The research commercialisation office of the University of Oxford, previously called **Isis Innovation**, has been renamed **Oxford University Innovation**

All documents and other materials will be updated accordingly. In the meantime the remaining content of this Isis Innovation document is still valid.

URLs beginning www.isis-innovation.com/... are automatically redirected to our new domain, www.innovation.ox.ac.uk/...

Phone numbers and email addresses for individual members of staff are unchanged

Email : enquiries@innovation.ox.ac.uk

UNIVERSITY OF OXFORD

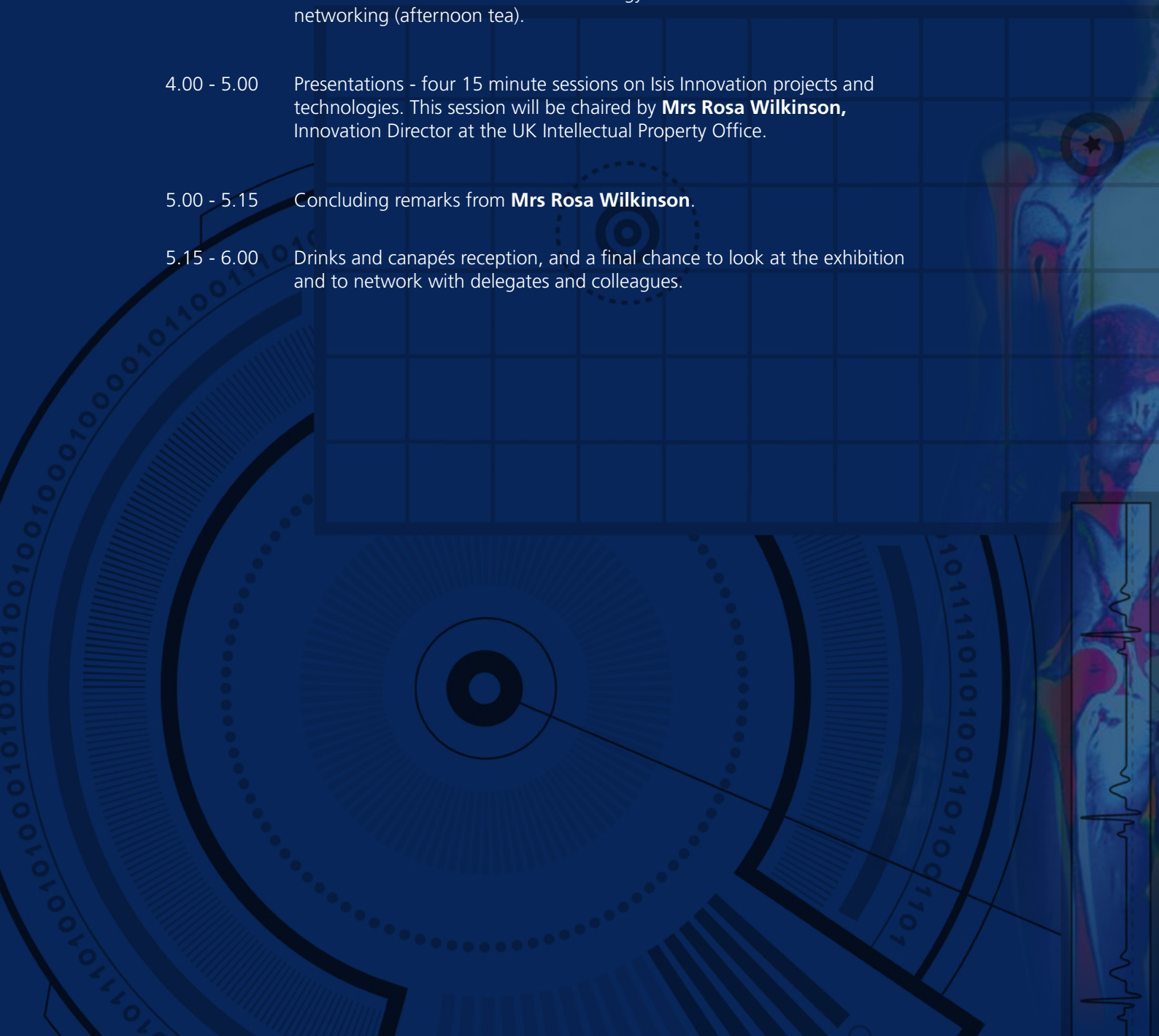
ISIS INNOVATION

SEPTEMBER 18TH 2014
UNIVERSITY OF OXFORD, MSTC,
DEPARTMENT OF PATHOLOGY

www.isis-innovation.com

Programme

1.30 - 2.00	Registration, tea and coffee.
2.00 - 2.15	Welcome from **Tom Hockaday**, Managing Director of Isis Innovation, an introduction from **Professor Ian Walmsley** FRS, Pro-Vice-Chancellor for Research, University of Oxford, and keynote speech from **Dr Penny Wilson**, Innovation Platform Leader in Stratified Medicine, Innovate UK.
2.15 - 3.15	Four 15 minute presentations of Isis Innovation projects and technologies. This presentation session will be chaired by **Dr Penny Wilson**.
3.15 - 4.00	Exhibition - The Isis Innovation Technology Showcase Exhibition and networking (afternoon tea).
4.00 - 5.00	Presentations - four 15 minute sessions on Isis Innovation projects and technologies. This session will be chaired by **Mrs Rosa Wilkinson,** Innovation Director at the UK Intellectual Property Office.
5.00 - 5.15	Concluding remarks from **Mrs Rosa Wilkinson**.
5.15 - 6.00	Drinks and canapés reception, and a final chance to look at the exhibition and to network with delegates and colleagues.



