

Pierre BADUEL, Ph.D.

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EDUCATION

Harvard University

Department of Organismic and Evolutionary Biology
Ph.D. in Biology

Cambridge, MA, USA
December 2016

École Polytechnique

Master Level degree
Bachelor of Science degree
Major: Biology - Cells, Organisms, Genomes, Evolution
Minor: Applied Mathematics
Graduation Rank: 4th out of a class of 400. GPA: 4.27/4.4; GRE: 170Q, 161V, 4.0W

Palaiseau, France
Sept. 2011
Sept. 2010

RESEARCH EXPERIENCE

Institut de Biologie de l'École Normale Supérieure (IBENS)

Post-doctoral Fellow

Paris, France
2017 - present

Assessing transposable elements (TEs) dynamics in *Arabidopsis*

- Established recent transposon dynamics across ploidy levels in ~300 re-sequenced *A. arenosa* genomes
- Set up pipeline for identification and analysis of TE variants across 1001 genomes of *A. thaliana*

John Innes Centre

Post-doctoral Fellow

Norwich, UK
Apr. - Oct. 2017

Evaluated ploidy-dependent genome evolution in *A. arenosa*.

- Developed transcriptomic-genomic approach for quantification of genetic diversity and selection strength across ploidy levels in ~300 re-sequenced genomes.
- Identified and functionally confirmed 2 potentially adaptive alleles with generation and analysis of >180 transgenic *A. thaliana*.
- Planned and led 2-week research expedition in Austria, Germany, and Poland.

Harvard University

Ph.D. Student

Cambridge, MA, USA
2012-2016

Studied genetic mechanisms of habitat adaptation in *A. arenosa*.

- Generated and analyzed transcriptomic and genomic data for detection of habitat-associated population differences.
- Predicted and experimentally confirmed phenotypic differences in heat and cold-stress adaptation.
- Detected evidence of selection on circadian clock gene with implications in transition to weedy lifestyle.
- Implemented statistical framework for quantitative trait loci interval mapping on ~500 tetraploid F2 individuals.
- Functionally confirmed 6 potentially adaptive haplotypes with generation and analysis of >350 transgenic *A. thaliana*.

Cold Spring Harbor Laboratory

Research Intern

Cold Spring Harbor, NY, USA
Apr. - Jul. 2011

Studied long-distance and trans-generational movements of RNA-interference signals in *A. thaliana*

- Generated >300 grafts to use as non-transgenic pollen donor system.
- Provided evidence of movement of silencing signal from roots to pollen and embryos.

LEADERSHIP/TEACHING EXPERIENCE

Harvard University - Science Policy Group

Cambridge, MA, USA

Course Coordinator

January 2015

- Co-organized and led 2-week long introductory class to science policy for 17 graduate students.
- Designed op-ed workshop with White House science & technology advisor and journalism professionals.

Harvard University

Cambridge, MA, USA

Teaching Fellow

Fall 2013- Spring 2014

- Taught 25-50 undergraduate students in 2 upper-level courses on genetics and genomics.
- Led weekly problem-solving and discussion sections for groups of 15 students.
- Graded exams and weekly homework.
- Awarded certificate of distinction in teaching (student evaluation scores: 4.3 and 4.5/5).

Bossuet Institute

Paris, France

Mathematics Interrogator

Sept. 2010 – Mar. 2011

- Led and designed weekly oral examinations preparing students for graduate engineering schools admissions.

French Army Cavalry

Saumur, France

Sublieutenant Officer

Sept. 2008 – Apr. 2009

AWARDS & FELLOWSHIPS

PRESTIGE Campus France

Jun. 2018

€24,000 16-months Marie-Curie fellowship

Fondation pour la Recherche Médicale (FRM)

Dec. 2017

€150,000 3-years post-doctoral fellowship

Harvard University Derek Bok Center for Teaching and Learning

Spring 2014

Certificate of Distinction in Teaching

Jean Gaillard Memorial Fund

2012-2013

\$15,000 graduate student fellowship

CONFERENCE PRESENTATIONS

Baduel P, Quadrana L, Colot V. *Assessing the drivers of transposable element accumulation dynamics in wild accessions of Arabidopsis thaliana*. Poster presentation at the CSHL Meeting on Transposable Elements, Cold Spring Harbor, NY, USA, 11/2018

Baduel P, Quadrana L, Colot V. *Assessing the drivers of transposable element mobilization using natural and experimental Arabidopsis systems*. Oral presentation at the International Plant Epi/Genetics Symposium, Angers, France, 10/2018

Baduel P, Quadrana L, Bomblies K, Colot V. *Relaxed purifying selection and transposition bursts drive family-specific transposable element dynamics following auto-polyploidization*. Poster presentation at the Population, Evolutionary, Quantitative Genetics Conference, Madison, WI, USA, 05/2018

Baduel P, Colot V. *The role of transposable elements in the generation of epimutational potential*. Oral presentation at the United College London Genetics Institute Epigenetics Symposium, London, UK, 05/2018

Baduel P, Arnold B, Bomblies K. *Habitat-associated life history and stress-tolerance variation in A. arenosa*. 26th Poster presentation at the International Conference on Arabidopsis Research, Paris, France, 08/2015

Baduel P, Hunter B, Bomblies K. *Transcriptional responses to vernalization in A. arenosa*. Poster presentation at the FASEB Conference on Mechanisms in Plant Development, Saxtons River VT, USA, 09/2013

PUBLICATIONS

Baduel P, Quadrana L, Paajanen P, Bomblies K, Colot V. *Relaxed purifying selection and transposition bursts drive family-specific transposable element dynamics following auto-polyploidization*. In preparation.

Monnahan P*, Kolář F*, **Baduel P***, Sailer C, Koch J, Horvath R, Laenen B, Schmickl R, Paajanen P, Fuxová G, Holcová M, Arnold B, Weismann C, Marhold K, Slotte T, Bomblies K, Yant L. *Pervasive population genomic consequences of genome duplication in A. arenosa*. Under review. bioRxiv.org. 10.1101/411041, 09/2018

*authors contributed equally

Baduel P, Bray S, Vallejo-Marin M, Kolář F, Yant L. *The 'Polyploid Hop': shifting challenges and opportunities over the evolutionary lifespan of genome duplications*. Frontiers in Ecology and Evolution, 10.3389/fevo.2018.00117, 07/2018

Baduel P, Hunter B, Yeola S, Bomblies K. *Genetic basis and evolution of rapid cycling in railway populations of tetraploid Arabidopsis arenosa*. PLoS Genetics, 10.1371/journal.pgen.1007510, 07/2018

Wilton PR, **Baduel P**, Landon MM, Wakeley J. *Population structure and coalescence in pedigrees: Comparisons to the structured coalescent and a framework for inference*. Theoretical Population Biology, 10.1016/j.tpb.2017.01.004, 01/2017

Baduel P, Arnold B, Weisman C, Hunter B, Bomblies K. *Habitat-associated life history and stress-tolerance variation in A. arenosa*. Plant Physiology, 10.1104/pp.15.01875, 03/2016

REFERENCES

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