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Mustafa Hajij* (mhajij@usf.edu), tampa, FL 33647, **Natasha Jonoska** (jonoska@mail.usf.edu), tampa, FL 33647, and **Masahico Saito**. *Graph Based Analysis for Gene Segment Interactions In a Scrambled Genome*.

Oxytricha trifallax, a species of ciliate, undergoes massive genome rearrangements during the development of a somatic macronucleus (MAC) from a germline micronucleus (MIC). Gene segments of MDSs located in MIC contigs can overlap, be included, or interleaved. We represent these gene segment interactions by graphs, with vertices and edges corresponding to MAC genes and their interactions, respectively. Then we use common graph properties to represent these graphs as a data cloud in a Euclidean space, to apply topological data analysis (TDA). The cluster formations under the TDA are presented, and the genes isolated from the major cluster are identified and studied. (Received May 07, 2017)