What's New in GeneLab

Release 2.0

September 29, 2017

GeneLab introduces new features and enhancements to further extend the capabilities of the GeneLab Data Systems (GLDS) platform. In addition to new features, GeneLab has added user manuals covering how to use and navigate: the GeneLab Data System, the GeneLab configured ISAcreator tool, and the data submission process. The new data submission process will allow PI’s or submitters to receive a GLDS # and link pre-publication.

New features in this release include enhanced search, data federation, new metadata tabbed user interfaces, data visualization dashboard, and a collaborative workspace.

New search capabilities
- Google-like, full text search (e.g., boolean, wildcards, string literals, etc.)
- Customizable search ranking & relevancy software algorithms
- Frequently used words and terms auto-correct spelling lookup feature
- Filter search on GeneLab database using key fields, such as Project Type, Factors, Organisms, and Assay Types

Data federation
GeneLab has integrated, commonly termed as data federation, with multiple heterogeneous external databases. Users can search across multiple databases, including GeneLab.

GeneLab is currently federated with:
- The National Institutes of Health (NIH) Gene Expression Omnibus (GEO)
- The European Bioinformatics Institute (EBI) Proteomics Identification (PRIDE)
- The Argonne National Laboratory (ANL) Metagenomics Rapid Annotations using Subsystems Technology (MG-RAST)

Data Visualization
The Data Visualization Dashboard provides a visual display of GeneLab data sets associated by Organism(s) and Assay type(s). Links are highlighted by clicking on the nodes: Organisms, GLDS Numbers and/or Assay Types.

New Tabbed Metadata User Interfaces (UI)
GeneLab uses the ISAcreator tool to define an experimental study and store the metadata. Using the ISATAB configuration, study metadata is now viewable by a customized multiple tabbed user interface. Click on each tab to navigate through the different sections: Description, Protocols, Sample and Assay Tables, Publications and Study Files. To view metadata and download data files, visit the GeneLab Data Repository.
Collaborative Workspace
Leveraging off the GenomeSpace platform, GeneLab has customized a workspace for file sharing and access to data analysis tools. To access the workspace, first-time users will need to create an account.

Key capabilities:
- Share data and results with collaborators
- Import other publicly available data sources using convenient “Import from URL” feature
- Drag & drop files and documents from your desktop computer to workspace folders
- User and Group defined security access controls with Private, Shared, and Public folders
- View and navigate between GeneLab data listing and workspace environment
- Default 30 GB quota of storage space per user. Additional storage space can be requested to GeneLab team.

Tools Integration with Collaborative Workspace
As the first set of many tools to come, GeneLab has integrated convenient data synchronization capabilities between the latest open-sourced Java-based ISAcreator version 1.7.10 desktop tool and GeneLab collaborative workspace for initial streamlining data curation and processing operations.

Other data analysis integration effort is ongoing as additional analysis tools will be available in future releases.

Integrated Search and Federation APIs
GeneLab provides a RESTful Application Programming Interface (API) to its full-text searches, which provides the same functionality available through the GeneLab website. The API provides a choice of standardized web output formats, such as JavaScript Object Notation (JSON) or Hyper Text Markup Language (HTML), for the search results.