



OÉ Gaillimh
NUI Galway

Microbiology External Seminar Series



"Microbial biogeography of 1000 geothermal springs in New Zealand"



supported by MicroSoc



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Microbial ecosystems play a pivotal role in every biogeochemical cycle on the planet. Biogeographical studies seek to understand the underlying forces driving community assembly in these habitats. I will discuss the 1000 Springs Project (<http://1000Springs.org.nz/>), the largest study of geothermal microbial ecosystems to date, as a model system to elucidate biogeographical controls. We measured bacterial and archaeal community composition, 46 physicochemical parameters, and metadata from 925 geothermal springs (13.9–100.6 °C and pH <1–9.7) across New Zealand's Taupō Volcanic Zone. Our findings conclusively show microbial diversity primarily influenced by pH <70 °C; with temperature only having a significant effect at >70 °C. This result is consistent with microbial eukaryotes, where the community structure of protists was examined in 160 springs. We investigated temporal variation in a subset of features ($n=33$), finding temperature and rainfall having greatest impact on prokaryotic communities over time. Preliminary analysis of this vast dataset suggests genus-level endemism within the Aquificae phylum is occurring in the New Zealand archipelago. Collectively, these results provide an unprecedented insight into ecological behaviour in geothermal springs and a foundation upon which to improve the characterisation of universal microbial biogeographical processes.

Thursday,
25th
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Duncan
Lecture
Theatre,
Microbiology

ALL WELCOME