Department of Health

DEPARTMENT OF HEALTH DESIGNATED ACADEMIC HEALTH SCIENCE CENTRE (AHSC)

2014/15 ANNUAL REPORT

Note: Please note this form should be completed in font no smaller than 10-point Arial.

1. ACADEMIC HEALTH SCIENCE CENTRE DETAILS

Name of the Department of Health Academic Health Science Centre:
Oxford Academic Health Science Centre
Contact details of the DH AHSC lead to whom any queries and feedback on this Annual Report will be referred:
Name: Professor Sir John Bell GBE
Job Title: Regius Professor of Medicine
Address: Richard Doll Building, Old Road Campus, University of Oxford
E-mail: regius@medsci.ox.ac.uk
Tel: +44 1865 289 782

Notes: Oxford AHSC Partners: **OBU** Oxford Brookes University, **OH** Oxford Health NHS Foundation Trust, **OUH** Oxford University Hospitals NHS Trust, **UoO** University of Oxford

2. OVERVIEW OF ACTIVITIES (no more than 4 pages)

Progress with further aligning the strategic objectives of the NHS providers and universities in order to harness and integrate world-class research, excellence in health education and excellence in patient care

Good progress has been made throughout this first year in developing partnerships and aligning strategic objectives across the four Partners. There has been particular focus on widening and strengthening relationships and ensuring that activities increasingly involve all four Partners.

1. There has been strong engagement in each Theme by more than one Partner. These partnerships have often extended to incorporate the Oxford AHSN which is now tightly linked to and working closely with the AHSC. Progress of the Themes has been driven by research activities of UoO and OBU and research funded through the Biomedical Research Centres.
2. There has been considerable progress in integrating training programmes related to the AHSC Themes. In particular, a new training programme in genomic medicine based at OBU is being strongly supported by the other Partners. OBU has appointed a Professor of Nursing and Nursing Research, Debra Jackson, who is actively developing training and research programmes and working with both OUH and OH. The research agenda of this new role will focus on patient safety, health disparities and workforce resilience.
3. There has been significant progress in the capital development plans that underpin the strategic ambitions of the AHSC. In particular, the construction of the Big Data Institute on the Old Road Campus is underway and will be completed in Summer 2016. The Kennedy Institute has been formally opened, supporting the inflammation programme. In addition, Phase 2 of the Botnar Institute focusing on inflammatory joint disease has opened, and Botnar Phase 3 has now been agreed. The Bioescalator to support new approaches to commercialisation and engagement with the business community is being constructed and the finalised plans for the Precision Cancer Medicine Institute are being agreed. As part of the £120m building development at OBU, space has been provided for a Health Innovation Hub which links OBU and OUH aiming to create a cross-disciplinary centre where pioneering new services that enhance the management of healthcare can emerge through the interaction of professionals with differing

expertise. There will be significant capital expenditure to develop Life and BioSciences at OBU, continuing its major expansion and rebuilding programme now underway.

4. In the digital health arena, the AHSC has created a virtual institute for Oxford Digital Health. This brings the expertise of all Partners into a single programme so that the extent of the digital health programmes can be properly assessed and coordinated where necessary. Digital health programmes are being rolled out by the AHSN, and locally by OUH and OH, to support the management of patients with mental illness, chronic disease, gestational diabetes, and to track severely ill patients in an acute hospital setting.
5. OUH and OH have formed an alliance to manage chronic disease problems better with a focus on community based care – out of hospital. This brings together the healthcare providers in the county in a single coordinated function and will be a crucial part of the chronic disease management theme.
6. Oxfordshire has now become the dominant biotech cluster in the country. 2014 data indicate that it is the leading region of the country for new biotech start-ups; for example, the most recent data from Peel Hunt Investment Bank indicate that the Oxford node of the Golden Triangle raised 2.5-fold more than companies in Cambridge during 2014. This includes £221 million private angel venture financing and $485 million of public market financing. The Old Road Campus has also been identified as the site for the first major inward investment from a key pharmaceutical company into the UK since the closure of the Pfizer facility at Sandwich. NovoNordisk is intending to set up a research centre on the campus over the course of the next two years, integrated with the research facilities elsewhere in Old Road.
7. OBU's Faculty of Health and Life Sciences, and the UoO's Nuffield Department of Clinical Medicine and the Department of Psychiatry were awarded Athena SWAN Silver awards on 23 April 2015. The departments within the Medical Sciences Division of UoO now hold 14 Bronze and 4 Silver Awards and the aim is for all to reach Silver by 2016.

