EMBL-EBI

www.reactome.org

European Bioinformatics Institute

Reactome - a knowledgebase of human biological pathways

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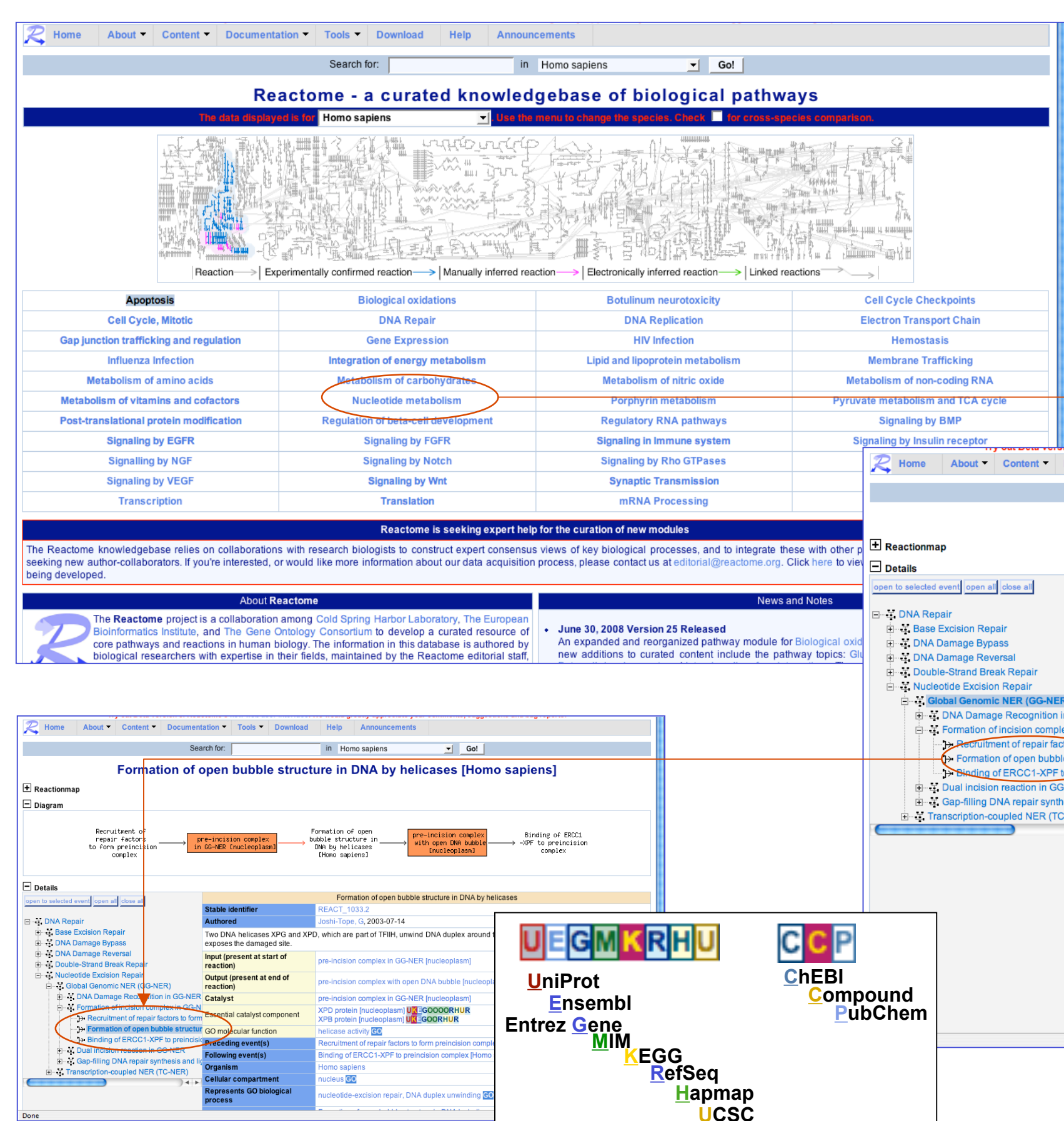[3]NYU