Trackster
(The Galaxy Track Browser)

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Why another genome browser?

**Galaxy**
- tool integration framework
- heavy focus on usability
- sharing, publication framework

**Genome Browser**
- physical depiction of data
- visually identify correlations
- find interesting regions, features

**Trackster**
Trackster

User-friendly, Web-based visualization for NGS

Integrates visualization and analysis

Can share & publish working visualizations
NGS datasets on the Web
So. Much. Data.

NGS datasets are often GBs, so cannot load them all at once

Need to load data on demand
  * IGV and Savant on the desktop...
    ...and now Trackster on the Web
Viewing and Navigating
Viewing and Navigating

Trackster automatically indexes via Galaxy

Complete customization
• custom builds!

Continuous and smooth scrolling
Integrating Analysis and Visualization
NGS Analysis Challenges

Complex tools, parameter dependent

Analysis and visualization not integrated

Want to be able to experiment
Experimentation in Trackster
Experimentation in Trackster

Tools integrated in visualization environment

Dynamically filter:
- visually identify features that match ranges
- on whole dataset

Run tools:
- quickly on visible region
- on whole dataset
Compatible Tools

Filtering tools
Genomic interval tools
Modified Cufflinks

Key requirement:
- local model
- access to global model
Your Tools with Trackster

local model
• ready to go!

global model
• store and retrieve global model
• support filtering -- decorate data with attributes
Sharing and Publishing
Visualization as Communication

Communication paramount

- biomedical/genomics research is big
- majority of publications use visualization

“A picture is worth a 1000 words.”

* A fully-interactive visualization is worth many more words
Sharing Trackster Visualizations
Sharing Trackster Visualizations

Uses Galaxy’s sharing/publication framework

Via URL or can be embedded in a Page

Visualization is fully functional
Looking Forward

Scalability
- Very large datasets
- many tracks at once

General visual interface for running tools
- alternative way to view Galaxy history
- easier experimentation
Trackster Summary

User-friendly, Web-based visualizations for NGS

Experimentation with tools, parameter values to improve analyses

Can share & publish visualizations to the Web
Thanks! Questions?

http://main.g2.bx.psu.edu/visualization/list_published

http://main.g2.bx.psu.edu/u/jeremy/v/gcc2011-1-viewing-and-navigating

http://main.g2.bx.psu.edu/u/jeremy/v/gcc2011-2-dynamic-filtering

http://main.g2.bx.psu.edu/u/jeremy/v/gcc2011-3-running-tools