

Biophysics Physics 422/V3800

The paper is 60% of the grade.

It should be ≈ 15 pages. It needs text and figures (with a minimum of ≈ 12 pages text).

This is written as a review article not as a research article.

Introduction. What is the function your protein is doing for the cell? Where does it fit into the work of the cell? What other proteins does it work with? (1-2 pages)

Protein structure. An atomic structure of your protein that highlights important elements. You may want to use a mixture of structures you generate yourself (with pymol, vmd or chimera) and pictures from papers that highlight what you are trying to show me. If you use a published picture always include the reference on the picture itself.

Protein function. This must have the equation for the reaction.

Energetics of the reaction. Is energy needed to run forward or is energy released; What's ΔG° , ΔG , what's the concentration across the membrane of relevant ions? etc

For Intro, structure, function and energetics portion of your paper start with the information you used for Class short talk 1 and 2. Expand the information to tell me something specific and interesting. Do not just write things into your paper because you read them and you want to fill space. You want to be describing your protein and its function. Make sure you have described the basics then go on to more specific elements you want to explain to me.

Figures: Figures can be a big help in telling your story. Use them to show me what I need to know. You must write your own figure legend (and make sure to add the reference). You may want to put a decent part of your text into the figure legends so that you really integrate the figure into the paper.

Source material. Use the web, Wikipedia as a start. But then you need ≈ 2 decent review articles (Hint: In PubMed these will be listed as review) and then a couple of papers on your more specific topic. You can use papers before 2000 for general information but please find some new papers (last 5 years) to make sure things haven't changed too much.

Your cool topic. The cool topic need not be narrowly focused on your particular protein. You may want to think about how your protein fits into the larger scheme of things (eg How does your protein work with other proteins; It can compare and contrast different proteins that are evolutionarily related to your protein. Or it can be looking at a set of papers addressing a open question about how your particular protein works; it could consider how to design a nanomachine that does what your protein does; it can be where are the mutants in the protein structure that lead to disease-are they clustered by location? are they a particular type of amino acid?).

You will give me the completed paper on the date I ask - This again is arranged to make the deadlines fairer.

I will then make an appointment with your for a 30' one on one meeting. At that time we will discuss the paper. If there are deficiencies you will have a chance to fill them in with can appendix that will answer specific questions we agree on. (Don't worry about this

now - just write your paper to be as good as it can be). Please read your paper over before this meeting because we will be discussing your writing in detail at our meeting.

References: Every paragraph should have one or more references. The easiest references are (first author last names, year). For example, (Jones, 2014). If there are two papers by Jones in 2014 label them 2014a and 2014b. The references at the back are in alphabetical order (from first author name). Use any format for the reference you find in a scientific paper that you are reading that contains the title of the paper. (Do not number the references (1) etc unless you are using a bibliography program. Endnotes (\$\$), Zotero (free) will do the job and if you are going to grad school are a good thing to learn. **Clearly NEVER copy (plagerize) text.**