1046-00-652   **A Angeleska*** (`aangeles@mail.usf.edu`), **N Jonoska** (`jonoska@math.usf.edu`) and **M Saito** (`saito@math.usf.edu`). *Strategies for DNA recombination using assembly graphs.*

We introduce a notion of an assembly graph that models the DNA structure during certain recombination processes. An assembly graph is a graph that consist of 4-valent rigid vertices and we study the vertex removal in these graphs, called smoothing, that models the recombination. Motivated by biological considerations, we characterize the subsets of vertices, called successful sets, whose simultaneous smoothing keep all of the gene segments on a single DNA molecule. Furthermore, we define a smoothing strategy in assembly graph as a sequence of successful sets which corresponds to a successive DNA recombination strategy. We study and characterize the "successful" strategies, i.e. the strategies that result in a complete correct DNA assembly. (Received September 09, 2008)