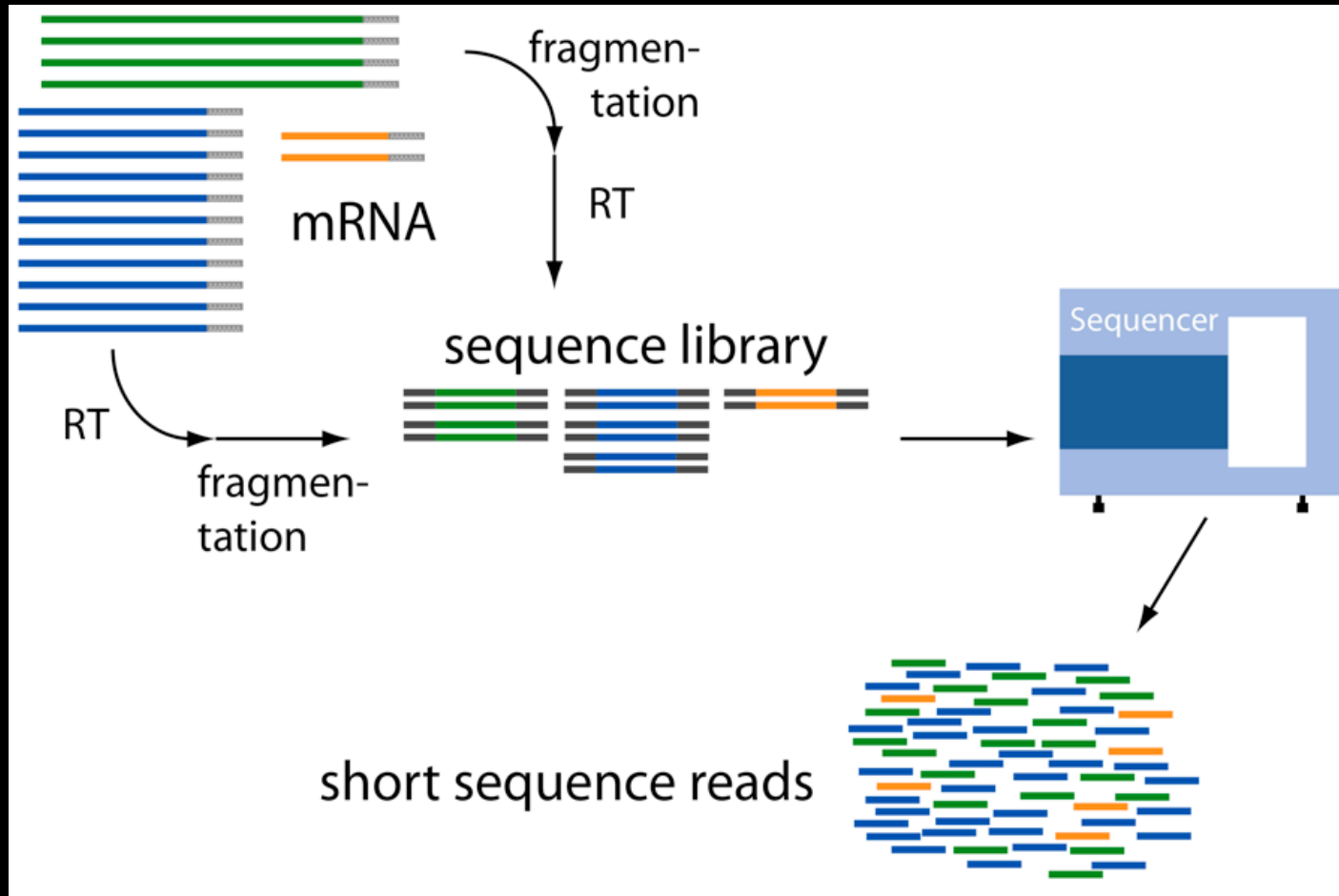


The Galaxy Track Browser “Trackster”