School of Medicine, 550 First Avenue, New York NY 10016, USA
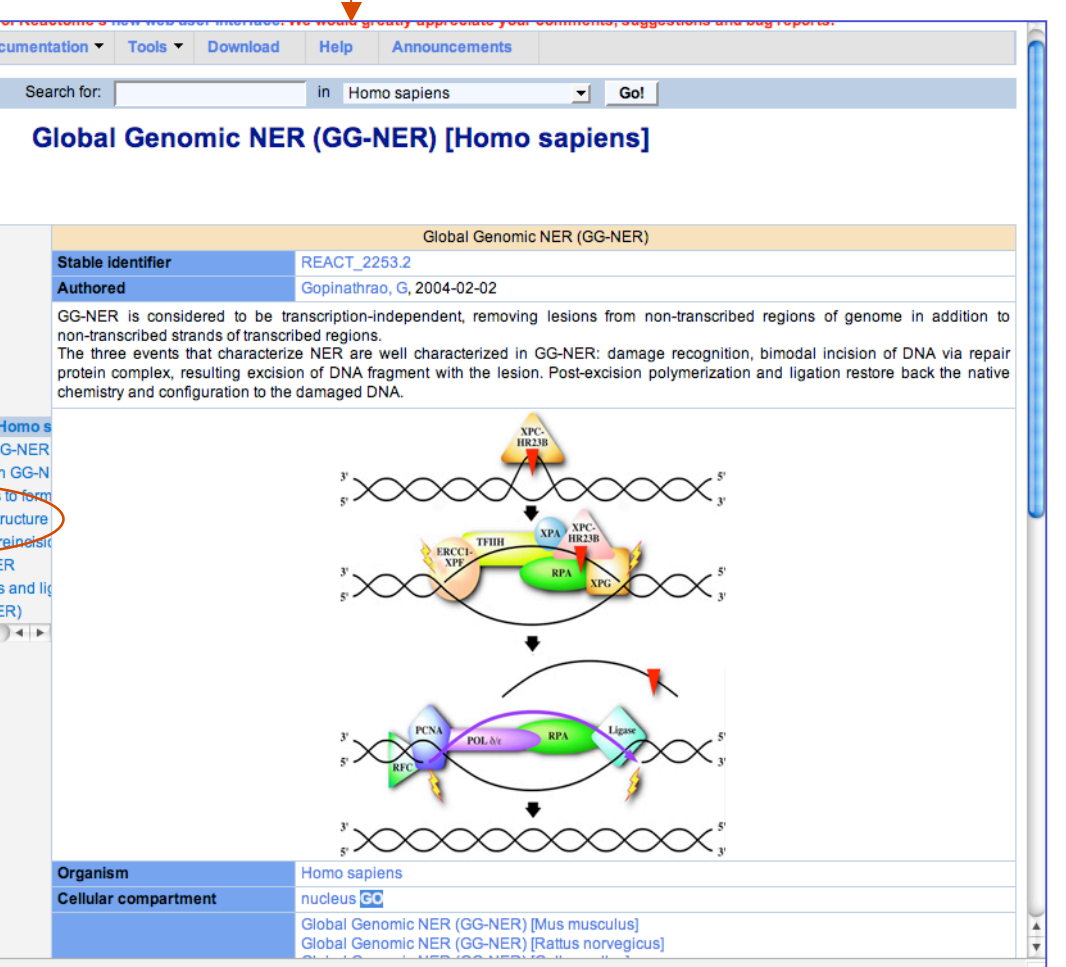[4]OICR 101 College St., Suite 800, Toronto, ON, Canada M5G0A3