Presentations

Exhibition

Welcome to Oxford Med-Tech

We are delighted to welcome you to this event, intended to give colleagues in industry and business an insight into the fascinating range of medical technologies from Oxford, ranging from microfluidics techniques to software tools, such as VirtualAssay. We look forward to inspiring talks from all our speakers, introduced by Professor Ian Walmsley of Oxford University, Dr Penny Wilson of Innovate UK, and Mrs Rosa Wilkinson from the UK Intellectual Property Office.

Isis has been working alongside colleagues in the University for more than 25 years, providing advice and assistance to researchers wishing to commercialise IP. Translating the outputs of early stage university research from the academic world to business allows novel ideas to become new products which address current global challenges in areas such as healthcare, the environment and communications. Oxford is a particularly fruitful source of medical technologies, with cross-disciplinary structures encouraging collaboration between academics from the physical and life sciences leading to unique discoveries and inventions. Today's event features a significant proportion of software-based technologies, demonstrating the breadth of expertise required to keep the boundary of medical discovery moving forward.

Industrial partners can access not only intellectual property generated within the University but also the expertise of University researchers through academic consultancy. This is facilitated by Oxford University Consulting. Clients seeking innovation management support and advice for their own organisations are assisted by Isis Enterprise, operating worldwide.

Organisations seeking to keep close to new innovations from Oxford are encouraged to join the Oxford Innovation Society, which provides members with regular opportunities to meet and to receive customised updates of technology developments in their fields of interest.

Our inaugural Technology Showcase last year proved to be a fantastic opportunity for researchers, industry representatives, investors and Isis staff to debate the applications, potential impacts and routes to market for a range of Oxford technologies. We look forward to even more productive discussions this year, and thank all our speakers and exhibitors who have made the day possible.

During the last year BiGGAR Economics evaluated the impact of Isis' commercialisation activities and concluded that they contributed £400m GVA (Gross Value Added), and created or sustained 5,000 jobs in the global economy. We all hope that new ventures arising from today will contribute to even more success in the future.

Managing Director

Commercialising medical technologies
Oxford's Institute of Biomedical Engineering

Overview of the IBME/Technikos Impact.

Presentation

The IBME, part of the Department of Engineering Science, sits at the heart of Oxford's Medical Research Campus next to the Churchill Hospital. The Institute is focused on biomedical image analysis, biomedical signal processing, biomedical ultrasonics, drug and vaccine delivery, fluid mechanics, orthopaedic biomedical engineering, tissue engineering and bio-processing. It provides state-of-the-art laboratories for research and collaboration between engineers, biologists and clinicians.

The IBME was completed in 2008 and was funded in part by London-based venture capital fund Technikos, who provided £12m in return for half of the University's equity in new companies based on IBME intellectual property. The agreement with Technikos contributed to building and equipment costs as well as providing funding for strategic staff appointments.

The IBME-Technikos partnership has been key to fostering a culture of innovation, entrepreneurship and impact creation within its researcher and student community that is unrivalled in the UK and around the world.

Six years on, the partnership has enabled some of the Institute's most promising academic research ideas to be translated into commercially viable products. The tenth and most recent spin-out under the agreement, Oxsonics, was set up in January 2014 with the help of the University's technology transfer company, Isis Innovation. It will use ultrasound technology and ultrasound-sensitive nanoparticles developed by an IBME research group headed by Professor Constantin Coussios to treat cancer and back pain.

IBME Professors Lionel Tarassenko and Alison Noble respectively provided the inventive vision behind the Institute's two 2012 spin-outs, OxeHealth (non-contact vital signs monitoring) and Intelligent Ultrasound (ultrasound image enhancement software). 2008 spin-out, OrganOx, aims to increase the quality and supply of organs for transplantation. The company has already completed a clinical study in the UK and is planning further studies in the US and Europe. They are aiming to launch a CE-marked device in Europe later in 2014.

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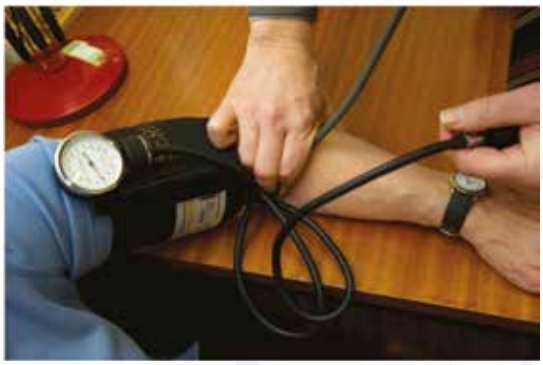
NIHR Diagnostic Evidence Cooperative Identifying new and emerging *in vitro* diagnostics

Based in Oxford the NIHR DEC is a national resource for the UK, identifying, evaluating and implementing *in vitro* diagnostic tests in primary care.

Presentation

The National Institute for Health Research Diagnostic Evidence Cooperative Oxford (NIHR DEC Oxford) aims to improve the way diseases are diagnosed by the NHS. We design, test, implement, and publish methods that will increase the likelihood that *in vitro* diagnostics (IVDs) can be implemented in primary care settings. Currently, primary care clinicians have very limited access to modern diagnostic tests.



Yet, technological developments in point of care tests mean that many tests which currently require samples to be sent to laboratories or referral to outpatients can now be done during patient visits. Better, more immediate diagnoses could improve care given to patients with chronic conditions requiring regular monitoring (e.g. diabetes) and extend monitoring to other diseases (e.g. heart failure) thus reducing the need for hospital referrals. More efficient care could improve the quality of patient care and experience, and improve use of NHS resources.

