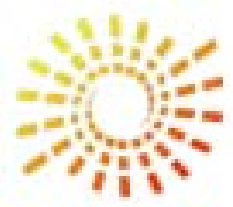
SGN BREEDERS TOOLBOX

Tomato Breeders Roundtable Meeting - 2009

Presentation Overview

- Background on the SOL Genomics Network (SGN)
- Breeders Toolbox
  - Phenotype search
  - QTL analysis tool
  - How to become a locus editor
- Suggestions received from the community
- Tools under construction
- Discussion

SOL Genomics Network (SGN)



- SGN (www.sgn.cornell.edu)
  - The Boyce Thompson Institute for Plant Research
- Database of genomic, genetic, phenotypic, and taxonomic information for species in the Euasterid clade
  - *Solanaceae and Rubiaceae*
- Repository for information generated by the tomato sequencing project
- Managed by Lukas Mueller
  - Staff
    - 5 postdoctoral associates
    - 2 programmers
    - 1 system administrator

Breeders Toolbox

- Purpose
  - Make information on SGN more accessible
- Work in progress
- My role
  - Not a part of the SGN staff
  - Link between the breeder community and SGN
  - Send feedback to me at jv27@cornell.edu

sol genomics network

home | forum | contact | help

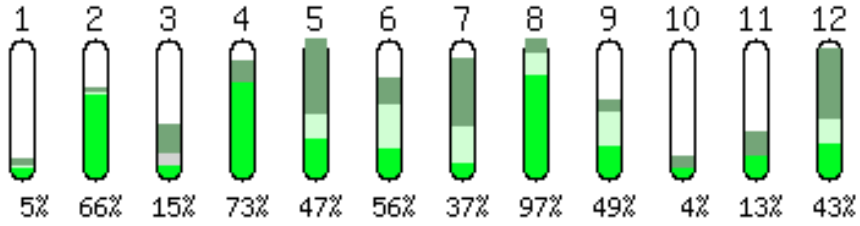
search | maps | sequencing | tools | sol search

log in

Community Annotation

As an SGN locus editor, contribute to webpages for your favorite genes and mutant lines and share relevant data and publications with the community.
>>more...

International Tomato Sequencing Progress



Getting started

What is SGN?

SGN info

- SGN data overview
- More about SGN
- SOL project | Outreach
- SOL newsletter
- International tomato project
- The ECO-SOL Project
- The Secretom Project

Portals

- Breeder's Portal

Phenotypes

Browse Solanaceae phenotypes

--select a population name-- Submit

Locus of the week

Leucine aminopeptidase A1

involved in late wound responses.

See previous 'loci of the week'...

Featured publication

Leucine Aminopeptidase Regulates Defense and Wound Signaling in Tomato Downstream of Jasmonic Acid

Fowler et al. Plant Cell (2009).

News

New map added to SGN

A new tomato map, kindly provided by José M. Jiménez-Gómez, is available on SGN. [March 17, 2009]

SOL newsletter March 2009 available

The SOL newsletter for March 2009 is available from SGN. [March 6, 2009]

Genome browser
SOL Bioinformatics Resources

Maps and markers

Available maps
Search markers
More about SSR | COS | COSII
COSII marker data (FTP)

SOL Loci

Search Solanaceae loci
Submit locus annotations

Phenotypes and mutants

Solanaceae phenotypes search
Submit phenotype information

Sequences

Search BACs and BAC ends
Search ESTs | Unigenes | Loci

Tools

BLAST | Intronfinder
Alignment & Tree Browser
Downloads | FTP Site

Order cDNA clones

Ordering page

Courtesy Sandra Knapp

Recent forum topics

Job Listings

Browse or advertise jobs here.

View all topics...

Featured lab

The Plant Molecular Genetics Lab, Corpoica, Colombia

See all featured labs...

SGN Feature Request

We would like to improve SGN for breeders by adding a breeder's toolbox.

