

Task #5

Writing the Initial Qualification Model Abstract

Due: Friday, October 13th

After completing your Task 3 Outline, write a **200-250 word (or 1220 characters not counting spaces)** abstract describing the structure and function of Glutathione-S-Transferase epsilon 2 or GSTe2. Your goal with this abstract is to tell a comprehensive molecular story associated with this specific protein. The Protein Data Bank File for this protein is 3zmk.

Your abstract should have the following basic information at the top:

- ✓ **School.** Full name of your school
- ✓ **Authors.** The authors are the students who are designing the qualification model and writing the abstract. The teacher's name should be listed separately. Names should be listed alphabetically. If the list of names is lengthy, First Name Initials can be used.
- ✓ **Teacher(s).** List the teacher's name(s).
- ✓ **Title.** The title should have the name of the molecule and a very brief phrase describing the structure, function or significance of the molecule. You can have some fun with the title (within reason) if you wish, but the title should also have a **concrete scientific premise**.
- ✓ **PDB File.** List the Protein Data Bank (pdb) file used to create the 3D model of 3zmk.
- ✓ **Primary Citation.** Your abstract should contain the primary citation used to create the 3D model, which can be found on the main summary page of the protein's Protein Data Bank page. Also, see Task 3.
Please use the following format:
 - List of authors (year). Title. Journal name in italics Volume (issue when available): Pages
 - Example:
Rutenber, E., Katzin, B.J., Ernst, S., Collins, E.J., Mlsna, D., Read, M.P., Robertus, J.D.
(1991). Crystallographic refinement of ricin to 2.5 Å. *Proteins* 10: 240-250.

How do I write a descriptive and engaging abstract?

Body of the Abstract

Write your abstract following this sequence of ideas, using what you learned in Task 3.

1. Open your abstract with a brief introductory sentence regarding the “big picture” story you deduced while writing your Task 3 Outline. It should grab the attention of your audience and make the reader want to continue reading.
 - a. *Why should we care about your project? What does this protein have to do with everyday life?*
 - b. *Why study it? What impact does this protein have on the global world?*
2. Introduce the specific protein and give supporting information on its molecular function.
 - a. *What organism(s) contain this protein? Is it part of a larger family of proteins?*
 - b. *What does this protein do within the tissues/cell? What is its job?*
 - c. *Where can you find the protein within the cell?*
 - d. *Does it interact with other molecules? If so, how/why?*
3. Describe what happens if the protein is missing or defective. Is it harmful or beneficial? Does a disease or disorder result? Is there a mutation? Explain.
4. Thoroughly describe the physical structure of the molecule.
 - a. *How many amino acids is it made of? Describe the overall shape.*
 - b. *Is it sub-divided into domains or motifs? What secondary structures are present?*
 - c. *What specific amino acids aid in or perform the function you are describing? How?*
5. Include a statement shortly after your structure discussion describing this project as a SMART Team modeling project using 3D printing technology. This will differentiate it as a modeling abstract, rather than a research abstract.
 - a. *Example, “The Fennimore High School SMART (Students Modeling A Research Topic) Team has designed a model of phenylalanine hydroxylase using 3D printing technology to investigate structure-function relationships.”*
6. Near the end, there should be a sentence discussing the importance of the work, how this work will affect science, medicine, the world, etc., and what future research is needed.
7. Your final summary should be a statement bringing your reader back to the “big picture”. Make a connection between the “big picture” idea with which you started the abstract and the specifics of the protein that you are modeling.

****Important Tips!!**

- Writing in science is not like writing in general literature. Science writing is specific and concise.
- **The abstract should be written in passive voice and in third person. No “I, We, She...”**
- When using highly technical words that most readers won’t understand, explain or define them.
- Avoid using abbreviations or acronyms that are not commonly understood unless you define them.
- Avoid superfluous phrases which do not contribute to the understanding of your project. For example: “The fact that...”; “In order to...” Don’t use more words than you need to make your point.
- Avoid using words like “it”. You have a limited number of words in which to tell the story; using a general pronoun like “it” can be confusing to the reader.
- ****Do NOT copy sentences or phrases directly from articles or any other resources into your abstract. This is plagiarism, and is strictly prohibited.** Your abstract is your own work and therefore should be your own words. Refer to your Task 3 Outline, and paraphrase everything into your own words (as a team).

Please refer to the sample abstracts following this Task to get a better feel for how to write yours!

Keeping to the Word Limit

Your abstract should be **200-250 words** (1220 characters without spaces). This can actually be more challenging than writing 1000 words. How do you meet this word limit?

- ✓ When writing your first draft, don't worry about the word count – just write what you feel is important.... Edit later.
- ✓ After completing the first draft, read back through it and identify superfluous words, phrases and sentences that are not important. Omit them until you get closer to your limit.
- ✓ Combine sentences to shorten the length of the abstract. It is better to use fewer words to get your point across. However, continue to ensure that the key points of your story are being conveyed clearly. ****Continue to always use proper grammar and sentence structure.**

Revisions

The more that you read through and consider your abstract, the more concise it can become. The more people who read through the abstract and offer feedback, the clearer your abstract will become.

- ✓ Make sure your Advisor/Teacher reviews your abstract first. Make edits per their suggestions.
- ✓ If possible, we recommend passing your abstract for review to additional science teachers or to an English teacher in your school.
- ✓ Once you feel it is the best it can be, send it on to the Judy at the CBM.
- ✓ Your abstract will undergo several rounds of revisions. Don't be at all discouraged by the red mark-up you see when you get it back. This is very normal! 😊

Email your abstract to Judy (birschbach@msoe.edu) no later than

Friday, October 13th.

First, second and third place WILL be awarded for Task#5!