

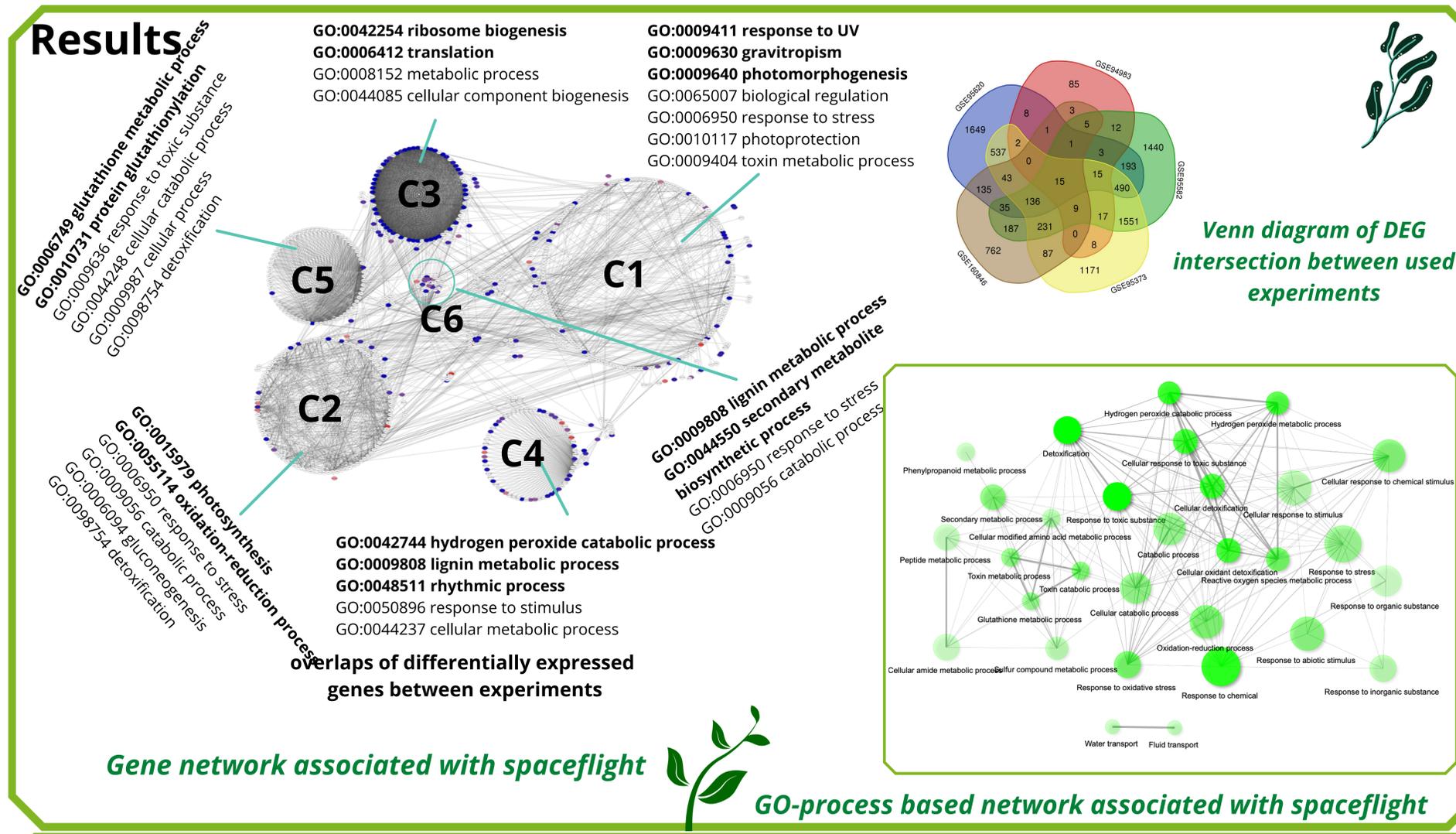
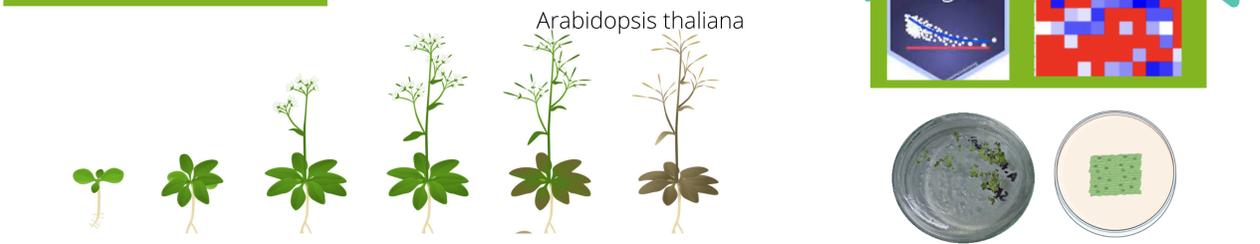
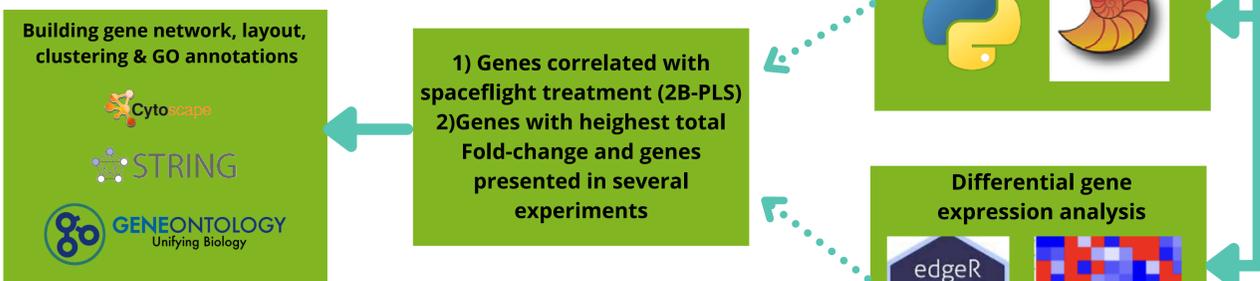
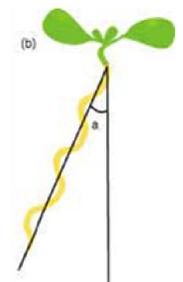
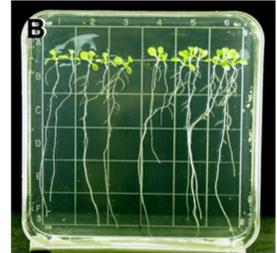
PR06 Green Cosmonauts: Predicting Regulatory Pathways Determining the Response to Space Flight Conditions in Plants

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Introduction

Space flight conditions significantly affect living organisms. Due to the psychological importance and physical well-being of the astronauts, it becomes necessary to study mechanisms of plant response to space flight conditions. The aim of this project is to find the connection between gene expression change and the peculiarities of spaceflight conditions.



Conclusions

Spaceflight conditions trigger a number of various physiological responses. Behind these changes lies a complex system of gene expression regulation changes, and by characterizing these changes we might be able to better understand what happens to plants in space on morphological and physiological scales. **Our analysis of gene expression regulation during spaceflight shows that plants alter their metabolism in space, meanwhile adapting to many spaceflight-specific stressors, such as microgravity and intense radiation.** In these conditions, plant cells make the changes in expression necessary to reduce damage induced by harmful physical condition, as well as chemical agents that could potentially be toxic. As a main results of our metaanalysis, we reconstructed the **gene network related to spaceflight conditions (which contains 766 proteins classified into 5 main clusters and 4430 interactions between them)** and **GO-process based graph which describes the complexity of spaceflight treatment on molecular level.**