1077-92-203   **Franziska Hinkelmann***, Mathematical Biosciences Institute, The Ohio State University, Jennings Hall 3rd Floor, 1735 Neil Ave, Columbus, OH 43210, and **Reinhard Laubenbacher**. *Algebraic theory for discrete models in systems biology.*

Systems biology aims to explain how a biological system functions by investigating the interactions of its individual components from a systems perspective. Modeling is a vital tool as it helps to elucidate the underlying mechanisms of the system. Many discrete model types can be translated into the framework of polynomial dynamical systems (PDS), that is, time- and state-discrete dynamical systems over a finite field where the transition function for each variable is given as a polynomial. This allows for using a range of theoretical and computational tools from computer algebra, which results in a powerful computational engine for model construction, parameter estimation, and analysis methods. (Received August 11, 2011)