

Guidelines for the Fourth-Year Seminar Biochemistry Graduate Program

An essential element of graduate training is to become proficient at giving oral presentations. Professional scientists give oral presentations at scientific conferences, as teachers, to justify projects to company executives, to convince venture capitalists to direct funding to them, and for many other reasons. Biochemistry Ph.D. students at UMD are required to present a seminar during their 4th-year in the program. The seminar enables students to learn about current research outside of their own research topic and to gain valuable experience in presenting a formal seminar.

The seminar will be part of the weekly Tuesday-morning biochemistry seminar series. Students must contact the instructor for Biochemistry Seminar (BCHM 889A) to set the date for their seminar.

I. BCHM 698 course

Fourth-year students register for BCHM 698 “Literature Seminar in Biochemistry” during the fall semester of their 4th-year (even if their seminar is not scheduled until the spring semester). This course includes instruction on how to give a good seminar. Each participating student will then give a practice seminar and receive constructive feedback from the other students and the course instructor. Most students give several additional practice seminars before their research group and/or their fellow students. The BCHM 698 meeting time and location will be determined by the instructor.

II. Selecting a seminar topic

Note - appropriate seminar topics and seminar content will be discussed further as part of BCHM 698.

You are responsible for choosing the topic of the seminar. Choose a topic or area that is clearly independent from your current research project and that is a reasonable choice given your interests, expertise, and training. You may consult with your research advisor for assistance in choosing among several possible topics that you have found. The instructor of BCHM 698 may also provide feedback as to the appropriateness of a topic.

The topic may be one that you heard about in a class or in a seminar, or one that you come across in the current scientific literature. The topic may not be one that you have researched in depth previously for any other assignment, whether as a graduate student here at UMD or as a graduate or undergraduate student at another university. It may not be a topic that you used previously for a written paper for a course, as the basis of a previous seminar, or for any similar assignment.

It is not possible to make a definitive statement about what is and is not a good topic for the 4th-year seminar. However, your topic and seminar must include some biochemistry! This means, for example, quantitative measurements done *in vitro* with purified components, and experiments that address structure and/or mechanism (broadly defined). You may show results from experiments that do not fit these criteria but your seminar should not be entirely or largely

such experiments.

Your seminar must include recent, important experimental work on your topic (recent means within the last 2-3 years or so). Look for a topic for which there is recent research that has clarified an interesting topic, or that led to a new mechanistic proposal or to significantly deeper understanding of the topic. The seminar should not be simply a review of research done over a long period of time, although you can and should include critical earlier work that provides the groundwork for more recent work.

III. Seminar content

The seminar is a presentation of research taken from the scientific literature. You should begin by introducing the seminar topic, explain why is it important, and review what we know so far. You should then describe key experiments, including their rationale, how the experiments were done, and how the results were interpreted to lead to the conclusions in the paper. You do not need to give all experimental details but you should be prepared to say more if you get a question from the audience.

Your seminar must include experimental data from several publications, including some that are recent. It must not be based on a single journal article. The seminar is not just a broad review of your topic and it may not simply be a presentation of a review article(s). You may use review articles as your initial entry into a topic, to help you to find relevant primary literature, and as a source for older work that you will cover in the introduction at the beginning of your seminar.

Be critical of what you read. All experimental methods have their limitations and experimental data always has uncertainty or noise. Authors of papers will try to wring as much as they can from their data; sometimes authors over-interpret their results or try to draw conclusions that are not well-supported by their data. Be alert for that!

IV. Future outlook - your last slide(s)

At the end of your seminar you must emphasize in a few concluding slides the most challenging problems related to the topic of their seminar and perhaps propose ways to address them. You should address this in your practice seminar(s) and get feedback from the students and instructor of the BCHM 698 class.