A summary of the progress against the specific short, medium and long–term objectives as detailed in your full stage application, and a brief summary of progress made in each of the approved themes / work programmes for the AHSC as detailed in the full application;

Theme 1 Big Data delivering the digital medicine revolution: This Theme remains central as it links into and supports all Themes. Progress has been made on a number of fronts. The Big Data Institute is being built and will house 500-600 data scientists with interests in genomics, image analysis, machine learning, digital analysis of patient physiological variables, large-scale analysis of cohorts (UK Biobank, Million Women Study), and the collection and analysis of electronic patient data collected longitudinally and in real time. Particular progress has been made in the area of genomic analysis where the analytical programmes created in the Wellcome Trust Centre are now receiving wide applications for the characterisation of whole genomes. The recruitment of Prof Augie Kong from DeCode in Iceland is another important component of the Big Data Theme. Oxford has been chosen as a NHS Genomic Medicine Centre and contributed substantially to the 100,000 Genomes Project. The WGS 500 study, now in press in *Nature Genetics*, was the original pilot for the Genomics England programme in cancer and rare diseases and Oxford remains the lead institution developing the molecular pathology support for the processing of cancer samples.

The generation of digital data from a range of programmes applied to both hospitalised patients and outpatients with chronic disease forms an important part of the Big Data analysis challenge. These data are currently being generated from real pilots using digital software to track and facilitate the management of patients with gestational diabetes, congestive heart disease, track and trigger systems in OUH and in the Neonatal Intensive Care Unit. OBU, OUH and UoO are collaborating to develop a training programme for clinical laboratory staff in the field of clinical genomics. This will be a Masters programme supported by faculty from both Universities, and clinical staff from the OUH. OBU is also developing a programme in computing science to be made available for a wide range of healthcare professionals, including nurses.

Theme 2: Building novel NHS, University and Industry Relationships has made real progress working with Partners and drawing on the local research capability and capacity to support and drive economic growth. Oxfordshire has increasingly dominated the SME sector for biotechnology and medtech companies. Importantly, it has several companies which have the capability of becoming strong, stable and mid-sized companies, helping to bolster the environment for Life Sciences in the UK. In particular, Circassia is a well-established company with a valuation of a billion dollars after a flotation last year. Adaptimmune will float by the end of the first week in May, with a similar valuation on NASDAQ, and Immunocore has a major round of funding anticipated before the end of 2015. These three companies are the strongest among the biotech sector in the UK and any one of these could go on to be a strong, independent company with significant sales in growth based in the UK.

The Partners have also contributed significantly to the interface with industry, using novel approaches to engage and support economic growth in the Life Sciences. Examples of novel approaches to this include the Harrington Fund where UoO has become the lead UK institution and currently has several Harrington

Scholars supported by the Harrington Advisory Board, with the intention of turning some of these projects into commercially viable programmes. One of the first Harrington spin-outs supported by their commercial arm (Orca) has successfully completed a transaction with AstraZeneca fully valued at $125 million. The Oxford Innovation Science Fund, with £250 million of new risk capital available to Oxfordshire start-ups has been agreed by funders and UoO and will be launched in June. UoO has expanded its offering for mid-sized and large pharmaceutical companies, with three new pharmaceutical companies joining the Structural Genomics Consortium – the world's most effective open innovation platform for drug discovery – and the University has added three extensive programmes of collaboration with three successful mid-sized companies – UCB, NovoNordisk and Celgene. NovoNordisk has agreed to establish its first European R&D site outside Denmark in Oxford to take advantage of the activity in the Old Road Campus. This will be a research centre focused on discovery research related to diabetes, metabolism and obesity. The BioEscalator building will break ground before September 2015, with an 18 month building programme. (see also below)

Theme 3 Modulating Immune Response for patient benefit: Major initiatives include the development of novel programmes for Ebola vaccines (Prof Adrian Hill OUH) and a vaccine for Respiratory Syncytial Virus (RSV), the major cause of hospital admission in young children, (Prof A Pollard, OUH), now entering a further trial in collaboration with GSK. The STOP-HCV programme, a £4m project funded through the MRC has anchored a trial of novel drugs for hepatitis C in collaboration with Gilead Sciences (Dr Ellie Barnes, OUH) and further work continues through the NHIC project to co-ordinate patient data collection for integrated clinical studies of viral hepatitis. Work continues to develop new Oxford-wide immune-monitoring platforms and this includes establishing the first chip cytometry programme in the UK (Prof P Klenerman, OUH) aiming to provide multiparametric immune cell phenotyping (for stratification of infectious and inflammatory disease; this includes important collaborations with the Oxford GI Biobank (Dr Holm Uhlig, OUH). Further assay platforms for diagnosis and monitoring of immunologically driven disease of the CNS (including epilepsy) have been developed in the OUH (Prof Angela Vincent), while Prof Berne Ferry (OBU/OUH) has continued to refine such novel immunodiagnostic approaches in collaborations with the NIHR-supported Oxford Diagnostics Evidence Co-operative and industrial partners.

Theme 4 Managing the epidemic of chronic disease: This Theme has benefitted from the Big Data Theme and the development of digital tools to track patients with disease in the community. Dr Kazem Rahimi is leading the work on congestive heart failure, using a range of digital tools to track and monitor patients in a home setting to identify those likely to deteriorate and require hospitalisation early. This model is to be applied across a wider range of chronic diseases. Similarly, Stephen Friend from Apple has been working with Prof Simon Lovestone and OH to generate and analyse large datasets obtained from smartphone technology applied to the neurodegeneration population. Developing new pathways for the care of elderly patients with chronic disease has been a major focus of the two hospital partners in the AHSC. OH and OUH have developed a strategic alliance which brings together the community hospitals as well as the acute care expertise associated with the major chronic diseases – congestive heart failure, COPD, type 2 diabetes and neurodegenerative diseases – to try to establish an integrated, unified programme that will help these patients to be managed jointly across the boundaries of different NHS entities. This is likely to be a crucial step to allowing the evaluation of new digital approaches to managing chronic disease patients at scale around Oxford where such tools can be piloted before being rolled out across the Thames Valley region by the AHSN.

