

1163-M1-1222 **Becky Sanft*** (bsanft@unca.edu) and **Anne Walter** (waltera@stolaf.edu). *Exploring Mathematical Modeling in Biology Through Case Studies and Experimental Activities.*

Exploring Mathematical Modeling in Biology Through Case Studies and Experimental Activities, written collaboratively by a mathematician and biologist, provides supporting materials for a course taken simultaneously by students majoring in the mathematical sciences and those in the life sciences. The text is designed to actively engage students in the process of modeling through a collection of case studies and wet labs connecting mathematical models to real data. In this talk we will provide an overview of the book and present a case study on immunotherapy in prostate cancer. Students formulate a system of differential equations that describe the interactions among tumor vaccine cells, immune response, and prostate cancer cells, and data from a prostate-specific antigen (PSA) test are used to estimate model parameters. The model is used to test vaccination schedules, and sensitivity analysis is used to identify model parameters that, if manipulated, are likely to make the greatest difference in cancer patient survival time. Through this case and the other case studies and labs, the reader will see the utility of models for understanding complex systems, making predictions, testing control strategies, and identifying further questions. (Received September 15, 2020)