NIHR DEC Oxford has five complementary themes:

1) Identifying new IVDs and assessing the current evidence for their use
2) Identifying priority unmet needs for IVDs in primary care
3) Integrating IVDs in primary care with laboratory services
4) Understanding patient, carer and clinician attitudes towards implementing new IVDs
5) Improving methods for deriving and translating evidence for IVDs in primary care

Well-established expertise in diagnostics facilitates the positioning of NIHR DEC Oxford as a national resource for the NHS in identifying, evaluating, and implementing IVDs in primary care. The unit develops collaborations between frontline clinicians, diagnostic test researchers, the diagnostics industry, the NICE diagnostics programme and other NHS groups.

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VirtualAssay
Predictive drug safety and efficacy screening software

Flexible, robust and easy to use drug safety and efficacy prediction software, for users without specialist programming or mathematical modelling expertise.

Presentation

No two individuals respond to a drug in exactly the same way. Due to sometimes subtle variability at a physiological level, what works for one person may not work for another, even before taking into account any additional complicating factors.

Box plots show the response across cell populations to the simulated action of a drug, for each biomarker.

This is one of the most significant challenges faced by the pharmaceutical industry. It is neither practical nor desirable to test a new drug on the entire human population to ensure it is both safe and effective.

Drug safety

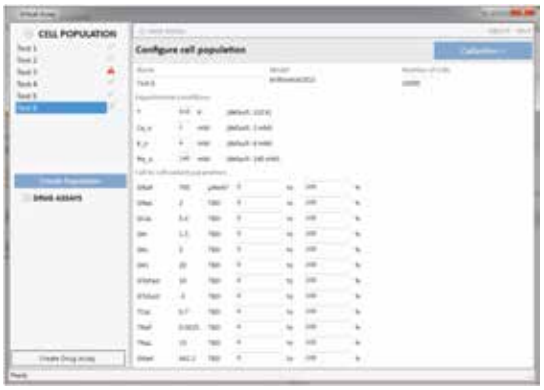
Ensuring a drug does not have potentially harmful or unexpected side-effects requires a huge amount of rigorous testing before the drug can be approved for clinical use. Even then, unforeseen problems can occur due to patient population variation or exacerbation of other pre-existing diseases.

"Virtual" screening

To overcome this, *in silico* modelling at a cell physiology level is becoming increasingly important in both drug efficacy and safety testing. Consequently, it is attracting significant attention from both the commercial sector and regulatory bodies such as the MHRA, FDA and the EMA.

Calibrated model populations

VirtualAssay starts with well understood cell biology models and modulates the variables to generate a range, or population, of models, which will respond differently to the same inputs. These populations are then calibrated against experimental data, retaining only those models in range with experimental observations. These populations can be used to analyse the effects of different pharmaceutical agents on cellular responses.



Configuration of a new cell population. Here the properties to be varied between different cells and the experimental conditions for the simulations are configured by the user.

Key advantages

- Tight coupling between modelling and specific experiments
- Users can produce models constructed with their own experimental data
- Quantitative prediction of the effects of drugs on cellular function
- Mechanistic explanation into the causes of drug effects by predicting the effects of drugs and providing an explanation for the main causes
- Takes into account inter-subject variability in the modelling and simulation
- Consultancy services also available

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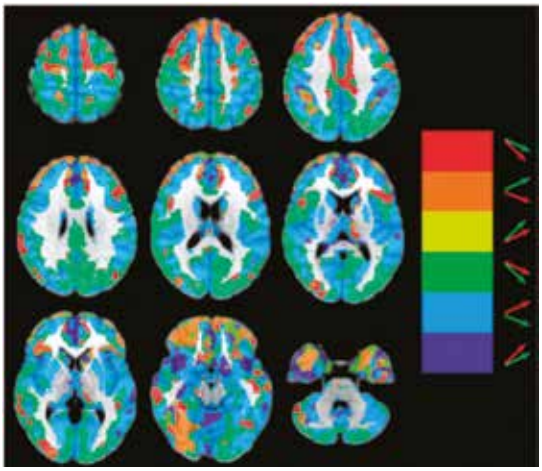
The FMRIB Software Library
Oxford Centre for the Functional Magnetic Resonance Imaging of the Brain Software Library

The FMRIB Software Library (FSL) is a comprehensive library of analysis tools used worldwide to quickly and effectively analyse complex brain imaging data.

The Oxford Centre for Functional Magnetic Resonance Imaging of the Brain (FMRIB) is a multi-disciplinary neuroimaging research facility, which focuses on the use of Magnetic Resonance Imaging (MRI) for neuroscience research, along with related technologies such as Transcranial Magnetic Stimulation, Transcranial Direct Current Stimulation and EEG. FMRIB is composed of research groups studying all aspects of brain imaging, including physics, analysis, basic science and clinical neuroscience.

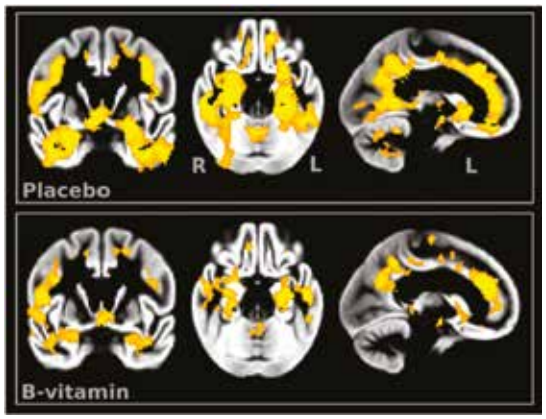
To assist researchers in the often complex and labour intensive analysis of MRI data, an innovative team, led by Professor Steve Smith, began developing the FMRIB Software Library (FSL) in 1998. Their algorithms worked robustly on a wide variety of real data, and they also generated leading-edge mathematical theory feeding into what was rapidly becoming a powerful standalone analysis pipeline.



