

Exercise in Reading the Primary Literature

CHE 255 - Biochemistry

Assignment Overview:

For this simple assignment, you must 1) use the search tools Medline or SciFinder Scholar to identify a research article on a biochemical topic (NOT a review paper) that interests you, 2) use the Library and/or MINITEX to obtain a copy of the paper, 3) read the paper carefully, and 4) summarize the paper using directed questions (below) as a guide.

Learning Objectives:

My hope is reading the primary literature will develop your scientific and information literacy skills and provide you with a vehicle to advance your learning of and cultivate your enthusiasm for biochemistry. Developing scientific and information literacy is an important part of a quality science education. It is also valuable for your pursuit of technically rich, information intensive careers, in addition to your responsibility to become informed citizens. Significantly, proficiency in working with primary source material is a critical step to gaining independence in learning in the field. My specific objectives for this assignment are that you:

- Develop proficiency in finding primary material in biomolecular science
- Appreciate the procedure for obtaining published data
- Develop proficiency in reading and understanding primary literature
- Communicate effectively a summary of technically challenging information

Directions:

To begin, you will need to use Medline (see URL below) or SciFinder to search for a paper that interests you. With both of these tools, you will get lists of titles, authors and hyperlinks to abstracts based on the search terms you use. I would encourage you to consider what aspects of biochemistry you find interesting. The assignment is generally interesting and enjoyable IF you let your interests dictate your reading. Looking through your text may help you to come up with some ideas about topics and search terms.

Once you have identified an article that you find interesting, you will need to obtain a copy of the article. Some journals, such as Journal of Biological Chemistry and Proceedings of the National Academy of Science, U.S.A. have some of their holdings (not the older and most current issues) available on-line. Other journals are available through the library either through hard copy or electronic access. Still others are available through the InterLibrary Loan process, and many of these result in the article being sent to you as an attachment. *Although electronic access is convenient, I encourage you to let your interests and not ease of access direct your reading!* Having to use InterLibrary Loan or go to the library to get your article is NOT a good reason to avoid it. Planning ahead should eliminate any issues associated with these modes of delivery.

Read your article carefully (more than once). To complete the assignment, write a summary of **no more than two-pages**. In your summary clearly provide an answer, **in the order listed below**, for **all** of the following six questions (however, no bullet points):

- What interest did you have in choosing this article (briefly)?
- What was **the** main research question (or two) the authors were asking?
- What experimental approach did they take to address the question(s)?
- What were their results and what conclusions did they draw from them?
- Were these conclusions adequately supported by the data?
- What could be done next or in addition to further address the question?

The **due dates** will be **Sept. 30,** **Nov. 7** and **Dec. 12**. Turn in your two-page, type-written summary and a copy of the article you are summarizing. **For the first assignment,** you must choose a protein crystallography paper for the first summary. **For the second and third assignment,** you may choose any topic that you find interesting.

Evaluation criteria:

The summary will be evaluated based upon how satisfactorily you answer the six questions for the assignment. These will allow me to assess the objectives of the assignment (specifically the third and fourth objective). The first objective will be demonstrated in your answer to the first question. It is important to turn in a copy of the paper (you'll get it back) to show that you can obtain one (objective two).

By way of giving tips, I have found that students often doing fine on the first two questions, but be sure to use your own words for the second question. It is important to try to make distinctions between your answers to questions three and four; the approaches are the methods used to answer questions, the result and conclusions are what follow from their experiments. You must make this clear in your summary. The last two questions are, by design, the most difficult questions. It will take effort, but you should do your best and expect to get better at these as the semester progresses.

Medline/PubMed URL and SciFinder Scholar:

PubMed is found at <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>. The SciFinder Scholar software can search the chemical and biomedical literature and is available in the campus and resident hall computer labs and those in Olin, Nobel, the Library and in Psychology. The College pays for access to two seats with this information service provider, which are shared with other colleges. If you find you are denied access, you should try again later or use the Medline/PubMed URL.

Journal Suggestions:

The following non-exclusive list includes journals (with URLs when back issues are available) that are likely to have appropriate articles:

Archives of Biochemistry and Biophysics

Biochemical and Biophysical Research Communications is at:

Biochemical Journal is at <http://www.biochemj.org/>

Biochemistry is found at <http://pubs.acs.org/journals/bichaw/>

Cell is found via GAC library journal holdings

The EMBO Journal is found at <http://emboj.oupjournals.org/>

European Journal of Biochemistry is found at <http://www.ejbiochem.org/>

Journal of Biological Chemistry archive is found at <http://www.jbc.org/>

Journal of Molecular Biology

Molecular and Cellular Biology is found at <http://mcb.asm.org/>

Molecular Biology of the Cell is found at <http://www.molbiolcell.org/>

Nature

Proceedings of the National Academy of Science is found at <http://www.pnas.org/>

Proteins

Protein Science

Science

Structure

Please ask ahead of time if you have any concerns about your choice of a paper.