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**Javier Arsuaga\***, 1600 Holloway Av., Thornton Hall 925, San Francisco, CA 94116, **Yuanan Diao**, Charlotte, NC , and **Robert Kaplan**. *Modeling the linking of DNA in trypanosomes*. Preliminary report.

Trypanosomatid parasites, trypanosoma and lishmania, are the cause of disease and death in many third world countries. One of the most unusual features of these organisms is the 3 dimensional organization of their mitochondrial DNA into maxi and minicircles. Minicircles are confined into a small volume and are interlocked forming a huge network. It has been estimated that in *C. fasciculata* the network contains 5,000 minicircles and that every minicircle is linked to three other minicircles. How this network is maintained, replicated and segregated while preserving the correct degree is mostly unknown. Here we investigate the effects of the confinement on the network formation. Our approach is inspired on a theorem from percolation theory that states that when the minicircles are confined into a small volume and the number of minicircles is large enough a percolating network (ie a network that fills the space), arises. We propose that the density of DNA minicircles in trypanosomes is beyond the percolation density and discuss whether this is the pathway that nature chose for the formation of the network. (Received April 08, 2010)