Binarised representation of all the combinations of grey matter development over 2.5 years between healthy adolescents (green arrows) and the schizophrenic patients (red arrows). [Dauaud et al, 2009]

FSL was released in 2000 and has received over 2,500 citations. The latest version has been downloaded over 10,000 times and is used in nearly 1,000 hospitals and university labs.

This success has been hard earned. For over ten years the core team has continually developed, refined and extended FSL, as well as creating extensive documentation and training courses with over 1,000 attendees since 2002, and maintains an active user community through its email support list.



Regional loss of Grey Matter (GM) volume in placebo and B-vitamin groups. Placebo-and B-vitamin–treated groups showed significant reduction of GM volume over the 2-year period in similar regions. The extent and significance of volume loss appeared markedly greater in the placebo group compared with the B-vitamin group and is confirmed by direct statistical comparison. [Dauaud et al, 2013]

With the addition of a user-friendly graphical interface, and a high degree of automation, this robust, powerful and flexible analysis pipeline is now the recognised standard in academia for multi-modal MRI analysis. FSL is also commercially licensed to 7 of the top 10 global pharmaceutical companies and many others, whose activities range from drug discovery and clinical trials to neuromarketing, and even iPhone app development.

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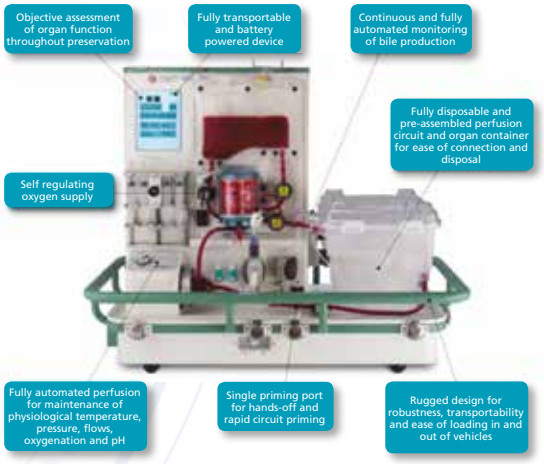
OrganOx®
Transforming transplantation for liver transplant patients

OrganOx® is a medical device company with a mission to increase the quality and supply of organs for transplantation. The technology has been in development for over 15 years based on the studies of Professors Peter Friend & Constantin Coussios at the University of Oxford.

Our mission is simple: To increase the quality and supply of organs for transplantation. Our first product, the OrganOx metra™, will enable the preservation and objective viability assessment of livers prior to transplantation for up to 24 hours, using normothermic oxygenated blood. Through the use of the metra we aim to increase the number of livers available for transplant. The metra utilises a patented process of "auto-regulation" allowing the liver to self-regulate pressures and flows of oxygenated blood at normothermic temperatures. The auto-regulation method and algorithms have been developed through more than 15 years of research by Professors Peter Friend and Constantin Coussios, with over 200 pre-clinical perfusions reported in over 30 peer-reviewed publications and reviews.

Cold vs Warm

Conventional cold preservation involves storage of the liver at 4 degrees C, using a non-physiological perfusion solution that aims to minimise liver decay. However, this process only slows down the metabolic process and does not stop deterioration. By contrast, warm preservation seeks to re-create an environment that mimics the human body by continuously perfusing at physiological pressures and flows with oxygen carrying red blood cells at 37 degrees C and providing nutrition. The liver is therefore functional during the preservation period, producing bile, metabolising glucose and maintaining a physiological pH. This enables objective assessment of organ performance prior to transplant, extended preservation times, and the potential use of organs that are presently being discarded.

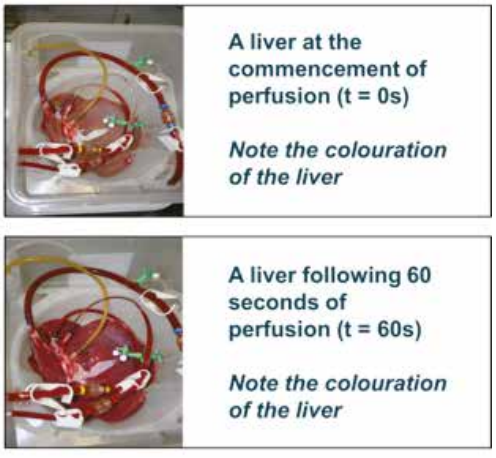


OrganOx has recently completed a Phase I prospective study in the UK which demonstrated the safety and feasibility of the metra for liver perfusion. Further clinical studies are planned in the US and Europe, with European product launch of a CE-marked device expected during 2014.

Our pipeline of products will extend the use of our core technology to the preservation of other organs.

Cold Liver Preservation	Warm Liver Preservation
Organ perfused with cold solution at 4° C without nutrition or oxygenation	Organ perfused with blood at 37° C with nutrition and physiological oxygenation
Preservation up to 12 hours	Preservation up to 24 hours*
Non-functioning organ during preservation	Functioning organ during preservation
Assessment of organ performance during preservation not possible	Continuous assessment of haemodynamic, metabolic and synthetic organ performance during preservation
Applicable to DCD donors for up to 15 minutes warm ischaemia	Applicable to DCD donors for up to 40 minutes warm ischaemia*
Poor applicability to steatotic organs	Potentially enables use of steatotic organs

*Demonstrated in pre-clinical models and associated publications with a clinical investigation in progress



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The Oxford e-Health Lab Initiative
A hub for healthcare services, supported through internet and electronic processes

Creating a centre of excellence for research and development of e-Health applications in Oxford.

