

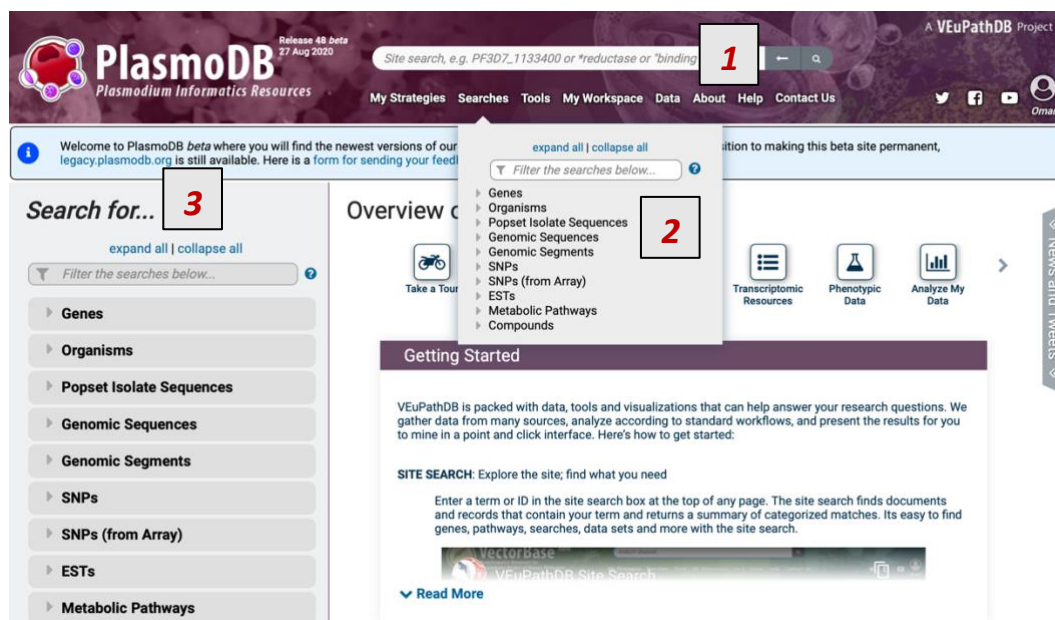
Search Strategies

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

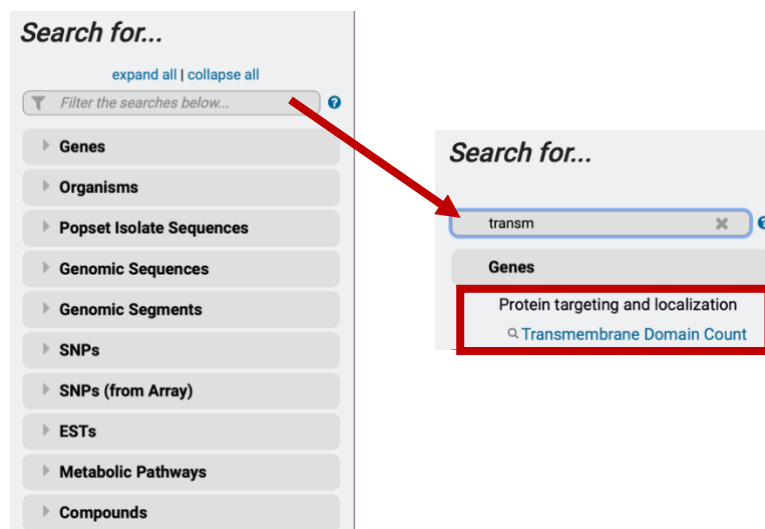
Learning objectives:

- Running a search to start a search strategy
- Adding steps in a search strategy
- Adding and sorting results
- Revising steps

There are three options to start a Search Strategy. 1) From the “Site Search” box ---> Export as Search Strategy, 2) In the site header from the “Searches” menu and 3) In the home page (left hand side) from the “Search for ...” section.



1. Go to the home page and in the “Search for ...” section on the left, filter the searches by typing the word transmembrane to find the **Transmembrane Domain Count** search in the filtered results.



2. Click on the transmembrane (TM) domain count search to get to the search page. Configure this search to find all genes from *Plasmodium vivax* P01 that have at least 6 TM domains and at most 8 TM domains. See image below if you need help with the configuration.