Theme 5: Emerging infections and antimicrobial resistance: OUH and OU continue to play a crucial role in developing new tools for molecular microbiology that will allow faster identification of pathogens and more efficient tracking of such pathogens in populations. The application of genomic technologies to mycobacterium tuberculosis, hepatitis C and HIV are now well established and the group is developing the protocols for its application to a wider set of hospital pathogens including MRSA and C. *diff*. The infectious disease surveillance programme accommodated in the Big Data Institute has already established large databases which allow the characterisation of both incidence and transmission frequency of a wide range of pathogens important on the global stage. Such surveillance data will be increasingly important in the context of emerging infections as a major healthcare threat to the UK. UoO has established a collaboration with Pirbright to undertake some surveillance and analysis of pathogens that have animal reservoirs. A key element in the defence against emerging pathogens will be the establishment of programmes to develop prophylactic vaccines well in advance of infections that subsequently become widespread. The Jenner Institute has been involved in the evaluation of four different Ebola virus vaccines emerging both from the pharmaceutical industry and the public sector and has established a vaccine programme to consider the vaccines necessary to deal with the emerging infections threat that might impact in the future on the UK. In the field of antimicrobial resistance, UoO is intent on creating a drug discovery programme to deal with the major pathogens associated with antimicrobial resistance.

Theme 6 – **Cognitive Health: Maintaining Cognitive Function in Health and Disease:** We have continued to build research capacity in dementia and cognitive health via the OxDARE consortium. Prof John Gallacher, principal investigator of Dementias Platform UK has now moved to Oxford. Profs Simon Lovestone and Chas Bountra have successfully obtained £9 million funding from Alzheimer's Research UK for a Drug Discovery Institute which will be based in the Target Discovery Institute and provides an innovative, precompetitive and collaborative approach to drug discovery. Prof Noel Buckley has been recruited to build capacity in target discovery. The NIHR supported D-CRIS informatics programme will shortly be implemented in Oxford and the leadership (Mike Denis and Prof Lovestone) is now based in Oxford. The major EU IMI EPAD adaptive trial award has now been made and is co-led from Oxford. UoO and OH are working together on a joint master plan for development of the Warneford site, which occupies a strategic and central position on the Headington Academic Health Campus, as a centre for translational neuroscience. The first phase of the upgrading of the Oxford Centre for Human Brain Activity with multimodal (MEG and MRI) neuroimaging will commence in July 2015. Engagement work has included consultation with stakeholders including a seminar at OBU by Profs Geddes and Mackay.

Summary of the AHSC's contribution to economic growth and the economy, including through partnerships with industry; See also Theme 2 above.

Additional activities and outcomes are summarised below. This is an area that the AHSC partners have worked particularly closely with the Oxford AHSN in drawing on its commercial development team and the wider partners.

Spin-Outs

In 2014 Isis/UoO spun out five companies with an aggregate investment of over £35 million. NightStarX raised £17 million for gene therapy for choroideraemia. Genomics Ltd raised over £13 million for the commercial development of software, databases and algorithms for storing and processing genetic information. Oxsonics, which is developing nanoparticle enhanced cancer therapy raised over £4 million. Deontics is working on a generation of personalised treatment guides for patients and received seed capital of £700k, while OxSyBio, which commercialises synthetic 3D printed tissues for organ and skin repairs, raised £1 million. There are currently ten potential spin-outs in the therapeutics/vaccines filed targeted for 2015, with an additional eight potential spin outs in the medtech/digital health space.

Strategic Relationships A Strategic Relationship is a formally managed company-university alliance agreement centred around a multi-year, multi-million financial commitment with a clear match in research interest and/or educational goals. Partnerships have capitalised on (i) outsourcing trend in pharma R&D, (ii) quality of fundamental and clinical research across UoO/OUH partnership, (iii) high level engagement at company and University, (iv) collaborative approach, formal governance, dedicated management and (v) scale of company resources and appetite to extend reach of relationship e.g. fellowship programmes. To date UoO has over £20 million of collaborative research funding secured through strategic research relationships with UCB, Bayer, Merck, Pfizer, Merck and Novo Nordisk.

The BioEscalator

Through the £67m City Deal, UoO has been awarded funding programme to create a "Bioescalator" located on the OUH's Churchill site in Headington, Oxford. The BioEscalator will pioneer a new model to support spinouts and start-ups effectively and economically, enabling them to grow into leading mid-sized biosciences businesses. It is a purpose built facility, jointly funded by the University and the government, which will provide a home to nurture the development of emerging bioscience start-ups that have been spun out or have strong research links with the University. The £11.1 million funding is part of the government's policy of investment in research in order to promote economic growth and innovation in healthcare, through the creation of new companies providing new treatments for patients. The space is a mix of office and laboratory spaces spread over three floors in the building. This demonstrates the importance of research driving economic growth, and enabling collaborations as outlined in the recently published NIHR document – *The NIHR as an engine for growth*. The core aims of the Oxford BioEscalator are shown in Annex 2.