The Oxford e-Health Lab aims to provide a co-ordinating hub for e-health activity in Oxford. It will seek to accelerate innovation in and implementation of e-health solutions, by linking the activities of patients, researchers, clinicians and healthcare solution providers.

The lab will build on the critical mass of research and activity in the field within Oxford. It is envisaged that the Oxford e-Health Lab will rapidly grow in recognition as a centre of excellence in e-health, attracting inward investment for research and development of e-health solutions, as well as promoting research and academic scholarship in this newly emerging sector. The Oxford e-Health Lab Initiative has six key aims:

1. To act as a co-ordinating hub - creating a focal point for e-health by providing an organisational framework to support and promote e-health activity and innovation within Oxford, working with stakeholders and existing networks including industry partners, the NHS, public sector agencies and not-for-profit organisations.
2. To create laboratory space - to establish a staffed lab to encourage collaboration in the testing and development of e-health solutions.
3. To accelerate innovation - to develop a translational pathway that bridges the transition from bright idea through development and evaluation, to implementation.
4. To develop an e-health infrastructure - providing a co-ordinated strategy within Oxford for the development of an e-health infrastructure that can support clinical care as well as research, involving all stakeholders in its development and closing current gaps in knowledge translation.
5. To support and develop academic scholarship underpinning the growing knowledge economy in e-health. Oxford has the critical mass of expertise to help shape this new discipline.
6. To build capacity - The e-health Lab will provide a collaborative learning environment for the next generation of e-health researchers and practitioners through the development of a Masters course, doctorate and researcher opportunities. The quality of teaching and research will attract the finest minds, creating the next generation of e-health solutions for the health of society.

We are interested in hearing from other parties wishing to collaborate or engage with this project. To find out more please contact Dr Fred Kemp (details below) or Dr Jane Kaye, jane.kaye@dph.ox.ac.uk.

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HELP - Health Emergency Learning Platform
Learning through gaming to improve clinical decisions

A teaching platform, in a computer game format linked to professional incentives, that improves knowledge of emergency care in health care providers.

Practice makes perfect and this game strives to achieve exactly that. Much medical knowledge can be distilled to a set of choices or algorithms that should be informed by the best available knowledge and updated with new knowledge. A game format can embed knowledge into the player by enforcing repetition while sustaining interest so it becomes instinctive to follow the correct sequence of clinical decisions.

In emergency care settings, immediate decision making is critical to a successful outcome but how do you ensure care providers are aware of, or follow the most up-to-date and relevant guidance?

Training in resource-poor settings

Traditional training methods, whether face to face, via print or through self-learning or eLearning, can present challenges. This is particularly the case in poor countries, where cost, coverage, access, demand, revision and sometimes content credibility can be barriers to learning. Despite this, healthcare training has become a multi-million dollar industry. Traditional approaches neither enforce repetition nor the speed required to ensure that correct sequences of decisions are made quickly and consistently.

With colleagues in Oxford, a professor based in Kenya, who works closely with the Kenyan Ministry of Health, and advises WHO on a range of issues related to child and newborn survival, is developing an interactive game for newborn resuscitation and emergency paediatric care in the developing world.

The challenge in the game is to solve different emergency scenarios that test knowledge of evidence-based guidance based on a series of briefing narrations and performance tasks, while facing varying and unpredictable challenges.

Plans for development

The plan for this project is to raise funds in order to translate the current pilot demo into a fully functional platform for advanced testing in Kenya. A business case will be based on demand, competition, links to professional incentives and an extended scope of game learning on multiple clinical topics.

1. The player is provided with key information – this is a mother delivering a full-term baby; but there is evidence that all is not well. The baby may be at risk and may need resuscitation. Note: the timer is advancing... players must complete the scenario perfectly within 5 minutes.

2. The player is told that the mother is safe and they must resuscitate the baby. In the next screen they will select from a list of 10 tasks the 5 key tasks and then arrange them in the correct sequence as they initiate the intervention. Players must get a perfect score in the best possible time and achieve consecutive perfect scores to pass this one scenario.

3. It is critical that healthcare providers are prepared in advance to give emergency care. Here the player must select the most important 7 items that will support effective resuscitation of a newborn.

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Commercialisation Strategy for Aglaris Cell
Isis Enterprise advises Aglaris Cell, a Spanish start-up developing bioreactor cell cultures

Isis Enterprise provides commercialisation strategy and practical advice to Aglaris Cell, a Spanish start-up, formed to exploit commercial development of its bioreactor cell cultures.

3D Model of the patent pending Aglaris Facer 1.0 System

Aglaris has developed an automated cell culture system for the mass production of human cells for research and therapeutic applications. The system addresses the labour-intensive and cell damaging steps in the current scale-up process.

Target applications include autologous chondrocyte implantation, where chondrocytes are isolated from cartilage and cultured *in vitro* to increase cell numbers prior to re-implantation for knee articular cartilage damage. The Aglaris reactor system comprises a disposable reactor unit containing compartments which can be sequentially and automatically filled and emptied as cell culture volumes increase over time. Cells are attached to beads and can be detached without the use of enzymes. Media changes and increases in total culture volume are all automatically controlled by the reactor system control unit. Culture conditions are monitored using sensor units in a media perfusion line. An online microfluidic PCR system even monitors for contamination and cell quality via biomarkers. The Aglaris technology will facilitate more reliable, lower cost production of higher quality human stem and primary cells, improving clinical outcomes in emerging and future therapeutic use.

