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Raina Robeva* (robeva@sbcbio.org). *Algebraic and Discrete Mathematical Methods in Biology – Connecting the Undergraduate Curriculum with Modern Biomathematics Research.*

The field of mathematical biology has been transformed over the past 15 years by research based on methods from discrete mathematics and computational algebra to tackle old and new problems. These ideas have impacted a wide range of topics such as gene regulatory networks, RNA folding, genomics, infectious disease modeling, phylogenetics, and ecological networks and food webs. In some cases they have even spawned completely new research areas. In contrast, there is a noticeable and troubling lag between the standard basic knowledge among researchers and standard basic material included in the undergraduate curriculum where difference and differential equation models still dominate. The talk will outline several areas of active research where modern algebra approaches have proved to be a natural fit and will highlight appropriate undergraduate resources related to such ongoing work for use in mathematics and biology courses or as starting points for student research projects. Topics will include gene regulatory and signal transduction networks, system behaviors emerging from local interactions, infectious disease transmission networks, and CpG island identification. (Received January 20, 2015)