Bridging the gap

Liz Humphreys reports on four NERC-funded scientists using the Follow-on Fund to develop their ideas.

One of the problems with science is that you might discover something that has great commercial potential, but you can't get funding to develop that idea enough to demonstrate its use to commercial investors. So great ideas could remain just that, ideas, filed and no use to anyone. This is why, NERC, with the Biotechnology and Biological Sciences Research Council (BBSRC) and the Engineering and Physical Sciences Research Council (EPSRC), provides Follow-on Funding for researchers to develop their commercial ideas. The Follow-on Fund bridges that gap and the four research teams below are using it to prove the commercial potential of their ideas.

Monitoring the health of freshwater habitats

Considerable amounts of our waste, such as sewage, litter, and industrial wastewaters, end up in freshwater habitats, and so it's important that we assess the health and water quality of these habitats. Carol Turley and colleagues at Plymouth Marine Laboratory have developed ECOBOX (Ecological Bacterial Biomarker of Toxicity), a cost effective, portable and fast analysis tool. It uses bacteria that occur naturally in water as a toxicity indicator. Originally developed for the marine environment, this freshwater version, developed with support from the Environment Agency, can be used by water authorities, water treatment plants, pharmaceutical and chemical companies and all industries producing wastewater.

Carol Turley, Plymouth Marine Laboratory, email: CT@pml.ac.uk

The oil and steroid detector

We don't normally put oil exploration and steroid abuse detection in the same box, but Colin Snape and team at the University of Nottingham have developed a revolutionary technique that will be valuable in both areas. They have taken a technique called hydropyrolysis, which breaks down samples for analysis in a very selective manner, and applied it to geochemical studies. In so doing they can solve some problems where conventional analysis fails, such as in the reconstructing the history of a particular petroleum basin to determine whether it's worth drilling for – an important aspect of petroleum exploration. Coincidentally, the team has discovered that you can also use hydropyrolysis to detect the illicit use of steroids, such as in athletics, horse racing and food production. Work continues to explore the commercial possibilities for both uses.

Colin Snape, School of Chemical, Mining and Environmental Engineering, University of Nottingham, email: Colin.Snape@nottingham.ac.uk

Tracking chemicals in plants

A novel technique for tracking chemicals within the cellular structure of plants could dramatically improve understanding of how harmful chemicals respond within the environment. Kevin Jones' team at Lancaster University developed a 3D visual technique that enables researchers to 'see' where a compound is and how it behaves within the plant. The technique uses the naturally occurring fluorescence in plants and chemicals, applies a visual microscopy tool TPEM (two-photon excitation microscopy) and works without altering the sample in any way. Commercial potential could include monitoring agrochemicals within plants to help refine the formulation of chemicals, such as pesticides; monitoring agrochemicals applied to fruits and vegetables to help develop 'safer' chemicals for the food industry; and monitoring the mobility of possible contaminants in food and drink packaging.

Kevin Jones, Institute of Environmental and Natural Sciences, Lancaster University, email: k.c.jones@lancaster.ac.uk

A single tool for 3D mapping

Mining and petroleum industries frequently use 3D digital mapping techniques to map sub-surface geology. Getting the same level of geospatial data and information about geological structures in rock outcrops on the surface is a little less advanced and some locations are inaccessible. Bob Holdsworth and team at the University of Durham and Geospatial Research Ltd are about to make life a lot easier for geoscientists in a wide range of industry, survey and academic sectors. New techniques involving a simplified system called Geospatial Acquisition Visualisation and Analysis (GAVA) combines digital field data capture, state-of-the-art visualisation and analysis techniques into a single tool. Coupled with modern mobile communications technology these tools will enable field scientists to access the entire range of data available and speed up mapping activities even when working in remote locations.

Robert Holdsworth, Department of Earth Sciences, University of Durham, email: r.e.holdsworth@durham.ac.uk

The Follow-on Fund: www.nerc.ac.uk/using/fofund.shtml