To date the system is being developed using mesenchymal stem cells that offer huge promise for research and in regenerative medicine. The enzyme-free cell detachment technology has been validated, and this approach is now being integrated into prototype bioreactor systems to demonstrate the automated cell expansion process.

Future applications for the Aglaris system include a bead-based induced pluripotent stem cells (iPS) transfection technology which offers the prospect of more reliable, efficient, and automated production of iPS cells for research and potential clinical use.

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Sortition®
Randomising Clinical Trials

An online randomisation system with full auditing, user management, email notification, treatment resource management, reporting and monitoring capabilities.

Poster

Sortition is a secure online clinical trial randomisation system developed at the Nuffield Department of Primary Care Health Sciences. It delivers gold-standard randomisation and minimisation algorithms through an intuitive and user-friendly interface.

Sortition is built from three core system tools: *Study Builder*, *Study Administration* and *Pack Management*. Control remains firmly in the hands of the user, regardless of their experience or location.

Study Builder

The Study Builder is an online interface which allows a new study to be built and deployed in minutes. This enables multiple randomisation configurations to be deployed and tested, gaining valuable feedback and site training, before recruitment commences.

Study Administration

The Study Administration tool is used to manage studies after they have been deployed and once recruitment has commenced. Sites can be added as they are recruited into a study, users can be created and managed and even external randomisation events, e.g. from an emergency randomisation, can be added retrospectively.

Pack Management

Sortition's Pack Management tool controls medication packs used in blind studies. Capabilities include pack ordering, relocating and status updates, managing locations, associating locations with sites and restocking locations.

Additional Sortition features include email notifications, automatic generation of allocation lists, encrypted data storage, full system and study level auditing, reporting (e.g. minimisation balance tables) and full online documentation.

"Throughout the development of Sortition the aim has always been to deliver core requirements from a robust architecture through a simple and intuitive interface."
David Judge, Sortition Developer

"When recruiting to trials in busy clinical settings I have found that Sortition provides a randomisation system that is easily accessible online, efficient, and has a simple user interface. Minimal training is required for researchers to utilise this application although this can be supported by a demo version. Other advantages included audit capability to ensure data fidelity, and email notification of each participant randomised enabling central monitoring of recruitment."
Michael Loynd, Lead Research Nurse

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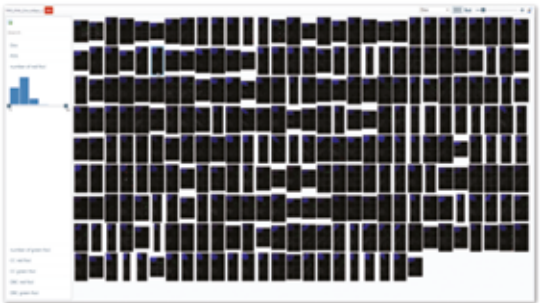
Zegami
A Tool for Image Data Exploration

Capable of sorting and filtering over 100,000 images in real-time, Zegami aims to help users generate new insights and hypotheses from large image collections, via its brand new web interface.

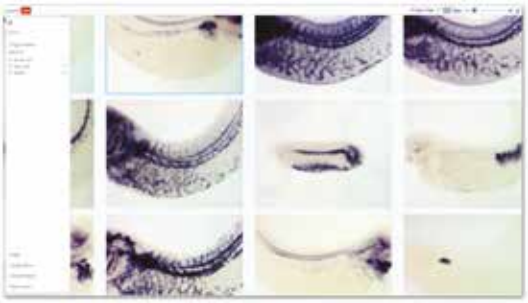
Poster

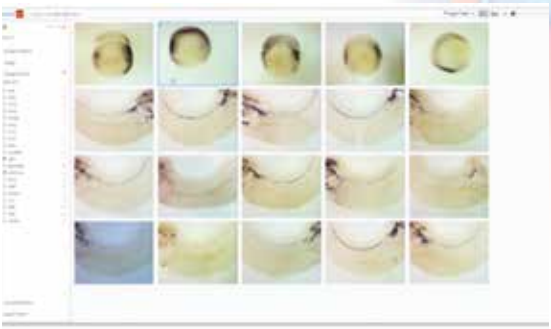
Biological imaging is generating an unprecedented amount of data. New, sophisticated imaging techniques yield large, multidimensional data sets that need to be viewed, analysed, annotated, queried and shared.

There is a need for analytical tools for biological imagery in order to advance biomedical research. A key requirement is automated tools characterising the phenotype of images and extracting higher-level information content. Traditionally, this is only possible through individual analysis by a highly trained researcher. We believe that there is a growing requirement for tools that enable the efficient exploration of the growing amount of data generated.



A key aim of this research is to allow mining of complex data sets and computer predictions for particular features. In addition, the ability to allow users to quickly filter out false positive leads using raw data has to be retained. Zegami allows visualisation and seamless querying of associated metadata across collections of thousands of images. It supports knowledge discovery and has particular utility in biological image analysis. Zegami's key features are:





- High usability, a dynamic and intuitive way of investigating large image collections with metadata
- Viewing and zooming into thousands of images at fine levels of detail
- Using data associated with each image in complex queries
- Versatility - working on all platforms including touch screens

Given the increasing numbers of images and movies generated in other fields, we believe Zegami has wider applications in medicine, physics, astronomy, movie management, document management, gaming and photo sharing domains.