Please contact Joyce van Eck with suggestions how to improve SGN for breeders.

Breeders toolbox

The purpose of this page is to give breeders direct links to breeder-relevant tools and data on SGN. It is a work in progress and your feedback or suggestions are welcome to build this into a comprehensive, easy to use and breeder-

Phenoype search

(phenotype search help page)

Search by keyword

orange fruit [Submit new accession]

Advanced search options

Search

- SNP discovery tool. This will be part of the SolCAP project.

Links

- TomatoMap.Net - a site for Tomato Genetics at Ohio State University.
- SolCAP - the official SolCAP website at Michigan State University.

SGN accession: e0089m1

Accession details

[New] [Edit]

Accession

Description

Population

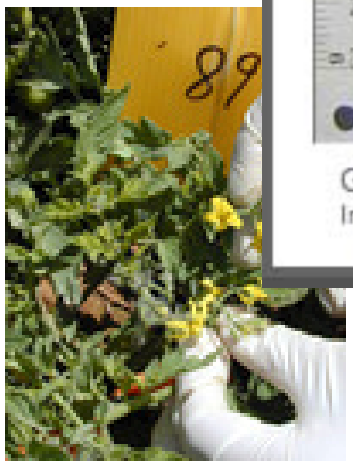
Organism

Uploaded by

Associated l

all plant

Images



Breeders toolbox

The purpose of this page is to give breeders direct links to breeder-relevant tools and data on SGN. It is a work in progress and your feedback or suggestions are welcome to build this into a comprehensive, easy to use and breeder-friendly resource.

QTL (trait) search

Search by trait name (help)

fruit shape | Search | [Submit new QTL data]

List of traits and their QTLs by population:

QTL Tomato Howard German x LA1589 F2

QTL Tomato Sausage x LA1589 F2

QTL Tomato Yellow Stuffer x LA1589 F2

Breeder tools under construction

- SNP discovery tool. This will be part of the SolCAP project.

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log in

QTL/Trait search results

QTL/Trait search results			7 matches
Trait name	**Synonym**	**Definition**	**QTL**
fruit shape circular	cir	Fitting precision R2.nHow well the boundary of a perfect circle fits the boundary of a fruit.	✓
fruit shape eccentric	ecc	The asymmetry of the fruit.nHeight of internal ellipse / total height.	✓
fruit shape ellipsoid	ell	Fitting precision R2nHow well the boundary of a perfect ellipse fits the boundary of a fruit.	✓
fruit shape index external 2	fruit shape index 2	Midheight/midwidth ratio.	✓
fruit shape index external	fruit shape index 1	Maximum height/maximum width ratio.	✓
fruit shape rectangular	rec	Sin/Soutnthe ratio of maximum area enscribing the rectangle to the minimum area of the enclosing rectangle.	✓
fruit shape triangle	tri	Proximal/distal width ratio.	x

SP:0000050 'fruit shape circular'

Cvterm details

Term id	**SP:0000050**
Term name	**fruit shape circular**
Definition	**Fitting precision R2.nHow well the boundary of a perfect circle fits the boundary of a fruit.**
Comment	

Synonyms:
cir

Definition dbxrefs:
SGN:EVDK
PO:0007010
PO:0007042
PO:0009001

Secondary IDs:

Phenotype data/QTLs (2 populations)

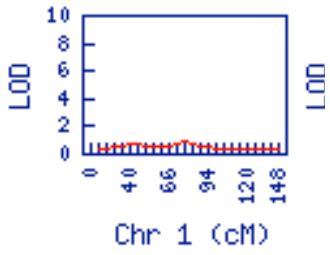
Population: QTL Tomato Howard German x LA1589 F2
Population: QTL Tomato Sausage x LA1589 F2

