

CURRICULUM VITAE

Alexandre de Saint Germain



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- 2009-2012 **PhD in Plant Biology**, Orsay Paris XI University / INRA Versailles-Grignon.
PhD fellowship from the Research and Education Ministry, France. **Supervisor: Catherine Rameau**, Thesis Title: **Towards a better understanding of the mode of action of strigolactones.**
- 2008-2009 **Master degree of Integrative Biology and Physiology (2nd year)**, speciality Plant biology, University Pierre et Marie Curie, Paris VI, Paris, France.
- 2007-2008 **Year of preparation for the « Agrégation » in biology**, University Pierre et Marie Curie, Paris VI, Paris, France. “*Professeur Agrégé de biologie*”.
- 2006-2007 **Master degree of Molecular Biology (1st year)**, University Pierre et Marie Curie, Paris VI, Paris, France.
- 2005-2006 **License degree of Biology**, speciality Molecular Biology, Picardie Jules Vernes University, Amiens, France.

RESEARCH AND PROFESSIONAL EXPERIENCE

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- 2018- 2019 **Postdoctoral Fellow**, IJPB-INRA Versailles-Grignon, France - Supervisor: Catherine Rameau
Labex SPS fellowship
Project: Discovery and characterization of novel D14 and KAI2 ligands
- 2017- 2018 **Postdoctoral Fellow**, IJPB-INRA Versailles-Grignon, France - Supervisor: Catherine Rameau
Agreenskill fellowship
Project: Evolution of Strigolactone perception in land plants and parasitic plants
- 2016-2017 **Temporary Lecturer and Research Assistant (ATER)** University Pierre et Marie Curie –Paris6/IBPC-UMR7141 Supervisor: *Francis-André Wollman*
Project: Study of nucleo-chloroplast interactions in *Chlamydomonas reinhardtii*: Characterization of OPR proteins.
- 2013-2016 **Postdoctoral Fellow**, Chory lab, The Salk Institute, La Jolla, CA92037, USA, Supervisor: Joanne Chory
Project: Characterization of Strigolactones and Karrikin perception by their receptors
- 2012-2013 **Temporary Lecturer and Research Assistant (ATER)**, Orsay Paris XI University / INRA Versailles-Grignon
- 2009-2012 **PhD in Plant Biology**, Orsay Paris XI University / INRA Versailles-Grignon. Supervisor: Catherine Rameau, Thesis Title: Towards a better understanding of the mode of action of strigolactones. PhD fellowship from the Research and Education Ministry, France.
- 2010 (6 months) Internship in Centre of Excellence for Integrative Legume Research in Brisbane, Australia
Supervisor: Christine Beveridge
- 2009(6 months) **Master degree training**, Jean-Pierre Bourgin Institute, INRA Versailles-Grignon, France. Supervisor: Catherine Rameau Title: Study of a transcription factor responsible for axillary bud dormancy: regulation in response to hormones during development of the plant.

TEACHING EXPERIENCE

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- 2017-2018 Lecture on plant hormone signaling at AgroParisTech and Orsay Paris XI University
- 2016-2017 Temporary Lecturer, Pierre et Marie Curie Paris 6 University for Licence1.2.3 and MASTER2 degree
- 2012-2013 Temporary Lecturer, Orsay Paris XI University for Master degree.
- 2009-2012 Monitor for the preparation for Master degree for Teachers (Animal and plant physiology, botany and zoology)
Monitor of tutorial and practical work in Animal Biology Licence degree 1
Design of practical work in plant physiology for high school students

SUPERVISORY EXPERIENCE

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- April-July 2018 Supervisor of Mickael Kravec de Raucourt **Master degree 1** (University Paris Diderot)
Title: Identification of new germination stimulants depending on strigolactone receptor homologs
Catherine Rameau lab– INRA de Versailles