Structural Genomics Corporation (SGC)

SGC has pioneered a new approach to open innovation in drug discovery. Based on the discovery of new novel proteins and the determination of novel inhibitors, all reagents and information is provided free to laboratories, pharmaceutical and life science companies, and medical research charities. SGC now has over 200 collaborations and is pioneering crowd-sourced science which will yield novel drug targets. During 2014, SGC received additional funding of £10 million from ARUK for novel dementia targets, €42 for human immune assays from the European Innovative Medicines Initiative (IMI). The Wellcome Trust has also invested a further £9 million for 24 Target Enabling Packages (TEPs) in oncology, metabolic and neuro-psychiatry. SGC is also exploring opportunities for developing spin-out companies based on the novel targets that have been developed. A workshop to explore opportunities for downstream exclusivity provisions in drug

development was held during the year with experts in drug development and intellectual property. Further work on extending the pre-competitive boundary from research to clinical development will be explored with potential investors and corporate partners.

Progress on the development and delivery of an appropriate e-Health informatics platform;
Electronic patient records. OUH and OH have made further progress in developing their EPR capabilities. OH has advanced its True Colours platform into monitoring a range of mental health conditions. This platform provides opportunities to expand nationally and develop significant national database capabilities. OUH has established a CERNER platform and is on the verge of expanding this into a range of therapeutic area modules capable of collecting and utilising data to alter care pathways.

An overview of any significant developments or issues associated with the leadership, strategy and governance arrangements which might impact on the delivery of the aims and objectives of your AHSC.

Governance arrangements were reviewed in January 2015 and all agreed that the light touch approach and collaborative working should continue as these provided flexibility and agility. It was important that Partners remained able to raise items together, and to take decisions, but also to maintain their individual governance arrangements. The AHSC is hosted by the OUH.

The Chief Executive of OUH, Sir Jonathan Michael, announced his retirement in November 2014 and the process for his replacement has been completed. Information on the AHSC was provided to candidates for the post. Membership of the Board was confirmed (see below Annex 1) and further links are being developed through the appointment of the four Partners' ambassadors linking with specific themes and providing operational input and feedback to the Board. Strong links between and across the four partners with increasing collaboration taking place with OBU. The AHSC is working very closely with the Oxford AHSN particularly in Big Data, novel interactions with industry and across the wider R & D arena.

All partners have made a financial commitment to the AHSC to support its activities, particularly in terms of, for example, administrative and management support. Plans are in hand for the recruitment of senior manager support for the AHSC.

STOP PRESS: Dr Bruno Holthof, currently Chief Executive of ZNA, a network of general and specialised hospitals in and around Antwerp, has been appointed as CEO of Oxford University Hospitals NHS Trust from 1 October 2015.

This form must be submitted, by e-mail, no later than 1pm Thursday 7 May 2015 to Sonja Tesanovic (sonja.tesanovic@nihr-ccf.org.uk). Please feel free to provide any other information you wish (in a separate annex) that demonstrates the progress made with your AHSC in 2014/15.

A signed copy of this report should be sent no later than 14 May 2015, to:

Dr Sonja Tesanovic
NIHR Central Commissioning Facility
Grange House
15, Church Street
Twickenham TW1 3NL

