Browsing and Comparing Genomes Using the Gramene Ensembl Browser

**Joshua Stein**1, Ken Youens-Clark1, Sharon Wei1, William Spooner1, Shiran Pasternak1, Jim Thomason1, Marcela Monaco1 and Doreen Ware1,2, (1)Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, (2)USDA ARS NAA Robert W. Holley Center for Agriculture and Health Cornell University, Ithaca, NY

Abstract Text:

This workshop will demonstrate Gramene’s genome, phylogenetic tree, and synteny browsers, as well as associated annotation and visualization resources.  Gramene hosts interlinked browsers for 14 complete and 8 partial reference plant genomes, each displaying community annotation, whole genome alignments, and additional analyses.  Annotated protein coding genes are subjected to InterPro domain prediction, Gene Ontology assignment, and cross-referencing to third party databases such as RefSeq.  Evolutionary histories of annotated protein coding genes are provided in phylogenetic gene trees using a method that infers orthologous and paralogous relationships.  Orthology information is in turn used to build synteny maps that are presented in a graphical user interface that promotes interspecies browsing across ancestrally derived regions.  In addition, genome browsers from mutiple species can be simultaneously viewed in a stacked arrangement, highlighting matching regions from DNA-level whole genome alignments.  SNP diversity data, available for several reference genomes, is visualized in the context of gene annotation and each variant site is classified with respect to its predicted consequence on transcript structure (e.g. non-synonymous coding).  Virtually all visualization displays can be downloaded as high-resolution, publication-ready, image files.  Release 34 of Gramene includes browsers for *Oryza sativa ssp. japonica*, *O. sativa ssp. indica*, *O. glaberrima*, *Sorghum bicolor*, *Brachypodium distachyon*, *Zea mays*, *Arabidopsis thaliana*, *A. lyrata*, *Glycine max*, *Vitis vinifera*, *Populus trichocarpus*, *Selaginella moellendorfii*, *Physcomitrella patens*, and *Chlamydomonas reinhardtii*.  Browsers are also available for partial genomes of non-cultivated species in the *Oryza* genus.

Title:

Browsing and Comparing Genomes Using the Gramene Ensembl Browser

Submitter's E-mail Address:

steinj@cshl.edu

Session Selection:

Gramene Project

Scheduled Date:

Tuesday, January 17, 2012

Scheduled Time:

5:30 PM

First author

Presenting Author

Joshua Stein  
Cold Spring Harbor Laboratory  
1 Bungtown Road  
Cold Spring Harbor, NY 11724  
**Phone Number:** 978-2644338  
**Fax Number:** 978-  
**Email:** steinj@cshl.edu -- Will not be published

Second author

Ken Youens-Clark  
**Bioinformatics Manager I:**Cold Spring Harbor Laboratory  
1 Bungrown Road, Williams #5  
Cold Spring Harbor, NY 11724  
**Phone Number:** 972-5799655  
**Fax Number:** 972-  
**Email:** kclark@cshl.edu -- Will not be published

Third author

Sharon Wei  
**Scientific Informatics Developer II:**Cold Spring Harbor Laboratory  
1 Bungtown Rd  
Cold Spring Harbor, NY 11724  
**Email:** weix@cshl.edu -- Will not be published

Fourth author

William Spooner  
**Bioinformatics Consultant:**Cold Spring Harbor Laboratory  
1 Bungtown Rd  
Cold Spring Harbor, NY 11724  
**Email:** whs@ebi.ac.uk -- Will not be published

Fifth author

Shiran Pasternak  
Cold Spring Harbor Laboratory  
One Bungtown Road, Williams Building  
Cold Spring Harbor, NY 11724  
**Email:** shiran@cshl.edu -- Will not be published

Sixth author

Jim Thomason  
**Scientific Informatics Analyst III:**Cold Spring Harbor Laboratory  
1 Bungtown Rd  
Cold Spring Harbor, NY 11724  
**Email:** thomason@cshl.edu -- Will not be published

Seventh author

Marcela Monaco  
Cold Spring Harbor Laboratory  
1 Bungtown Road  
Williams Bldg #5  
Cold Spring Harbor, NY 11724  
**Phone Number:** 516-287-1531  
**Email:** mmonaco@cshl.edu

Eighth author

Doreen Ware  
Cold Spring Harbor Laboratory  
1 bungtown  
Cold Spring Harbor, NY 11724  
USDA ARS NAA Robert W. Holley Center for Agriculture and Health Cornell University  
Tower Road  
Ithaca, NY 14853  
**Email:** ware@cshl.edu -- Will not be published