

## Exploring the Gene Page

**Note:** this exercise uses TriTrypDB (<https://TriTrypdb.org>) as an example database, but the same functionality is available on all VEuPathDB resources.

### Learning objectives

#### Gene pages:

- Become familiar with the information in gene pages
- Navigate to and from the gene pages

#### 1. Navigation to the Gene pages

For this exercise visit the gene page for Tb927.10.13780 (Glycogen synthase kinase 3). How did you get to this gene? (hint: copy and paste the ID in the site search, then click on the gene ID in the results).

The screenshot shows the TriTrypDB website interface. At the top, there is a search bar with the text "Tb927.10.13780" entered. Below the search bar, there is a navigation menu with links: "My Strategies", "Searches", "Tools", "My Workspace", "Data", "About", "Help", and "Contact Us". On the right side of the header, there are social media icons for Twitter, Facebook, and YouTube, along with a "Guest" user profile icon. Below the header, the main content area displays "Genes matching Tb927.10.13780" with a count of "1 - 1 of 1". A red arrow points to the first result, which is "Gene - Tb927.10.13780 Glycogen synthase kinase 3 short". The details for this gene are: "Gene name or symbol: GSK3s", "Organism: Trypanosoma brucei brucei TREU927", and "Fields matched: Cellular localization; External links; Gene ID; GO terms; Transcripts". On the left side of the results, there is a "Filter results" panel with sections for "Filter Gene fields" and "Filter organisms". The "Filter Gene fields" section has checkboxes for "Cellular localization", "External links", "Gene ID", "GO terms", and "Transcripts", all of which are currently unchecked. The "Filter organisms" section has a search bar and a list of organisms, with "Trypanosomatidae" and "Trypanosoma" listed. The "Trypanosoma" entry is expanded, showing a count of "1".

#### 2. Explore the top section of the gene page

What information is in this section? Can you easily find which chromosome this gene is located on? Does this gene have any user comments?

Add to basket Add to favorites Download Gene

**Tb927.10.13780** Glycogen synthase kinase 3 short

**Name:** GSK3s  
**Type:** protein coding  
**Chromosome:** 10  
**Location:** Tb927.10.v5.1:3,361,774..3,366,257()

**Species:** Trypanosoma brucei  
**Strain:** brucei TREU927  
**Status:** Curated Reference Strain

[View this gene at GeneDB](#)  
[View 3 user comments, or add a comment](#)

*This genome is actively curated at GeneDB. User comments added to this gene will be reviewed and incorporated into the official annotation if appropriate.*

**Shortcuts**

Synteny BLAT Alignments Phenotype SNPs Transcriptomics Protein Features Proteomics

Also see Tb927.10.13780 in the [Genome Browser](#) or [Protein Browser](#)

▲ Collapse all sections for better performance

### 3. Explore the gene model section.

Scroll down to the gene model section of the gene page. What direction is the transcript relative to the chromosome? Does the gene have UTRs?

**1 Gene models**

▲ Collapse all sections for better performance

# Exons in Gene 1

# Transcripts 1

▼ Gene Models

[View in JBrowse genome browser](#)

Scroll and zoom

[Transcripts](#) [Download](#) [Data sets](#)

How long is the transcript? You can determine transcript length by expanding the Transcripts section.

[View in JBrowse genome browser](#)

