

Molecular biology

Protein name: Glucokinase

Organism names:

- *Homo sapien* : AAB97682.1
- *Ratus norvegicus* :
- *Mus musculus* : AAC42074.1
- *D. melanogaster* : AAG23063.1
- *C. elegans* : CCD65339.1

Concepts: Transcription and Translation

Task: Compare the sequences of the above organisms and determine the following:

- Percentage similarity between *Homo sapien* and *C. elagans*: 11%
- Percentage dissimilarity between *Mus musculus* and *D. melanogaster* : $100 - 44\% = 56\%$
- Determine the location(s) of dissimilarity across the entire sequences
- Were the differences across the sequences based on structural mutation or numerical?
- Were the differences across the variable or conservative scale?
- Are the mutations deleterious?
- Can you suggest a title for your findings?

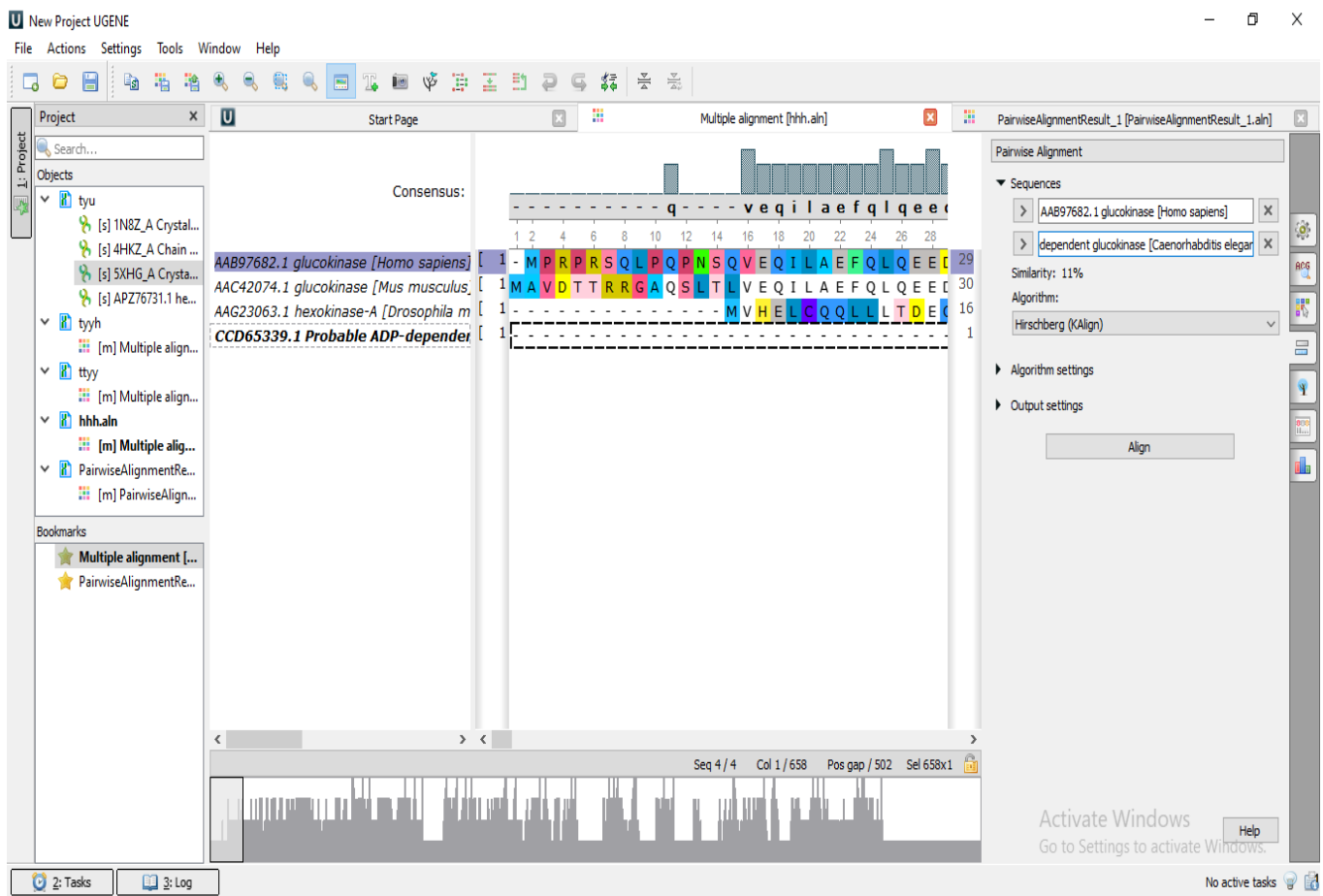
Note: The screenshots of the results are included in the next pages.