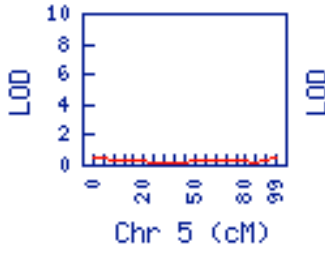
Ontology browser

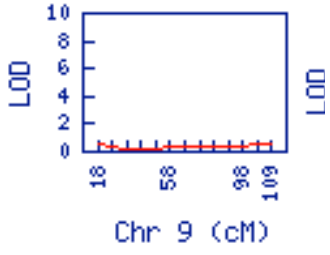
- root
- SP:0001000 Solanaceae phenotype ontology
  - is_a SP:0000037 fruit
    - is_a SP:0000011 fruit morphology
      - is_a SP:0000038 fruit shape
        - is_a SP:0000050 fruit shape circular

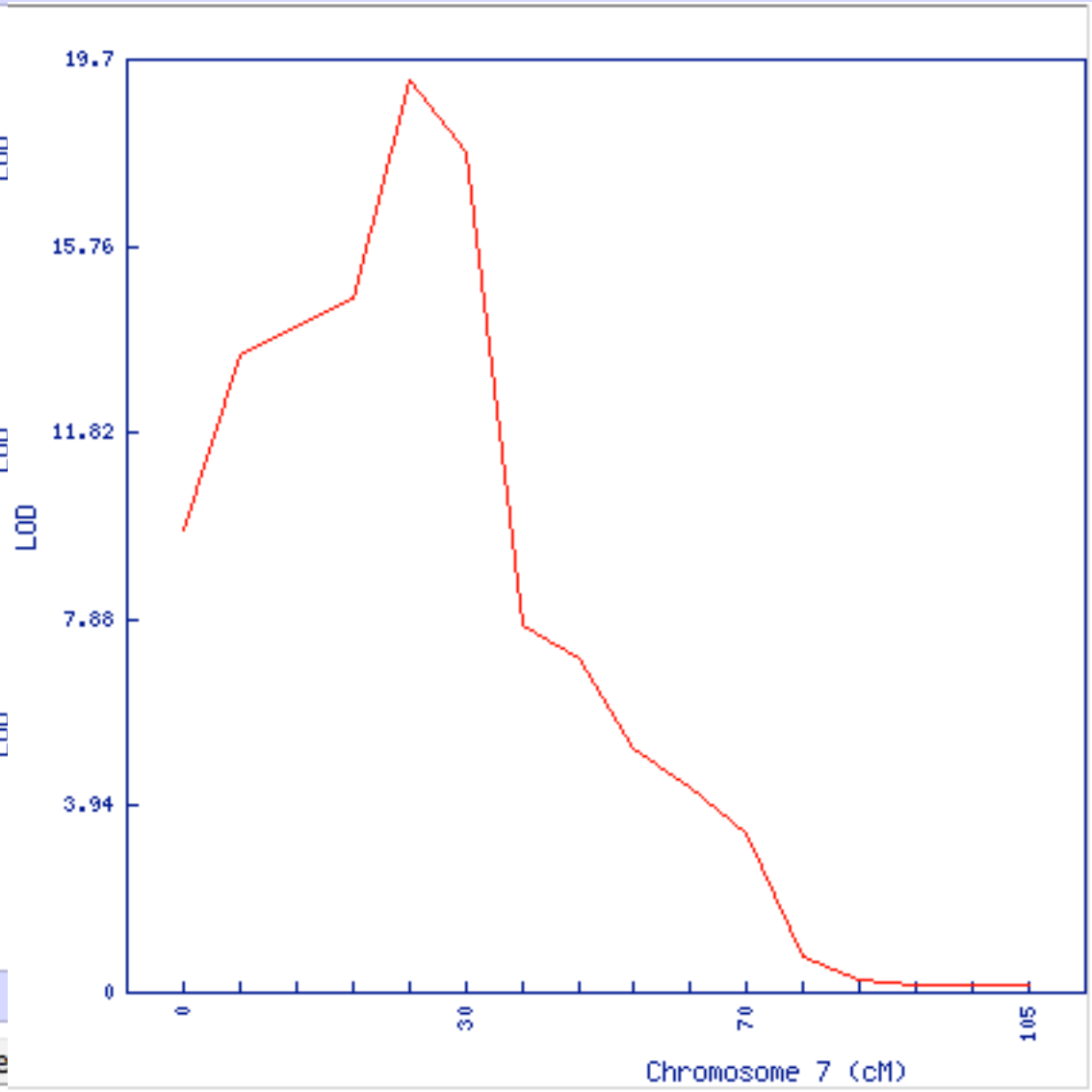
Phenotype data/QTLs (2 populations)

