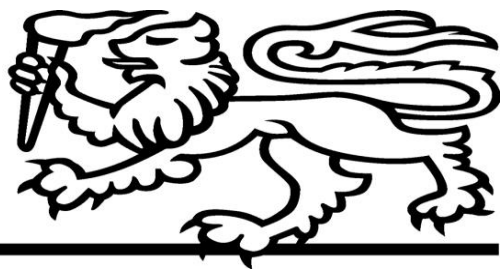


# UTAS



---

SCHOOL OF PHYSICAL SCIENCES  
Discipline of Mathematics

**Ruth Davidson**  
**University of Illinois Urbana-Champaign,**  
**Departments of Mathematics and Plant Biology**

*Will give the following talk*

**Applications of Mining Public Genome Data to Recover Statistical  
Trends using Geometric Combinatorics**

Websites such as TreeBASE.org and datadryad.org provide public access to a wealth of genomic data released with peer-reviewed biological publications.

Phylogenomics - the recovery of the common evolutionary history of a group of taxa from short gene samples recovered from long genomes - is a basic area of research that gives rise to many quantitative methods for mining data for evolutionary signals. In turn, myriad fields such as ecology, medicine, and linguistics consume these methods; thus, improved methods have very broad scientific impact.

We present a publication (joint work with Joseph Rusinko, Zoe Vernon, and Jing Xi) that provides a baseline framework, built on geometric combinatorics, for studying statistical trends in genomic data.

Further, we will outline future research directions that will:

- (1) Build on this framework to inform the development of new theory and methods for model-testing, and
- (2) Improve the understanding of trends in phylogenomic data in the systematic biology, computer science, statistics, and mathematics communities.

**1pm Monday 23<sup>rd</sup> October 2017**  
**Physics Lecture Theatre II**  
**SANDY BAY CAMPUS**  
**ALL WELCOME**