

## **Spatiotemporal multiscale Modelling of Antibiotic Resistance in the Irish sub-surface Environment (SMARTIE)**

### **Project Description**

Contaminated groundwater continues to be a public health concern for 16% of the Irish population who are reliant on this natural resource as their primary drinking water supply. While much work has been done on the contamination of groundwater with microbiological contamination, only one spatially and temporally limited study, currently exists which has assessed the incidence of antibiotic resistance within the Irish groundwater environment. SMARTIE is an interdisciplinary research project blending traditional hydrogeological fieldwork, GIS, molecular microbiology, analytical chemistry and hydrological catchment simulation to bridge the gap between geoscience and health. SMARTIE will elucidate the complex relationship between our natural environment and human health, focussing on characterising the properties of (hydro)geological processes and agents which facilitate the occurrence and transport of antimicrobial residues, genes and resistant bacteria. This frontier research will improve our understanding of current and emerging threats to groundwater quality, facilitate in identifying challenges facing our water resources and assist in identifying solutions which promote sustainable management of our groundwater resources, thus significantly adding to our capacity and expertise in Environmental Geosciences.

### **Person Specification**

- BSc/BEng in an Environmental Science related discipline (essential)
- Excellent practical laboratory skills (essential)
- Evidence of working on their own initiative (essential)
- Evidence of good scientific writing skills (essential)
- Familiarity with Geographical Information Systems (desirable)
- Familiarity with statistical analysis software (desirable)
- Knowledge of groundwater-related research (desirable)
- Knowledge of environmental microbiology and/or epidemiology (desirable)
- Previous research experience (desirable)
- A full clean driving licence (essential)

### **University College Cork**

The School of Biological, Earth and Environmental Sciences at UCC has a long-established reputation for producing high quality research and has a strong Geoscience presence; with UCC being an integral member of iCRAG. UCC also hosts the Environmental Research Institute (ERI), which offers substantial research facilities at its two dedicated buildings. The ERI building has 3000m<sup>2</sup> of specialised customised laboratory facilities and a wide range of instrumentation for carrying out analytical chemistry, water analysis and microbiology. The UCC campus hosts modern library facilities, has access to myriad scientific journals and has a dedicated team of laboratory technicians to assist with analytical research project.



## Contact Information

Informal queries are welcome.

Dr. Jean O'Dwyer

School of Biological, Earth and Environmental Sciences.

Environmental Research Institute

University College Cork, Cork

Email: [Jean.ODwyer@ucc.ie](mailto:Jean.ODwyer@ucc.ie)

Website: <http://research.ucc.ie/profiles/D026/jean.odwyer@ucc.ie>