Software:

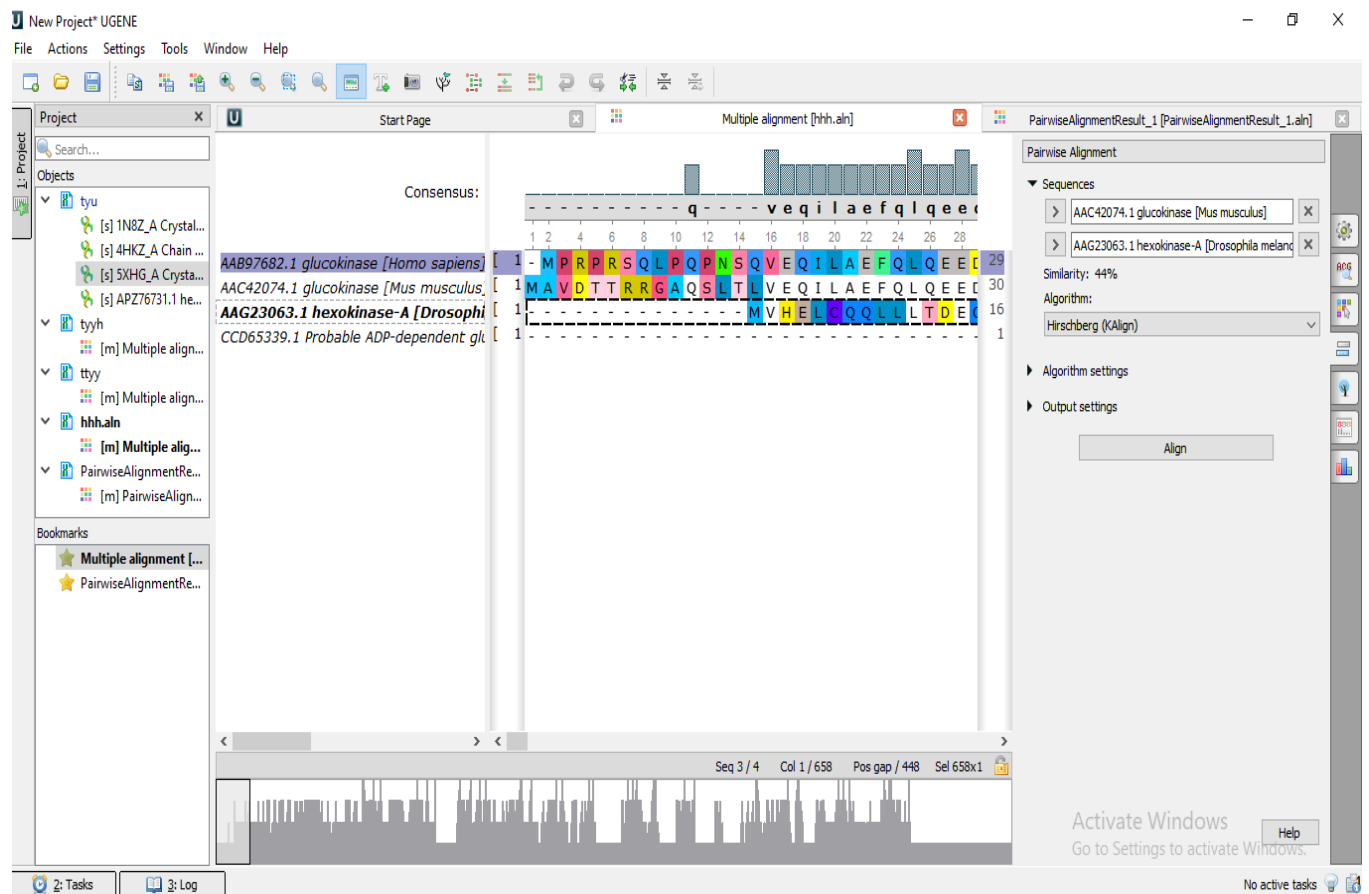
- NCBI for sequence retrieval
- Clustal Omega for MSA
- Consurf server for mutational analysis
- Hope server

NB: We can arrange a separate class if you have difficulty using any of the software.

Best wishes



Percentage similarity between *Homo sapien* and *C. elagans*: 11%



Percentage dissimilarity between *Mus musculus* and *D. melanogaster* : $100 - 44\% = 56\%$