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True Colours
A health monitoring platform for self-management

True Colours is now being adapted to deliver patient reported outcome measures in other clinical care pathways, such as during pre-clinical registration and post-operative recovery.

Poster

True Colours is an easy-to-use technology that enables people to monitor their health by texting or emailing answers to simple health-related questions. Answers are recorded on a display that may be viewed online and printed out both by participants and members of their care team. True Colours is sensitive enough to help identify even small changes in health and wellbeing for a wide range of different conditions, from post-operative quality-of-life to long-term mood disorders. This online record may be annotated to note items such as changes in medication, changes in environmental stresses, and behavioural changes patients might have made.

Small changes create big impact

True Colours naturally lends itself to to self-management, and is often used alongside integrated self-help programmes. By monitoring symptoms in this way patients can learn how to make small changes to their lifestyle that can have a big impact on wellbeing.

Other healthcare opportunities

In addition to new mental health questionnaires, the True Colours team is working with other world-leading clinicians at the University of Oxford and Isis Innovation to bring other patient reported outcome questionnaires (PROs) to the platform, and to integrate them into best-practice care pathways for use throughout the NHS.

Self-monitoring and improved clinical care

- Enables patients to record their symptoms remotely via text, email or the website
- Improves the assessment by reducing recall bias
- Reduces the need for history-taking, shifting the focus onto intervention planning
- Produces outcomes data on the impact of interventions
- Remote clinical reviews allow time to be targeted to those in need, reducing workload and improving clinical response

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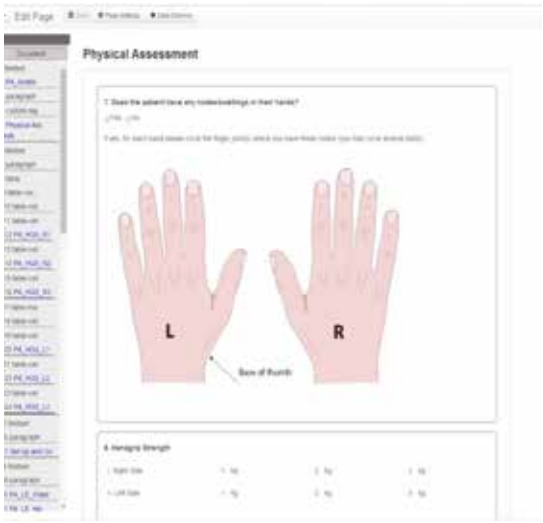
FormFactory
Clinical Trials Software

An online clinical trials management software suite for multisite clinical trials.

Poster



FormFactory is a software package developed to aid the creation of Case Report Forms (CRFs) – questionnaires that are used by researchers to document data from clinical trial participants. FormFactory has already been used successfully to develop online databases for several disease studies, including surgery for osteoarthritis and for rare bone disorders.

FormFactory was initially developed to meet the database requirements for a study of diagnostic and classification criteria in patients with vasculitis-inflammation of blood vessels (DCVAS) involving over 100 different research centres. To date, records for over 3,500 patients have been processed, and the system is constantly evolving to include more features.

The benefits of FormFactory include 'build' tools that automate the creation of the various form fields and other content that make up the online pages for a study. Validation is easily incorporated to ensure correct data entry. Interactivity is added to the page using 'actions' which allow for dynamic changes such as showing and hiding content based on your current selections.

The 'schema builder' feature also enables the creation of the accompanying database tables where records will be stored and displayed.

The next phase in development is to further simplify the form-building process with the use of 'wizards' to assist non-developers through a simple step-by-step process.

The modular platform used in FormFactory means that the software can easily be reconfigured for use with other disease studies and clinical trials, and for treatment and care pathway outcome measures.

The team would therefore welcome discussion with parties interested in adopting FormFactory for clinical trials management or for use as an e-PROM platform.

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The RUDY Project
Rare UK Diseases bone, joint and blood vessel study

Collating patient, symptom and treatment information for research into rare diseases.

Poster

Clinicians may only come across a disease once or twice in their career. Patients often feel isolated. Ultimately, this leads to a lack of evidence to inform clinical care and an urgent need for new tests and treatments.

The RUDYstudy.org interface has been designed to increase stakeholder involvement in research to develop new tests and treatments, and could ultimately lead to more tailored and effective personalised care.

Objectives of the project

The primary objectives are to establish a detailed phenotype of patients with rare diseases of the bone, joints and blood vessels, and identify unique patient subgroups within each disease cohort. The secondary objective would be to determine the personal burden and patient impact of rare musculoskeletal diseases using quality of life, pain and functional outcomes. These will:

- Increase our understanding of patients with rare diseases
- Identify new mechanisms and potential targets for treatment
- Provide a research cohort of rare musculoskeletal diseases that can be approached for further studies
- Train the next generation of clinical leaders in rare disease research

Patient-centric interface

As patient involvement is key, experience of participants as they access their own secure webpage is important. The RUDY website and database structure will manage participant study interaction

and contribution, informed consent, study scheduling, biosample tracking and data collection.

Outputs

- Participant health record data will be available for use to both academic and commercial bodies
- Biosamples will be available for use in research
- A patient registry will provide:
  - Rapid identification of patients that match clinical study/trial eligibility requirements
  - An academic and expert patient network
- All information entered by participants is made available for them to output as needed

Next Steps

Initially the scope of the RUDY project has been a small group of rare bone, joint and blood vessel diseases. Consultation is underway to extend this to a range of other rare diseases. It is hoped that in the future RUDY could become a generic tool for rare disease research and treatment globally.

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Dynamic Consent
Storage of tissue donations and personal information

A personalised communication interface to enable participants to become more engaged in the donation of their tissue samples and personal information for research purposes.

