1145-57-2464 **Mariel Vazquez*** (mrlvazquez@ucdavis.edu), Department of Mathematics, UC Davis, One Shields Ave., Davis, CA 95616. *Topological modeling of DNA recombination.*

DNA replication in bacteria yields two interlinked circular chromosomes. Returning the chromosomes to an unlinked monomeric state is essential to cell survival. Simplification of DNA topology is mediated by enzymes, such as recombinases and topoisomerases. We here focus on site-specific recombinases that recognize two short segments of DNA (the recombination sites), introduce two double stranded breaks and recombine the ends. The local action of site-specific recombinases is a reconnection event which is modeled mathematically as a band surgery. The banding is coherent or non-coherent, depending on the relative orientation of the recombination sites. We use tools from low dimensional topology to investigate the mechanism of action of these enzymes, and we compliment the analytical work with computer simulations. The numerical work provides a quantitative measure to distinguish among pathways of topology simplification by recombination, and also informs the search for bandings between specific pairs of link types. This is joint work with Allison Moore, Michelle Flanner, Koya Shimokawa and Robert Stolz (Received September 25, 2018)