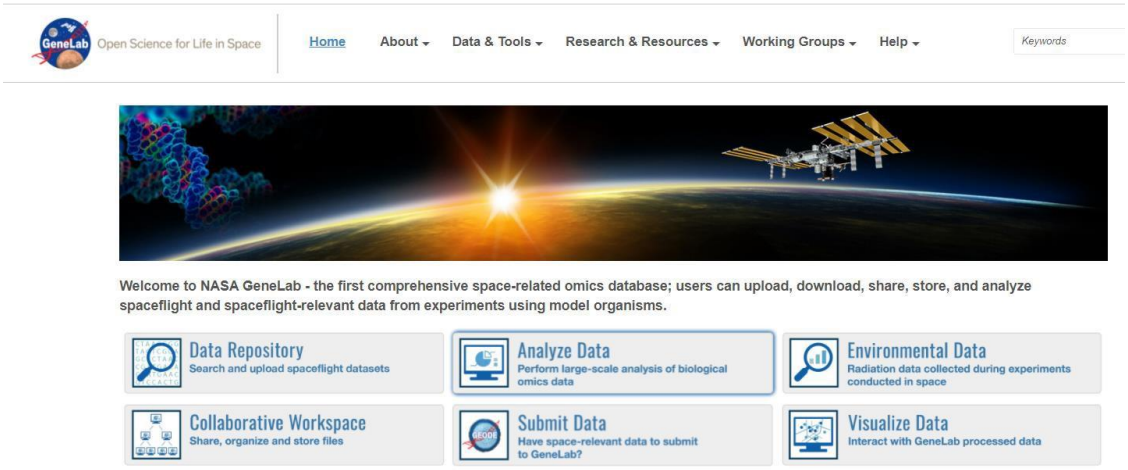
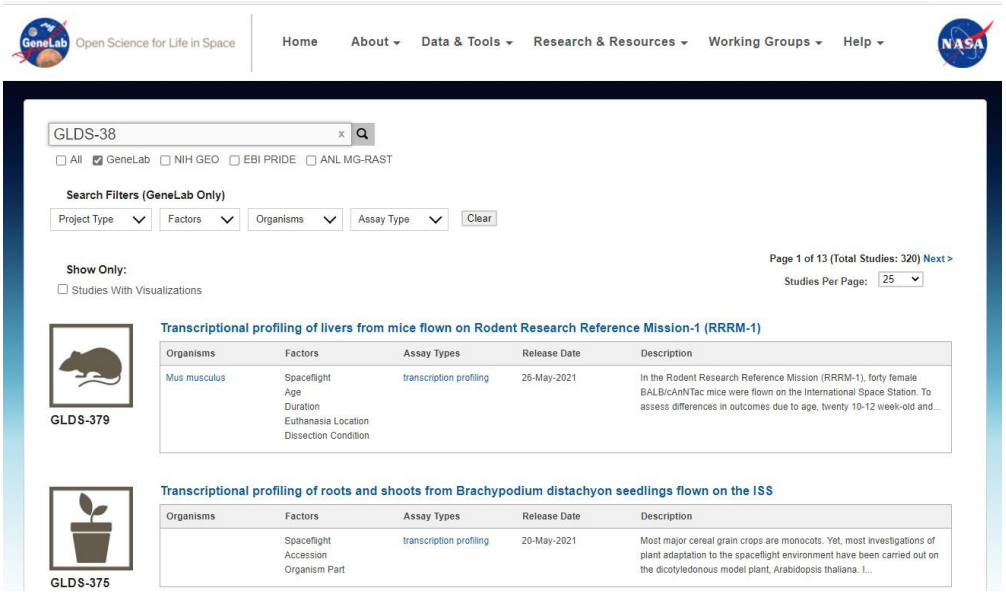
Activity 3: Metadata Analysis using GLDS-38

Curricular Unit
Teacher Materials

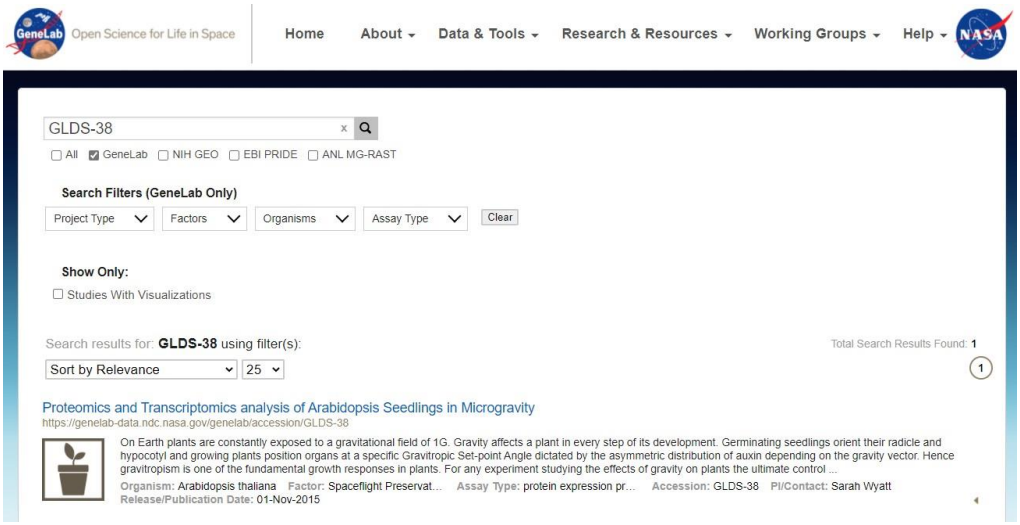
Instructions: Navigate a web browser to [NASA GeneLab: Open Science for Life in Space]



