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Raina Robeva* (robeva@sbc.edu), Sweet Briar College. *“Mathematical Concepts and Methods in Modern Biology: Using Modern Discrete Models” - A Collection of Undergraduate Mathematical Biology Modules.*

A growing number of pre-calculus and introductory calculus courses now utilize difference and differential equations models to address questions arising from biology. At the same time, important alternatives such as algebraic and discrete models are notably absent from the undergraduate landscape - a phenomenon largely due to the lack of appropriate curricular materials. The talk outlines a multi-author collection of modules developed in response to this need titled “Mathematical Concepts and Methods in Modern Biology: Using Modern Discrete Models” and edited by Raina Robeva from Sweet Briar College and Terrell Hodge from Western Michigan University. The modules span a wide range of biological topics including gene regulation, neuronal, metabolic, and epidemiological networks, DNA content, population dynamics, and phylogenetics. The featured mathematics includes graph theory, Boolean networks and finite dynamical systems, probability, linear, polynomial, and abstract algebra, and a number of computational algorithms. Multiple exercises are embedded within each chapter and supplemental materials, including online projects, software, data files, and solution manuals are made available from the volume’s site. The collection will be published by Academic Press in January 2013. (Received September 25, 2012)