- June-Aug 2017 Supervisor of Emmanuelle Baudu **Licence degree 3** (ENSTBB-Bordeaux)
Title: Expression and characterization of *Phelipanche ramosa*. PrKAI2 proteins
 Catherine Rameau lab – INRA de Versailles
- Jan-June 2017 Co- Supervisor of Gaëlle Chemin **Master degree 2** (university Paris VI Jussieu)
Title: Development of a reporter system for endonuclease activity
 Francis-André Wollman lab– IBPC Paris-UMR7141
- 2014-2016 Supervisor of Meng Hoa and Shane Lin (University of California San Diego), **College student 4th year.**
 Joanne Chory Laboratory– Salk Institute
- Sept 2014 Supervisor of Amélie Champé (AgroParisTech), **Master degree 2**
- March 2015 Title: SMXL proteins in the strigolactone signaling pathway Joanne Chory lab– Salk Institute
- Jan-June 2012 Supervisor of Yasmine Ligerot **Master degree 2**
Title: The interaction of gibberellin and strigolactones
- Supervisor of Cindy Gassaud **Licence degree 3**
Title: Characterization of the role of the *MAX1* gene in pea
- June-July 2013 Supervisor of Solène Moulin **Licence degree 3**
Title: The regulation of the *RMS3* expression gene in pea
- Jan-Sept 2011 Supervisor of Jennifer Barboiron-Allégre in **Licence degree 3**
Title: Identification and characterization of strigolactone biosynthesis mutants in pea
- June-Sept 2010 Supervisor of Deborah Bellet in **Licence degree 2**
Title: Identification of genes involved in branching in pea
- Sept 2009- Supervisor of Emmeline Huvelle in **Licence degree 3**
- Sept 2010 Title: Identification and characterization of the pea *D14* gene and obtaining of *D14like* mutants in pea

