

Léa Monge Waleryszak

PhD in Molecular biology in Plant-Microbe interactions

SUMMARY

Early career scientist passionate in protein-protein interactions in the field of plants-pathogens interactions. Experienced in proximity labelling using a biotin ligase as a proximity labelling enzyme. Specialised in Plant-microbe interactions after a bachelor degree in evolution and ecosystems biology allowing for an integrative view of molecular biology. Trained in pedagogy methods for teaching and supervising students. Specific training in ethics and integrity in research. Currently member of the lab committee for equality, diversity and inclusivity in research. Available from spring 2025 for exciting post-doctoral project(s).

CURRENT POSITION

2021-2025: **PhD in Molecular biology in Plant-Microbe interactions**, University of Toulouse, France. Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France. Supervisors: **Dr. Valerie Pacquit & Dr. Laurent Deslandes**. Project : Identification and functional characterization of *A. thaliana* proteins targeted by YopJ family acetyltransferases from *Ralstonia solanacearum* and *Xanthomonas campestris*.

2021-2023: **Assistant lecturer**, Faculty of sciences and engineering, University of Toulouse, France. Practical training and exercises sessions for biology bachelor students. Subjects: Plant physiology, Methods & Technics applied in biology.

EDUCATION

2021 – 2025: **PhD in Plant development, Biotic and non-biotic Interactions**, Faculty of sciences and engineering, University of Toulouse, France.

2019 – 2021: **Master in Plants Adaptation, Development & Improvement in presence of Microorganisms**, Faculty of sciences and engineering, University of Toulouse, France.

2016 – 2019: **Bachelor in Biology of Organisms, Populations & Ecosystems**, Faculty of sciences and engineering, University of Toulouse, France.

RESEARCH INTERSHIPS

2021 - **Master 2 Internship**, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France. Supervisor: **Dr. Andreas Niebel**. Project : Functional study of a long non coding RNA potentially targeted by NF-YA1 and involved in nodule development in *Medicago truncatula*.

2020 - **Master 1 Internship**, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France. Supervisor: **Dr. Andreas Niebel**. Project: Study of an homeodomain transcription factor family (TALEs) in *Medicago truncatula* and other model organisms.

2018 - **Undergraduate Internship**, Laboratory of Evolution & Biological Diversity, Toulouse, France. Supervisor: **Dr. Alexandre Ribéron**. Project: Comparative approach on hydrocarbons production in *Coccinellidae*.

2018 - **Undergraduate Internship**, Laboratory Geosciences & Environment of Toulouse, France. Supervisor: **Dr. Guillaume Dera**. Project: Morphometric study of clade representative organisms.

FUNDINGS

2024: **TULIP Graduate School Mobility fellowship** (2.3k€), Research communication at TSL Summer Conference 2024, Norwich (UK).

2024: **French Society of Phytopathology congress fellowship** (600€), Research communication at TSL Summer Conference 2024, Norwich (UK).

2023: **TULIP Graduate School Mobility fellowship** (3k€), Research communication at the SI-MPMI Congress, Providence (RI, USA).

2022: **FRAIB Young Scientist Grant** (5k€), project: Elucidating XopJ6 proximal proteome with proximity labelling.

2021: **PhD Fellowship** (100k€/an), Doctoral school SEVAB (Sciences of Ecology, Veterinary, Agronomy and Bioengineering), Faculty of sciences and engineering, University of Toulouse, France. Project: Identification and functional characterization of *A. thaliana* proteins targeted by YopJ family acetyltransferases from *Ralstonia solanacearum* and *Xanthomonas campestris*.

TEACHING, SUPERVISION AND MENTORING

2024: **Mentoring of Master 2 Intern**, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan. Project: Characterization of a newly discovered target of PopP2 in *A. thaliana*.

2023: **Co-supervision of Master 1 Intern**, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan. Project: Investigation of PopP2 proximal proteome using *Pseudomonas*-mediated effector delivery in *A. thaliana*.

2021-2023: **Assistant lecturer**, Faculty of sciences and engineering, University of Toulouse, France. Practical training and exercises sessions for biology bachelor students. Subjects: Plant physiology, Methods & Technics applied to biology.

2022: **Assistant lecturer, “Student becoming” University program for 1st year biology students**, Faculty of sciences and engineering, University of Toulouse, France. Subjects: Learning Methodology, Career advisement.