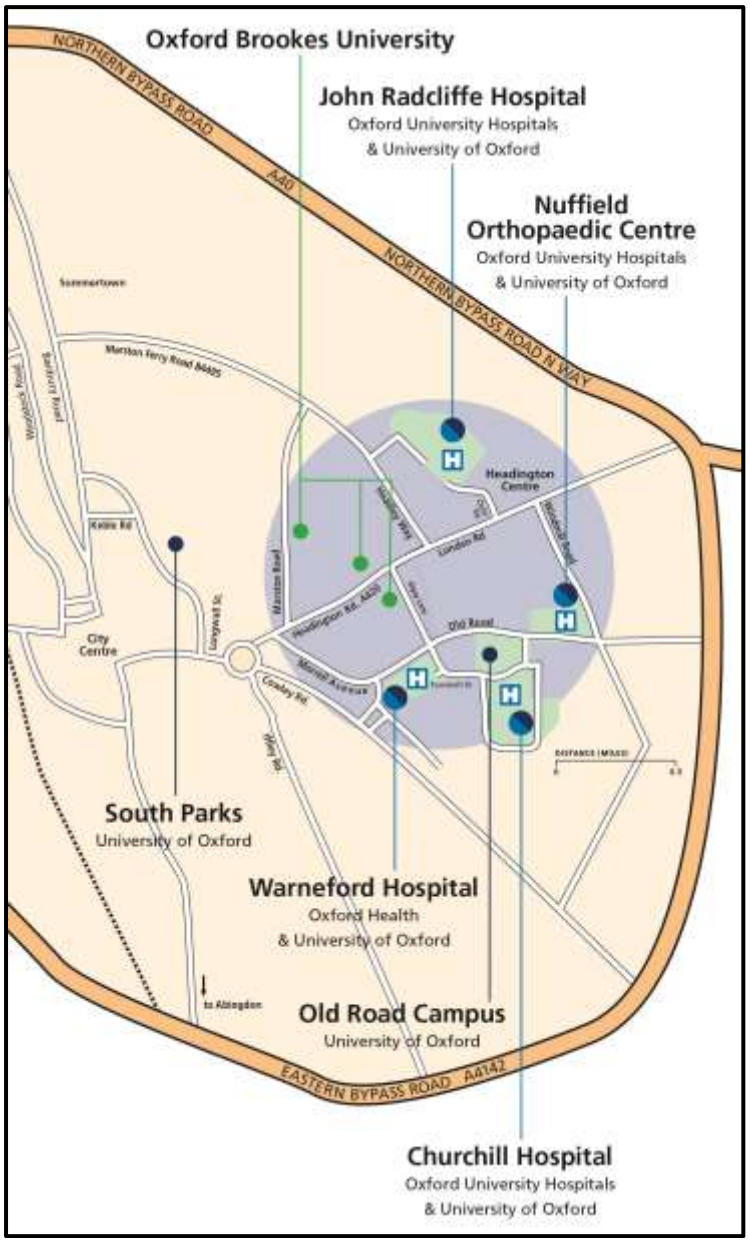
Notes: Oxford AHSC Partners: OBU Oxford Brookes University, OH Oxford Health NHS Foundation Trust, OUH Oxford University Hospitals NHS Trust, UoO University of Oxford

Theme 1: Big Data, delivering the digital medicine revolution; Theme 2: Building novel NHS, University and Industry Relationships; Theme 3 Modulating immune response for patient benefit; Theme 4 Managing the epidemic of Chronic disease; Theme 5: Emerging infections and antimicrobial resistance; Theme 6: Cognitive health: maintaining cognitive function in health and disease.

Annex 1: The Oxford AHSC

The four Partners behind the successful Oxford Academic Health Science Centre (AHSC) bid came together in March to mark the start of an important shared journey. This follows an announcement at the end of last year to combine Oxford's world-leading NHS Trusts and academic institutions.

The Centre will combine the institutions' individual strengths in world-class science, research, training and clinical expertise to address 21st century healthcare challenges. It will allow scientific discoveries to move rapidly from the laboratory to the ward, operating theatre and general practice, so patients benefit from innovative new treatments.



Board membership

Chairman

- Professor Sir John Bell GBE, Regius Professor of Medicine, University of Oxford
- Professor June Girvin, Pro Vice Chancellor and Dean of the Faculty of Health and Life Sciences, Oxford Brookes University
- Mr Stuart Bell CBE, Chief Executive, Oxford Health NHS FT
- Sir Jonathan Michael, Chief Executive, Oxford University Hospitals NHS Trust
- Professor Alastair Buchan, Dean of the Medical School and Head of Medical Sciences Division, University of Oxford

In attendance

- Professor Keith Channon, Director of BRC, Director of R & D Oxford University Hospitals and University of Oxford
- Professor John Geddes, Director of R & D, Oxford Health and University of Oxford
- Professor Linda King, Interim Pro Vice-Chancellor, Research and Knowledge Exchange, Oxford Brookes University
- Professor Gary Ford CBE, Chief Executive Officer, Oxford Academic Health Science Network

Theme Leads (and AHSN link where relevant)

Theme 1:	Dr Martin Landray (Mr Mike Denis, Oxford AHSN)
Theme 2:	Professor Chas Bountra (Dr Nick Scott-Ram, Oxford AHSN)
Theme 3:	Professor Paul Klenerman
Theme 4:	Dr Kazeem Rahimi and Professor Stephen McMahon
Theme 5:	Dr Peter Horby
Theme 6:	Professor John Geddes

Annex 2: Additional information from the Themes

Theme 1: Big Data and delivering e-Health

The AHSC has established **Big Data and Clinical Informatics Oversight Group** (chaired by Prof Landray, UoO Big Data Institute, with members drawn from all 4 partners) to provide strategic leadership and coordination for informatics. This will provides the unifying mechanism optimizing synergies and existing activities across the partners and programmes, including AHSN and the BRC.

Progress has also been made in tracking cohort material from UK Biobank and the Million Women Study and a collaboration established between Simon Hay and Chris Murray (University of Washington) is to create a second node for the IHME (Institute for Health Metrics and Evaluation) where the Big Data Institute and Oxford will be the major European hub for the collaborative programme with Chris Murray supported by the Gates Foundation. Progress has been made in the further development of geopositions healthcare data for the major infectious diseases globally and this will be further developed in the coming years as part of a global surveillance network for infections.

