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An interdisciplinary look at drug design and testing: Penicillin derivatives and their activity

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The purpose of this project was to promote undergraduate research and collaboration between chemistry and microbiology students. Research and collaboration have been shown to promote learning and retention, especially among underclassmen. Chemistry research students were asked to research the history, formation, mechanism and resistance of penicillin and its derivatives. Each student was then introduced to some basic organic chemistry lab techniques and asked to choose a derivative to make. The penicillin derivatives were made and diluted to afford two concentrations for testing. Students in a microbiology course then used their expertise in the Kirby-Bauer disk diffusion susceptibility test protocol to test the sensitivity of the synthesized penicillin as compared to commercial penicillin on *Staphylococcus epidermidis* and *Escherichia coli.* By measuring the zones of inhibition, the bacteria were shown to be more sensitive to the synthesized penicillin as compared to the commercial penicillin. In this workshop, we will discuss how to lead an undergraduate research project that is both scientific and interdisciplinary. Some basic information will be given on the synthesis of penicillin as well as the testing procedure. Participants will get to perform the Kirby-Bauer diffusion assay and measure zones of inhibition during the workshop.

Keywords: drug design, microbiology, Kirby-Bauer, chemistry

Mission, Review Process & Disclaimer

The Association for Biology Laboratory Education (ABLE) was founded in 1979 to promote information exchange among university and college educators actively concerned with teaching biology in a laboratory setting. The focus of ABLE is to improve the undergraduate biology laboratory experience by promoting the development and dissemination of interesting, innovative, and reliable laboratory exercises. For more information about ABLE, please visit http://www.ableweb.org/.

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