Valentin Joly

Molecular Biologist • Bioinformatician

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Education

present **Ph.D., Biological Sciences** (thesis to be submitted in Dec. 2018)
2012 **M.Sc., Biological Sciences** (accelerated transition to Ph.D. in 2013)
University of Montreal, *Montreal*, *QC*, *Canada*
Thesis: Molecular communication between male and female gametophytes and reproductive barriers in wild potatoes (*Solanum* sect. *Petota*).
Advisor: Prof. Daniel P. Matton **GPA:** 4.3/4.3

2011 **B.Sc., Biology, international program**
Pierre & Marie Curie University (UPMC), *Paris*, *France*: years 1 and 2
University of Montreal (UdeM), *Montreal*, *QC*, *Canada*: year 3
GPA at UdeM: 4.12/4.3 **Last GPA at UPMC:** 17.65/20 (1st out of 513 students)

2008 ***Baccalauréat* (French high school degree), Sciences (Biology-Geology)**
Lycée Saint-Sauveur, *Redon*, *France*. Bilingual English-French class.
Final grade: 19.94/20: *summa cum laude* (mention Très Bien)

Research experience

Wet lab </> Bioinformatics

2013–*present* **Ph.D. Project.** Prof. D. P. Matton, *University of Montreal*, *QC*, *Canada*
Wet lab DNA/RNA techniques. Cloning. Protein expression and purification.
Wet lab Plant cell culture. Pollen tube guidance assays. Microfluidics.
Wet lab Microscopy: epifluorescence, confocal, SEM, TEM.
</> Python and R programming. Development of the sequence search tool KAPPA.
</> Transcriptomics: RNA-seq assemblies. Microarray analysis. DGE. Annotation.
</> Proteomics: LC-MS data analysis. Secretomics. Label-free protein quantification.

2016–*present* **International collaboration.** Dr. Johan Edqvist, Linköping University, *Sweden*
Wet lab Protein expression and purification in *Pichia pastoris*.
</> Development of a nsLTP prediction tool and a plant nsLTP database.

June–Aug. 2016 **JSPS Summer Program.** Prof. T. Higashiyama, Nagoya University, *Japan*
Wet lab Development of microfluidic devices for pollen tube guidance assays.
Wet lab Introduction to 2-photon confocal microscopy.

Apr.–May 2014 **International internship.** Prof. W. J. Swanson, Univ. of Washington, *Seattle*, *WA*, *USA*
</> Variant calling (GATK).
</> Molecular evolution and positive selection analysis (codeml).

Apr.–May 2012 **Botanical transect.** Dr. F. Chiarini, Universidad Nacional de Córdoba, *Argentina*
Wet lab Collection of potato individuals in the Andes cordillera.

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Research experience (continued)

Wet lab </> Bioinformatics

Jan.–Aug. 2011 | **Introductory and Summer internships.** Prof. D. P. Matton, Univ. of Montreal, *QC, Canada*
Molecular cloning. Biolistics. Epifluorescence and confocal microscopy.

Jul.–Jun. 2010 | **Undergraduate summer internship.** Prof. C. Bailly, CNRS, UPMC, *Paris, France*
Seed dormancy and germination biology.

Jan. 2009 | **Short-term introductory internship.** Prof. C. Bowler, CNRS, ENS, *Paris, France*
Protein electrophoresis. Immunoprecipitation. Western Blotting.

Other training

2016–2018 | **Online Bioinformatics Specialization.** University of California San Diego, on Coursera
» 6 different courses and a final project: Certificate H528Q2K9KYB6

2016 | **Online Courses in Bioinformatics.** Johns Hopkins University, on Coursera
» *Python for Genomic Data Science*: Certificate XHKWDB4XD7
» *Introduction to Genomic Technologies*: Certificate U88T89XKR2
» *R Programming*: Certificate X8NKEQAUU4

July 2012 | **International seminar in automated functional protein annotation**
BLAST2GO, University of California, Davis, CA, USA

Articles

*Equal contributions

Published | Salminen TA, Eklund DM, **Joly V**, Blomqvist K, Matton DP and Edqvist J. (2018). Deciphering the evolution and development of the cuticle by studying lipid transfer proteins in mosses and liverworts. *Plants*, 7(1), 6. DOI: 10.3390/plants7010006

Joly V and Matton DP. (2015). KAPPA, a simple algorithm for discovery and clustering of proteins defined by a key amino acid pattern. *Bioinformatics*, 31(11), 1716–1723. DOI: 10.1093/bioinformatics/btv047

