Abstract

NASA’s GeneLab aims to greatly increase the number of scientists that are using data from space biology investigations onboard ISS, by leveraging existing capabilities and data sharing. GeneLab will provide an integrated research environment for generating, processing, and sharing the results of space biology investigations. NASA will conduct data quality control tasks and format raw data returned from the GeneLab project to ensure that the datasets are usable by the scientific community. The GeneLab project will be an integrated repository and bioinformatics data system for analysis and modeling of space biology data. GeneLab will support a collaborative research environment for spaceflight studies that will closely resemble those conducted on Earth. The GeneLab project will follow four distinct phases of implementation. Each phase of the project will be marked by increasing capability and broader data sets available through GeneLab. The final phase of the project will achieve full implementation of GeneLab.

Goals for GeneLab

GeneLab supports goals of NASA’s Space Life and Physical Sciences Division and the International Space Station (ISS) Program (figure 1). The GeneLab project will follow four distinct phases of implementation. Each phase of the project will be marked by increasing capability and broader data sets available through GeneLab. The final phase of the project will achieve full implementation of GeneLab.

Flight Research Agreements

GeneLab will acquire space-flown samples (and/or data), process the samples for data generation, and employ an open-access model to expand the scientific audience. Table 1. 2014-15 missions that will provide tissues and data for GeneLab. GeneLab data will be produced in addition to the data returned for a specific principal investigator-led mission experiment.

Expected Impact and Benefits

- Maximize Return On Investment (ROI) for Life Sciences Flight Experiments and ISS Utilization
- Maximize Use of Modern Biomedical Tools and Techniques
- Create a PI-Multiplier Effect for Space Biology
- Speed the Pathway to Discovery and Application
- Leverage both NASA and External Partner Strengths

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Visit our website at: http://genelab.nasa.gov/