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**Joseph M. Mahaffy\***, San Diego State University, San Diego. *Modeling and calculus for the life sciences with WeBWorK computer labs.*

Students learn better in a contextual environment with active participation. I have developed a Calculus course, which uses a modeling-based approach to learning the material and has computer labs with data-based examples to give hands on modeling experience with real biological examples. In the computer lab the students obtain experience with software tools to manage real data sets and practice the knowledge learned from the lectures. Several specific examples will be presented.

WeBWorK is an open source, automated homework system supported by the MAA. As an open source development tool, I have created many biologically based homework exercises. More recently, I have extended WeBWorK exercises to include a significant portion of the computer lab problems. The computer lab problems include a graphing and writing component to further promote the understanding of key concepts. Former students have related that the computer lab was their most valuable learning experience, which carried through the rest of their university career. (Received July 03, 2012)