Abstract

Reactome is a manually curated knowledgebase, created and peer-reviewed by experts in their field. Its robust data model describes life processes ranging from metabolism to signal transduction and the cell cycle. As of release 28, Reactome contains 3700 human proteins in 3200 reactions. Data is cross-referenced to publicly available web-based informatics resources. Reactome features the SkyPainter tool for analysis of high-throughput datasets, and the Mart query and data retrieval tool. All data are freely available and can be exported in a number of data formats.
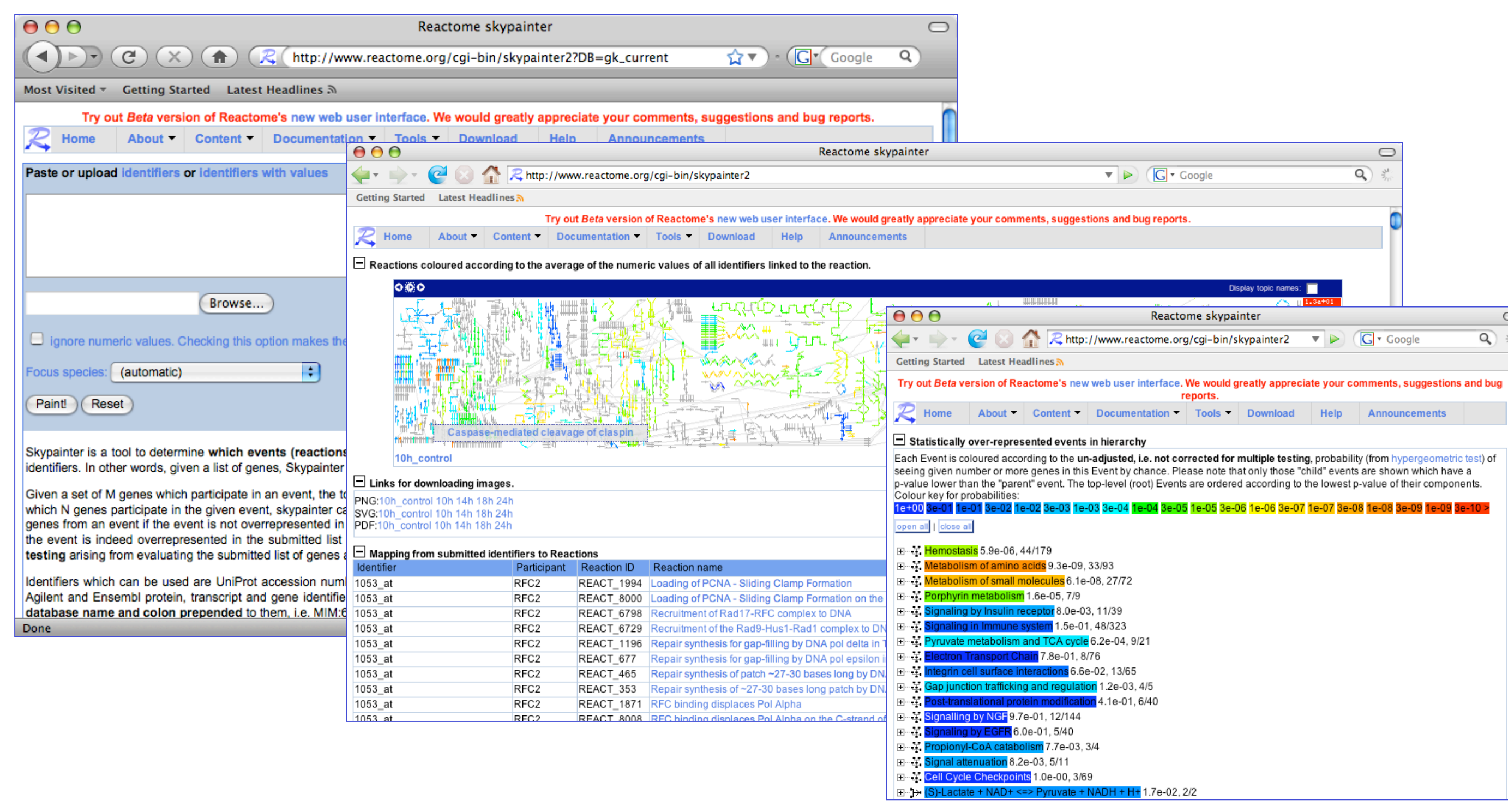
Reactome Frontpage With Interactive Reaction Map and Eventbrowser Pages

The Reactome frontpage features an interactive reaction map and serves as entry portal to the Eventbrowser pages, allowing the user to drill down to more detailed pages.

