

Matthias Benoit

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Ph.D. in Physiology and Molecular Genetics

RESEARCH

- 2019-Present: **Research Associate**, Howard Hugues Medical Institute, Cold Spring Harbor Laboratory
Principal Investigator: Dr. Zach Lippman, Funding: Howard Hugues Medical Institute
Project: Contribution of structural variation and epigenetic diversity in generating phenotypic quantitative variation in tomato
- 2015-2018: **Research Associate**, The Sainsbury Laboratory, University of Cambridge, United Kingdom
Principal Investigator: Dr. Jerzy Paszkowski, Funding: European Research Council
Project: Epigenetic and developmental regulation of retrotransposons in tomato
- 2010-2014: **PhD in Molecular Genetics & Physiology**, Genetics, Reproduction and Development Laboratory, CNRS/INSERM, Clermont-Ferrand, France
Supervisor: Dr. Aline V. Probst. Funding: Auvergne Region & ARC Foundation.
Project: Role of H3 variants and H3 chaperones in heterochromatin dynamics in Arabidopsis
- 2010: **Master 2 Molecular Biology of Eukaryotes Laboratory**, CNRS, Toulouse, France
Team leader: Pr. Kerstin Bystricky, Supervisor: Isabelle Goiffon
Project: Hho1, Sin1 and Asf1 participate in chromatin folding *in vivo*
- 2009: **Master 1 Molecular Biology of Eukaryotes Laboratory**, CNRS, Toulouse, France
Team leader: Pr. Kerstin Bystricky, Supervisor: Dr. Mathieu Dalvai.
Project: Role of histone variants in estrogen-regulated genes expression

EDUCATION

- 2014: **Ph.D. in Molecular Genetics & Physiology**, Blaise Pascal University, Clermont-Ferrand
- 2010: **Master 2 Genes, Cells & Development**, Paul Sabatier University, Toulouse, France
- 2009: **Master 1 Biology & Health**, Paul Sabatier University, Toulouse, France
- 2008: **Bachelor of Biomedical Sciences**, The Robert Gordon University, Aberdeen, Scotland
International Technical University Diploma in Biological & Biochemical Engineering, Auvergne University, Clermont-Ferrand, France

PUBLICATIONS

- 2019: **Benoit, M.**, Drost, H.-G., Catoni, M., Gouil, Q., Lopez-Gomollon, S., Baulcombe, D.C., and Paszkowski, J. (2019). Environmental and epigenetic regulation of *Rider* retrotransposons in tomato. **PLOS Genetics**, in press
- Cho J., **Benoit M.**, Catoni M., Drost H. G., Brestovitsky A., Oosterbeek M. and Paszkowski J. Sensitive detection of pre-integration intermediates of long terminal repeat retrotransposons in crop plants. **Nature Plants** 5 (1), 26–33.
- Benoit M.**, Simon L., Desset S., Duc C., Cotterell S., Poulet A., Le Goff S., Tatout C. and Probst A. V. – Replication-coupled histone H3.1 deposition determines nucleosome composition and heterochromatin dynamics during Arabidopsis seedling development – **New Phytologist** 221 (1), 385-398
- 2017: Duc C., **Benoit M.**, Détourné G., Simon L., Poulet A., Le Goff S., Cotterell S., Tatout C. and Probst A. V. - Arabidopsis ATRX controls nucleosome occupancy and regulates 45S rRNA expression. **The Plant Cell** 29 (7), 1773-1793
- Poulet A., Duc C., Voisin M., Desset S., Tutois S., Vanrobays E., **Benoit M.**, Evans D., Probst A. V. and Tatout C. - The LINC complex contributes to heterochromatin organisation and transcriptional gene silencing in plants. **Journal of Cell Science** 130 (3), 590-601
- 2015: Duc C., **Benoit M.**, Le Goff S., Simon L., Poulet A., Cotterell S., Tatout C. and Probst A. V. - The Arabidopsis HIR complex is required for maintenance of nucleosomal density and transcriptional gene silencing. **The Plant Journal** 81 (5), 707-722
- 2013: **Benoit M.**, Layat L., Tourmente S. and Probst A. V. - Heterochromatin dynamics during developmental transitions in Arabidopsis – a focus on ribosomal DNA loci. **Gene** 526 (1), 39-45

COMMUNICATIONS

Talks

- 2018: Plant Epi/Genetics Symposium, Angers, October 29-31
Harnessing retrotransposons to unlock phenotypic diversity in tomato (selected oral communication from abstract)
- 2013: Third European Workshop on Plant Chromatin, Madrid, August 29-30th
H3 histone variants and chaperones in Arabidopsis chromatin dynamics (selected oral communication from abstract)
- 16th Doctoral School for Life Sciences, Health, Agronomy and Environment Days, Clermont-Ferrand, May 16-17th, **awarded best oral communication**
Organisation dynamique de l'hétérochromatine chez *Arabidopsis thaliana*