Oxford is leading the development of clinical informatics systems for major national projects, including: **NIHR Health Informatics Consortium,** an £11M programme of infrastructure development across 5 BRCs in Oxford, London and Cambridge. We have brokered a comprehensive, generic data sharing agreement signed by all parties. The Trusts are now working to establish interoperable clinical data repositories in cancer, infectious diseases, renal transplantation, intensive care, and acute coronary syndrome. This data models developed by Oxford for the HIC, characterising relevant aspects of clinical and laboratory data in each of these therapeutic areas, have been redeployed by Oxford to provide the national data capture infrastructure for the **100,000 Genomes Project** (live release: March 2015).

Oxford is now leading an MRC-funded project to develop the associated research infrastructure to support the **Genomics England Clinical Interpretation Partnerships (GeCIPs)**, in a collaboration that includes Queen Marys University London, EBI and the Farr Institute. Following the success of the 100,000 Genomes Project and opening of the Oxford NHS Genomic Medicine Centre, AHSC partners have planned for new training programmes to support development of new healthcare workforce in genetics. Starting September 2015, we will be delivering an MSc Medical Genomics partnering OBU, Oxford NHS Genomic Medicine Centre, Oxford Molecular Diagnostics Centre, Oxford Molecular Genetics Laboratory, The Wellcome Centre for Human Genetics, MRC Functional Genomics unit, Oxford AHSN, NHS England SCN and Public Heath England.

Improving capability and capacity within the workforce and the student population regarding big data is a crucial area for focus – a review has been carried out of opportunities for 'education' across a very wide range course etc. Outcomes from report include improvements for embedding Big Data and its principles in professional qualifications, in health-related degree programmes and in the specialist programmes. There is a growing need for computer scientists/ data analysts to develop interest and skills in biomedicine and for Biomedical scientists to develop skills in programming and data analysis. The AHSC is considering opportunities in the Oxford Region for this at MSc level and above as well as encouraging undergraduates in computing/ mathematics/ statistics/ engineering etc. to develop knowledge and interest in bioscience- perhaps by offering supervised 'live' projects. A group has been set up to take this forward. Prof Mary Boulton (OBU) has been providing training for staff working across the AHSC in applying for NIHR grants with the focus on building clinical research collaborations.

Oxford leads the **NIHR Health Informatics Collaborative (HIC),** an £11m programme of infrastructure development across the five comprehensive NIHR Biomedical Research Centres: Oxford, Cambridge, Imperial, UCL, and Guys' and St. Thomas'. The HIC Trusts have signed a comprehensive, generic data sharing agreement, and are working to establish interoperable clinical data repositories in cancer, infectious diseases, renal transplantation, intensive care, and acute coronary syndromes. The data models developed for the HIC, characterising relevant aspects of clinical and laboratory data for the different therapeutic areas, have been re-used for the UK 100,000 Genomes Project.

International partnerships with leading companies in the IT/tech and pharma/biotech sectors are being developed, e.g. with Apple [see below).

A memorandum of understanding with **Stanford University** (signed Feb 2015) provides a framework for conducting major joint research programmes (e.g. mobile health for cardiovascular disease, building on our joint work with **Apple** using ResearchKit); initiatives to support innovative research (e.g. a US$1M seed grant scheme, backed by the Li Ka Shing Foundation; including work on the distributed analysis of data on melanoma patients from OUH, Stanford and Vanderbilt); and training (e.g. the annual Oxford-Stanford Big Data in Biomedicine conference).

Theme 2: Building Novel NHS, University and Industry Relationships

The **Oxford Stanford Biodesign programme** targeted largely at digital health applications in a variety of components of the healthcare system has been initiated, with the first four Fellows to start the programme in 2016. The programme is intended to support a dozen Fellows working in this area developing commercially viable interventions.

The Partners have created the **Oxford Digital Health Institute**, a virtual institute that brings together investigators from the two Hospital Trusts, from the Medical Sciences Division (including the Big Data Institute at UoO), the Engineering Department which has particular strengths in digital health, and investigators from OBU who are developing new apps and tools that can be used for the evaluation of patients with disorders such as Parkinson's disease (see also below) or Alzheimer's disease.

The AHSC partners are working with the Oxfordshire LEP and the Oxford Innovation Engine Group to help create effective networks of businesses in both the diagnostics and the therapeutics space. A review of the Life Sciences companies in the Thames Valley has revealed that there are 550 such entities here, all of which could benefit from a more coherent story about the Oxfordshire Biomedical Cluster. The AHSN is actively engaged in this work.

Prof Helen Dawes (OBU) has been leading a project on the development of a novel and cheap smartphone technology for the **Gait analysis** of Neurological conditions such as Parkinson's and Huntington's disease. Already raising over £1m in research funding and being primed for clinics with commercial engagement at Biotrinity2015. This work links with Theme 6 and involves Oxford Dementia and Ageing Research (OxDARE) and Dementia and Neurodegeneration Speciality (DeNDRON) and academic clinicians from all Partners. Work also includes developing training courses for healthcare professionals (e.g. dementia simulation courses), providing health and well-being services to the public through translation of current research activity (e.g. from the FFC, Dept of Psychology; weight loss, metabolic testing, body composition, sleep, women's health) and providing health and well-being services to the staff, students and the public though rental of the consultancy rooms to the local health care practitioners who practice in areas related to local research.

