Financial crisis

Cold Chill through UK Universities

Many universities have yet to establish and recover their losses from riskier investments on the world's plunging share markets. However, several UK universities have recently admitted that what should have been relatively safe investments are now in jeopardy.

The problem lies with Iceland's flamboyantly ambitious banks, which, over the last two years, have offered one or two percent higher returns on their UK internet savings accounts than local banks. Encouraged to show financial initiative by the government, many UK universities, charities, local councils, police authorities and fire services have invested large sums of money (at least £1 billion) in these accounts, hoping to make extra gains.

At the end of September 2008, swept up by the ongoing global financial crisis, the three largest Icelandic banks, Glitnir, Landsbanki and Kaupthing, were pronounced bankrupt and immediately nationalised by the Icelandic government. Prime Minister, Geir Haarde, stated on October 6th that the actions taken by the government have ensured that the Icelandic state will not actually go bankrupt but no-one is in any doubt that life in previously booming Iceland is now going to get very tough. The stock market has lost over 75% of its value, Iceland's currency, the krona, has been heavily devalued, and domestic savings and pension funds have been wiped out.

The UK's 300,000 account holders in Icesave, the British trading name for Landsbanki, is equivalent to the entire population of Iceland, and this isn't counting the depositors in the other two banks. Unfortunately, Iceland only guarantees the first €20,000 of deposits and even then will be stretched to meet its obligations.

Sadly, the frozen money invested by UK universities and local authorities runs into millions of euros. The British government confirmed that 12 UK universities had a total of £77 million invested in Iceland.

The hardest hit appears to be Oxford University that has 5% of its 'cash pool' in Iceland, which it coyly admits represents "about £30 million". This news is highly embarrassing for Oxford with its hitherto well-regarded "trust pool" containing university cash and money from around 20 colleges. However, financial experts were critical of the university's decision to put their money into fixed two-year cash deposits, with no emergency get-out clause. Nevertheless, Oxford immediately insisted: "We're not expecting it to have a significant operational impact." Although it's not clear what cuts will be made to meet any financial losses.

Meanwhile, Cambridge University has admitted to £11 million of frozen cash, saying it had £8.5 in the Heritable Bank, a UK subsidiary of Landsbanki, and £2.5 million in Glitnir. This represents around 3% of the university's money market deposits. A Cambridge spokesman said, "We have alerted the Higher Education Funding Council and we are seeking to have a concerted recovery effort with the other British universities affected."

Other universities facing heavy losses include Manchester Metropolitan University (£10 million) and the Open University (£6.5 million).

Furthermore, charities, which represent a strong source of research funding in the UK, face losses of over £120 million. For example, Imperial College London was not directly affected but its National Health Service Charitable Trust, which funds clinical research, has deposits of £2 million in Iceland.

However, it should not be forgotten that the investments in these Icelandic Bank accounts were considered relatively safe. The universities have not yet reported their financial losses from riskier forms of investment, for example, in company shares. The UK share indicator, the FTSE100, has fallen 40% over the last year.

Furthermore, a combination of reduced share prices and liquidity are likely to severely curtail the tendency by commercial sponsors to make generous charitable donations to UK universities. Scientists at UK universities are only just beginning to feel the constraining effects of the current financial crisis.

JEREMY GARWOOD

PAUL THE POSTDOC

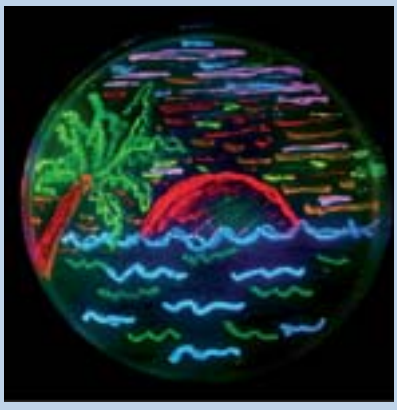
BY RAFAEL FLORÉS

Recently Awarded

▸ **Rüdiger Klein**, director at the Max Planck Institute of Neurobiology in Martinsried, Germany, received the **Remedios Caro Almela Prize** in Alicante, Spain. Once a year, this award, which carries a value of €18,000, honours one European scientist whose research significantly advanced our knowledge of the development of the nervous system. The work of Klein and his team focusses on how growing nerve cells are guided via the Eph/ephrin communication system through thousands of other neurons to find their 'correct' partner cells – a process which is crucial for the correct formation of functional neural networks.