Identify Genes based on Transmembrane Domain Count

1 selected, out of 45

add these | clear these | select only these
select all | clear all

vivax

☒ Plasmodium vivax

☒ Plasmodium vivax P01

☐ Plasmodium vivax Sal-1

☐ Plasmodium vivax-like sp.

☐ Plasmodium vivax-like Pvl01

add these | clear these | select only these
select all | clear all

Minimum Number of Transmembrane Domains

6

Maximum Number of Transmembrane Domains

8

Get Answer

- How many genes did you obtain? (hint: look at the number results in the strategy step in yellow, or the number right above the results and below the search strategy).

My Search Strategies

Opened (1) All (404) Public (42) Help

Unnamed Search Strategy *

Transmb Dom
101 Genes
Step 1

+ Add a step

101 Genes (97 ortholog groups) Revise this search

Organism Filter
select all | clear all | expand all | collapse all
Hide zero counts
Search organisms...

Gene Results Genome View Analyze Results

Rows per page: 50 Download Add to Basket Add Columns

Gene ID	Transcript ID	Organism	Genomic Location (Transcript)	# TM Domains
PVP01_0104300	PVP01_0104300.1	Plasmodium vivax P01	PvP01_01_v1:213970..224298(+)	6
PVP01_0113600	PVP01_0113600.1	Plasmodium vivax P01	PvP01_01_v1:607892..610837(+)	6
PVP01_0114900	PVP01_0114900.1	Plasmodium vivax P01	PvP01_01_v1:664719..665660(-)	6
PVP01_0317200	PVP01_0317200.1	Plasmodium vivax P01	PvP01_03_v1:744775..747000(+)	6
PVP01_0606500	PVP01_0606500.1	Plasmodium vivax P01	PvP01_06_v1:261479..262988(-)	6
PVP01_0703300	PVP01_0703300.1	Plasmodium vivax P01	PvP01_07_v1:187292..193820(-)	6
PVP01_0706600	PVP01_0706600.1	Plasmodium vivax P01	PvP01_07_v1:352530..354459(-)	6

- Explore the results table. Try the following things:

- Sort the #TM domain column to show genes with 8 TM domains first.
- Add a column for transcript length (Click on add columns and find the transcript length column, then click on update columns).

Gene Results Genome View Analyze Results

Rows per page: 50 Download Add to Basket Add Columns

Gene ID	Transcript ID	Organism	Genomic Location (Transcript)	# TM Domains
PVP01_0208500	PVP01_0208500.1	Plasmodium vivax P01	PvP01_02_v1:352862..356879(+)	8
PVP01_0412900	PVP01_0412900.1	Plasmodium vivax P01	PvP01_04_v1:530187..531415(-)	8
PVP01_0509600	PVP01_0509600.1	Plasmodium vivax P01	PvP01_05_v1:429961..434135(-)	8
PVP01_0702700	PVP01_0702700.1	Plasmodium vivax P01	PvP01_07_v1:158919..167549(-)	8
PVP01_0817900	PVP01_0817900.1	Plasmodium vivax P01	PvP01_08_v1:778581..780290(+)	8
PVP01_0914100	PVP01_0914100.1	Plasmodium vivax P01	PvP01_09_v1:654670..655704(+)	8
PVP01_0936100	PVP01_0936100.1	Plasmodium vivax P01	PvP01_09_v1:1551091..1552320(-)	8
PVP01_1011300	PVP01_1011300.1	Plasmodium vivax P01	PvP01_10_v1:501278..502747(-)	8
PVP01_1028700	PVP01_1028700.1	Plasmodium vivax P01	PvP01_10_v1:1224465..1226132(-)	8

Select Columns

Update Columns

Search Columns

Search Specific

Gene models

Exons in Gene

Exons in Transcript

Transcripts

Annotated 5' UTR length

Annotated 3' UTR length

Gene Strand

Gene Type

Is Pseudo

Is Reverse

Transcript Length

Annotation, curation and identifiers

Link outs

Genomic Location

Chromosome

Genomic Location (Gene)

Genomic Location (Transcript)