PUBLICATION & COMMUNICATION

Publications

- Lopez-Obando M, de Villiers R, Hoffmann B, Ma L, **de Saint Germain A**, Kossmann J, Coudert Y, Harrison C. J., Rameau C, Hills P, Bonhomme S *Physcomitrella patens* MAX2 characterization suggests an ancient role for this F-box protein in photomorphogenesis rather than strigolactone signaling. *New Phytol.* 2018 Jul;219(2):743-756.
- Ligerot Y, **de Saint Germain A**, Waldie T, Troadec C, Citerne S, Kadakia N, Pillot JP, Prigge M, Aubert G, Bendahmane A, Leyser O, Estelle M, Debelle F, Rameau C. The pea branching *RMS2* gene encodes the PsAFB4/5 auxin receptor and is involved in an auxin-strigolactone regulation loop. *PLoS Genet.* 2017 Dec 8;13(12):e1007089.
- Kameoka H, Dun EA, Lopez-Obando M, Brewer PB, **de Saint Germain A**, Rameau C, Beveridge CA, Kyojuka J. Phloem transport of the receptor DWARF14 protein is required for full function of strigolactones. *Plant Physiol.* 2016 Nov;172(3):1844-1852.
- **de Saint Germain A**, Guillaume Clavé, Marie Ange Badet-Denisot, Jean-Paul Pillot, Jean-Pierre Lecaer, Frank Pelissier, Pascal Retailleau, Jean-Bernard Pouvreau, Virginie Puech, Colin Turnbull, Sandrine Bonhomme, Joanne Chory, Catherine Rameau and François-Didier Boyer. An histidine covalent receptor/butenolide complex is involved in strigolactone perception *Nat Chem Biol.* 2016 Aug 1. *12* (10), 787–794
- Zheng Z, **de Saint Germain A**, Chory J. Unfolding the mysteries of strigolactone signaling *Mol Plant.* 2014 Jun;7(6):934-6.
- Boyer FD, **de Saint Germain A**, Pouvreau JB, Clavé G., Pillot JP, Roux A., Rasmussen A., Depuydt S., Laouressgues D., Frei N., Thomas S.A. Heugebaert, Stevens CV, Goormachtig S., Rameau C. New Strigolactone Analogues as Plant Hormones with Low Activities in the Rhizosphere. *Mol Plant.* 2014 Apr;7(4):675-90.
- **de Saint Germain A**, Ligerot Y, Dun EA, Pillot JP, Ross JJ, Beveridge CA, Rameau C. Strigolactones stimulate internode length independently of gibberellins. *Plant Physiol.* 2013 Oct;163(2):1012-25.
- **de Saint Germain A**, Bonhomme S, Boyer FD, Rameau C. Novel insights into strigolactone distribution and signalling. *Curr Opin Plant Biol.* 2013 Jul 3
- Dun EA, **de Saint Germain A**, Rameau C, Beveridge CA. Dynamics of Strigolactone Function and Shoot Branching Responses in *Pisum sativum*. *Mol Plant.* 2013 Jan;6(1):128-140.
- Boyer FD, **de Saint Germain A**, Pillot JP, Pouvreau JB, Chen VX, Ramos S, Stévenin A, Simier P, Delavault P, Beau JM, Rameau C. Structure-activity relationship studies of strigolactone-related molecules for branching inhibition in garden pea: molecule design for shoot branching. *Plant Physiol.* 2012 Aug;159(4):1524-44.
- Braun* N, **de Saint Germain* A**, Pillot JP, Boutet-Mercey S, Dalmais M, Antoniadi I, Li X, Maia-Grondard A, Le Signor C, Bouteiller N, Luo D, Bendahmane A, Turnbull C, Rameau C. The pea TCP transcription factor PsBRC1 acts downstream of Strigolactones to control shoot branching. *Plant Physiol.* 2012 Jan;158(1):225-38.
- Dun EA, **de Saint Germain A**, Rameau C, Beveridge CA. Antagonistic action of strigolactone and cytokinin in bud outgrowth control. *Plant Physiol.* 2012 Jan;158(1):487-98.
- **de Saint Germain A**, Braun N, Rameau C. Strigolactones, a novel class of plant hormones controlling branching. *Biol Aujourd'hui.* 2010 204(1):43-9.

Publications pending

- Kerr S, **de Saint Germain A**, Pillot J-P, Saffar J, Ligerot Y, Aubert G, Citerne S, Bellec Y, Dun E, Beveridge C, and Rameau C. Integration of the strigolactone signalling repressor, PsSMXL7, in the model of shoot branching in pea. Submitted to *Pl Physiol*.
- Tinashe G. Chabikwa, **Alexandre de Saint Germain**, Michael G. Mason, Stephanie C. Kerr, Catherine Rameau, Tadao Asami, Christine A. Beveridge **Sugar-strigolactone antagonism regulates shoot branching**. Submitted to *Pl Physiol*.
- **Alexandre de Saint Germain**, Pascal Retailleau, Stéphanie Norsikian, Vincent Servajean, Franck Pelissier, Jean-Paul Pillot, Jean-Bernard Pouvreau, and François-Didier Boyer. Identification of a Novel Compound detected by the Enzymatic Activity of the Strigolactone Receptor and derived from the last step of the synthesis of the strigolactone analog GR24. *Molecular Plant*. In preparation.
- **Alexandre de Saint Germain**, Guillaume Brun, Jean-Bernard Pouvreau, Lukas Braem, Anse Jacobs, David Cornu, Kris Geveart, Sofie Goormachtig, Philippe Simier, Philippe Delavault^b and François-Didier Boyer. Strigolactone Receptor of *Phelipanche ramosa* is able to Perceive Different Classes of germination stimulants. *Nature Plant*. In preparation.

