

## **INTERNSHIP PROPOSAL**

**Institute and Group:** BIG, group LPCV

**Supervisor:** Robert Blanvillain

**Phone:** 0438783484

**Email:** [Robert.BLANVILLAIN@cea.fr](mailto:Robert.BLANVILLAIN@cea.fr)

**Research project title:** Isolation and study of the PAP nuclear complex

**5 Keywords to describe the project:** Photomorphogenesis - RNA polymerase - Chloroplast - Nuclear encoded protein - Biochemistry

### **Description of the project (aims, experimental techniques, recommended background):**

Photosynthesis depends on nucleus-and-plastid gene expression. The plastid-encoded RNA polymerase (PEP) contains nuclear-encoded proteins (PAPs) that are essential for its function since their alteration leads to albino plants incapable of photosynthesis. Therefore the PEP-PAP complex has been proposed as the bottleneck of chloroplast biogenesis. We discovered that half of the PAPs are able to localize both in plastids and in the nucleus where a functional complex could also form. The master student will be involved in detecting and isolating the PAP nuclear complex in order to determine its composition and function as well as its structure in collaboration with a team at IBS. The candidate should preferably have background in molecular genetics and biochemistry such as protein localization using fluorescent markers and protein-complex purification.

### **Relevant publications of the team:**

- Pfannschmidt T, Blanvillain R, Merendino L, Courtois F, Chevalier F, Liebers M, Grüber B, Hommel E, Lerbs-Mache S. Plastid RNA polymerases: orchestration of enzymes with different evolutionary origins controls chloroplast biogenesis during the plant life cycle. *J Exp Bot.* 2015 Sep 9. (Review).30(18), 3812-22.

- Steiner S, Schroter Y., Pfalz J., & Pfannschmidt T. (2011) Identification of Essential Subunits in the Plastid-Encoded RNA Polymerase Complex Reveals Building Blocks for Proper Plastid Development. *Plant Phys.* 157: 1-13