

1116-55-437

Leyda M. Almodovar Velazquez* (leyda-almodovar@uiowa.edu) and **Isabel K. Darcy** (isabel-darcy@uiowa.edu). *Could topology provide insight into brain diseases?* Preliminary report.

While it is known that certain brain diseases are genetic, scientists have not been able to pinpoint the exact cause of several diseases. Advances in functional imaging allow us to collect brain images while subjects perform a given task. But, how are brains related to mathematics? Topologists can study the brain networks structures of healthy subjects and subjects predisposed to a brain disease in order to identify different brain behavior among the subjects. We can apply cutting edge tools from topological data analysis (TDA), an area where algebraic topology, statistics and computational geometry intersect, in order to analyze data. Specifically, the idea behind TDA is to describe the “shape” of the data by representing them as a geometrical object, describing the relationship between data points, thus possibly providing new information that could not be obtained via statistical methods alone. (Received September 01, 2015)