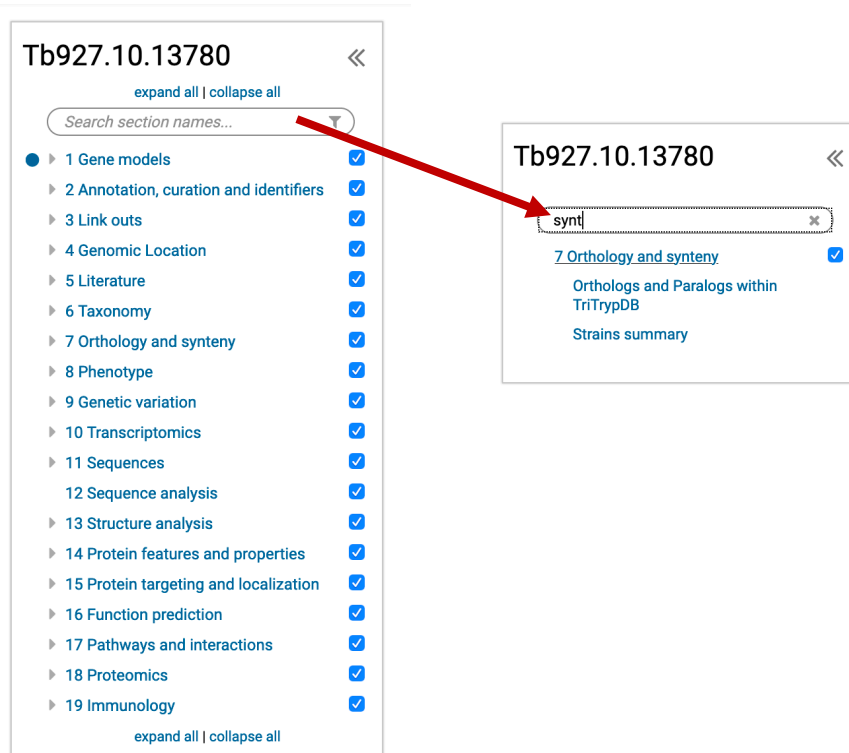
▼ **Transcripts** [Download](#) [Data sets](#)

Transcript	# exons	Transcript length	Protein length
Tb927.10.13780:mRNA	1	4484	352

### 4. Content navigation.

How do you find/navigate to the different sections of the page? Use the “Contents” menu on the left side, type a keyword and click on the menu, click on the work to

navigate to it on the page. In the example below the word “synteny” is used. You can also click on the images in the Shortcuts section in the top of the page.



## 5. Running an alignment of selected sequences

- Expand the “Orthologs and Paralogs in TriTrypDB” section.
- Select a few genes from the table using the checkbox.
- Scroll to the bottom of the table and click on the Run Clustal Omega button.

<input checked="" type="checkbox"/>	TcYC6_0115420	Trypanosoma cruzi Y C6	protein kinase
<input type="checkbox"/>	Tc_MARK_4866	Trypanosoma cruzi marinkellei strain B7	glycogen synt alpha, putative
<input type="checkbox"/>	TevSTIB805.10.14480	Trypanosoma evansi strain STIB 805	glycogen synt
<input type="checkbox"/>	DQ04_00191000	Trypanosoma grayi ANR4	putative glyco kinase-3 alpha
<input checked="" type="checkbox"/>	TM35_000033680	Trypanosoma theileri isolate Edinburgh	putative glyco kinase-3 alpha
<input type="checkbox"/>	TvY486_1013940	Trypanosoma vivax Y486	protein kinase

Check All Uncheck All

### Select sequence type for Clustal Omega multiple sequence alignment:

Please note: selecting a large flanking region or a large number of sequences will take several minutes.

