1. Find host genes that are upregulated in infected mouse cells compared to uninfected ones. For this exercise use http://hostdb.org

   a. Navigate to the “Transcript Expression” section then select “RNA Seq Evidence”. Select the fold change query for the “Transcriptome during infection with 25 strains of T. gondii (Minot et al.)” experiment.

   b. Configure the query so that you are comparing all infected samples to the uninfected control. Make sure to select upregulated. In the example above a fold change of 10 was selected and the “average” operation was applied on the comparison samples. Feel free to run the query exactly as above.
c. What kinds of GO terms are enriched in this result set?  *Hint:* click on the “Analyse Results” tab and select the GO enrichment analysis.

![Gene Ontology Enrichment](image)

“Analyse Results” tab and select the GO enrichment analysis.

d. Can you identify the human orthologs of these genes?  *Hint:* add a “Transform by Orthology” step.

![Mouse Infected 727 Genes](image)

![Orthologs 727 Genes](image)

Add Step

e. Do any of these human genes also have peptide evidence for their expression during infection?  *Hint:* add a step and explore the “Mass Spec Evidence” data in the protein expression section. Run the search using the default parameters.

![Mass Spec Evidence](image)

![Mouse Infected 200 Genes](image)

![Orthologs 727 Genes](image)

![164 Genes](image)

Add Step
2. Find *Plasmodium falciparum* antigens that are immunogenic.
For this exercise use [http://plasmodb.org](http://plasmodb.org)

a. Identify antigens (genes) that exhibited an increased immunogenicity in children (ages 0-18) with no disease (normal) compared to children with disease (infected). *Hint*: the “Serum Antibody Levels” search is available in the “Host Response” menu item in the “Identify Genes By” section of the home page. Note that you will be comparing “comparison” samples to “reference” samples. So in this example, your comparison samples will be normal children and your reference samples with be infected children. You can configure the samples by making selection from left. What do your results look like? Could these represent potential protective antigens?