2016	<i>Systematic Biology (in press)</i>	3/5
2016	<i>Scientific Reports</i>	1/5
Others		
2007	<i>Trends in microbiology (Review)</i>	1/2
2012	<i>Médecine sciences : M/S (in French, brief)</i>	2/2
2015	Principal co-inventor of a patent deposited by Institut Pasteur & CNRS	1/5
2016	Book chapter in <i>Methods in Molecular Biology on Secretion Systems. To be published in 2016.</i>	1/2

Selected communications

Year	Congress/Event	Location	Talk/ poster	Rank/ Authors
2006	Integrative Post Genomics	Lyon, France	talk	1/3
2007	Society for General Microbiology	Manchester, UK	talk	1/3
2007	Alphy (french comparative genomics meeting)	Montpellier, France	talk	1/3
2008	Society of Molecular Biology and Evolution	Barcelona, Spain	talk	1/4
2009	Alphy	Lyon, France	talk	1/4
2010	Society of Molecular Biology and Evolution	Lyon, France	poster	1/4
2011	Indo French Bioinformatics Meeting	Hyderabad, India	invited talk	1/4
2012	Evolution	Ottawa, Canada	talk	1/2
2013	Systems Biology for Infectious Processes	Lyon, France	talk	1/2
2013	European Society for Evolutionary Biology (ESEB annual congress)	Lisbon, Portugal	talk	1/2
2014	Society of Molecular Biology and Evolution	San Juan, Puerto Rico US	talk	1/5
2014	EMBO Conference: Microbiology after the genomics revolution	Paris, France	talk	1/5
2014	Seminar at the Department of Ecology, University of Vienna	Vienna, Austria	guest lecture	N/A
2014	Seminar at the Laboratory of Biology and Applied Pharmacology, ENS	Cachan, France	guest lecture	N/A
2015	Society of Molecular Biology and Evolution	Vienna, Austria	poster	1/4
2016	Jacques Monod Conference " "Molecules as documents of evolutionary history: 50 years later" "	Roscoff, France	invited talk	N/A

Reviewer activity

PLoS ONE, Molecular Biology and Evolution, Genome Biology and Evolution, BMC Microbiology, BMC Genomics...

Skills/Techniques

- Molecular phylogeny: Phylml, RAxML, PAUP, Phylip, Mesquite, Muscle, MAFFT, Tcoffee...
- Phylogenomics, comparative genomics, phylogenetic comparative methods
- Proteic sequence analyses (similarity, domains): Blast, HMMER profiles, InterProScan, PFAM...
- Statistical analyses: R software, JMP software
- Programming: Python, C++, Java, tcsh, bash, sed, awk, Bio++ and Biopython libraries
- Methods implemented: [Prunier](#) software for phylogenetic identification of lateral gene transfers; [MacSyFinder](#) for the detection of macromolecular systems in genomes, MacSyFinder's models to detect bacterial secretion systems and CRISPR-Cas systems in (meta-)genomes (TXSScan and Cas-Finder)

Awards

- 2016** - Marie Curie Individual Fellowship - European commission (2 y.)
- 2007** - Post-graduate travel award, Society for General Microbiology
- 2006** - Doctoral fellowship of the French Department of Research and Higher Education (3 y.)

Languages

French: native language; English: very good command; Russian: notions