

Award

PhD in Chemistry

Project Title

Computational Design of Small Molecules to Prevent the Early Formation of Multispecies Biofilms

Project Details

We are recruiting for a 3.5 year PhD project on “Computational Design of Small Molecules to Prevent the Early Formation of Multispecies Biofilms”. The project is part-funded by **Penrhos Bio** (www.penrhosbio.com) and will be based in the newly formed **Strathclyde Centre for Doctoral Training in Artificial Intelligence for Molecular Exploration, Discovery and Development (AIMED2)**.

Biofilms are ‘communities’ of microbes such as bacteria and fungi that live and grow on a surface. Harmful biofilms represent an increasingly serious societal problem from a wide range of economic, environmental, and health and wellbeing perspectives. Biofilms are a global challenge; they are the fouling that causes drag to shipping, the fungus that destroys food crops in the field and the infection that stops a chronic skin ulcer healing. In 2020, the total economic impact of harmful biofilms was estimated to be almost \$4 trillion globally and £45 billion (\$62bn) in the UK alone. The cost to the environment and to society is immeasurable.

Penrhos Bio is a bioscience company with the capability to safely control the formation of harmful biofilms. Formed as a company in 2019 jointly by **Unilever** and **Innova Partnerships**, they are commercialising a novel technology inspired by Nature and the Biology of the Oceans that is able to inhibit communication between planktonic microorganisms and prevent the early formation of multispecies biofilms. This has been developed and optimised by Unilever and its research partners over the past 12 years. Our mission is to develop truly innovative and sustainable products which are active in solving bacterial and microbial biofilm challenges across consumer, healthcare and industry environments. Our vision is a world free of harmful biofilms.

You will work in close collaboration with the scientists at **Penrhos Bio** and its research partners. There is also the opportunity to spend time working alongside the team at the Unilever facility at the Material Innovation Factory (<https://www.liverpool.ac.uk/materials-innovation-factory/>). During your studies you will develop and optimise new small molecules to prevent the formation of multispecies biofilms. The PhD will provide training in computational chemistry, artificial intelligence, biomolecular simulation, and applied biochemistry.

The studentship will be supervised by Dr David Palmer in the Department of Pure and Applied Chemistry at the University of Strathclyde. It will be based in Palmer Lab (www.palmer-lab.com) in the **Strathclyde Computational and Theoretical Chemistry Hub (SCoTCH, www.scotch-research.com)**, a centre for excellence in computational molecular science. The centre occupies modern computational laboratories with access to high-performance computing facilities including graphic processing units (GPUs).

We are committed to inclusion across race, gender, age, religion, identity, and experience, and believe that diversity makes us stronger by bringing in new ideas and perspectives. The Department of Pure and Applied Chemistry holds an Athena Swan Silver Award for Equality, Diversity and Inclusion.

The University of Strathclyde was established in 1796 as 'the place of useful learning' and this remains at the forefront of our vision today for Strathclyde to be a leading international technological university that makes a positive difference to the lives of its students, to society and to the world. Strathclyde was the first institute to win the coveted Times Higher Education "University of the Year" award twice, in 2012 and 2019, and has since been voted the Scottish University of the Year in 2020. The University occupies a central position in Glasgow, only short journeys from Edinburgh and the Scottish Highlands and Islands.

This is a fully funded position open to UK students. It offers a stipend at the UKRI standard rate. The proposed start date is 1st October 2024.

How to Apply

Please send your application letter and CV to Dr David Palmer (david.palmer@strath.ac.uk).

Deadline

Open until filled.

Duration

42 months

Funding

Funding includes full tuition fees at the home fee rate plus an annual stipend at the UKRI standard rate.

Full funding is only available for UK students, but self-funded international students are welcome to apply.

Eligibility

A first class or upper second-class UK Honours degree (or overseas equivalent) in Chemistry, Biology, Physics or a related subject. If English is not your first language, you must have an IELTS score of at least 6.5 with no component below 5.5.

Primary Supervisor

Dr David Palmer

Contact Details

david.palmer@strath.ac.uk