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2011 Challenge Competition Winners

Winners of the 2011 CRACK IT Challenges competition have been announced by the NC3Rs at its Annual Science Review meeting on 28 February 2012. The Challenges are funded by NC3Rs with in-kind contributions from industry sponsors AstraZeneca, Huntingdon Life Sciences, Lilly, Syngenta and Unilever.

[Wireless recording of the electrophysiology of cognition in psychiatric disease models \(£0.5 million\)](#)

Sponsored by Lilly, the winning team is led by Dr Esther Rodriguez-Villegas of Imperial College and Ervitech

This Challenge seeks to develop a tiny wireless system that can be worn comfortably by mice whilst scientists study their brain activity to understand disorders such as schizophrenia and Alzheimer's disease. Use of a wireless recording device will allow the mice to move around freely and be housed in groups, improving the welfare of the animals compared to current methods which require the mice to be frequently handled causing stress and affecting their performance in the test.

[Rodent Big Brother: automated recording of rodent activity and temperature in the home cage \(£0.5 million\)](#)

Sponsored by AstraZeneca, the winning team is led by Professor Douglas Armstrong from Actual Analytics together with colleagues from TSE Systems and Professor Judith Pratt of the University of Strathclyde.

Measurements of activity and body temperature provide useful information in basic research and drug development. To measure the activity or temperature of a mouse or rat, monitoring devices can be surgically implanted, or non-invasive measurements can be made by housing animals individually. However, rodents prefer to live in groups so even the non-surgical approach has a negative impact on welfare. This Challenge is to develop a way of measuring activity and temperature when rodents are housed in a group and which does not involve surgery. As well as improving welfare this would enable incorporation of these additional measurements into other studies that are already being carried out as part of drug development, reducing the number of animals used.

[Improving the predictive capacity of *in vitro* cytokine release assays to reduce animal use and drug attrition \(£0.5 million\)](#)

Sponsored by Huntingdon Life Sciences, the winning team is led by Professor Martin Glennie from the University of Southampton with collaborators from the University of York.

Drugs based on biological proteins can cause adverse immune reactions in humans. Cynomolgus monkeys are currently used to test these compounds but it is difficult to predict human immune reaction from these studies. This Challenge is to develop an *in vitro* system to predict immune responses accurately. These assays would be used to pre-screen candidate drugs and reduce the number of monkeys used.

[Improved *in vitro* to *in vivo* extrapolation in chemical safety risk assessment of human systemic toxicity \(£1 million\)](#)

Funded by Defra as well as the NC3Rs, this was sponsored by AstraZeneca, Syngenta and Unilever. The winning application came from Dr Dominic Williams, University of Liverpool, working in collaboration with Dr Marianne Ellis, University of Bath, Dr John Ward, Loughborough University, Dr Rebecca Shipley, University of Oxford, Dr Steven Webb, University of Strathclyde, and Dr Iain Gardner, Simcyp.

The safety of chemicals used in industry, agriculture and pharmaceuticals is largely based on animal tests. These methods are expensive, can use many animals, and the results can sometimes be difficult to interpret with respect to human safety risk. This Challenge seeks to find better ways of extrapolating results from *in vitro* tests to humans. These tools could ultimately be used to assess the safety of chemicals without using animals.

[BADIPS: Generating human induced pluripotent stem cells to study bipolar affective disorder \(£1 million\)](#)

The winning team is led by Professor Andrew McIntosh from the University of Edinburgh. Other team members come from the Universities of Edinburgh and Cambridge and Roslin Cells.

The current animal models used to study some forms of mental illness such as bipolar affective disorder present challenges in understanding the disease or for predicting whether possible new treatments will work. They are also associated with significant animal welfare concerns as they involve the administration of drugs that cause psychosis in man, or subjecting animals to stress (e.g. maternal deprivation). This Challenge is to develop tests for the treatment of bipolar affective disorder using cell-based systems derived from the skin or hair of affected patients. These assays will be more relevant to the disease as it affects humans, reduce the dependence on animal models and should make some of the present animal testing obsolete.

A press release relating to these awards is available at: <http://www.nc3rs.org.uk/news.asp?latest=1&id=1742>



- [@Crack_It](#): @3dbiomatrix yes they are
- [@Crack_It](#): Registration open: CRACK IT Challenges Launch event 5 September 2013 <http://t.co/HwxCzUmLiL>
- [@Crack_It](#): Seeking partners to utilise technology for making non-invasive pharmacokinetics measurements in vivo & in vitro <http://t.co/zLn9KIG3eS>
- [@Crack_It](#): The model of spinal cord injury <http://t.co/mJ2jWjYmzu> was developed initially through @NC3Rs funding! #joinedupthinking

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