Liu Y*, **Joly V***, Dorion S, Rivoal J and Matton DP. (2015). The plant ovule secretome: a different view toward pollen-pistil interactions. *Journal of Proteome Research*, 14(11):4763–75. DOI: 10.1021/acs.jproteome.5b00618

Lafleur É*, Kapfer C*, **Joly V**, Liu Y, Tebbji F et coll. (2015). The ScFRK1 MAPK kinase kinase (MAPKKK) from *Solanum chacoense* is involved in embryo sac and pollen development. *Journal of Experimental Botany*, 66(7), 1833–1843. DOI: 10.1093/jxb/eru524

In preparation | **Joly V***, Liu Y* and Matton DP. (2018). *Solanum chacoense* ovule transcriptome reveals developmentally regulated transcripts during female gametophyte genesis and maturation. To be submitted in Aug. 2018.

Joly V*, Tebbji F*, Nantel A and Matton DP. (2018). Pollination type recognition from a distance by the ovary is revealed by a global transcriptomic analysis. To be submitted in Aug. 2018.

Oral presentations

*Speaker ★ Award

2018 | **Joly V** and Matton DP*. *Pre-zygotic barriers in inter-specific crosses: a leading role for small cysteine-rich protein attractant in wild potatoes species ?* Plant Biology 2018, Montreal, QC, Canada, July 14th-18th 2018.

2017 | ★ **Joly V***, Viallet C, Liu Y, Zaro A, Ceriotti F and Matton DP. *Deciphering species-specific pollen tube guidance in* Solanum. CSPB Eastern Regional Meeting, Montreal, QC, Canada, Nov. 24th–25th 2017.

Joly V*, Viallet C, Liu Y and Matton DP. *Reproductive cysteine-rich proteins: key players in* Solanum *speciation?* Plant Biology 2017, Honolulu, HI, USA, June 23rd–28th 2017.

Joly V and Matton DP*. *Pollination type recognition from a distance by the ovary is revealed by a global transcriptomic analysis.* 5th International Symposium on Plant Signaling and Behavior, Matsue, Japan, June 26th – July 1st 2017.

2016 | **Joly V*** and Matton DP. *Deciphering potatoes' words of love.* Invited speaker, Institute for Transformative bio-Molecules (ITbM), Nagoya University, Japan, July 13th 2016.

2015 | ★ **Joly V*** and Matton DP. *Plants' secret words of love: rapid evolution of pollen–pistil recognition proteins drives reproductive isolation of wild potatoes.* Botany 2015, Edmonton, AB, Canada, July 26th–29th 2015.

Joly V* and Matton DP. *Sex among wild potatoes: ladies wear the pants.* Invited speaker, Centre for Structural and Functional Genomics, Concordia University, Montreal, QC, Canada, July 16th 2015.

2014 | **Joly V*** and Matton DP. *Cell-cell communication between gametophytes and reproductive isolation in wild potatoes.* Invited speaker, Dept. of Genome Sciences, University of Washington, Seattle, WA, USA, Apr. 24th 2014.

2013 | ★ **Joly V*** and Matton DP. *Comment éviter les liaisons dangereuses : secrets d'alcôve des pommes de terre.* Journées du Centre SÈVE, Wendake, QC, Canada, Nov. 7th–8th 2013.

Joly V* and Matton DP. *Species-specificity of pollen-pistil interactions in wild potatoes.* Invited speaker, Institute of Genetics, Chinese Academy of Science, Beijing, China, Oct. 24th 2013.

Tebbji F, **Joly V** and Matton DP*. *Pollination type recognition from a distance by the ovary is revealed by a global transcriptomic analysis.* 10th Solanaceae Conference (SOL 2013), Beijing, China, Oct. 13th–17th 2013.

★ **Joly V***, Liu Y and Matton DP. *Divergence des protéines reproductives et maintien des barrières de spéciation chez les pommes de terre sauvages.* 23^{e} Symposium des Sciences biologiques, University of Montreal, Montreal, QC, Canada, Mar. 21st 2013.

2011 | Daigle C*, **Joly V** and Matton DP. *Discovering new MAPK signalling cascades involved in plant reproduction using co-expression analyses and deep transcriptomic sequencing of ovule and pollen tubes.* 7th Canadian Plant Genomics Workshop, Niagara Falls, ON, Canada, Aug. 22nd–25th 2011.

Poster presentations

★ Award

2018 | **Joly V** and Matton DP. *Long-distance relationships: how the ovary perceives different pollination types at a distance.* Plant Biology 2018, Montreal, QC, Canada, July 14th-18th 2018.

2016 | ★ **Joly V**, Liu Y, Dorion S, Rivoal J and Matton DP. *Ovule secretomics reveal the importance of post-transcriptional regulation of reproductive proteins.* Plant Reproduction 2016, Tucson, AZ, USA, March 18th–23rd 2016.

★ **Joly V** and Matton DP. *KAPPA: exploring -omics data to detect and cluster cysteine-rich proteins.* [same conference as above]

2015 | ★ **Joly V** and Matton DP. *KAPPA: meeting the challenge of proteome-wide detection and clustering of cysteine-rich proteins.* High Performance Computing Symposium HPCS 2015, Montreal, QC, Canada, June 17th–19th 2015.

2013 | Liu Y, Bai F, **Joly V** and Matton DP. *Identification of female gametophyte-specific CRPs and isolation of pollen tube guidance attractant(s) in solanaceous species.* Journées du Centre SÈVE, Wendake, QC, Canada, Nov. 7th–8th 2013.

Joly V, Liu Y and Matton DP. *Interspecific divergence of reproductive proteins: the keystone of species-specific fertilization in wild potatoes?* 10th Solanaceae Conference (SOL 2013), Beijing, China, Oct. 13th–17th 2013.

Liu Y, **Joly V** and Matton DP. *Isolation and characterization of the pollen tube attractant from* Solanum chacoense. [same conference as above]

Joly V and Matton DP. *Speciation genes in pollen-pistil interactions.* 9th Canadian Plant Genomics Workshop, Halifax, NS, Canada, Aug. 12th–15th 2013.

Teaching

since 2013
2011–2012 | **Chief teaching assistant**
Teaching assistant
Plant physiology labs (BIO1534), Prof. Jean Rivoal, University of Montreal
» Teaching load: 140 hours per session, about 70 students
» Weekly courses including a lecture (0:45) and a practical session (2:30)
» Supervision of 1–2 teaching assistants

2014–2016 | **Teaching assistant**
Molecular biology labs (BIO3102), Prof. D. P. Matton, University of Montreal
» Teaching load: 140 hours per session, 10-20 students

since 2015 | **Supervisor for international graduate interns**
ELAP (*Emerging Leaders in the Americas Program*) at the University of Montreal
» 4 Ph.D./M.Sc. students supervised so far, for 6-month internships

since 2012 | **Supervisor of undergraduate summer interns**
Summer course “Initiation to research” (BIO2091), University of Montreal
» 6 undergraduate interns supervised so far, for 1 to 4-month projects

Scholarships and Awards

★ Major scholarship

2017
- ★ **Hydro-Québec Excellence Scholarship**
  Hydro-Québec (national electricity company), $25,000
- **Scholarship for Finishing Ph.D. Students (BEFD)**
  Faculty of Graduate and Postdoctoral Studies, University of Montreal, $8,400
- **Jacques-Rousseau Travel Scholarship**
  Plant Biology Research Institute, University of Montreal, $1,500
- **Travel Scholarship** (*Bourse d'appui à la diffusion des résultats de recherche*)
  Faculty of Graduate and Postdoctoral Studies, University of Montreal, $500
- **Honorable mention** for a student oral presentation
  CSPB Eastern Regional Meeting

2016
- ★ **Hydro-Québec Excellence Scholarship**
  Hydro-Québec (national electricity company), $25,000
- ★ **MITACS Globalink Award / JSPS Summer Program**
  MITACS/Japanese Society for the Promotion of Science, ¥550,000
- ★ **Ph.D. Scholarship from the Government of Québec**
  Fonds Québécois de Recherche – Nature et Technologies, $13,333
- **Best Graduate Student Poster Award**
  Frontiers in Plant Reproduction Biology, *Plant Reproduction 2016* Conference, $300
- **Jacques-Rousseau Travel Scholarship**
  Plant Biology Research Institute, University of Montreal, $1,500
- **PARSECS Travel Scholarship**
  FAÉCUM, University of Montreal, $400

2015
- ★ **Catherine-Frédette Excellence Scholarship in Biological Sciences and Neurology**
  Faculty of Graduate and Postdoctoral Studies, University of Montreal, $5,000
- **FBSB Ph.D. Scholarship from the Dept. of Biological Sciences**
  University of Montreal, $1,500
- **President's Award for the Best Student Oral Presentation**
  Canadian Society of Plant Biologists (CSPB), Botany 2015 Conference, $500
- **Best Student Poster Award**
  Compute Canada, High Performance Computing Symposium HPCS 2015, $500
- **G.-H. Duff Travel Scholarship**
  Canadian Society of Plant Biologists (CSPB), $340
- **Jacques-Rousseau Travel Scholarship**
  Plant Biology Research Institute, University of Montreal, $775
- ★ **Excellence Scholarship from the Faculty of Graduate and Postdoctoral Studies**
  University of Montreal, $3,000