QTL(s)









Analysis Procedure: R/QTL
QTL Model: single-QTL model
Genome Scan: every 10 cM
Probability: 0.05
LOD Threshold (based on 1000 permutations): 5%: 7.2
Flanking Markers & Comparative Mapviewer: click on graph

Phenotype Data

View/hide phenotype

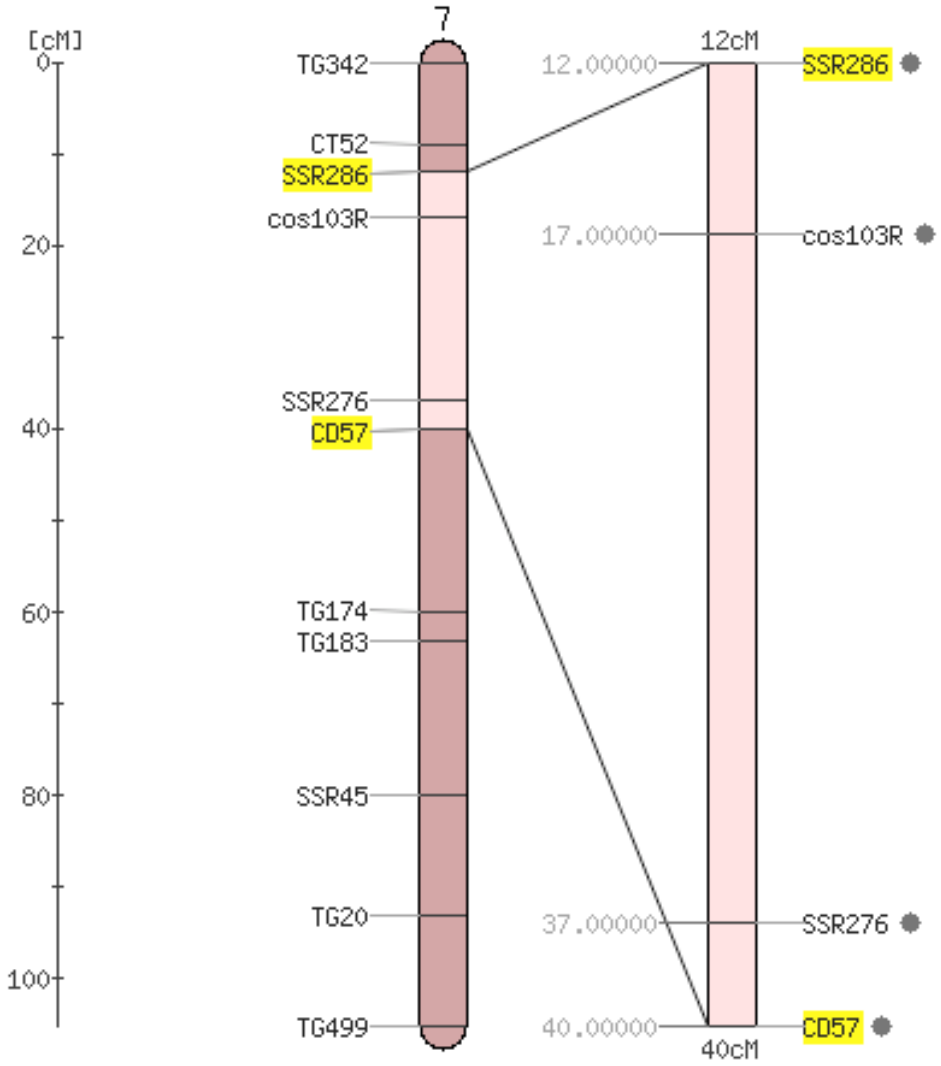
A QTL analysis for fruit shape circular in population QTL Tomato Howard German x LA1589 F2