SkyPainter : Over-representation Analysis and Visualization of High Throughput Datasets Using the Reactome Reaction Map
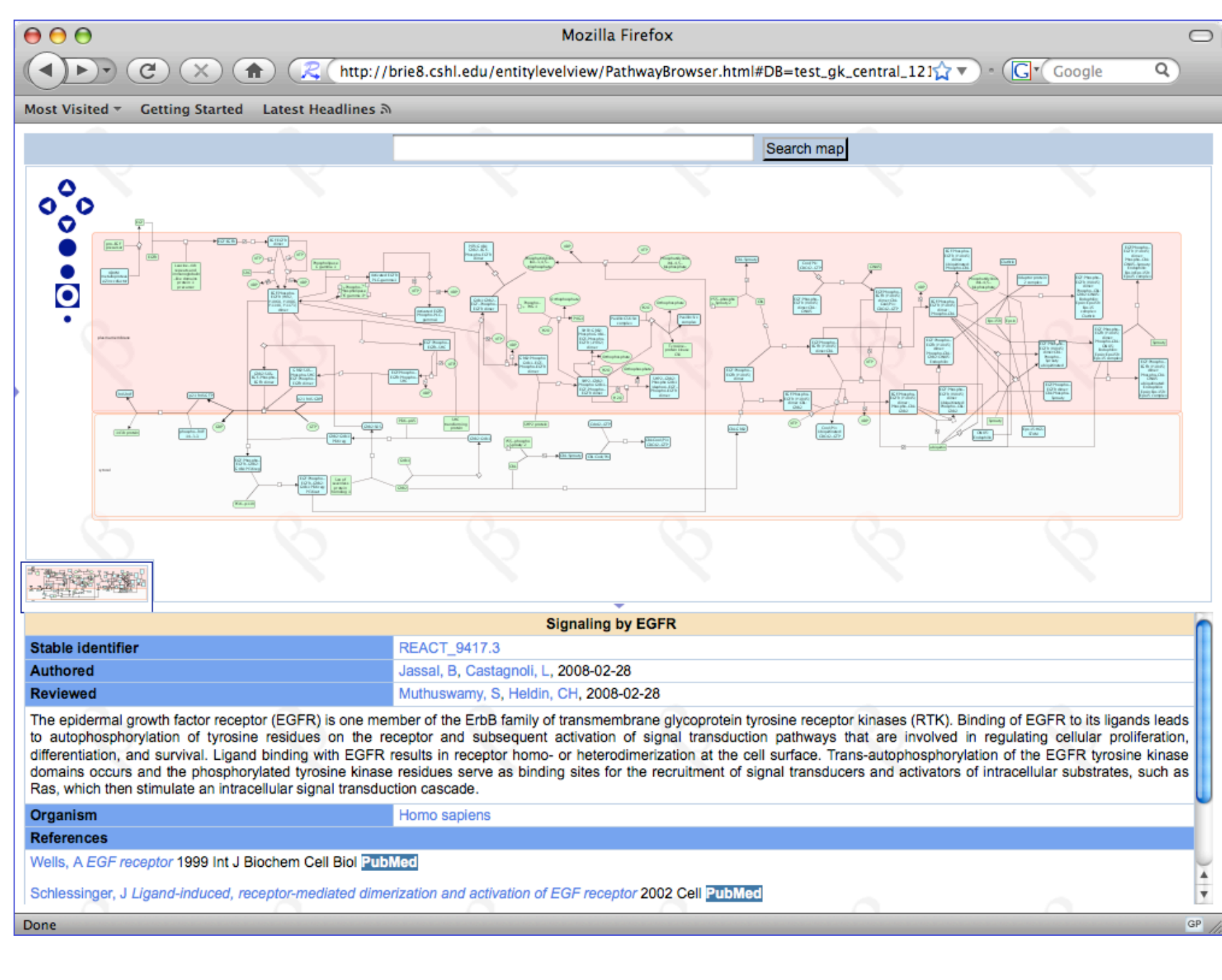
Topics