Genomic Sequence ID

Taxonomy

Organism

Orthology and synteny

Phenotype

Genetic variation

Transcriptomics

Protein features and properties

Protein targeting and localization

TM Domains

SignalP Peptide

Add Columns






-
- Release 48 beta
27 Aug 2020
- Site search, e.g. PF3D7_1133400 or "reductase or "binding protein"
- PlasmoDB
Plasmodium Informatics
- ## My Search Strategy
- Opened (1) All (404) Public (42)
- Unnamed Search Strategy *
- Transmem Dom
101 Genes
- Step 1
- Add a step
- 101 Genes (97 ortholog groups)
- Organism Filter
select all | clear all | expand all | collapse all
☐ Hide zero counts
Search organisms...
- ☐ Plasmodium adleri
☐ Plasmodium berghiei
☐ Plasmodium billicollisi
☐ Plasmodium blacklocki
☐ Plasmodium chabaudi
☐ Plasmodium...
- ### Add a step to your search strategy

 - Choose how to combine with other Genes
 - ☒ 1 INTERSECT 2
 - ☐ 1 UNION 2
 - ☐ 1 MINUS 2
 - ☐ 2 MINUS 1
 - Choose which Genes to combine. From...
 - ☒ A new search
 - ☐ An existing strategy
 - ☐ My basket

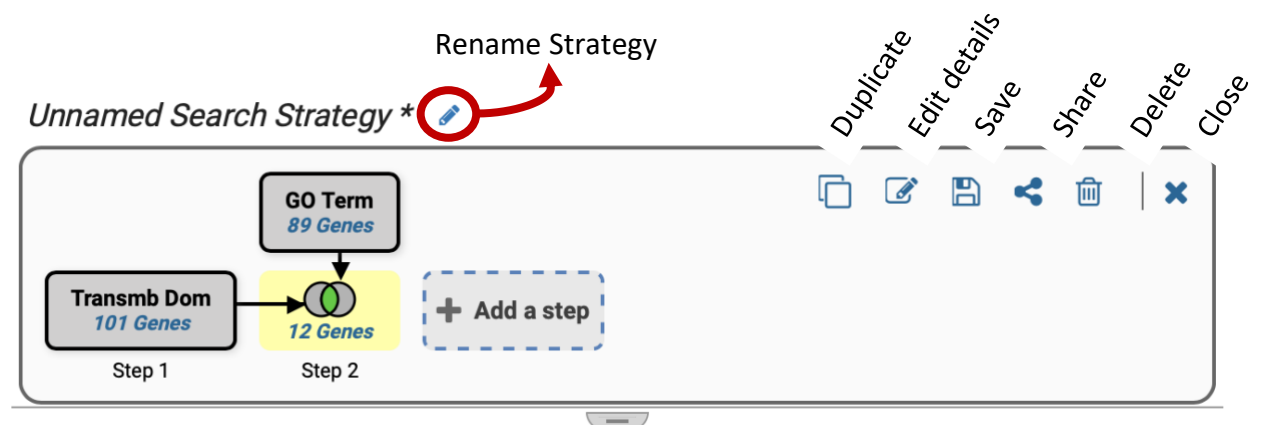
Function prediction
 q. GO Term
 Text
 q. Text (product name, notes, etc.)

4

Notice that you have different options on how to combine results from searches in your strategy. What do you each of the operations do?

Operator	Combined Result will contain
<input checked="" type="radio"/>  2 INTERSECT 3	IDs in common between the two lists
<input type="radio"/>  2 UNION 3	IDs from list 2 and list 3
<input type="radio"/>  2 MINUS 3	IDs unique to 2
<input type="radio"/>  3 MINUS 2	IDs unique to 3
	IDs whose features are near each other (collocated) in the genome

- You can rename, duplicate, delete, save and share strategies (saving and sharing strategies requires creating an account and logging in). You can also rename each



individual step in a strategy.

7. Revising a step in a strategy. You can revise any step in a strategy by moving your mouse over the step you want to revise until you see the edit button appear on the step.
8. Revise the first step in your strategy and change the TM domain parameter to include genes with a minimum of 5 TMs and a maximum of 12 TMs. How does this change your final results?

Opened (1) All (404) Public (42) Help

Unnamed Search Strategy *

View | **Revise** | Insert step before | Orthologs | Delete

Details for step *Transmb Dom*
101 Genes

Organism Plasmodium vivax P01

Minimum Number of Transmembrane Domains 6

Maximum Number of Transmembrane Domains 8

► Give this search a weight

12 Genes (12 ortholog groups)

Organism Filter
select all | clear all | expand all | collapse all

Rows per page: 50

Download Ad

GO Term 89 Genes

Transmb Dom 101 Genes

Minimum Number of Transmembrane Domains
5

Maximum Number of Transmembrane Domains
12

Revise