Thousands of undergraduates present hypothetical research projects at judged poster sessions: How to do it!

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As a complement to the experiments in a large introductory biology laboratory course, we give students the opportunity to develop a hypothetical research project that is ultimately presented in a judged poster session. The starting point is learning about different types of literature and how to find articles in databases on any subject. Once students have identified a key primary literature article, we focus on the following: what question(s) were the authors asking? What methods did they use? What data do the figures show? What conclusions did the authors draw? Using what they learn from the paper, we ask students to generate a research question and hypothesis, write a background, determine what the next logical experimental question would be and then propose an experiment to address this question. Students must also identify possible outcomes of these experiments that both support and do not support their hypothesis as well as future directions. Student groups present their research proposals at a judged poster session with several hundred students (pre-COVID); our goal is to mimic a poster session at a scientific meeting as closely as possible. This gives students a chance to present orally, respond to questions, and evaluate the work of their classmates. This workshop will take participants through all the steps - starting with a literature scavenger hunt, participants will then find a paper(s) on a topic of interest and develop ideas for the poster similar to what we have students do. At several steps along the way we will stop to discuss - the process, common problems students have, and the logistics of organizing a poster session of this size. This activity is an excellent complement to the skills students get in a laboratory course and a way to enrich their understanding of the scientific process.

Keywords: hypothetical research project, judged poster session, literature search

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