- Cell cycle, DNA repair, Apoptosis
- Signaling pathways (insulin, NOTCH, opioid, NGF, EGFR, FGFR, Rho GTPases)
- Transcription, mRNA processing, translation, post-translational modification
- Hemostasis
- Metabolism (energy, amino acid, lipid, nucleotide, xenobiotic)
- HIV and Influenza lifecycles
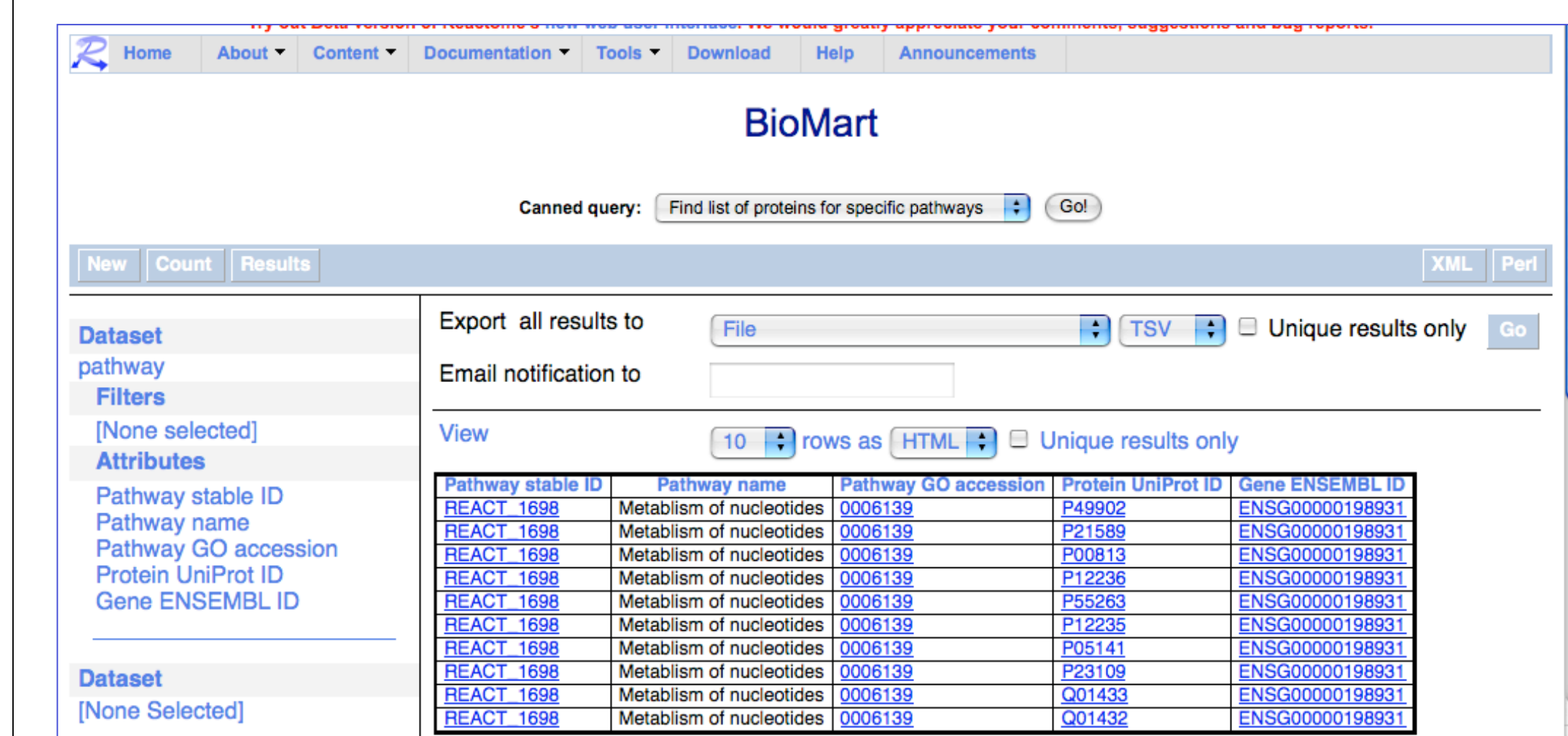- Neurotoxicity of botulinum toxins and more...