RESEARCH OVERVIEW

From the study of biology at all scales, I specialized in molecular biology in plant-microbe interactions and first focused on the *Medicago-Sinorhizobiome* nitrogen fixing symbiosis. I worked on the characterization of a long non coding RNA (lncRNA), located in a symbiotic island. Phenotyping of KO and OE *Medicago* mutants inoculated with the symbiote revealed a potential role of the lncRNA in nodule organogenesis and development, reinforcing the concept of symbiotic island and further questioning the role of lncRNAs in plant-microbe interactions. To explore another side of plant-microbe interactions, I joined L. Deslandes' team and worked on the *Arabidopsis-Ralstonia* pathosystem. As a PhD student, I developed a proximity labelling approach to identify new targets of the effector PopP2. I also used this approach for the *Xanthomonas* newly discovered effector XopJ6 (close homolog of PopP2). Results were particularly exciting and several putative specific and shared targets are being characterised.

COMMUNICATIONS

PUBLICATION

Monge Waleryszak et al., *in preparation*. “A YopJ acetyltransferase targets ARID proteins involved in the PEAT complex”.

POSTERS

L. Monge Waleryszak*, C. Pichereaux, E. Lauber, L. Noël, V. Pacquit, L. Deslandes (2024). “Unravelling the proximal proteome of two YopJ acetyltransferases from vascular phytopathogenic bacteria”. **Poster session. TSL Summer Conference**, Norwich (United Kingdom).

L. Monge Waleryszak*, C. Pichereaux, E. Lauber, L. Noël, V. Pacquit, L. Deslandes (2023). “Deciphering the proximal proteome of two YopJ family acetyltransferases from two plant vascular pathogenic bacteria”. **Poster session (P-339). IS-MPMI congress**, Providence (Rhode Island, USA). DOI : 10.5281/zenodo.10926538

TALKS

L. Monge Waleryszak*, C. Pichereaux, E. Lauber, L. Noël, V. Pacquit, L. Deslandes (2024). “Unravelling the proximal proteome of two YopJ acetyltransferases from vascular phytopathogenic bacteria”. **Flash talk sessions. TSL Summer Conference**, Norwich (United Kingdom).

L. Monge Waleryszak*, E. Lauber, L. Noël, V. Pacquit, L. Deslandes (2023). “Project Explain: Elucidating XopJ6 proximal proteome with proximity labelling”. **FRAIB young scientist grant winner session. Agrobiosciences, Interactions and Biodiversity Research Federation Forum**, Toulouse (France).

L. Monge Waleryszak*, C. Pichereaux, V. Pacquit, L. Deslandes (2022). “Identifying PopP2 proximal proteome with TurboID” **Molecular Dialogue in Plant biotic interactions Congress** (MoDip INRAE), Montpellier (France).

SKILLS

PROTEIN BIOLOGY

Proximity labelling: *N.benthamiana*, *A. thaliana*

Post-translational modification identification: immunoblotting, LC-MS/MS result analysis

Protein-protein interaction : Y2H, Split-luciferase

GENE EXPRESSION

RNA-seq data analysis

PHENOTYPING

Root Inoculation: IGC, Disease index kinetics, Survival curves

Leaf Infiltration: HR responses

CLONING

Gateway, Golden Gate methods

Bacterial transformation : *A.tumefaciens/rhizogenese*, *R. solanacearum*, *P. fluorescens*

ADDITIONAL TRAINING

Ethics and integrity in scientific research

Scientific **publishing and copyrights**

Pedagogy in teaching

First aid measures

SERVICE

INSTITUTIONAL RESPONSIBILITIES

2021-2024: **CNRS Corresponding Agent for Equality and Diversity**, National Centre for Scientific Research delegation of west-Occitania, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France.

2021-2024: **Member of the Young Scientific Association**, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France.

OUTREACH

2023: **European Researchers Night 2023**, Cité de l'espace, Toulouse, France.

MEMBERSHIP

2021-2025: **French Society of Phytopathology (SFP)**

2023-2025: **International society of Molecular plant-microbe interactions (SI-MPMI)**

REFERENCES

Dr. Laurent Deslandes

PhD co-supervisor and Group Leader, team Dynamics of the Immune Response and Climate Change Adaptation, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France.

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Dr. Valerie Pacquit

PhD co-supervisor and Senior lecturer, team Dynamics of the Immune Response and Climate Change Adaptation, Laboratory of Plant-Microbe-Environment Interactions, INRAE, Auzeville-Tolosan, France.

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Dr. Fabien Mounet

Head of the "Plant physiology" teaching department at the University of Toulouse and Group Leader, team Regulation and dynamic of wood formation, Laboratory of Research in Plant Sciences, , INRAE, Auzeville-Tolosan, France.

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