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**Chris Anderson\*** (canderson@clark.edu), 0615 SW Palatine Hill Road, MSC 237, Portland, OR 97219, and **Marion Scheepers, Marlena Warner** and **Helen Wauck**. *Biological Implications of the Mathematical Properties of Ciliate Genome Decryption*. Preliminary report.

Ciliates are a fascinating family of protozoa which store their genetic information in an encrypted micronucleus - before any ciliate gene can be expressed, it must be unscrambled based on a set of genetic "pointers" and copied into a decrypted macronucleus. Representing the scrambled micronuclear DNA as integer permutations of the canonical gene sequences reveals that ciliate molecular machinery is capable of inverting certain permutations. Though we cannot yet precisely describe the set of ciliate-invertible permutations, we have observed optimal patterns for the decryption mechanism, leading to specific hypotheses about the permutations possible in real-world ciliate DNA. In this talk we present some of our findings. (Received February 12, 2013)