▸ The **Nobel Prize for Medicine** was an all-European award this year. One half went to the German **Harald zur Hausen** for his work on the role of Human papilloma virus in inducing cervical cancer. The other half is shared between the Parisians **Luc Montagnier** and **Françoise Barré-Sinoussi** for their discovery of the "AIDS virus" HIV.

The winners of this year's **Nobel Prize for Chemistry** – **Osamu Shimomura**, **Martin Chalfie** and **Roger Tsien** –, on the other hand, all work in the US. The work of all three was decisive in developing Green Fluorescent Protein (GFP) applications towards the most important and versatile biomarker in living cells. The image shown is taken from the Tsien lab website and shows an agar plate with bacteria expressing different GFP derivatives.



More on the 2008 Nobel Prizes at *www.labtimes.org* -RNE-

Nikon Small World Competition

A Matter of Taste

Since 1977, Nikon has annually organised the Small World Competition for the best microscopic images as judged by an independent panel of experts in science and photography. This year for the first time, however, the company also invited the public to independently rate their own favourites among the 115 top entries.

The experts finally chose the image of a marine diatom *Pleurosigma* (above) by Michael Stringer of Westcliff-on-Sea (UK) as the winner, which also achieved a remarkable third place in the popular vote. Winner of the latter was the photomicrograph of a chick embryo (left), captured by Tomas Pais de Azevedo, a biologist from Lisbon. The experts, however, not only failed to select it as one of the 15 "Winners" but neither did it make the 14 "Honorable Mentions" (see *www.nikonsmallworld.com*). -RNE-

Human Microbiome Project

The Bugs We Bear

A new worldwide consortium was launched on October 16th in Heidelberg, Germany, bringing together many recent national projects looking at the human microbiome.

The International Human Microbiome Consortium (IHMC) includes the US Human Microbiome Project (HMP), the European Commission's Metagenomics of the Human Intestinal Tract (MetaHIT), Australia's Urogenital Microbiome Consortium, Canada's Microbiome Initiative and China's Meta-GUT.

The human microbiome refers to all of the microorganisms that live within or on the human body. Very little is actually known about the bugs that we live with from birth onwards. There are an estimated 10 trillion microbial cells in the gut alone, ten times the total number of human cells in the body.

Nobody knows how many different species there are, or how to culture many of them, or which of them are common to all humans. However, it appears increasingly evident that this microbial ecosystem plays an important role in health and disease. Previous studies on mice raised in germ-free bubbles have shown that they have abnormally small internal organs, inefficient digestive systems and weak immune systems. Gut microbes appear to help harvest otherwise inaccessible nutrients and energy sources from the diet, to participate in the synthesis of vitamins and the metabolism of xenobiotics. They also assist in the renewal of gut epithelial cells and may play complex roles in modulating our behaviour.

The biggest member of the IHMC is the HMP, a $115 million five-year initiative by the US National Institutes of Health that began at the end of 2007. "We are excited to be a participant in this ambitious worldwide effort to understand the human microbiome," said NIH Director, Elias Zerhouni.

"Understanding the intricacy of the human microbiome and how microbial communities interact with the human genome is a complex task that will benefit from sharing information across projects and our commitment to provide a common resource, which any scientist around the globe can access."

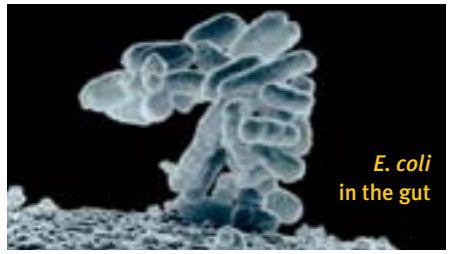
Much of HMP's work will focus on identifying and characterising which bacteria are located where on healthy and diseased humans. It will collect samples of faeces and swabs from the mouth, nose, skin and, where appropriate, vaginas of 250 volunteers. Short, variable stretches of DNA will be sequenced from these samples, using notably the 16S rRNA genes to determine the numbers of different species, thought to be around 1,000. The HMP plans to piece together overlapping DNA sequences to ▸▸

▸▸ provide 600 'reference genomes' against which researchers can compare and identify their own sequence data.

The €20 million European MetaHIT plans to sequence a further 100 genomes. "This global initiative will allow us to explore as yet unknown territories," says Peer Bork, joint coordinator of the European Molecular Biology Laboratory's (EMBL's) structural and computational biology unit, who is in charge of data coordination and analysis for MetaHIT.

"Microbes contribute to human health and diseases and understanding their interaction with our bodies will have wide-ranging impacts on medicine, pharmacology, nutrition science and many other disciplines."