Patents

- Boyer F.-D., Rameau C, Pillot J-P, **De Saint-Germain A**, Pouvreau J.-B. Nouveaux analogues de strigolactones spécifiquement actif sur le contrôle de la ramification des plantes agissant faiblement sur la germination des plantes parasites de type Orobanche. Patent number : FR 11 58917

Conference poster presentations

- **de Saint Germain Alexandre**, (Aout 2018) Evolution of Strigolactone perception in land plants and parasitic plants. The 12th International Congress on Plant Molecular Biology. Montpellier, France
- **de Saint Germain Alexandre**, (Octobre 2017) Design and use of profluorescent probes for strigolactone reception studies in vascular plants. Bilateral Closure Symposium of GDRI Integrative Plant Biology Network, Lyon, France
- **de Saint Germain Alexandre**, (Octobre 2012) RMS3, an α/β hydrolase involved in the strigolactone perception. The 10th International Congress on Plant Molecular Biology. Jeju, Korea
- **de Saint Germain Alexandre**, (Mars 2012) RMS3, an α/β hydrolase involved in the strigolactone perception. 4th UPSC-INRA (UPRA) bilateral meeting. Umeå, Suède
- **de Saint Germain Alexandre**. (May 2011) The pea homologue of *TEOSINTE BRANCHEDI* is an integrator of the strigolactone and cytokinin pathways in the control of shoot branching. Conférence Jacques Monod "*Évolution des mécanismes de régulation du développement des plantes*" Roscoff (Brittany), France.
- **de Saint Germain Alexandre**, (June 2010) The pea homologue of *TEOSINTE BRANCHEDI* is an integrator of the strigolactone and cytokinin pathways in the control of shoot branching. 20th IPGSA Conference in Tarragona (Spain).

Oral conference presentations

- **de Saint Germain Alexandre**, (Juin 2016) The D14 strigolactone receptor: part-enzyme part-receptor 22nd IPGSA Conference in Toronto, Canada
- **de Saint Germain Alexandre**, (Avril 2016) Characterization of Strigolactone perception-La Jolla Plant Biology Talks-San Diego USA
- **de Saint Germain Alexandre** (Juillet 2011) Towards a better understanding of the mode of action of Strigolactones. European Ph-D retreat. Orsay, France.
- **de Saint Germain Alexandre** (April 2010) The strigolactones: carotenoid-derived branching inhibitors. Journée jeune chercheur de l'INRA, Colmar. (France)

AWARDS AND SCHOLARSHIPS OBTAINED

- Agreenskills Fellowship Award (mai 2017 -2018)
- Catharina Foundation Postdoctoral Fellowship Award (janv 2014-dec2015).
- Jean & Marie-Louise DUFRENOY Travel Award (Académie d'agriculture de France) (2011).
- PhD fellowship from the French ministry of education and research (oct 2009-oct 2012).

SKILLS

Molecular Biology and genetic

DNA and RNA isolation, cDNA synthesis, PCR and Real-Time quantitative PCR amplification, TILLING, gene mapping, cloning, yeast two hybrid, Western Blot, RNA sequencing, CHIP sequencing, mapping

Plant physiology

Grafting, pea and Arabidopsis model study, girdling, Agrotransformation, phenotyping (root and shoot architecture, hormonal treatment).

Biochemistry:

Protein expression (*E. coli*), protein purification, protein-ligand interaction study (ITC, DSF, intrinsic fluorescence), direct mutagenesis, enzymology (HPLC, LC/MS, fluorimeter), immunoblot, co-immunoprecipitation. CO-IP mass spec, crystallography

Chemistry

Hormone quantification: gibberellin, cytokinin by UPLC and MS/MS

Cytology

In situ hybridization, GUS staining, confocal microscope (GFP tagged protein *in planta*)

Informatics

Image editing software (Adobe Photoshop, Image J), Molecular software (Serial Cloner, BioEdit Ape), Prism graph pad.

Languages

French (native language), English (fluent), German (beginner)

REFEREES

Dr Francis-André Wollman, post-doctoral supervisor

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Pr Joanne Chory, post-doctoral supervisor

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Dr François-Didier BOYER, collaborator

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