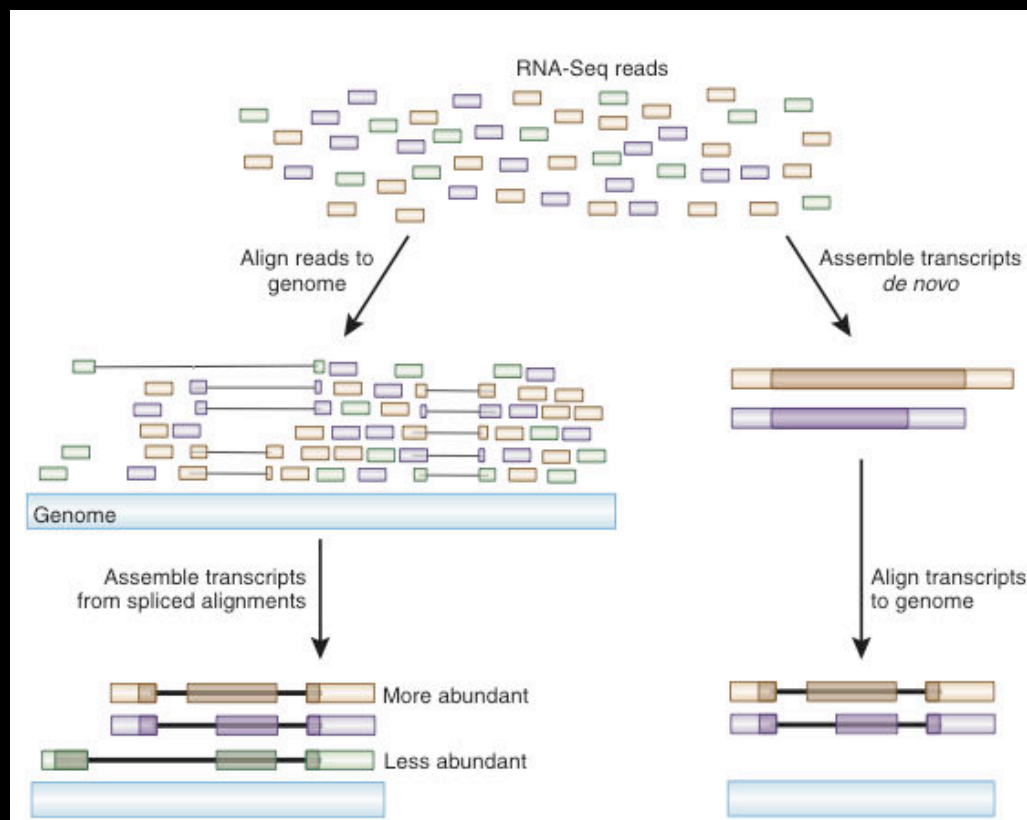
Jeremy Goecks, Kanwei Li, Dave
Clements, The Galaxy Team, and
James Taylor

