

# PORT *Eco*: integrating web resources for the biology of *E. coli*

portal for *E. coli* research

Try it Live  
Thursday during the posters  
in the Capitol View Room

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## Abstract

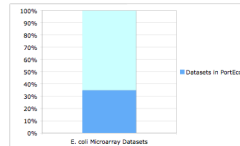
PortEco (<http://porteco.org>; formerly EcolHub) is a project to unify and integrate data, annotation, and analysis tools from a variety of sources for biologists working on laboratory *E. coli* and its phage, plasmids, and mobile genetic elements. We have enhanced our unified search, which returns links to information from EcoCyc, EcoGene, UniProt, EcolWiki, and Genobase. Information about protein structures and interactions is gathered from PDB, the Protein Model Portal, and String. The search also returns gene expression profiles from our *E. coli*-specific subset of the Stanford Microarray Database and the OUEXPDB, as well as gene family information from the PANTHER database. We have upgraded our publications search to support full-text searches of papers linked from EcolWiki. We have added new tools to mine these data sets and to pass data between tools at different participating websites, or to download it for offline analysis. Power users can use EcolHouse, a data warehouse, to perform complex queries across multiple data sources. Over the past year, PortEco has added many more data sets, including more transcriptome data from microarrays, ChIP-chip data, and high-throughput analysis of the phenotypes of knockout and knockdown mutants under different conditions. We are working to integrate annotation and analysis tools from RegulonDB about transcription units and transcriptional regulation.

PortEco not only provides a unified resource to find published information; we also provide services to help authors perform embargoed pre-publication analyses and allow reviewers to view data. Live, hands-on demonstrations of PortEco functionality will also be presented during the poster sessions.

## PortEco Search

PortEco search now searches for data from 13 different websets. Results are now reformatted if the PortEco search can tell you were looking for a gene.

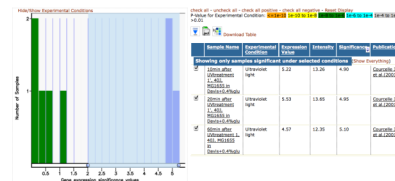
## Gene expression



We continue to make progress in curating published microarray transcriptome studies to allow comparative analyses on <http://expression.porteco.org>. Currently, we have loaded 35% of the datasets available: >1,000 microarrays from 75 publications.

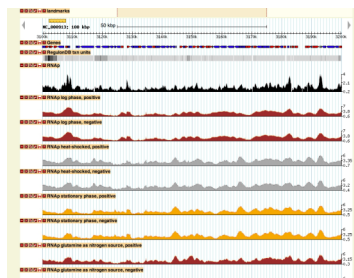
Use the 'Cluster My Genes' tool to retrieve and cluster gene expression data for a given set of genes based on your selection criteria, such as Experimental Conditions, Mutant, Strain, or Publications.

Or search for a gene across all samples to identify samples or experimental conditions where its expression is significantly altered.



## ChIP visualization

We are making displays for published ChIP data on the EcolWiki genome browser at <http://ecolwiki.net/growow>



Upload your prepublication data to compare with published results

## Chemical genomics

Nichols et al. (2011 Cell 143: 1097–1109) examined more than 10,000 phenotypes of *E. coli* mutants grown under hundreds of different conditions. Our online data browser, allows three kinds of searches:

## More *E. coli* data in EcolWiki

We continue to add and improve infrastructure to support community addition of more content types to EcolWiki (<http://ecolwiki.net>). We are also adding more content ourselves.

### Strain genealogy

Subcategories

- 10 Strain: E. coli B (1)
- 10 Strain: E. coli C (7)
- 10 Strain: E. coli K-12 (6)
- 10 Strain: Hfr (5)
- 10 Strain: O157 (1)
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### Mutant phenotypes

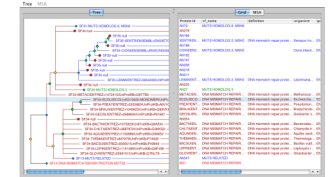
### Quantitative measurements

### and more...

- We are continuing to improve functional annotation using Gene Ontology.
- We are building content about
  - Phage
  - Plasmids
  - Mobile elements
  - Genetic interactions
  - Protein structure-function
  - other online resources

## Protein families

PANTHER (<http://www.pantherdb.org/>) is building phylogenetic trees for *E. coli* protein families, starting with those with the broadest distribution across the Tree of Life



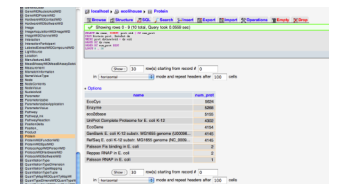
## More *E. coli* genomes in BioCyc

As more *E. coli* complete genome sequences become available, the EcoCyc team is loading them into BioCyc. There are currently 34 *E. coli* strains and 8 *Shigella*s in BioCyc (<http://ecocyc.org>).



## Web interface for EcolHouse

EcolHouse, the power user data warehouse for PortEco is now accessible via a web interface at <https://publichouse.ai.sri.com/phpmyadmin/>



## PortEco community

Look for colleagues and let others see information about you via <http://community.porteco.org>

### Colleague search