

'Crossing the Clinical Boundary' EPSRC Knowledge Transfer Account

Transforming research work into commercial use

Case Study

Medical Imaging Agents based on Highly
Fluorescent Molecules

Department:
Chemistry



The problem

Fluorescent molecules are important as cell-specific imaging agents of disease. Compounds based on the dipyrromethene boron difluoride (BODIPY) backbone have been used successfully to label proteins such as antibodies in order to study human organs and cellular events for medicinal purposes. However, existing molecular types are limited in structural diversity and possess certain limitations in their properties (such as their hydrophilicity and the wavelength of their emission maxima).

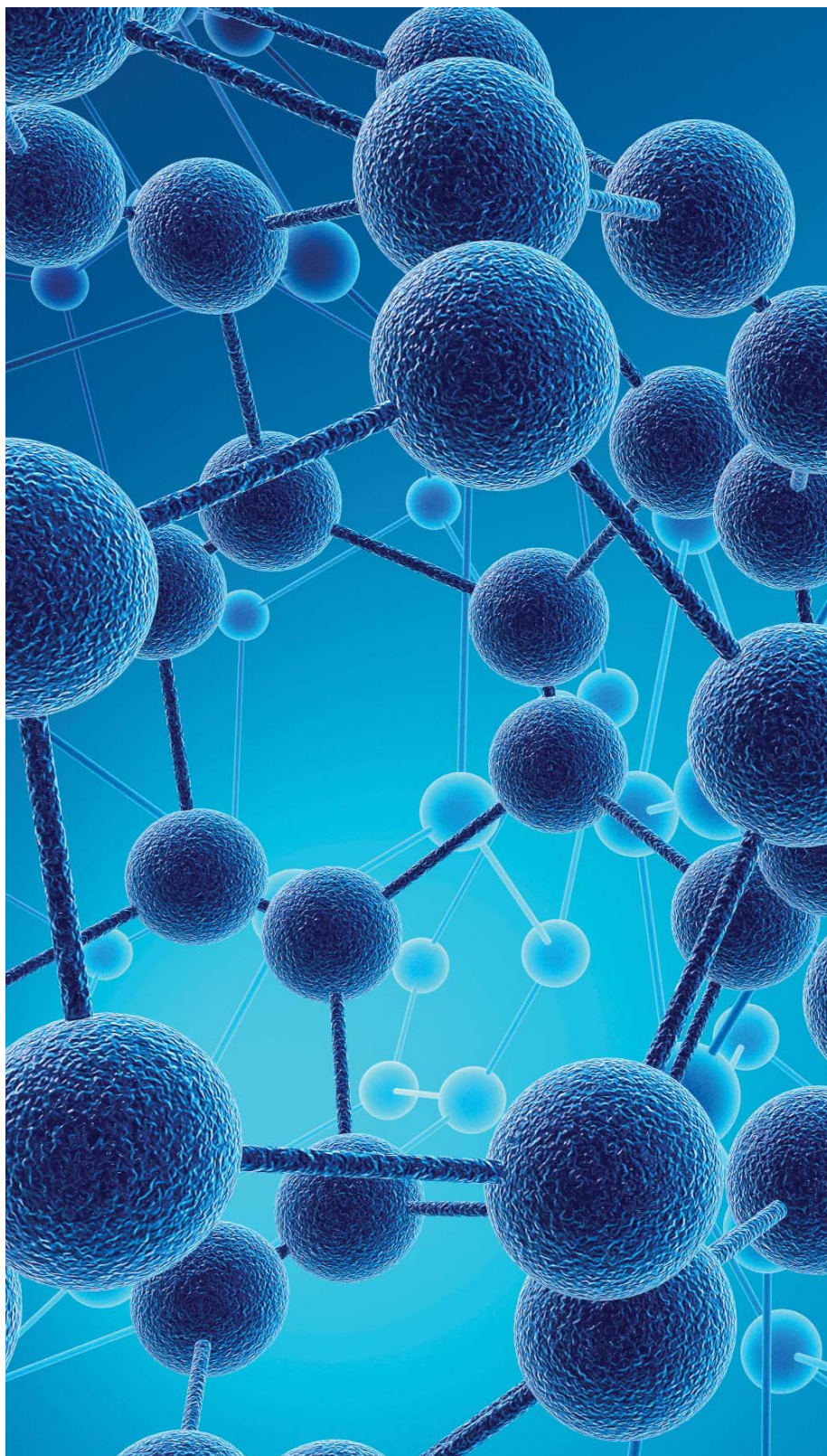
The solution

Chemists at Newcastle University have recently prepared unique BODIPY compounds that can bind a biologically important metal but also contain reactive bonds which may be functionalised with biomolecules and cell-specific receptors. Collaboration with Newcastle University Faculty of Medicine showed that the precursor molecules are readily taken up by mammalian bone-forming cells which can then be imaged using fluorescence microscopy.

Working with High Force Research Ltd., the team is now focusing on scaling up processes to move from quantities suitable for bench research to a more commercial scale. It is important to have high purity products, which often require two or three purification steps, due to the sensitivity of the fluorescence technique. High Force Research has expertise and large scale equipment in this area.

The benefits

This joint initiative delivers the skills and knowledge needed by High Force Research as it seeks to fulfil the needs of a client who is interested in the synthesis of a class of fluorescent compounds that are the subject of recent findings by the Newcastle chemists. It also allows scope for novel compounds to be synthesised and incorporated as the research progresses. Access to facilities and instrumentation not currently available to the company expands capacity and strengthens a productive research collaboration, with the ultimate aim of producing a valuable medical tool.



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'Crossing the Clinical Boundary'
Knowledge Transfer Account is
a partnership between Newcastle
University and Durham University.

For more information about this project and
the KTA, please contact:

Julie Swinbank

E julie.swinbank@durham.ac.uk **T** 0191 334 3213

E julie.swinbank@newcastle.ac.uk **T** 0191 222 5488