“Next-Generation” Sequencing (NGS) Genomic Data



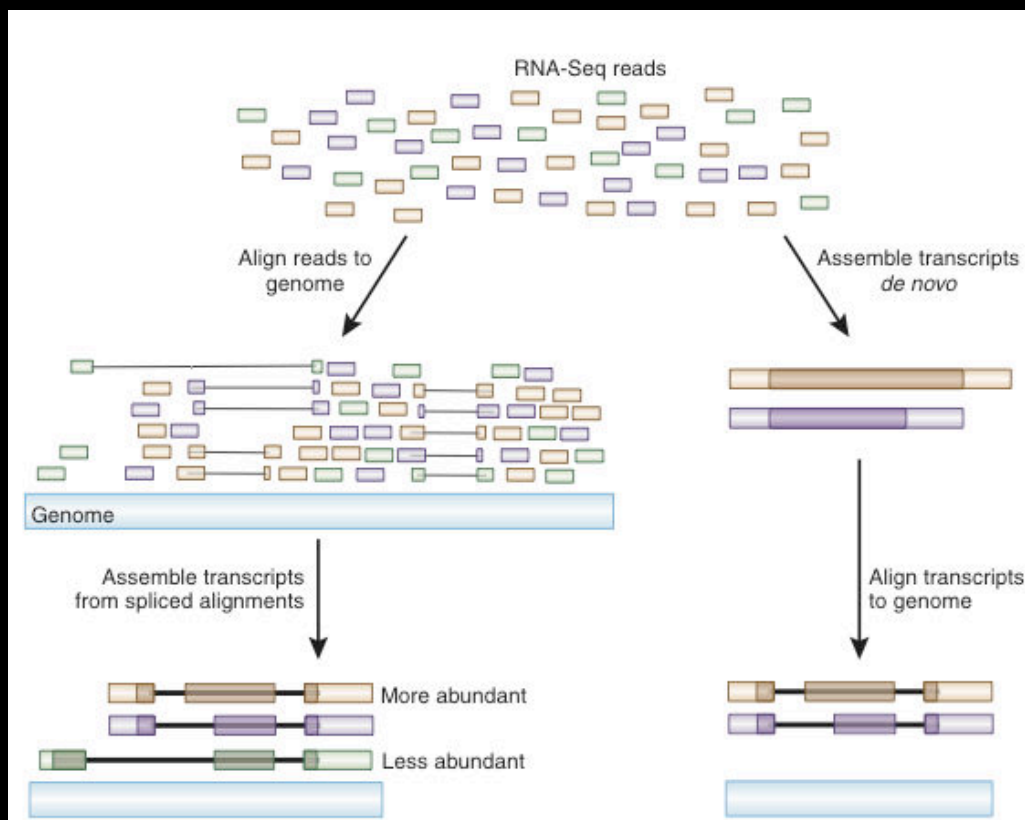
<http://www.fml.tuebingen.mpg.de/raetsch/members/research/transcriptomics>

An NGS Workflow



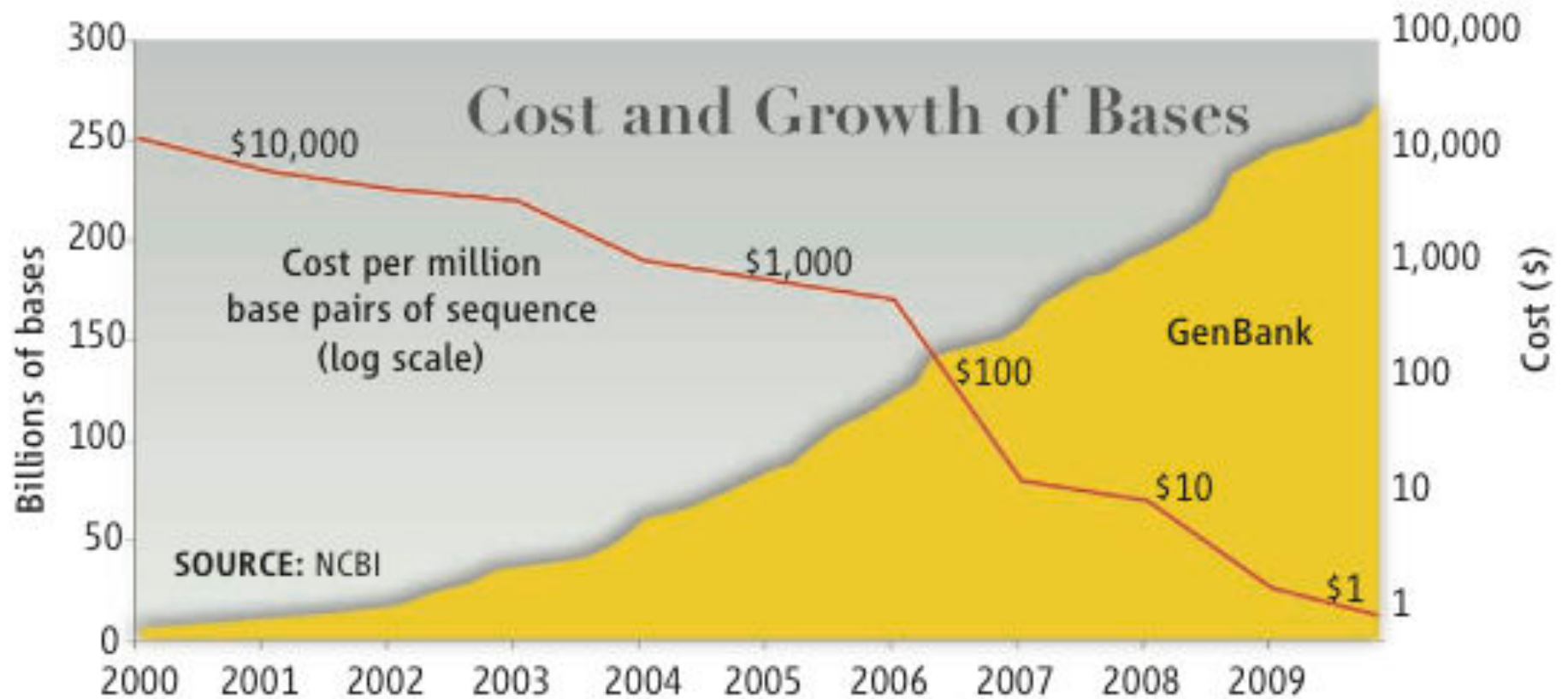
1. Map reads
2. Aggregate reads to features
3. Quantitate features
4. Understand features, quantitation in genome context