An application has been made by the AHSC Partners for Local Enterprise Partnership (LEP) funding for a **Bioinnovation Hub** for student engagement with industry at OBU.

The core themes of the BioEscalator (ref Theme 2 in Report) are:

- Translating research excellence into tangible health and wealth benefits: The BioEscalator will provide the necessary space, support and guidance to nascent and emerging spin out companies to give them the best chance to grow and become viable companies ready to move on to one of Oxford's science parks. The facility will offer a range of business support services and company advisory boards, affordable flexible laboratory and office space, new models of efficient shared management and brokered access to specialist equipment and facilities from the adjacent University and NHS sites – the AHSC Campus. Importantly, by keeping innovations closer to the University for longer before spinning out, they have a demonstrably higher chance of developing into sustainable companies.
- Promoting Entrepreneurship in Research: By positioning the BioEscalator in the heart of the clinical academic campus of the AHSC, a cultural shift can start to occur in the research community that will foster higher connectivity, greater permeability and a stronger emphasis on developing research and intellectual endeavour into tangible products and therapies for patients. In order to ensure the long-term success of the BioEscalator, the teaching and training of young, enthusiastic researchers and clinicians will help develop the next generation of entrepreneurs in healthcare. A range of networking and public outreach events to fully engage the BioEscalator in the wider business community will complement this.

- Connecting to the local healthcare ecosystem: The Oxfordshire healthcare system is uniquely placed to help support the translation of ideas from the lab into the market and the BioEscalator will help achieve this by acting as a hub and catalyst to bring together the key stakeholders to promote and expedite this process. As well as supporting the Universities' and NHS Trusts' spin out companies, we expect start-ups and other stakeholders (e.g. patient groups, product developers, manufacturers, investors, professional services), from outside of Oxford to engage with activities at the Bioescalator.

Theme 3: Modulating Immune Response for Patient Benefit
UoO have collaborated with a new local Biotech start-up ORCA pharmaceuticals to develop new RORgt inhibitors for the treatment of inflammatory diseases. This partnership attracted seed funding from VC firms BioMotiv and NYU Ventures of $12.8m to take the programme to Phase 1B. ORCA successfully developed lead compounds and this programme has been subsequently been acquired by Astra Zeneca. Proof-of-concept studies by UoO researchers in the BRC Immunology Core Lab (Dr L Xue, recruited from local biotech firm Oxagen, now Atopix) were central to this successful development.

Building on this success the same collaborative team are working with a new start up KMD Pharma, to explore novel therapeutics in the area of inflammatory disease based on inhibition of the histone demethylase jmjD3. This novel and potentially potent drug target was uncovered by work from the SGC (Prof C Bountra, UoO). This builds on successful collaborations between UoO and staff at ORCA, Atopix and Oxagen and will foster development of a new start-up programme.

Other local industrial collaborations from within this programme include those with Atopix (clinical trials of CRTH2 antagonists for allergic skin and lung disease; Prof G Ogg and Prof I Pavord UoO), and Immunocore.

Theme 4: Managing the Epidemic of Chronic Disease
The joint leads of the Cardiorespiratory Research Group at OBU, Dr Shakeeb Moosavi and Dr Helen Walthall have seeded a number of AHSC projects: 1) Clinical trial of inhaled furosemide as an adjunct to optimal treatment in chronic heart failure patients (funded by a BHF grant) involving the following collaborators: Dr. Najib Rahman (Director of the Oxford Respiratory Clinical Trials Unit, Churchill Hospital), Dr. Heather House (OUH/UoO Joint Research Office), Dr Jeremy Dwight (Consultant Cardiologist OUH), Helen Jackson (Nurse Consultant in Heart Failure OUH), Professor Paul Leeson (Cardiovascular Clinical Research Facility, UoO) and Dr. Tim James (Clinical Biochemistry, OUH); 2) Hypothesis driven projects to improve understanding of the cerebral mechanisms of clinical breathlessness so that better treatment options can be identified for intractable dyspnoea in patients with chronic respiratory diseases such as COPD and lung cancer. The experiments involve studying (i) patients with insular cortex damage from ischaemic cerebral stroke and low-grade glioma (ii) patients with deep brain electrodes implanted for relieve of chronic pain, tremor or epileptic seizures. These patients have been targeted because of the areas of the brain thought to be crucial for breathlessness perception. Collaborations have been set up with: Mr. Alex Green and Mr. Puneet Plaha (Consultant Neurosurgeons at OUH), Dr. Andre Van Wyk and Dr. John Park (Stroke Neurologist and Consultant in Respiratory Medicine respectively, at the Royal Berkshire NHS Foundation Trust in Reading); 3) Development of a Patient Reported Outcome Measure (PROM) for fatigue and breathlessness in Chronic Heart Failure patients and Evaluation of a cardiac rehabilitation programme in a hospice for patients at the end of life with chronic heart failure (in collaboration with Dr Jeremy Dwight, Consultant Cardiologist, OUH and Professor Bee Wee, Consultant in Palliative Care Medicine OUH). This reflects the importance of understanding patient experience and looking to improve this.

