Using the Ensembl Genome Browser

20th September 2022

helpdesk@ensembl.org

Welcome to the ‘Living Document’ for this Ensembl Browser Workshop. Everyone who is registered for the course has access to edit this document. Please feel free to use this document to ask questions to the Ensembl team throughout the workshop. If you wish to ask questions privately, please do not hesitate to contact the Ensembl HelpDesk.

The ‘Living Document’ is a great way of capturing the knowledge exchanged during the course and saving it for future use by yourselves and those who can’t attend this course. Remember - you don’t have to contribute, but any additions will be welcomed!

The course learning outcomes are:

- Outline the Ensembl project and the data types available
- View genomic regions and manipulate the view to add features they are interested in
- Describe the Ensembl gene annotation process
- Search for and export information about genes and transcripts from Ensembl

Course Overview

Schedule

Tuesday, 20th September 2022, 15:00 - 17:00 (GMT-3):

15:00 - 16:00	Introduction to Ensembl and Exploring Genomic Regions
16:00 - 17:00	Ensembl Genes and Transcripts

Trainers

Louisse Mirabueno, Ben Moore

Demo, exercises and slides available to download

https://training.ensembl.org/events/2022/2022-09-20-WBDSLA

Feedback survey

https://forms.gle/LoHaLurJzqG9YFo49

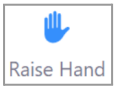
We would really appreciate it if you could share your thoughts with us regarding these sessions. We are interested in your opinions, how you feel the experience has benefited you and how it could be improved. If you could find a few minutes to complete a short survey at the end of the last session it would really help us in improving the training we can deliver.

Workshop recording

(URL to be added)

The golden rules for efficient online training

We suggest everyone follows these few simple rules for the course to run as smoothly as possible:

- Mute all your microphones to reduce the background noise - only unmute when asking a question
- If you have questions during the course, either:
    - Unmute yourself and ask question out loud
    - Type your question in this shared reference document. Avoid typing in the Zoom chat as it is difficult to keep track there
- When you are ready to move on from a practical/exercises please click the Raise Hand button 

so that the tutor knows you are ready and can proceed with the course. Please remember there are more exercises than we have time for. You are not expected to complete all of them, but rather pick and choose the ones most relevant to your work and you are welcome to finish them in your own time.

Resources:

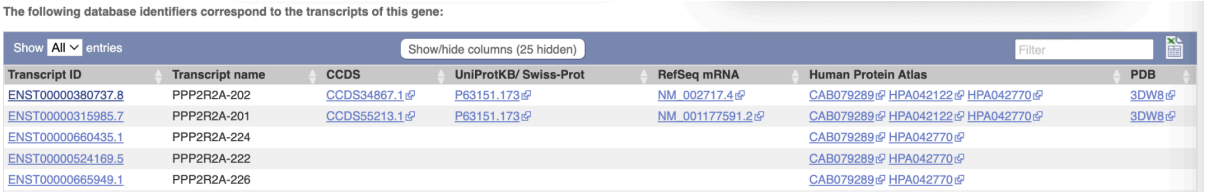
www.ensembl.org - Ensembl genome browser (chordates)
grch37.ensembl.org - Ensembl archive for browsing data associated with the human GRCh37 genome assembly
www.ensemblgenomes.org - Ensembl Genomes genome browser (non-chordates)
www.ebi.ac.uk - EMBL-EBI website
www.ebi.ac.uk/services - EMBL-EBI databases and tools
Train Online - EMBL-EBI e-learning for our databases and tools

Questions

If you have any questions/problems that you would like to share and are applicable to the whole class please write them below. A tutor will answer your question.

Write your question after the last one you can see in this document and write your name.