View and compare with genetic and/or physical maps

Literature Annotation

PMID:17283371 Morphological [illegible] loci controlling fruit shape and development. Show/hide abstract

Viewing chr **7** of map **Tomato-EXPIMP 2008** [Help]



Marker color by LOD score: F(LOD3) | CF(LOD>=3 | I(LOD2) | I(LOD<2) | uncalculated Color marker types

Scroll up | Scroll down | Zoom in | Zoom out | Hide zoomed **zoom range:** 12.00 to 40.00 show

Compare map to: Map Tomato-EXPEN 2000 Chromosome 7 (8 markers) Compare

Hide comparison | Switch chromosomes View entire comparative map

Jump to map: Tomato-EXPIMP 2008 chr 7 Jump **Highlight marker:** SSR286 (Highlight

Marker SSR286

SGN-M959

SSR info

EST trace: Unknown
Annealing temperatures: Low: 50 **High:** 48
Repeat motif: CAG **Repeat number:** 8
Forward primer: AGCTATGGAGTTTCAGGACCA
Reverse primer: ATTCAGGTAGCATGGAACGC
Predicted size: 107

Breeders toolbox

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Please contact Joyce van Eck for suggestions.

Gene and phenotype information

- Search the SGN Locus database for your favorite gene
- Search the SGN Phenotype database for Solanaceae accessions
- Search the SGN Traits database for phenotype and QTL data
- SGN gene and phenotype submission guide

SGN tools

- Browse the SGN Markers database
- Browse available controlled vocabularies using the SGN Ontology browser
- Develop CAPS markers using the CAPS Designer
- Check intron locations in transript data using the Intron Finder
- On the fly QTL analysis for Solanaceae traits

