Gene Presentation

MPCS56420 Spring 2020

You will become an expert on a gene of your choosing and present it to the class. There is no restrictions on which gene you select, however, you must be willing to conduct the necessary analysis on it (described below).

Presentation Format

You will have 10 minutes to present your gene. This is a hard limit and you will be stopped at the 10 minute mark. Practice your presentation to ensure you can stay within the limit. After you presentation, we will open up to questions for a maximum of 5 minutes.

Prepare slides for your presentation that address the following sections:

Introduction/Background

Provide information to introduce your gene to the class. Make sure to include information about the organism(s) where the gene exists along with information on why you choose this gene. What made it interesting enough for you to choose?

Sequence Analysis

Perform sequence analysis on your gene making sure to address (at least) the following questions:

- When was this gene sequenced? By whom? What is its accession number?
- Is it part of family? If so, how well is then family conserved? What are characteristics of family?
- What is the gene's function? Does it have an E.C. number? How well is the function conserved across different family members or organisms.
- Is there anything else interesting about the sequence of family?

Structural Analysis

Perform structural analysis on your gene making sure to address (at least) the following questions:

- Are there any conserved structural domains in the gene?
- What structural features are important for function (ie. where is the functional site)? Is this site conserved across other members of the family? If not, what is different?
- Is there a structure of the gene? If so, show an image (or movie) created using PyMOL. Make sure to highlight important features of the protein. If not, predicate a model of the structure and show an image of the model. Describe what software and tools you used to make the model.
- Describe the structure of your gene using either the CATH or SCOP databases.

Unique Analysis or Insights

Describe any additional analysis or provide insights you have made after conducting your analysis. Consider the following questions:

- What else would you like to know about the gene?
- If you had more, time what other analysis would you have done?
- Can you think of an experiment that could help better understand the gene?
- If the gene is related to a disease, is it a drug target? What is the current state of development?
- Could this be a “validate” drug target? Why or why not?
- Did you find any contradictory information in your research?

References

You must make references to at least 2 papers that discuss the sequence, structure of function of you gene in your presentation. Provide the references as the last slide in your presentation using MLA format for the citation.