1116-92-2700 **Mariel Vazquez*** (mariel@math.ucdavis.edu), Mathematics Department, University of California, Davis, One Shields Ave, Davis, CA 95616. *DNA unlinking.*

Chromosomes are long DNA molecules encoding the genetic code of an organism. Cellular processes such as DNA replication and recombination change the topology of circular DNA, in particular newly replicated circular chromosomes are topologically linked. This poses a topological problem to the cell. Returning the chromosomes to an unlinked state is essential to cell survival. The cell uses enzymes to achieve this goal. We model the action of enzymes as band surgeries, use tools from low-dimensional topology to establish unlinking pathways and topological mechanisms, and present a computer implementation to find the most likely pathway. (Received September 22, 2015)