Breeder tools under construction

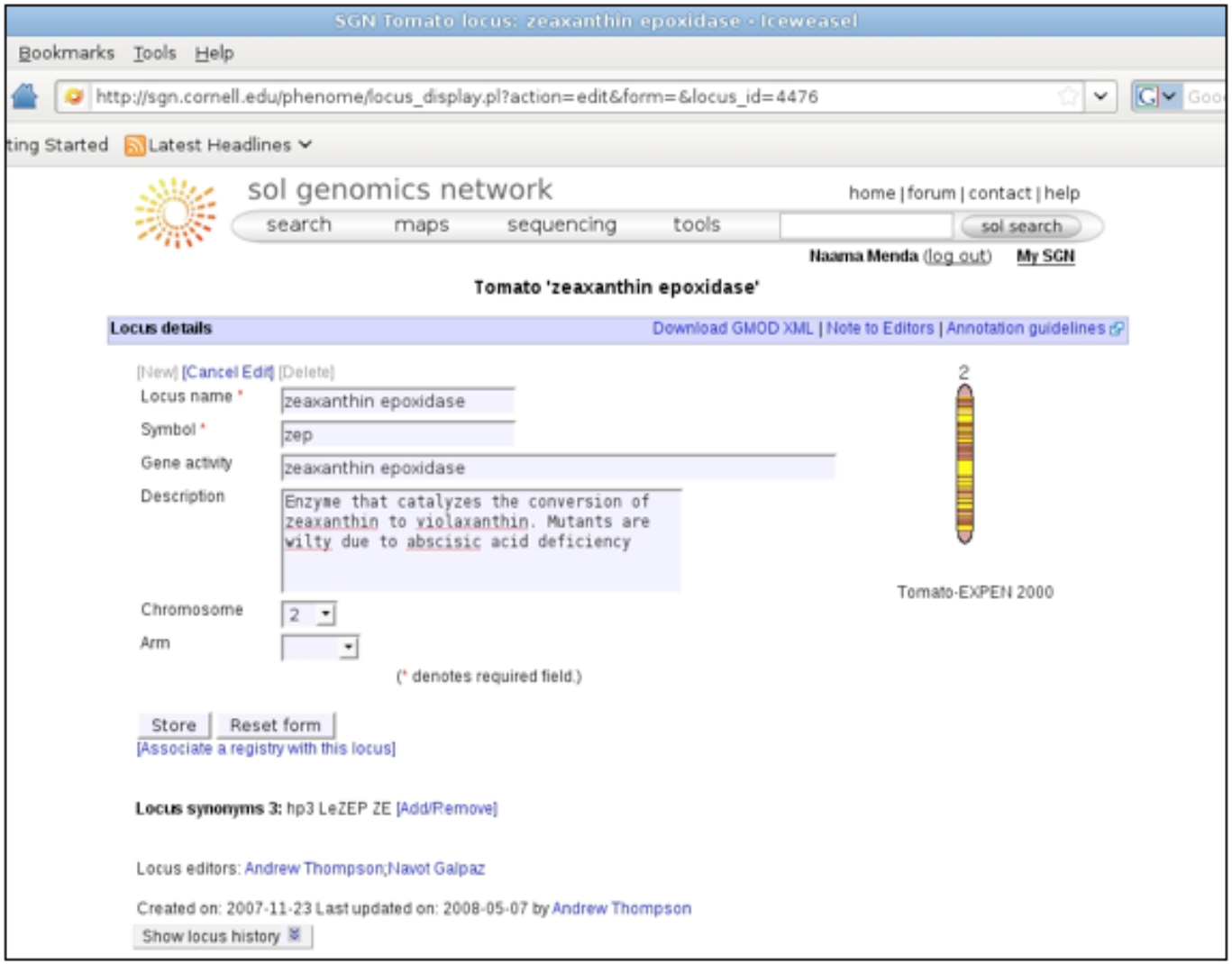
- SNP discovery tool. This will be part of the SolCAP project.

Links

- TomatoMap.Net - a site for Tomato Genetics at Ohio State University.
- SolCAP - the official SolCAP website at Michigan State University.

