Postdoc project:

Structure – function studies of mTERF9 in chloroplast ribosomes

Supervisor(s): Chloe Zubieta
Host laboratory (UMR): UMR 5168 CEA-CNRS-Univ. Grenoble Alpes – UMR 1417 INRAE
Host laboratory website: https://www.lpcv.fr/
Host team/group: STRUCDEV
Contact: chloe.zubieta@cea.fr
How to apply:
https://emploi.cnrs.fr/Offres/CDD/UMR5168-CHLZUB-004/Default.aspx?lang=EN
Application deadline: 28/04/2025

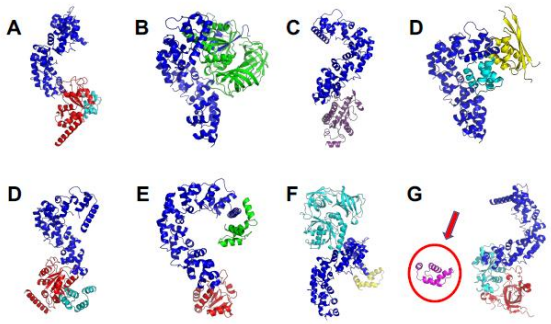

Figure 1: **Examples of predicted multimeric mTerf complexes:** A-G. The folded regions of mTERF9 are shown in dark blue with protein partners colored uniquely.

Keywords: Electron microscopy, protein complexes, ribosomes, chloroplasts

Project summary: applications are invited for a 2-year postdoctoral position in the StrucDev team at the Laboratory of Plant Cellular Physiology (LPCV). The researcher will be part of the ANR Terfing project. The project will study the role of MTERF9, a member of the mitochondrial transcription termination factor family, which has recently been shown to play a role in chloroplast ribosomal stability and/or assembly. MTERF9 is predicted to fold into a solenoid structure with a disordered domain implicated in phase separation. It acts as a scaffold protein and has been shown by our collaborators to interact with different ribosomal proteins and 16S rRNA. The candidate will use artificial intelligence-based structure prediction tools to examine different MTERF9-containing complexes based on mass spectrometry and yeast 2-hybrid data, recombinantly express and purify MTERF9 and its protein partner(s) and structurally characterize the complexes using X-ray crystallography and/or electron microscopy. Chloroplast ribosomes may also be isolated and tested for interaction with MTERF9 for structural studies. This project will be carried out in collaboration with team members (engineers and researchers) and K. Hammani, IBMP, Strasbourg. For more information on the project topic, see https://doi.org/10.1093/nar/gkaa1244).

Principal activities: Express and purify mTERF9 and its interaction partners.
Utilize structure prediction methods to identify the most likely mTERF9 protein complexes.
Determine the structure of mTERF9-containing complexes using X-ray crystallography and/or electron microscopy. Isolate chloroplasts and purify chloroplast ribosomes for structural studies.

Skills/Qualifications: Doctorate in a relevant biological discipline (structural biology, biophysics, biochemistry, plant biology). Strong background and research experience in structural biology, biochemistry, and molecular biology techniques. Excellent written and oral communication skills and proficiency in English are required. French is optional. The candidate must have good interpersonal skills and be able to work independently, but also interact well within an international research group.

Work context
The researcher will be employed by the CNRS and will be part of the StrucDev team at the Laboratory of Plant Cellular and Vegetal Physiology (UMR 5168 - CNRS - CEA - Univ. Grenoble Alpes - INRAe) in Grenoble (France). The team's projects focus on the atomic and molecular determinants of protein function in plant development and how environmental conditions affect the structure and activity of different transcription factors, transcriptional and translational regulators, and scaffold proteins. This position is part of a collaborative project funded by an ANR grant. Collaborations are ongoing with national and international partners.