An NGS Workflow

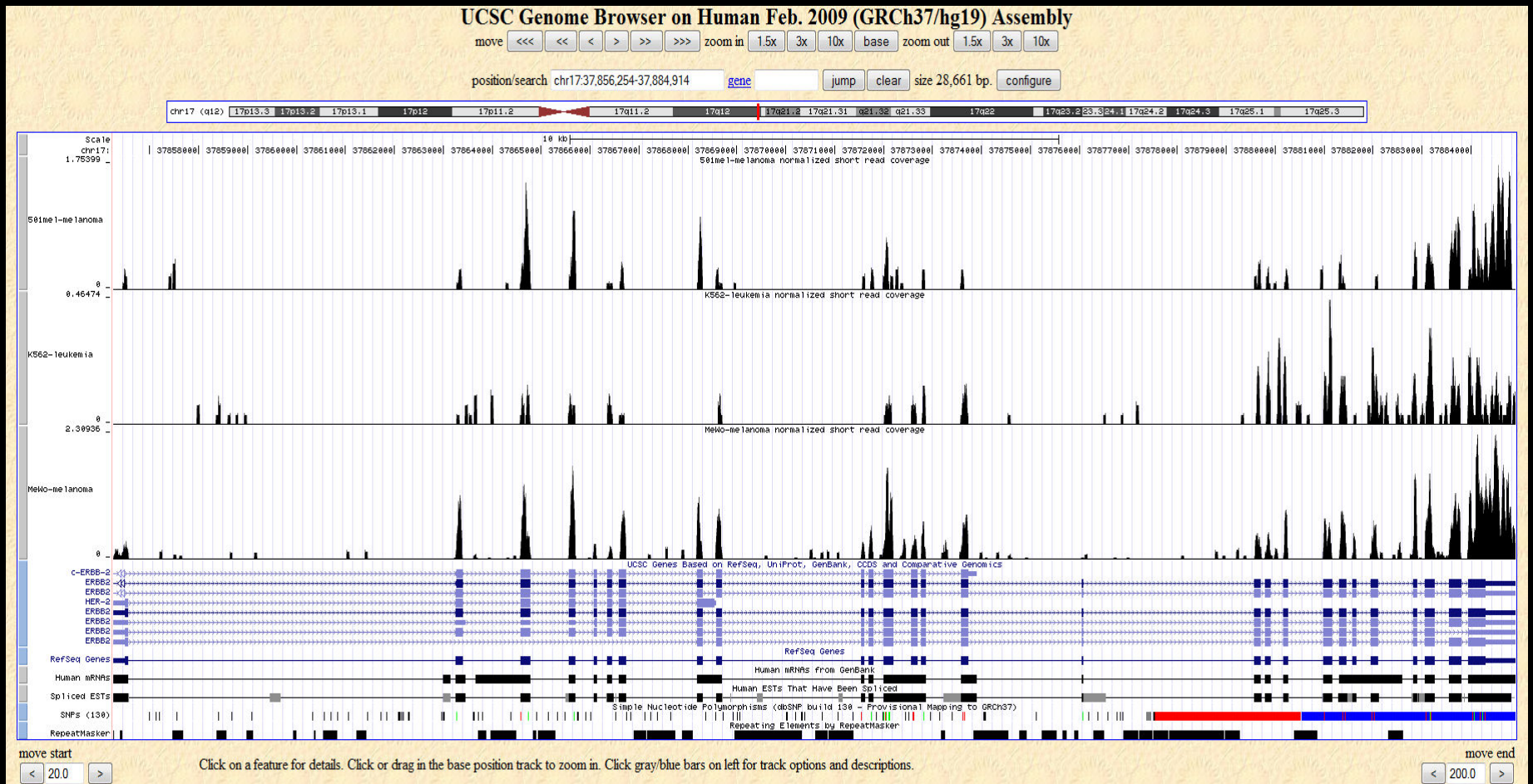


1. Map reads
mapped reads (50m+)
2. Aggregate reads to features
discrete features (50k+)
3. Quantitate features
*feature attributes (50k+ * N)*
4. Understand features, quantitation in genome context
*other features, data (50k+ * N)*