Once on the site, click on **Data Repository** and search for **GLDS-38**.



This will bring you to the study that we will be analyzing in this curricular unit**,** Proteomics andTranscriptomics analysis of Arabidopsis Seedlings in Microgravity.



Click on the hyperlink that corresponds to the study "Proteomics and Transcriptomicsanalysis of Arabidopsis Seedlings in Microgravity**"**.

1. According to the **Study Description**, what is one of the fundamental growth responses in plants? What is the ultimate control for any experiment studyingthe effects of gravity in space?

   Gravitropism

   Microgravity in space

2. What is the model organism for this study?

   Arabidopsis thaliana

3. In the **Samples** section under **Factor Value**, what two groups are being compared in the study? What is being compared?

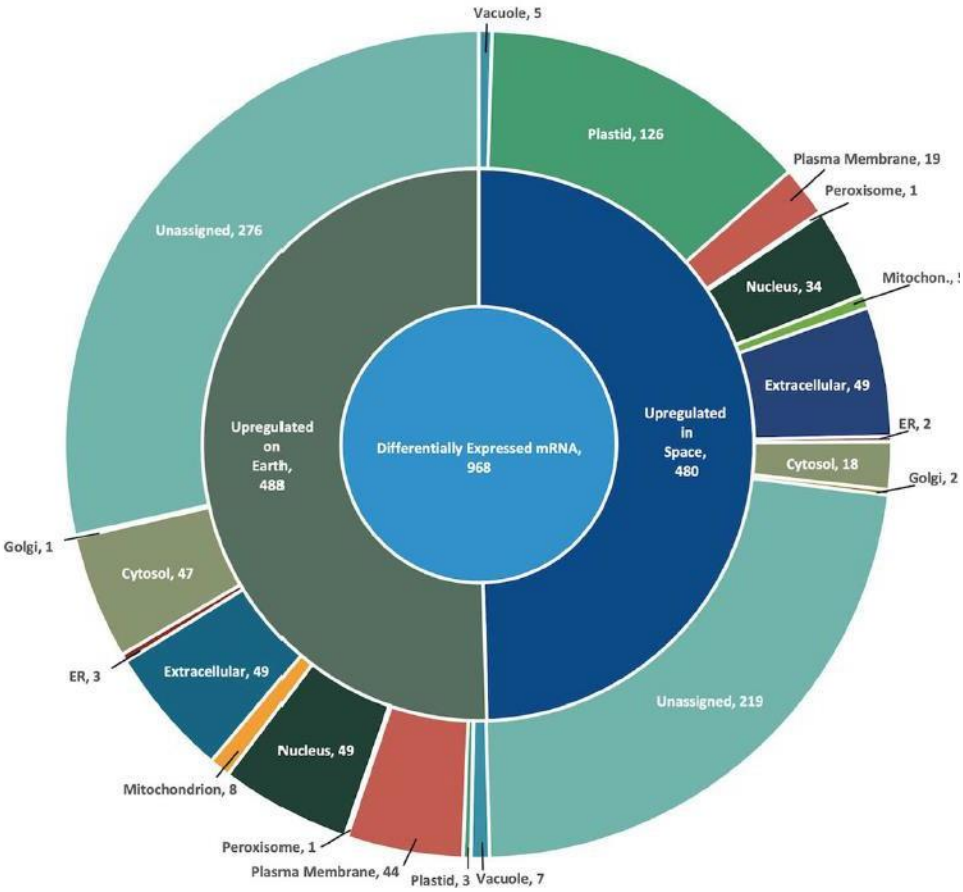
   Possible Answers: Spaceflight and ground control (conditions) OR RNAlater or liquid nitrogen (preservation method)

4. Under the **Protocol** section, how was nucleic acid extracted? What platform wasused to sequence it?

   Extracted using RNeasy Plant mini extraction kit

   Sequenced using Illumina HiSeq 2500

5. Look at the figure below.



The figure shows an overview of transcripts differentially expressed duringspaceflight. How do the upregulated in space compare to those on earth?

Answers will vary
Example: More plastid genes are upregulated in space than on Earth

AUTHOR
Monique Salazar, iMater Preparatory Academy (Hialeah, FL)
Edited by GL4HS Staff