Localization and Structure of Plastidial-Encoded Polymerase Sub-units

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- The elucidation of these protein structures allows a novel vision into the world of chloroplast biogenesis, proving firsthand the function of each specific protein as never seen before.

- Advanced comprehension and spoken fluency of the French Language.

- My abstract thinking abilities have been greatly enhanced, with an emphasis on the application of my scientific knowledge on the problem solving aspects of both basic and applied science. In addition the interlinguistical aspect of working within an international lab has incited me to reach a complete understanding of a topic in order to be able to explain it to a nonnative speaker.

Future Directions

- Microbiology-Molecular Genetics – Biochemistry - Cell and Molecular Biology-Chloroplast Biogenesis

Goals

- To elucidate the structure of PAP3, PAP5, PAP 7, PAP8, PAP12
- To observe interactions between PAP Proteins through the use of Split YFP

Methods

- Primer Design,
- Fluorescence Microscopy
- Biochemical Analysis Techniques (Nucleic Acid gels)
- Bimolecular Fluorescence Complementation
- Gene Delivery Systems
- Genetic Maleability
- Cloning

Applicable Fields:

- physiology microscopy, microbiology, proteomics, botany, genomics, biochemistry.

- Innovation through characterization

The elucidation of these protein structures allows a novel vision into the world of chloroplast biogenesis, proving firsthand the function of each specific protein as never seen before. For society to further understand the main life sustaining organisms through their advanced metabolic capacity will lead to unlocking its exceptional potential.

+ NcoI/NotI
+ XhoI/XbaI
+ pEZS
+ cTP
+ p35S
+ pPGA09
+ pKP16
+ pRB1741
+ pET21d
- pAG09
- pKP16
- pRB1741
- pET21d
- pAG09
- pKP16
- pRB1741
- pET21d

A ST-PCR was used to isolate our genes of interest from WT arabidopsis thaliana, these primers were utilized to then clone our orfs into split YFP expression vectors. We will then test protein to protein interactions through particle gun bombardment.

As demonstrated through this example of a PAP8 mutant there is an easily observable phenotypic difference between WT and mutant organors. In addition we notice a strict adherence to the typical mendelian ratios of Genetics.

- The construct designed in order to be able to observe the subcellular localization of PAP7 and PAP8, a ubiquitous 35s promotor followed by our PAP7orf

The application of our plasmid with the aforementioned construct through particle gun bombardment of onion cells. It is observable that PAP7 and PAP8 seems to reach the nucleus due to the strong signal observable that PAP7 and PAP8 seems to reach the nucleus due to the strong signal.