

Project title: Microbial Degradation of Marine Plastic

Solent University, School of Sport, Health and Social Sciences.

Dr Suzy Clare Moody (PI)

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Closing Date: 13<sup>th</sup> September 2019

Funded PhD (UK/EU applicants only)

### **Project Description**

This opportunity focusses on utilising microbes to degrade plastic waste from the marine environment. Plastic waste has become a high-priority topic, with the negative impact of plastics on marine life being well-documented (1, 2). It is known that some microbes can initiate degradation of petroleum-based plastics with some success (3, 4, 5), but the processes and pathways the microbes use to achieve this are still poorly understood.

#### *Research Aims*

The project will investigate a range of microbes able to degrade a variety of plastics. The focus will be on marine plastic litter, and the specific problems associated with treating this waste. The key areas of investigation will be to characterise the physico-chemical changes to plastics associated with microbial degradation and understand the microbial processes and pathways utilised during plastic degradation. This work will draw on the experience of the PI in proteomics and metabolomics, to further the field of plastics research. The studies undertaken will inform plans for industrial scale-up, and assess the potential for large-scale waste plastic bioremediation.

#### *Candidate requirements*

The successful candidate will possess at least a 2:1 degree in a biological discipline and be able to demonstrate significant interest and understanding in the field of microbiology. Experience with microbiological laboratory techniques would be an advantage.

Potential applicants are strongly advised to contact the PI for informal discussions.

The anticipated start date will be January 2020

#### *Research environment*

Dr Suzy Moody is establishing a new Environmental Microbiology Research Group at Solent University, with expertise in both bacterial and fungal systems. This project is offered in collaboration with Dr E. Joel Loveridge of the Department of Chemistry at Swansea University. The student will be primarily based at Solent University in Southampton, but will benefit from undertaking some visits to Swansea University to conduct elements of research in the well-equipped chemistry facilities.

With a population of around 11,000 staff and students, **Solent University** is home to one of the world's leading maritime schools.

### **How to Apply**

Applications can be made via the Solent website: <https://www.solent.ac.uk/research-innovation-enterprise/research-degrees/applying-for-a-research-degree>

Expected interview date in October 2019

### **Funding Notes**

This is a fully-funded 4 year studentship offered by the Maritime Trust Fund. The annual stipend is to RCUK. It is available to UK/ EU applicants only.

### *References*

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4. Montazer Z, Najaf M, Levin D. Microbial degradation of low-density polyethylene and synthesis of polyhydroxyalkanoate polymers. *Can. J. Microbiol*. 2019 65: 1–11 (2019) dx.doi.org/10.1139/cjm-2018-0335.
5. Paço A, Duarte K, da Costa JP, Santos PS, Pereira R, Pereira ME, Freitas AC, Duarte AC, Rocha-Santos TA. Biodegradation of polyethylene microplastics by the marine fungus *Zalerion maritimum*. *Sci Total Environ*. 2017. May 15;586:10-15. doi: 10.1016/j.scitotenv.2017.02.017.