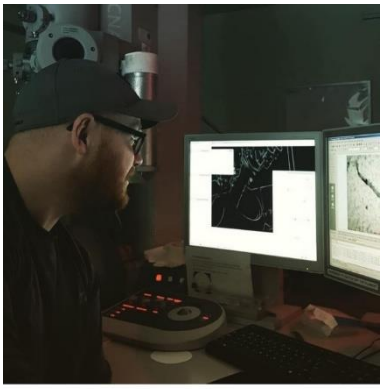
Best Poster Presentation at Environ 2020

Winner Tristan Nolan, University College Dublin



Antibiotic resistance genes in bacteria and bacteriophages: A land use study of rivers

Human health is closely connected to the health of animals and our shared environment. The role of the environment is increasingly evident and is a major component of the One Health approach. One health is a global public health strategy that recognises the importance of these links. Antimicrobial resistance (AMR) is one of the greatest threats to global public health and is widely recognised that a One Health approach is needed to tackle this exigent threat. The environment interface is under growing stress and can be an important indicator, while also acting as a reservoir for AMR.

Tristan's PhD research focuses on antimicrobial resistance in the aquatic environment and the influence of land use and human and agricultural faecal contamination on the prevalence on antimicrobial resistance genes in microorganisms and bacteriophages. One of the main research aims is to identify where antimicrobial resistance genes enter riverine systems and is done by detecting and quantifying a range of antimicrobial resistance genes. This data provides an insight into where they enter aquatic environments and what their fate is in the marine environment.

Tristan's work at Environ 2020 aimed to establish the impact of land use with a multivariate approach. Results show differences between sources, agricultural and urban land uses. Future work looks to characterise aquatic microbial populations with a keen emphasis on antimicrobial resistance and potential virulence associated genes, employing a metagenomic approach. Tristan's PhD research is funded through Acclimatize, an interdisciplinary team from University College Dublin and Aberystwyth University. This project is part funded through the European Regional Development Fund through the Ireland Wales Cooperation programme.