

P001 Kinetics of multiplex hybridization on microarrays
S. Blair, L. Williams, J. Bishop, A. Chagovetz
*University of Utah, Dept. of Electrical and Computer
Engineering*

We discuss the characteristics of multiplex hybridization using experimental and simulation methods. The interaction between multiple nucleic acid sequences hybridizing to the same probe location and the interaction across multiple probe spots challenge quantitative interpretation of microarray signals. Multiplex hybridization follows the rules of competitive displacement, in which lower affinity species are displaced by higher affinity species. While this phenomenon increases the time to equilibrium, it is the underlying mechanism of specificity in molecular capture. A simple three-component kinetic model of hybridization quantitatively describes multiplex hybridization, where cross-hybrids are explicitly accounted for without *a priori* information. New assay methodologies based upon the combination of real-time signal acquisition with kinetic analysis will be discussed, in particular, for SNP detection.