Posters

- 2017: 40th New Phytologist Symposium, Vienna July 12-15th
Benoit M., Paszkowski J., Environmental and developmental regulation of transposon activity in tomato
- New Phytologist Next Generation Scientist 2017, Norwich July 24-26th
Benoit M., Paszkowski J., Environmental and developmental regulation of transposon activity in tomato
- 2016: CHSL conference on Transposable Elements, Cold Spring Harbor November 2-5th
Benoit M., Paszkowski J., Developmental and environmental regulation of transposon activity in tomato
- Sainsbury Laboratory Symposium on Induced Plant Development, Cambridge April 4-6th
Benoit M., Sanchez H.D., Paszkowski J., Developmentally regulated transposons activities in tomato
- 2012: 7th Young Researchers of the Plant Biology French Society Congress, Grenoble, July 4-6th
Benoit M., Le Goff S, Tourmente S, Probst AV, Dynamic heterochromatin organization in *Arabidopsis thaliana* development
- 2011: 9th Plant Biology French Society Meeting, Clermont-Ferrand, December 12-14th, **awarded best poster**
Benoit M., Le Goff S, Tourmente S, Probst AV, Dynamic heterochromatin organization in *Arabidopsis thaliana* development
- 7th Research Day, Clermont-Ferrand, December 1st
Benoit M., Le Goff S, Tourmente S, Probst AV, Dynamics of heterochromatin during early development in *Arabidopsis thaliana* and role of the histone H3 network
- Doctoriales of the Doctoral Schools College of Clermont-Ferrand, June 20-24th
Benoit M., Le Goff S, Tourmente S, Probst AV, Organisation dynamique de la chromatine chez la plante *Arabidopsis*

TRAINING & PRACTICAL COURSES

- 2018: Training in the team "Identification of genes and mechanisms for crop productivity", Pr. Dani Zamir, The Robert H. Smith Institute of Plant Sciences and Genetics in Agriculture, Rehovot, Israel
- 2012: Training in the team "Epigenetic Changes in Plants", Dr. Ortrun Mittelsten Scheid, Gregor Mendel Institute of Molecular Plant Biology, Vienna, Austria
- 2011: Doctoriales of the Doctoral Schools College, Clermont-Ferrand, France

Bioinformatics & Statistics Course, GReD, Clermont-Ferrand, France

2010: 6th Course on Epigenetics, Curie Institute, Paris, France

1st Workshop Genome, Structure & Functions, Toulouse, France

FELLOWSHIPS

2013: ARC Foundation – 4th year PhD funding “Role of histone chaperones in heterochromatin maintenance and genome stability”

2013: Auvergne Region – International meeting participation funding for the Third European Workshop on Plant Chromatin, Madrid

TEACHING EXPERIENCE

2015-2018: **Supervision** of Part IB **Plant and Microbial Sciences** students – University of Cambridge

Plant Evolution and Behaviour Practicals – University of Cambridge

2012-2013: **Genetics Course** - Blaise Pascal University, Clermont-Ferrand

Undergraduate Student Supervision

2018: **Megan Lloyd-Palmer**, 10 weeks

Project: Consequences of hybridization for the evolution of transposable elements in plants

2017: **Hollie French**, 10 weeks

Project: Consequences of transposon activity on gene transcription in the crop plant tomato

2016: **Katherine Moran**, 10 weeks

Project: Identification and characterization of transcriptionally active retrotransposons in tomato

2012: **Lucile Borao**, 10 weeks

Project: The Arabidopsis Hir complex – Characterization of its different components and impact on transcriptional silencing

2011: **Ghislain Pompeu**, 10 weeks

Project: Characterization of the amino acids responsible for the differential genomic localization of H3.1 and H3.3 in *Arabidopsis thaliana*

ACTIVITIES AND MEETING ORGANISATION

Since 2017: ASPB Plantae Fellow

2016-2018: Member of the Sainsbury Laboratory Biological Safety Committee

Member of the Sainsbury Laboratory PhDoc Society

Postdoctoral Affiliated Member at Clare Hall College Cambridge

2011-2013: Elected as representative of PhD students at the scientific council of the Doctoral School

2012: 15th Doctoral School for Life Sciences, Health, Agronomy and Environment Days, Clermont-Ferrand, May 24-25th

2011: 9th Plant Biology French Society Meeting, Clermont-Ferrand, December 12-14th

PROFESSIONAL MEMBERSHIPS

AAAS Science Program for Excellence in Science

The New York Academy of Science

National Postdoctoral Association