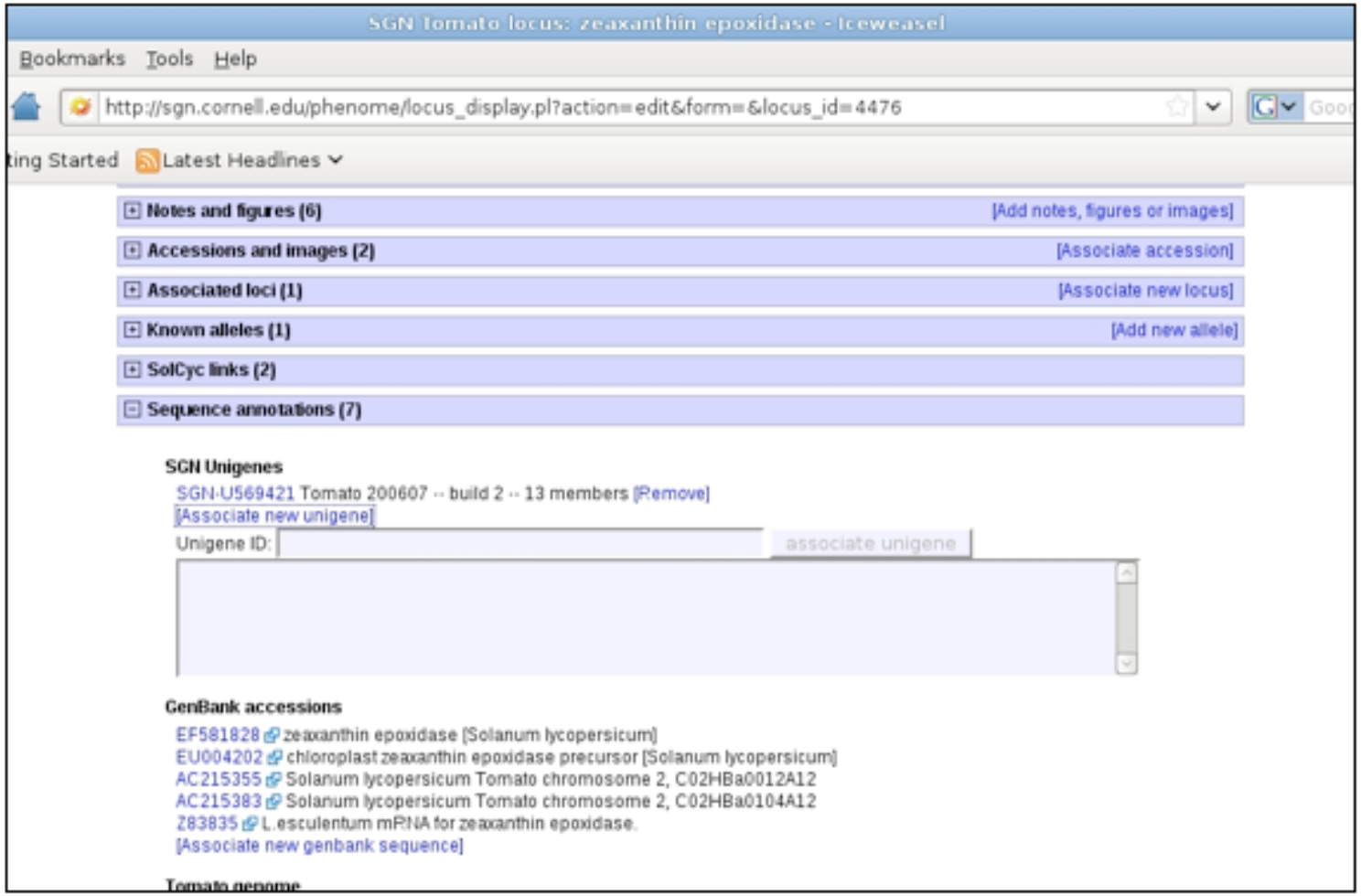
How do I begin annotating my favorite gene?

- **Search for the locus**. You can get **editor privileges** for any locus in the database.
  Obtaining editor privileges is easy! Simply click on the '[Request editor privileges]' link from any locus page (next to the 'Locus editor' name), or send us an email and an SGN curator will create an account for you.
- **Submit a new locus**. Your favorite Solanaceae locus is not found on SGN? We encourage you to **submit** information about genetic loci of the Solanaceae and related species here (please notice that an SGN account is required for all data submissions). For large datasets, please contact SGN



Can I submit information without being the locus-editor?

- You do not wish to be a locus editor, yet you want to **submit related information** such as publications or sequences?
  You may do so just by logging-in with your submitter account. SGN account can be created easily, but for submitting information we require a short validation step. Plese email SGN for obtaining permissions for accessing the community annotation features.



Suggestions and Tools under Construction

Acknowledgements

-Douglas Maxwell

-David Francis

-Allen van Deynze

- Some suggestions we have received:
  - Need to be able to find what you need quickly
  - Structure searches by "intuitive" terms and market class
  - Look at other sites with a similar resource
- Tools under construction
  - Interactive Tutorials
  - SNP discovery tool – part of SolCAP
  - Trait correlation analysis – direct or indirect
  - Search genome sequence – identify candidate genes

Acknowledgements

- Naama Menda
- Isaak Tecle
- Lukas Mueller
- Jim Giovannoni
- National Science Foundation
- SolCAP
  - Will fund a postdoctoral associate position on a half-time basis.