However, as Bork told *Nature* magazine, "It is pretty hairy from a computational biology analysis point of view." Even with supercomputers to process the sequencing data, some clever analysis will be required to compare the millions of sequence reads that span thousands of species between hundreds of healthy and unhealthy people. It may be even harder if, as some suspect, subtle genetic patterns are the important factor in disease rather than the presence or absence of a single gene or species.



Data generated by IHMC projects will be analysed and made available through the EMBL and the NIH Human Microbiome Project Data Analysis and Coordination Center. The data will also be distributed to other public databases, including those hosted at EMBL's European Bioinformatics Institute and those supported by the National Center for Biotechnology Information, part of the National Library of Medicine. -JGA-

Clinical trials

Not published

In the September issue of *The Oncologist* (vol. 13: 925-29), US cancer researchers Scott Ramsey and John Scoggins reported that fewer than one-in-five cancer clinical trials registered in the US with *clinicaltrials.gov* have been published in the peer-reviewed literature (17.9%). From a total of 2,028 trials, those sponsored by clinical trial networks published the greatest proportion of registered studies (59.0%); studies sponsored by industry published the fewest (5.9%). Among published studies, 64.5% reported the results as positive findings.

The authors headlined their commentary "Practicing on the Tip of an Information Iceberg" and urged "research sponsors, researchers, and journal editors to redouble their efforts to encourage publication of registered clinical trials in oncology".

Is there any reason to believe that things are different in Europe, or in clinical disciplines other than oncology? -RNE-

Google Embryo

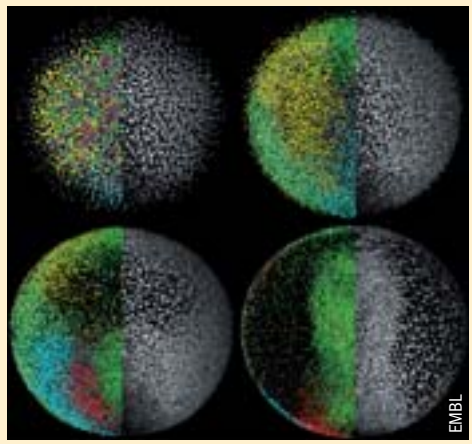
Digital zebrafish embryo provides the first complete developmental blueprint of a vertebrate.

It sounds like a downright Herculean task: tracking every single cell for the first 24 hours in the life of a developing zebrafish.

"Imagine following all the inhabitants of a town over the course of one day using a telescope in space. This comes close to tracking the ten thousands of cells that make up a vertebrate embryo – only that the cells move in three dimensions," Philipp Keller underlines. Yet, together with Annette Schmidt he has successfully completed this task in the labs of Jochen Wittbrodt and Ernst Stelzer at the European Molecular Biology Laboratory (EMBL) in Heidelberg.

The scientists determined three key steps in their approach to tracking a living zebrafish embryo from the single cell stage up to 20,000 cells: labelling nuclear histone proteins at the one-cell stage by fusion with Green Fluorescent Protein (GFP); a newly developed Digital Scanned Laser Light Sheet Microscope that scans a living organism with a sheet of light along many different directions; and a large-scale computing pipeline to assemble complete 3D images from the data.

At first sight, it looks as if Keller *et al.* just loaded their fertilised zebrafish egg into the machine after labelling, started up the scanner and let it sit there collecting tons of data on the developing fish for hours and hours. In this way, a final 400,000 images were taken per embryo, thereby generating terabytes of data on cell positions, movements and divisions that were reassembled into a digital 3D representation of the complete developing embryo.



The zebrafish digital embryo (left halves: colours encode movement directions of cells) and the microscopy data (right halves) at different time points in zebrafish development.

However, it involved much more than simple "machine loading and data collection". Mining the "digital embryo" by using a couple of sophisticated analysis tools, the authors were able to gain several new insights (*Science* 2008 Oct 9; Epub ahead of print). They describe observations of early symmetry-breaking events, patterns of synchrony and symmetry in cell divisions, direct observations of the formation of specific tissues and comparisons with mutant embryos that reveal differences in cell assortment. Furthermore, they were able to observe how the position of the head-tail body axes of the zebrafish is induced early on by signals deposited in the egg by the mother.

"The digital embryo is like Google Earth for embryonic development. It gives an overview of everything that happens in the first 24 hours and allows you to zoom in on all cellular and even subcellular details," says Jochen Wittbrodt, who has recently moved to the University of Heidelberg and the Karlsruhe Institute of Technology. -RNE-

(More research results from European labs on pp. 28-33)