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Birmingham to host first UK centre to study environmental metabolomics

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The University of Birmingham has won funding to run the UK's first NERC-funded centre to use metabolomics technologies to study the environment.

The new national Environmental Metabolomics Facility supported by funding from NERC (Natural Environment Research Council) will lead work using the new technology to understand the interactions between an organism and its natural environment. Metabolomics can be used to study the effects of pollutant chemicals on organism health and is also a powerful tool for characterising the effects of disease on populations.

Metabolomics is part of a new family of technologies called the omics, which study aspects of an organism's chemistry in great detail. Proteomics looks at thousands of individual proteins, genomics at an organism's genome while metabolomics looks at the chemical signatures that reactions in cells leave behind. These technologies allow scientists to create a metabolic fingerprint for an individual animal or plant.

The new centre will give UK environmental scientists access to Birmingham's world class facilities for NMR spectroscopy, mass spectrometry and advanced computation to analyse highly detailed metabolic data. It will form part of the NERC Molecular Genetics Facility, with existing nodes at Edinburgh, Liverpool and Sheffield, and a new bioinformatics node at CEH Oxford.

Dr Mark Viant who will be leading the centre comments: "Metabolomics is a relatively new and developing area of science, which is already improving our understanding of how environmental pollutants affect individuals living within ecosystems in the UK, something that also has significant implications for human health.

We are extremely pleased that NERC has chosen to support this exciting emerging area of work. We hope this new centre will offer UK scientists interested in this field opportunities to work together and develop metabolomics as something that is truly useful in determining the health of our environment.

The UK has led the development of metabolomics and it is important we remain at the forefront of developing this technology in the future."

Scientists at Birmingham are using metabolomics to study the effects of pollution on animals resident in UK estuaries and coastal regions. The chemical data allows them to create a metabolic profile of an animal, which gives detailed information about its lifecycle and exposure to environmental pollutants.

Professor Kevin Chipman adds: "We are really only just starting to understand how useful metabolomics can be, but the ability to analyse thousands of metabolic signals simultaneously is extremely powerful.

Using this type of analysis we are already able to create a metabolic fingerprint, which allows us to work out exactly which area of the UK coast an animal comes from. These differences are caused in part by exposure to pollutant chemicals and our next task is to understand exactly which parts of this molecular fingerprint are driven by pollution.

Having a national centre is an important step in getting industry to see the immense potential of metabolomics in monitoring the impact of chemical pollutants."

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ENDS

Notes to Editors

NERC

The Natural Environment Research Council (NERC) funds world-class science, in universities and its own research centres, that increases knowledge and understanding of the natural world. It is tackling major environmental issues such as climate change, biodiversity and natural hazards. NERC receives around £400m a year from the government's science budget, which is used to provide independent research and training in the environmental sciences.

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