1. **<Ana><Is there any suggestion for making the correct crosslinking with UniProt accessions?>**
   <Ben> Ensembl provides mapping between proteins encoded by protein-coding transcripts annotated by Ensembl and UniProt proteins. The best place to view these links to UniProt is through the 'External References' link on the left hand side of the gene tab and scrolling to the table at the bottom of the page. E.g:
   https://www.ensembl.org/Homo_sapiens/Gene/Matches?db=core;g=ENSG00000221914;r=8:26291508-26372680



The following database identifiers correspond to the transcripts of this gene:

Show All entries | Show/hide columns (25 hidden) | Filter

Transcript ID	Transcript name	CCDS	UniProtKB/ Swiss-Prot	RefSeq mRNA	Human Protein Atlas	PDB
ENST00000380737.8	PPP2R2A-202	CCDS34867.1	P63151.173	NM_002717.4	CAB079289 HPA042122 HPA042770	3DW8
ENST00000315985.7	PPP2R2A-201	CCDS55213.1	P63151.173	NM_001177591.2	CAB079289 HPA042122 HPA042770	3DW8
ENST00000660435.1	PPP2R2A-224				CAB079289 HPA042770	
ENST00000524169.5	PPP2R2A-222				CAB079289 HPA042770	
ENST00000665949.1	PPP2R2A-226				CAB079289 HPA042770	

   For UniProt, these mappings are created by direct links and alignments:
   https://www.ensembl.org/info/genome/genebuild/xrefs.html

2. **<Carolina><Do ensembl's updates include the newest genomes releases from partner sites, e.g. Vector Base?>**
   <Ben> Ensembl and Ensembl Genomes incorporates updated releases from partner sites, such as VectorBase and WormBase, but because of the asynchronous release cycles, one resource may have more recent data than the other for short periods of time. You can always check the assembly and annotation versions through the species information pages. E.g:
   https://www.ensembl.org/Caenorhabditis_elegans/Info/Annotation

   Hmm, got it! Thank you a lot!

   No problem!

3. **<Ana><Thanks Ben! So when retireving the Uniprot id using the API REST is there any consideration to do? When coming with an Uniprot ID i mean>**
   <Ben>I'm not 100% sure what you mean, I'm afraid Ana. The UniProt IDs you find linked to Ensembl transcripts in the browser will be the same as those

retrieved through the REST API. Do you have an example? I will check for an old example, and be back here. Thanks!

4. **<Name><Question>**
   <Tutor><Answer>

5. **<Name><Question>**
   <Tutor><Answer>

6. **<Name><Question>**
   <Tutor><Answer>

7. **<Name><Question>**
   <Tutor><Answer>

8. **<Name><Question>**
   <Tutor><Answer>

9. **<Name><Question>**
   <Tutor><Answer>

10. **<Name><Question>**
    <Tutor><Answer>

11. **<Name><Question>**
    <Tutor><Answer>

12. **<Name><Question>**
    <Tutor><Answer>

13. **<Name><Question>**
    <Tutor><Answer>

14. **<Name><Question>**
    <Tutor><Answer>

15. **<Name><Question>**
    <Tutor><Answer>

16. **<Name><Question>**
    <Tutor><Answer>

17. **<Name><Question>**
    <Tutor><Answer>

18. **<Name><Question>**
    <Tutor><Answer>

19. <Name><Question>
    <Tutor><Answer>

20. <Name><Question>
    <Tutor><Answer>

21. <Name><Question>
    <Tutor><Answer>

22. <Name><Question>
    <Tutor><Answer>

23. <Name><Question>
    <Tutor><Answer>

24. <Name><Question>
    <Tutor><Answer>

25. <Name><Question>
    <Tutor><Answer>

Other resources

This section of the Living Document provides additional resources that might be useful to you in developing skills and knowledge in the course topic area.

Train online

EMBL-EBI provides an e-learning platform called Train online. Train online provides free courses on Europe's most widely used data resources, created by experts at EMBL-EBI and collaborating institutes. You do not need to have any previous experience of bioinformatics to benefit from this training. We want to help you to become a confident user of our data resources; we are not trying to train you to become a bioinformatician.

Tutorials of interest might include:

- Ensembl: Quick Tour
- Ensembl: Browsing Genomes
- Ensembl Genomes (non-chordates): Quick Tour
- Ensembl REST API

Webinar series

The EMBL-EBI training team also runs regular webinar series featuring the EBI resources. See the Training pages for more information. You can also catch up on any webinars that you might have missed in Train online or on Youtube.