

## **Mathematics in Medicine Journal Club**

Hosted by the Center for Quantitative Medicine, UConn Health

*Presentation date:* Tuesday, 3pm, April 10<sup>th</sup>

*Speaker:* Dr. Cory Brunson

### *Title*

Conventional versus topological data analysis for disease subtyping: cases of type-2 diabetes mellitus

### *Summary*

Type-2 diabetes mellitus (T2D) is a high-burden disorder with heterogeneous presentation. Two recent studies have proposed novel phenotypic T2D subtypes with distinctive prognoses, obtained using unsupervised learning techniques on patient-level clinical data. Li and colleagues (2015) drew upon combined high-dimensional EHR and genotype data and used a topological analysis tool called Mapper, whereas Ahlqvist and colleagues (2018) performed conventional hierarchical clustering on an etiology-based set of six commonly monitored clinical variables. I will summarize these studies' methods and findings and invite discussion on the potential of topological methods for patient stratification.

### *Links*

Li et al (2015): <http://stm.sciencemag.org/content/7/311/311ra174>

Ahlqvist et al (2018): [https://doi.org/10.1016/S2213-8587\(18\)30051-2](https://doi.org/10.1016/S2213-8587(18)30051-2)