Human versus other species

- Manual curation focus on human
- Electronic inference to 22 other species based on orthology data from OrthoMCL
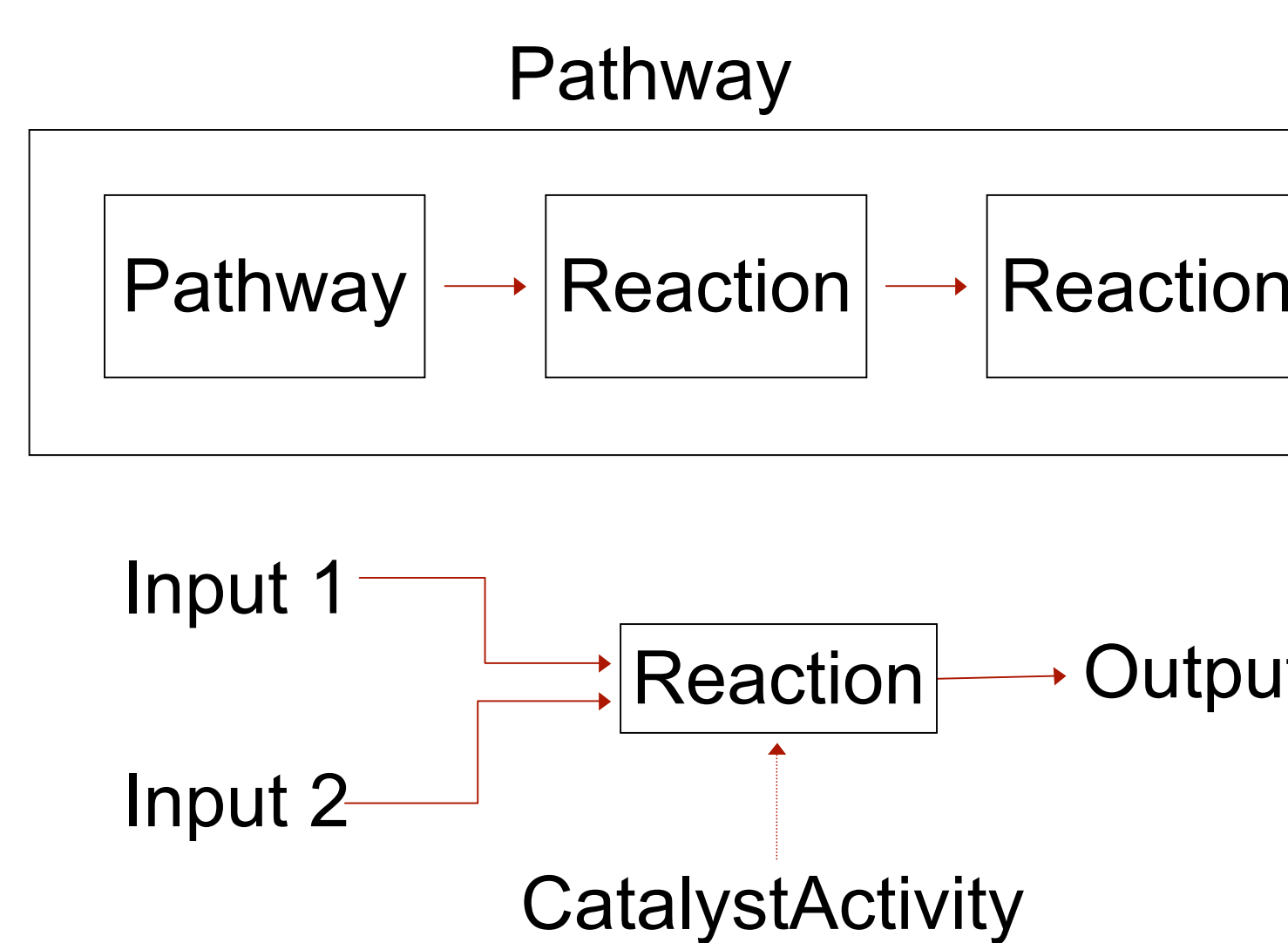- Cross-species comparison webpage

Coming soon: Entity-level view
(pathway layout based on SBGN)

Reactome Mart:
Query submission and data retrieval
(Combined queries across EnsembI, PRIDE, etc.)

Reactome Data Model

Pathway

Pathway → Reaction → Reaction

Input 1
Input 2
Reaction → Output
CatalystActivity

Future plans

- Website re-design
- "Pathway Analysis" portal incl. overrepresentation analysis
- Colouring of Entity-level view with user-supplied data
- Colouring of Entity-level view for species comparison
- Displaying interactors for proteins in Entity-level view

Reactome Downloads

- mysql database dump
- SBML
- BioPAX level 2 and 3
- PDF/RTF "Textbook"
- "Interaction" and ID mapping files
- Local installation
- Author- and curator tools
- SOAP based webservices

Acknowledgements