☒ Protein ☐ CDS (spliced) ☐ Genomic

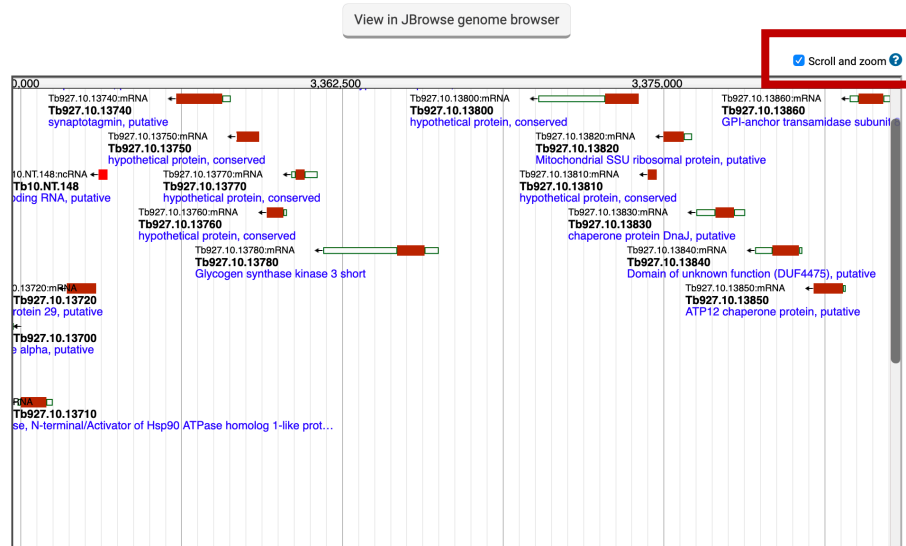
Output format: Mismatches highlighted

Run Clustal Omega for selected genes

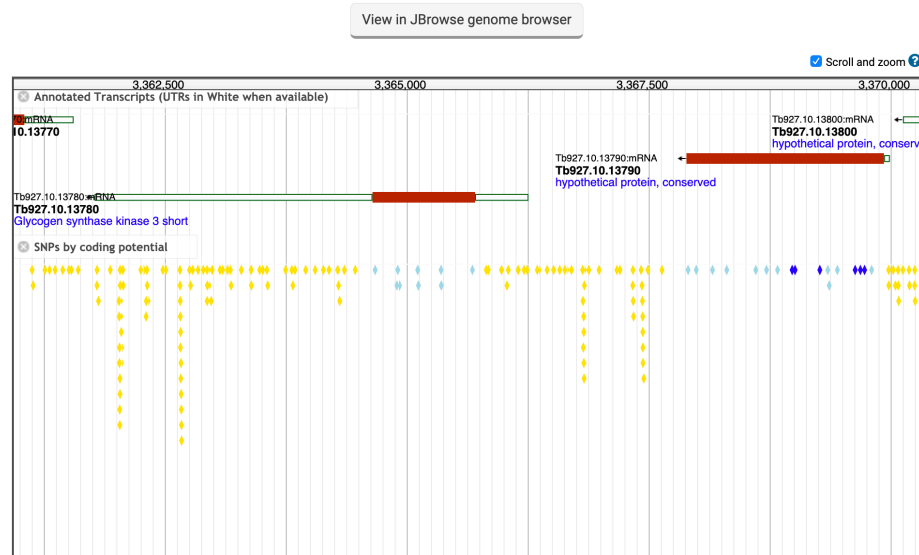
## 6. Exploring the genetic variation section

Go to the Genetic variation section of the gene page and expand the SNP section. Notice that by default you cannot scroll within the embedded browser window. To enable scrolling, select the “Scroll and Zoom” check box in the upper right-hand side of the browser window. To scroll down within the browser window, you click and drag or use two-finger scrolling. You can also double click in an area to zoom in.

▼ SNPs



SNP color code: Dark blue (non-synonymous), light blue (synonymous), Yellow (non-coding), Red (nonsense). What kind of SNPs are in this gene? Can you see any non-synonymous SNPs? How does this compare to the neighboring genes?



## 7. Explore other sections of the gene page.

Feel free to scroll around the gene page and ask questions for clarification. Here are some questions you may want to ask about this gene:

- a. Is there evidence that this protein is phosphorylated? (hint: go to the proteomics section and expand the Post Translational Modification section).
- b. Where is the protein localized? (hint: go to the Protein Targeting and Localization section and expand the cellular localization section).
- c. Is there any phenotypic data available for this gene? (hint: go to the Phenotype section and expand its subsections).
- d. Is there any RNA-Seq data available for this gene? (hint: go to the Transcriptomics section and expand the subsections called RNA-Seq transcription summary and Transcript Expression).