Poster

Dynamic Consent is a personalised, communication interface to enable participants to become more engaged in donating tissue samples and personal information for research.

This dynamic approach allows interactions over time, and enables participants to alter their consent preferences as their circumstances change and for these decisions to travel with their samples and information. Through a secure, password-protected website, participants can alter their contact details, change their consent preferences, receive information on the use of their samples and information, enrol in new studies and complete online surveys. This allows them to engage with the research study in their own time, as much or as little as they choose.

Features and benefits of Dynamic Consent:

- It places participants at the centre of decision-making
- The website has a public area with hypertext, videos and links to social media on new research initiatives which can be adapted for users with visual impairment and hearing or learning difficulties
- The interface can be tailored both to meet the information and communication needs of participants and the resources and capabilities of researchers. Participants can set their preferences about the kind of information they receive from the biobank, how often and in what form they want to receive it
- It meets the highest international ethical and legal standards for consent in a world where data protection laws are in flux

- Collection of one-off consent for research can occur at a stressful time for the person concerned, such as prior to treatment or surgery; dynamic consent removes this pressure by allowing participants to return to their decision and review their consent preferences in their own time, creating a clear distinction between research and the clinic
- It encourages public trust by making research more transparent and accountable

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Infection Severity Surveillance
Oxford technology to analyse and exploit existing data

An early warning system for new infectious strains occurring in patient populations.

Poster

Hospitals and clinics routinely collect data from patients which reflect patients' response to infection. The more severe the infection, the more severe the change in particular biomarkers. By monitoring these biomarkers over time, it is possible to spot the effects of new infectious strains on patient populations before normal clinical data (such as a rise in death rate from specific bacteria) identifies the problem.

With this in mind, Oxford researchers have developed a set of statistical algorithms to track data that is already available but is not being pulled together and analysed.

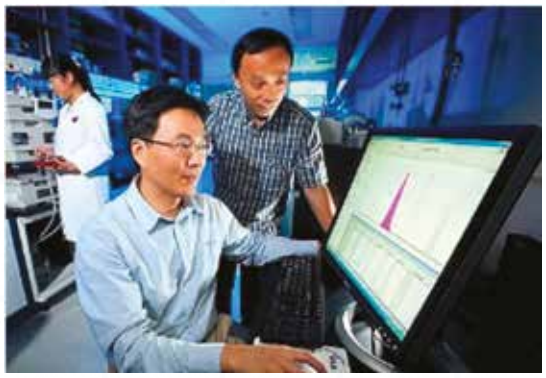
Supporting information

Clostridium difficile infection (CDI) is a leading cause of intestinal disease and is endemic in hospitals. In 2005 a particularly virulent strain caused a global epidemic.

Analysis of historical hospital data collected over many years has shown that biomarkers (such as neutrophil count from routine clinical tests) could have revealed the appearance of the new virulent strain and its effects well before the normal clinical data showed a rising death rate. The strain was subsequently identified using the Oxford technology described here.

Applications and adaptability

The Oxford technology can be adapted to many types of clinical biomarkers and tests, and to many possible infections. The technology could potentially be applicable to other situations where early detection is desirable.



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Poster

Bounts
A little extra motivation to get going

An Isis Software Incubator startup – allows users to earn rewards by getting active, whatever the exercise.

Bounts is an app enabling you to collect reward points or 'bounts' every time you exercise. You can then redeem these in our online shop for vouchers, which can be used at local retailers as well as on the high street. There are over 800,000 people in the UK and 11 other countries now collecting bounts.

'How do I collect bounts?'

Download and register on the bounts mobile app and click on 'My Code' from the menu. Just scan your unique QR code at your gym's reception on the bounts iPad or automatically via our Bluetooth beacons. That's it, you've checked in! Alternatively, pick up a bounts key tag from reception and follow the instructions, don't forget to register your key tag or you could lose your points!

'I do different sports outside the gym - can I still collect points?'

You can collect bounts on everything you do. If you already use a fitness app or tracking device it's easy to connect it to your bounts account so you can collect bounts whatever you do, in and out of the gym.

'So, what's a bount worth and how do I spend it?'

That's easy, just check your points balance online, head to our reward shop and start spending!

'How does bounts help me get fitter?'

As well as giving you extra motivation to exercise through rewards, our app is filled with features designed to help you get fitter. A personal fitness dashboard lets you track progress, a shared leaderboard allows you to compare and compete with others and you can even get advice and direction from fitness professionals.

'How much does bounts cost?'

Bounts is free for the first 12 months after which you pay an annual subscription. Businesses and organisations can subscribe to provide bounts as employee benefits.

Mr John Stuart
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Other exhibits:

Oxford University

Big challenges face our world today. From pioneering new cures to setting society-shaping policies, from creating new energy sources to determining modern ethics.

At Oxford University we're passionate about the creation and impact of our knowledge and how, in partnership, we can apply this to real challenges. There are many parts of the University that can work with business for mutual benefit. Find out more at www.partnership.ox.ac.uk

The Oxford Academic Health Science Network (OAHSN)

The area covered by the Oxford Academic Health Science Network is home to a wealth of world-leading organisations involved in clinical care, life sciences and medical research, education and training, innovation and informatics.

The Oxford AHSN brings together the NHS, universities, business, patients and the public to promote best health for our population and prosperity for our region. Breaking down traditional organisational boundaries and building stronger relationships between industry, scientific and academic communities – coupled with better knowledge exchange – will bring lasting benefits as best practice is spread quickly and widely across the NHS. The vision of the Oxford AHSN is best health for our population and prosperity for our region.

Notes: