

PathoSystems Resource Integration Center (PATRIC)

<http://patric.vbi.vt.edu>

X.J. Meng², Oswald Crasta¹, Joao Setubal¹, Bruno Sobral¹

**1. Virginia Bioinformatics Institute,
2. VA-MD Regional College of Veterinary Medicine,
Virginia Polytechnic Institute and State University, Blacksburg, VA 24061**



The Bioinformatics Resource Center for microbial pathogens

- I. BRC at Virginia Bioinformatics Institute (PATRIC-BRC)
- II. Available Resources to Be Incorporated Into PATRIC
 - Analysis and Visualization Portal (ToolBus/PathPort)
 - Pathogen Information (Pathinfo and ProNet)
- III. Community Involvement



VBI Bioinformatics Resource Center

Goal: Establish a National Bioinformatics Resource Center (BRC) that consists of a multi-organism relational db

Funding: 5 year, \$10.3 million contract from NIH-NIAID
Bruno Sobral (PI); Joao Setubal (co-PI)

Team: Oswald Crasta (Curation)
Dana Eckart (Software)

Subject: 8 PathoSystems, including **Hepatitis E virus strains.**

URL: <http://patric.vbi.vt.edu>



BRC Mission

- Community involved annotation of genomes
 - ✓ Genome annotation, Functional characterization of genes
 - ✓ Integration of literature and post-genome data
 - ✓ Comparative genomics
- Web interfaces for curated data
- Interoperable analysis resource
- Discovery of new ways to fight infectious diseases

File Edit View Go Bookmarks Tools Help

http://www.niaid.nih.gov/dmid/genomes/brc/default.htm

Microbial Research • Global Health
Division of Microbiology & Infectious Diseases

Home Site Map Search Contact Us

Areas of Research Press Releases Meeting Information Other Supported Programs Publications & Other Resources

Bioinformatics Resource Centers

- Home
- Awards
- Meetings & Presentations
- Contact Us

NIAID Bioinformatics Resource Centers for Biodefense and Emerging or Re-Emerging Infectious Diseases: An Overview

Over the past few years NIAID has launched a number of initiatives to provide comprehensive genomics resources to the scientific community conducting basic and applied research on organisms considered agents of bioterrorism or causing emerging or re-emerging diseases. The availability of genome sequences of pathogens, pathogen vectors and their disease hosts has opened up new research opportunities and will allow scientists to systematically examine biological systems, such as those involving host immune response to pathogen infection or to vaccination. There is a growing need for integrating genomics, proteomics, biochemical and microbiological information to facilitate the interpretation of the data and generate new scientific hypotheses and ultimately new targets for diagnostics, drugs or vaccines.

The NIAID Bioinformatics Resource Centers (BRCs) will focus on data related to multiple organisms selected from the [NIAID lists of Category A-C priority pathogens](#) and other pathogens causing emerging and re-emerging diseases. Each Center maintains data related to a selection of pathogens. (See [awards page](#) for more information.) Relational databases will be established to collect a variety of data types, such as genome sequencing, comparative genomics, genome polymorphisms, gene expression, proteomics, host/pathogen interactions and pathways. Access to these data and their interpretation will be facilitated by user-friendly web interfaces and state of the art analysis tools. In addition, training opportunities will be offered to the scientific community on the use and interpretation of the data contained in the database and the analysis tools available. The BRCs are supported by multi-disciplinary teams consisting of pathogen domain experts, microbiologists, bioinformaticians and computer scientists. For more information please refer to the [original solicitation](#).

Source: <http://www.niaid.nih.gov/dmid/genomes/brc/default.htm>



Organisms in PATRIC-BRC

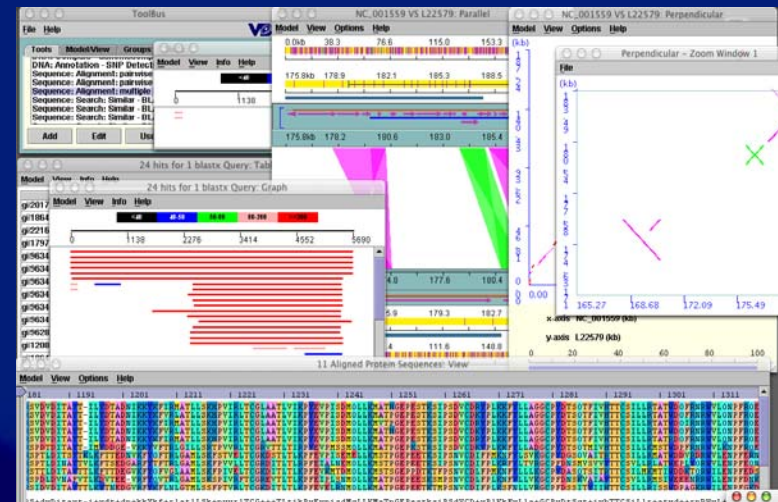
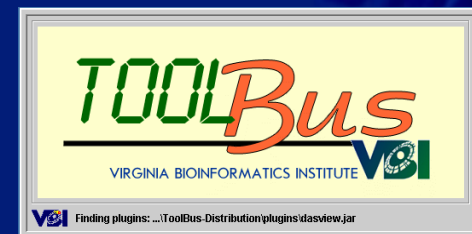
Organism	Complete genomes With Annotation	Complete genomes (Ref_Seq)	Complete genomes without annotation	Partial Genomes	Genomes in Progress
<i>Brucella</i>	<i>B. melitensis</i> , <i>B. suis</i>	<i>B. melitensis</i> , <i>B. suis</i>	<i>B. abortus</i>		<i>B. ovis</i>
<i>Coxiella burnetii</i>	1	1			
<i>Rickettsia</i>	3	3	3		3
Calicivirus	47	10			
SARS Coronavirus	127	9		21	
Hepatitis A virus	15	1		2	
Hepatitis E virus	34	1			
Rabies virus	7	1		1	

ToolBus/PathPort System

Software and Data Analysis

- Federation of best available tools through web services
- Development of new tools and visualization interfaces
- Connection to best data sources
- Interoperability among tools and across domains

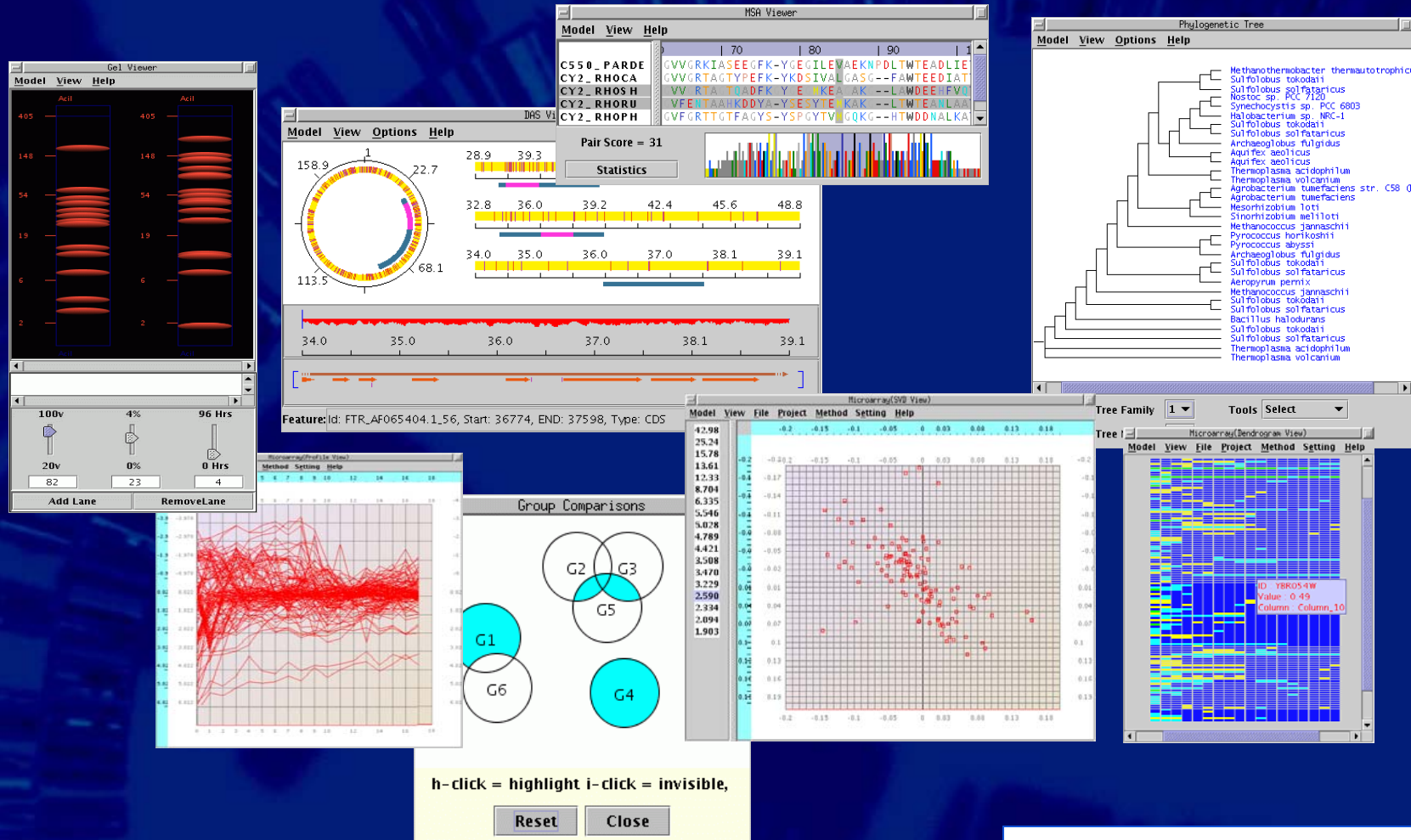
<http://pathport.vbi.vt.edu/>



PathPort
The Pathogen Portal Web Project



An Interoperable Work Environment for Discovery



h-click = highlight i-click = invisible,
 [Reset] [Close]

Acknowledgements

Funding

- DoD grant for PathPort project (Sobral)
- NIH-NIAID BRC grant (Sobral)



Thank You!

Contact Information:

Oswald R. Crasta, Ph.D.

Director of Bioinformatics, Cyberinfrastructure Group

Virginia Bioinformatics Institute

brc@vbi.vt.edu

<http://patric.vbi.vt.edu/>