2014
- **Pehr-Kalm Scholarship**
  Montreal Botanical Garden, $2,000
- ★ **Travel Scholarship for International Interns**
  Government of Quebec (FRQNT) – Centre SÈVE, $3,815
- **Jacques-Rousseau Travel Scholarship**
  Plant Biology Research Institute, University of Montreal, $1,769

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Scholarships and Awards (continued)

★ Major scholarship

2013 | ★ **Marie-Victorin Excellence Scholarship**
Plant Biology Research Institute, University of Montreal, $3,000

Best Oral Presentation Award
Journées du Centre SÈVE, $300

Jacques-Rousseau Travel Scholarship
Plant Biology Research Institute, University of Montreal, $850

Best Oral Presentation Award
Symposium of Biological Sciences, University of Montreal, $100

2012 | **FBSB M.Sc. Scholarship from the Dept. of Biological Sciences**
University of Montreal, $1,200

★ **Scholarship for Accelerated M.Sc.-to-Ph.D. Transition**
Faculty of Graduate and Postdoctoral Studies, University of Montreal, $14,000

2011 | **Travel Scholarship for Student Exchange in Canada**
French Ministry of Research (CROUS), €1,600

PIL Excellence Scholarship for Student Exchange in Canada
Pierre & Marie Curie University (Paris VI), €1,500

AMIÉ Travel Scholarship for Student Exchange in Canada
French Regional Authority (*Conseil régional*), €2,800

Campus'Trotter Scholarship for Student Exchange in Canada
French Local Authority (*Conseil général*), €700

2010 | **Best B.Sc. Student in the Dept. of Biology**
Pierre & Marie Curie University (UPMC), after the June 2010 final exams

2008 | ★ **Excellence Scholarship for Undergraduate Studies**
French Ministry of Research (CROUS), €5,400

Commitments

Societies

American Society of Plant Biologists (ASPB), since 2016

Canadian Society of Plant Biologists (CSPB), since 2014

International Association of Sexual Plant Reproduction Research (IASPRR), since 2015

Quebec Biological Association (ABQ), 2013–2018

French Botanical Society (SBF), 2010–2011

Students' associations

Naturalist Students' Association *Timarcha*, 2010–2011
Pierre & Marie Curie University (UPMC), Paris, France

Environmental Committee *Éco-école*, 2006–2008
Lycée Saint-Sauveur (≈ high school), Redon, France

Volunteering

Volunteer French teacher for newcomers to Canada, 2015–2016
Community Center *The House of Friendship*, Montreal, Quebec
» 3-hour lessons every week with 10-20 students

Contributor to various online projects:
» Writer and translator for *Wikipedia* (biology-related articles), since 2008
» Volunteer cartographer for *OpenStreetMap*, since 2015
» Herbarium digitalization for the Paris National Museum of Natural History (Project "*Les Herbonautes*"), 2015

Popularization

Radio interview for the science popularization program *Les années lumière* on Radio-Canada. Broadcasted on Apr. 24th 2016.

Popularization article written for *L'ARN messager*, online biology students' journal at the University of Montreal. Published on Dec. 19th 2014.

Other skills

Languages

French, mother tongue
English, fluent (level C1)
Spanish, fluent (level C1)
Italian, intermediate (level B1)
Japanese, beginner

Computing

Programming: mostly Python/BioPython and R. Bases in C and Perl.

Web : HTML/CSS, Jekyll.

Operating systems: Linux (*Ubuntu*, *Fedora*, *CentOS*); Mac OS X ; Windows

Bioinformatics: assemblers (*Trinity*, *CLC*, etc.); read aligners (*Bowtie*, *TopHat*, etc.); sequence search and alignment tools (*BLAST*, etc.); annotators (*BLAST2GO*, *PFAMscan*, *SignalP*, etc.)

Office software: LaTeX, *LibreOffice*/*OpenOffice*, *Microsoft Office*

Image processing: *GIMP*, *Inkscape*, *ImageJ*, *Adobe Photoshop*, *Cytoscape* ; *AxioVision* (*Zeiss* microscope steering program)