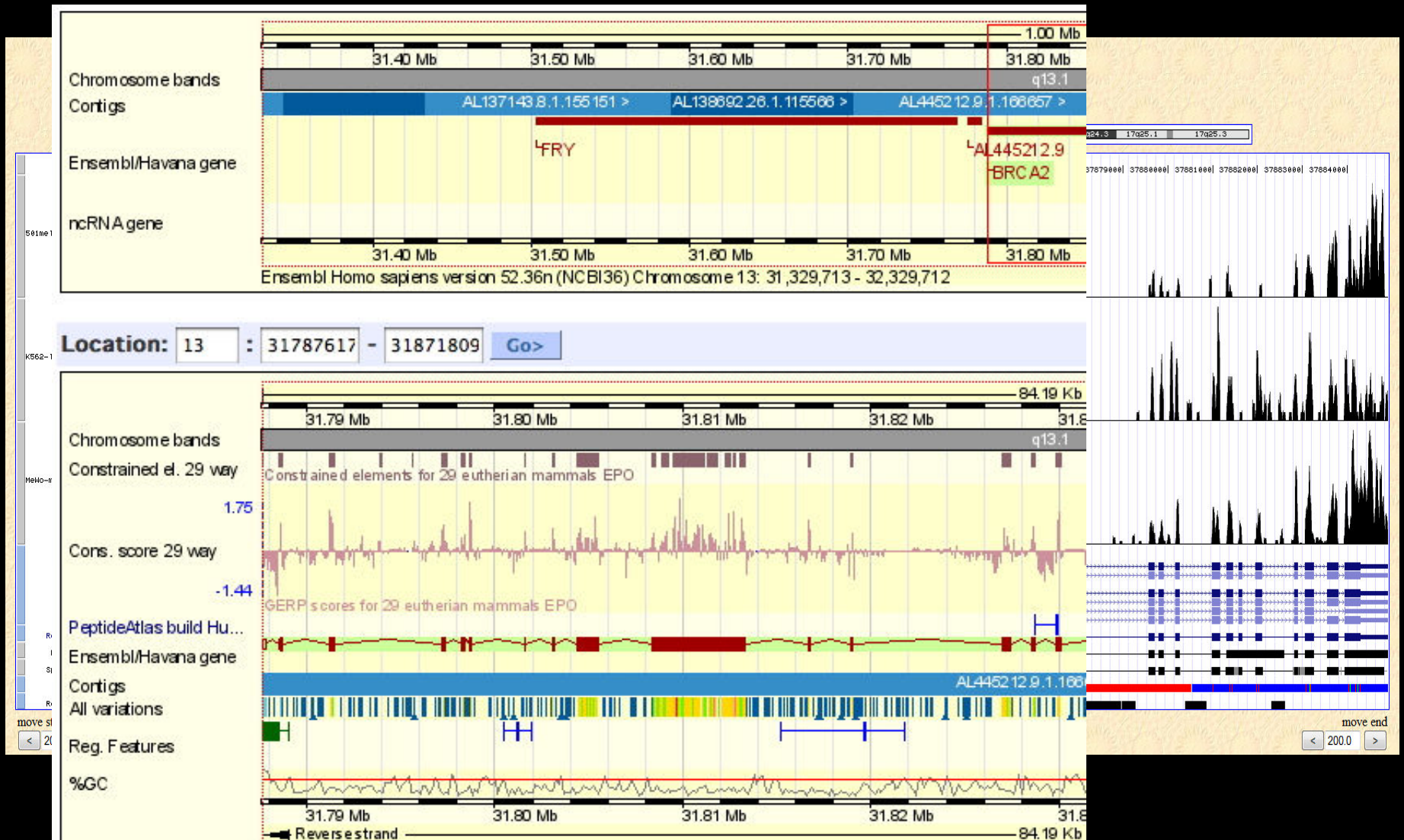
Sequencing Trends



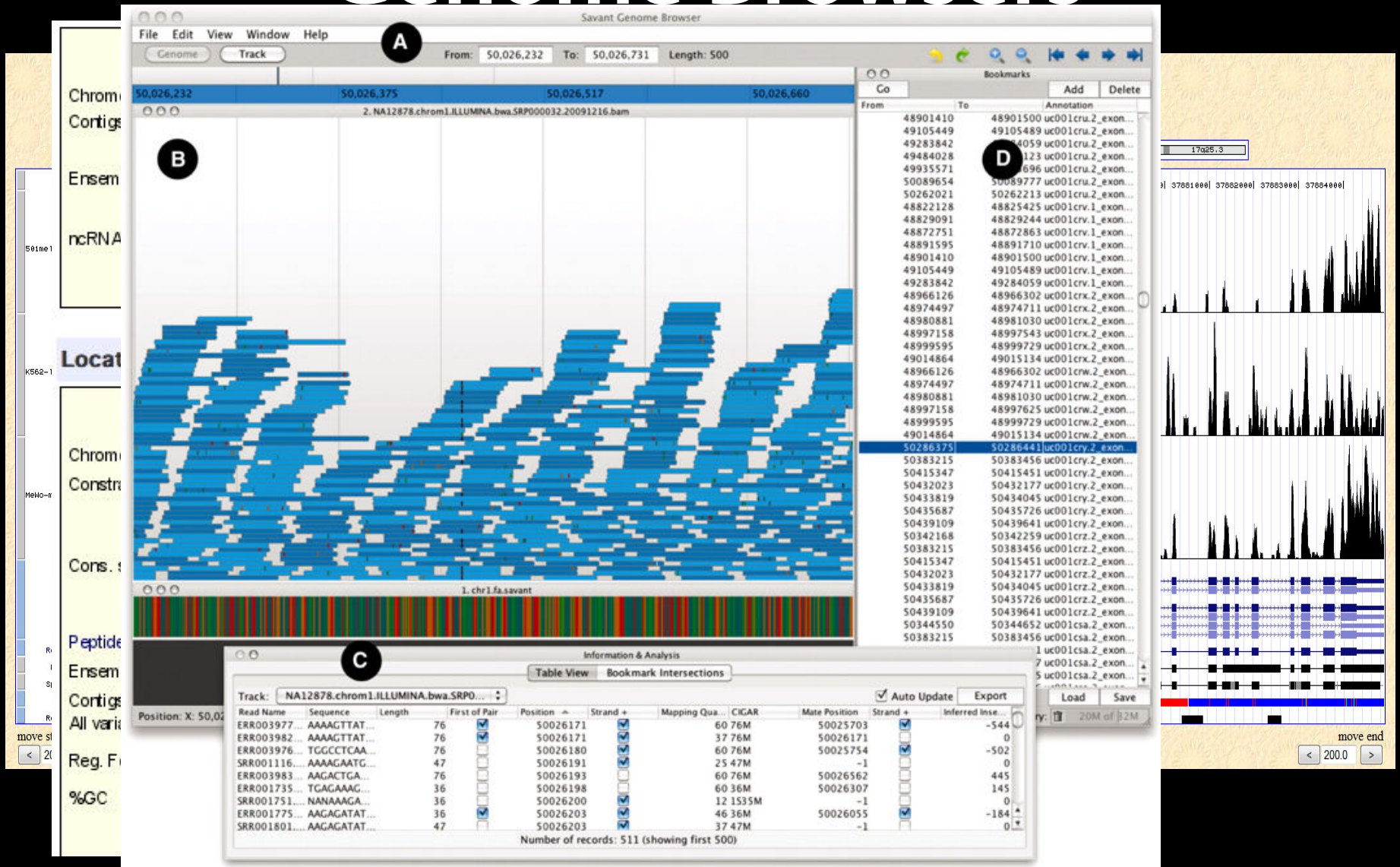
Genome Browsers



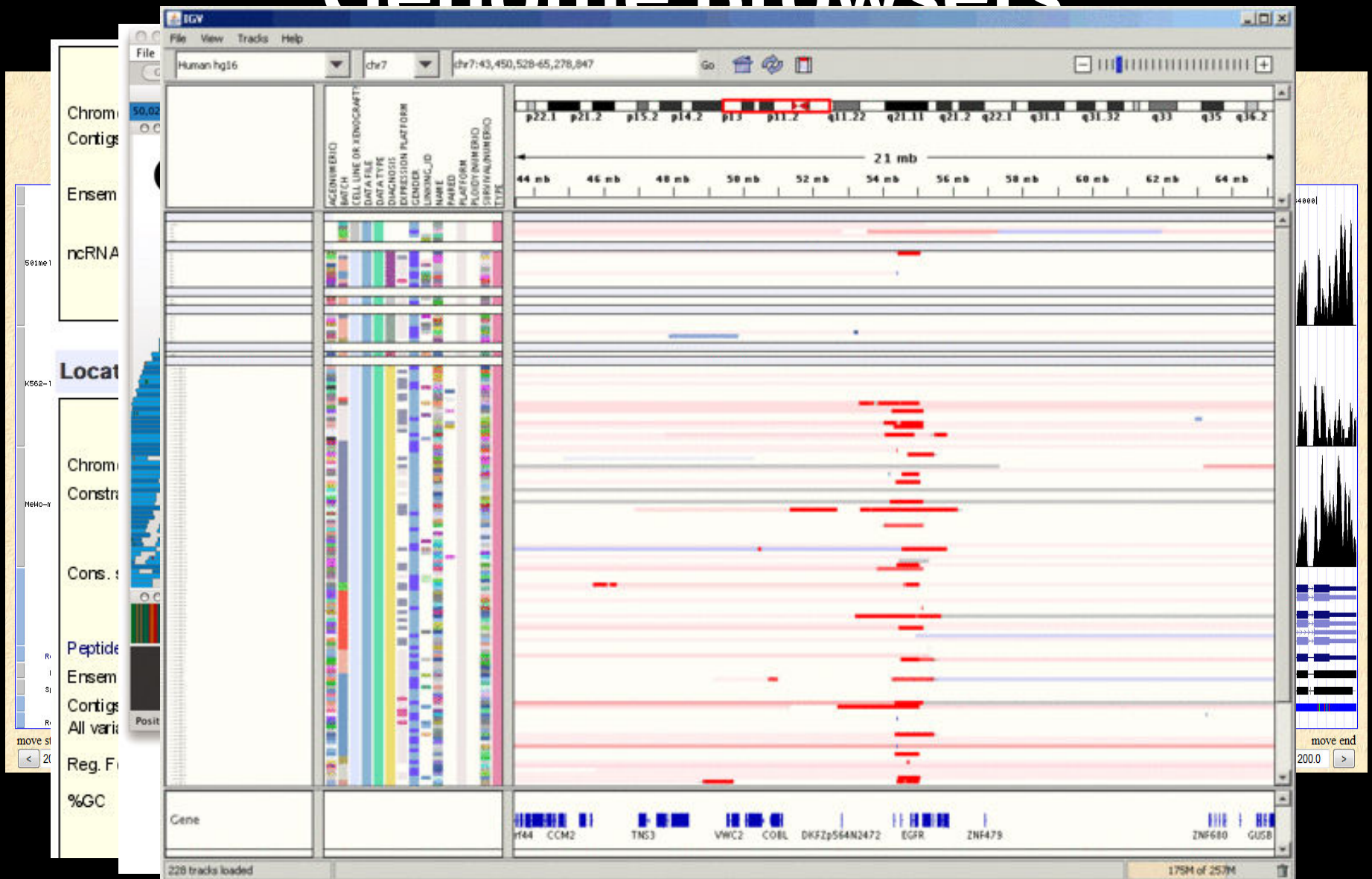
Genome Browsers



Genome Browsers



Genome Browsers



Why *another* Genome Browser?

Galaxy (<http://usegalaxy.org>)

- ✦ Web-based GUI for genomics
- ✦ many tools in one place
- ✦ sharing, publication framework

Genome Browser

- ✦ physical depiction of data
- ✦ visually identify correlations
- ✦ find interesting regions, features

Galaxy Track Browser



```
graph LR; Galaxy[Galaxy] --> GTB[Galaxy Track Browser]; GB[Genome Browser] --> GTB;
```

