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About

(/university/colleges/les/research-gallery/tim-dafforn.aspx) Professor Tim Dafforn has established himself as an expert in biophysical spectroscopy with a keen interest in synthetic biology. Professor Dafforn has developed a number of projects from inception through to commercial realization and is currently the director of knowledge transfer for the college of Life and Environmental Sciences at the University of Birmingham.

Qualifications

BSc (Hons) Biochemistry(Cardiff University)

PhD ProteinEngineering (Bristol University)

Biography

I began my science career studying protein engineering under Professor J. John Holbrook at the Bristol University. During these studies I developing 2 approaches to enzyme engineering based on forced evolution and rational design. I moved to a PDRA position in the laboratory of Professor Robin Carrell FRS in the Cambridge Institute of Medical Research. Working with Dr Arthur Lesk I studied the mechanism of action of a class of serine proteinase inhibitors (SERPINS) involved in innate immunity and blood clotting. During this time I defined a mechanistic and structural explanation which underlies a group of diseases known as serpinopathies. In 2003 I was awarded a prestigious MRC Career development fellowship to continue my work on the SERPINS, as part of this I worked with Professor Alison Rodger (Warwick) to establish Linear Dichroism as an important technique for the study of membrane proteins and protein fibres. More recently I have developed three research strands all enabled by linear dichroism. Firstly I have produced insights into the assemblies that underlie bacterial cell division. Secondly I have developed a novel method that trivializes the production of membrane proteins enabling advances in bioprocessing. Finally I have developed a platform bioassay that represents one of the first commercial applications of synthetic biology.

Teaching

Impact has become a keyword in British science, my teaching aims to embed an impact ethos at the earliest stages of undergraduate and postgraduate training. I believe this can be achieved by first highlighting the wonders of the biological science and then showing how anyone can commercialize science for the common good.

Research

Over the past 2 billion years life has been evolving to produce the wonderful biological diversity we see today. At the molecular level evolution has produced nano-molecular machines of wonderful complexity. My research is focused upon studying these wonders, understanding how they assemble and harnessing their function for good. Currently my studies have three streams of research:

1. Studying and understanding the complex molecular machinery that underlies bacterial cell division.
2. Developing novel nanoencapsulation methods that allow large scale production of membrane proteins.
3. Building nano-assemblies that can be used in detection systems

The last 2 of these projects have provided 7 patents that are currently the focus of two commercialisation projects.

Other activities

I take a keen interest in wider aspects of science policy being a member of Senate at the University of Birmingham and a member of Council at the Biochemical Society. When not working I spend time watching my sons play rugby, rebuilding classic cars and sleeping.

Publications

2014-2007

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