Since the last newsletter we learned that our evaluation by an international jury and the ANR lead to the extension of TULIP until 2025. This is a fantastic opportunity for the whole TULIP consortium to continue building an interdisciplinary scientific community in agrobioscience and ecology, from infra individual to individual, population and ecosystemic biology in Occitany. In line with this dynamic, we submitted a project in the frame of the “Ecole de Recherche Universitaire” call for proposals, entitled TULIP-GSR (Graduate School of Research) and constituting the pedagogical extension of TULIP.

Importantly, we recently attracted two promising Junior scientists via our “Attractiveness Package” tool: Aurélien Carlier & Grégoire Freschet are currently joining TULIP partner labs. They are interviewed below. Added to the previous attractiveness operations, this means that we now have successfully attracted 2 senior scientists of international fame and 5 Junior scientists who considerably stimulated our internal dynamics. As all TULIP actions, this attractiveness facet of TULIP will continue during the next term of TULIP until 2025.

In parallel, all other TULIP programs continued to stimulate our activities, with TULIP Prestige seminars and Visiting scientists staying in one or more TULIP labs for longer periods. Furthermore, our innovation call supported the Plantsys project involving TULIP researchers and the iMean startup created by former temporary TULIP researchers. Our InterLabEx call for projects opened the way to five cooperative projects with members of other labexes, and collectively we kept on publishing important papers in journals of the highest scientific standard. In terms of TULIP scientific life, the TULIP annual meeting was held on May 15th and we are fine-tuning the organization of our 8th summer school from 6 to 12 July at Ramonjuan in the French Pyrenees.

We hope you will enjoy reading this newsletter.

Etienne Danchin & Dominique Roby

Headline News

Grégoire Freschet joins TULIP to explore the relationship between biodiversity and ecosystem functioning
Grégoire Freschet recently obtained a "Junior" package from TULIP, an attractiveness project prepared for many months by the LabEx team and the Moulis Theoretical and Experimental Ecology Station (UMR 5321 CNRS / UPS). We take this opportunity to talk about his research on the role of plant diversity and their symbionts in the stability of ecosystem functioning at the interface between plant functional biology and ecology.

A « Junior Package » for Aurélien Carlier and his research on foliar symbiosis

Specialist of the bacterial-host interaction at the level of nodular symbiosis, Aurélien Carlier will join the LIPM (UMR CNRS / INRA) in September 2019. Accompanied in his installation by a TULIP "Junior Package", he will be able to create a team dedicated to symbiotic associations in the phyllosphere.

Research Highlights

Modularity and predicted functions of the global sponge–microbiome network

Defining the organization of networks of interaction between species and revealing the processes at the origin of their assembly is fundamental to understand biodiversity, the stability of communities and the functioning of ecosystems. This is the challenge tackled by researchers at the Station of Theoretical and Experimental Ecology of Moulis (UMR CNRS / UPS). They presented the assembly network of the marine sponge microbiome in an article published in Nature Communications.

The genome dynamics of rice revealed by sequencing 3,000 varieties

The Genome and Plant Development Laboratory (LGDP, UMR 5096 CNRS/UPVD), published in Nature Communications an article describing the transpositional dynamics of rice based on the analysis of 3,000 genomes. The authors show that transposable elements (mobile DNA in the genome) contribute significantly to the diversification of the species genome.

Understanding adaptive mechanisms modulating plant assemblages

Despite the importance of plant-plant interactions in plant community dynamics and crop yield, our understanding of the adaptive genetics underlying these interactions remains limited. To fill this gap, researchers from the LIPM (UMR CNRS / INRA) mapped genomic regions involved in the in situ interaction between a model plant and its neighbors.
With a little help from the neighbours: intercellular cooperation in a fungal plant pathogen facilitates host colonization

Some bacterial pathogens are known to rely on cooperation between individuals and species for efficient colonization of their host and the onset of disease. LIPM researchers (UMR INRA / CNRS) examined in this PNAS article the regulation of genes in cells from different parts of a fungal plant pathogen and found evidence for cooperation between these fungal cells. They further show that cooperation between fungal cells is particularly important for the efficient colonization of resistant plants. These findings establish cooperation as a mechanism supporting disease caused by fungal pathogens that should be taken into account in the design of disease management strategies.

Lateral transfers of functional genes among grasses

Guillaume Besnard from the Evolution and Biological Diversity Laboratory (EDB UMR UPS / CNRS / IRD) in collaboration with a team from the University of Sheffield published in PNAS an article documenting the existence of many lateral gene transfers of long DNA fragments among grasses.

Studying the remodeling of a cell wall domain during seed development

During the development of the seed in *Arabidopsis*, local loosening of a cell wall domain is required for proper function later during the imbibition of the dry seed. In this article in *Developmental Cell*, researchers at the LRSV (UMR CNRS / UPS) expose the molecular actors that govern the local remodeling of this wall domain.

Habitat loss can destabilize ecosystems

A new international study published on May 24 in *Nature Communications* shows the consequences for biodiversity of the loss of natural habitats. The study led by researchers from the SETE (UMR CNRS/UPS) suggests that biological communities respond to the destruction of their habitats prior to species extinctions. It shows that the way human activities destroy habitat for biodiversity is a key factor to understanding the effects of that loss on the stability and functioning of biological communities.

Can we generalize the determinants of dispersal across species?

Individuals disperse according to the resources and constraints of their current habitat patch. In turns, dispersal movements affect the local and regional stability of biological communities. This is revealed by seven parallel experiments concerning 21 taxa recently published in *Nature Ecology & Evolution*. 
A protein complex required for polar growth of rhizobial infection

The work of LIPM researchers in the model legume *M. truncatula* in collaboration with researchers from the John Innes Center (UK) and from the CAS-JIC Center of Excellence for Plant and Microbial Science (China) led to the publication in Nature Communications of an article characterizing a novel protein complex that is needed for polar growth of the infection threads and thus for the colonization of the nodules by the bacteria.

LabEx’s life & careers

CNRS Bronze Medal for Pierre-Marc Delaux, a LRSV researcher

Pierre-Marc Delaux, a LRSV researcher (UMR UPS / CNRS) member of TULIP will receive the bronze medal of CNRS Occitanie West Talents.

IHPE key projects are revealed

Following the integration of the Perpignan’s IHPE into TULIP, we now put online their key projects that will identify it within the TULIP Major Themes of Research (MTRs). You will find them on the dedicated page of the website.

Innovation & Partnership

A new project supported by the TULIP 2018/2019 Innovation Call

The PLANTSYS project led by Fabrice Roux (LIPM) and Rémi Peyraud (iMean startup) will be funded up to 50k€ over 12 months as decided by the LabEx Innovation Committee on February 20th.

5 InterLabEx projects funded by TULIP!

Five projects submitted in response to the interLabEx call of project that we launched in 2018 will be funded by the LabEx TULIP alone.
Ongoing calls for projects

"Visiting scientists": the second call of this year will be launched in autumn 2019. Junior/Senior Packages operations are still available, do not hesitate to contact us if you have a proposal.

Training & Education

Our 2019 Summer School starts in a week!

The TULIP summer school will take place from 6 to 12 July 2019 in the French Pyrenees, in a beautiful setting at the foot of the Pic du Midi de Bigorre. Receiving this year 23 master and PhD students from all over the world, we are developing for this eighth edition a special program on the occasion of the last edition of the current mandate of the LabEx.

Upcoming scientific event

Niko Geldner « Prestige » seminar

Niko Geldner will give a seminar « Root damage and immune responses at cellular resolution » on Friday, September 6 at 11:00 am in the Marc-Ridet conference room.