The diagram illustrates the relationship between three genome browser tools. On the left, there are two light blue rounded rectangular boxes. The top box is titled 'Galaxy' with the URL 'http://usegalaxy.org' and lists three features: 'Web-based GUI for genomics', 'many tools in one place', and 'sharing, publication framework'. The bottom box is titled 'Genome Browser' and lists three features: 'physical depiction of data', 'visually identify correlations', and 'find interesting regions, features'. On the right, there is a third light blue rounded rectangular box titled 'Galaxy Track Browser'. Two orange curved arrows point from the 'Galaxy' and 'Genome Browser' boxes towards the 'Galaxy Track Browser' box, indicating that it combines or builds upon the features of both.

Why another Genome Browser?

From browsing to visual analysis

Experimentation for large datasets

- ✦ interactive and dynamic

Sharing and collaboration

Demo

Summary

NGS datasets are huge and genome browsers used frequently

GTB transforms genome browser into visual analysis and experimentation tool

- ✦ dynamic filters
- ✦ tool integration

Can share visualizations using only a web browser



Enis Afgan



Dannon Baker



Dave Clements



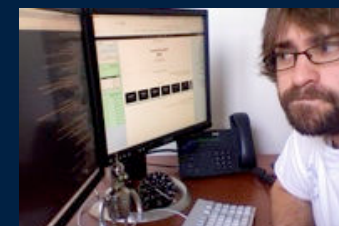
Jeremy Goecks



James Taylor



Dan Blankenberg



Nate Coraor



Jennifer Jackson



Greg von Kuster



Anton Nekrutenko

Supported by the **NHGRI** (HG005542, HG004909, HG005133), **NSF** (DBI-0850103), Penn State University, Emory University, and the Pennsylvania Department of Public Health

Thanks! Questions?

http://usegalaxy.org/visualization/list_published

- ✦ <http://usegalaxy.org/u/jeremy/v/trackster-demo-1-viewing-and-navigating>
- ✦ <http://usegalaxy.org/u/jeremy/v/trackster-demo-2-dynamic-filtering>
- ✦ (Running tools demo very slow on main due to high NGS tools usage; faster demo coming soon.)

Galaxy

- ✦ public server: <http://usegalaxy.org>
- ✦ download and run: <http://getgalaxy.org>
- ✦ mailing lists: galaxy-user@bx.psu.edu (using Galaxy) and galaxy-dev@bx.psu.edu (developing with Galaxy)

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