The AHSN is currently evaluating digital tools for gestational diabetes with Maternity units across the Network where it has demonstrated a 25% reduction in nursing support for pregnant women with diabetes who are monitored in this fashion, and they are also facilitating the evaluation of a community based programme to monitor patients with chronic obstructive pulmonary disease.

Theme 5: Emerging Infections and Antimicrobial Resistance
Prof Derrick Crook (UoO/Public Health England) and Dr Dona Foster (OBU/UoO) are collaborating on a project for whole genome sequencing of Streptococcus pneumoniae from invasive disease in the Oxfordshire region. Dr Ryan Pink (OBU), Dr Dona Foster (OBU/UoO) and Dr Noel McCarthy (Public Health England) have been working on a tracking infection mobile app under guidance of the AHSN. The Theme lead, Peter Horby has been actively involved and leading the investigational Ebola treatments being tested in West Africa as part of the international initiative to fast-track trials of the most promising drugs.

Theme 6: Cognitive Health: Maintaining Cognitive Functions in Health and Disease

Theme 6 integrates activity between the Universities and the NHS Trusts including the BRC, the Oxford AHSN (dementia lead: Rupert McShane) and the Oxford CLAHRC. The Theme builds on the pre-existing rapid developments driven by our response to the Prime Minister's Challenge on Dementia (March 2012) and facilitated initially by the Oxford BRC's Cognitive Health Working Group (Director Professor Kia Nobre; Coordinator Professor Clare Mackay) which prioritized cognitive health in late life) and the Oxford CLAHRC. Oxford Dementia and Ageing Research (OxDARE) was created as a vehicle to coordinate dementia research and translation across Oxford. After an unprecedented year of responding to funding calls in 2013/4 we now enter a phase of establishing and launching new platforms and preparing to deliver a step change in dementia research in Oxford. This includes several additional new recruits, further local and national integration, continued collaboration and engagement, and new developments in a number of research and infrastructure projects.

In 2014 we were delighted to attract Simon Lovestone, to a new Chair in Translational Neuroscience in the Department of Psychiatry. This was followed by the establishment of a new statutory chair in Translational Cognitive Neuroscience, to which Kia Nobre was appointed. Several other significant new appointments have followed: Mike Denis is Director of Information Strategy for the AHSN, Noel Buckley is Professor of Neurobiology, and John Gallacher (Director of DPUK) is newly appointed as a Professor of Cognitive Health. The BRC CHWG co-ordinator, Clare Mackay, has been promoted to Associate Professor.

Internationally leading programmes of integrated basic and patient-based research are now aligned around a vision to become a global leader in preventing dementia and promoting cognitive health across a range of neurodegenerative diseases. These centre mainly on target discovery, analysis of 'big data', imaging, and cognitive neuroscience across the major dementia disease areas: Alzheimer's disease (Professor Simon Lovestone), Parkinson's disease (Drs Richard Wade Martins, Michele Hu), vascular dementia (Professor Peter Rothwell), amyotrophic lateral sclerosis (Professor Kevin Talbot & Dr Martin Turner) and frontotemporal dementia (Dr Chris Butler).

The major EU IMI EPAD adaptive trial award has now been made and is co-led from Oxford and adds to the similarly large IMI EMIF programme for information repurposing for dementia. Together these two programmes, both co-led from Oxford have now partnered with IMI-Aetionomy to form the IMI-AD platform; the leading public-private consortium for dementia research in Europe. The platform will develop novel therapeutic approaches predicated on biomarkers and Oxford has partnered with major information technology companies to generate innovative devices for early dementia detection and is leading on imaging and molecular biomarker studies in the Dementias Platform UK.

Assessing cognitive health at scale is a growing theme within OxDare and the Department of Psychiatry at UoO with the design of web-based cognitive testing for use in UK BioBank and other large cohorts, and a recent partnership with Apple to develop device-based cognitive assessment for population-wide cognitive assessment. A goal of these programmes is the detection of early cognitive change enabling earlier intervention. Building on the assessment of cognitive assessment at scale and the Department of Psychiatry's True Colours project are plans to develop within the Oxford AHSN Informatics work linking health records to web-based and device-based assessment of cognitive and psychological health.

Oxford continues to play a prominent role in the two key national infrastructure initiatives relating to dementia research. Firstly, Simon Lovestone leads the NIHR Translational Research Collaboration for Dementia (TRC-D), which comprises the six English institutions with BRUs in Dementia or BRCs with a Dementia theme. Oxford is represented by Kia Nobre. The TRC-D is developing theme-specific working groups. Having obtained its first research grants, a number of projects are now underway (Biomarkers for Parkinson's Disease, Deep and Frequent Phenotyping, Clinical Records Interactive Search for Dementia [D-CRIS] – details below). Secondly, the MRC Dementias Platform UK (DPUK - Director: John Gallacher; Co-director: Simon Lovestone) was established to bring together and repurpose large cohort studies for dementia research, and specifically to create 'readiness cohorts' for experimental medicine. Several Oxford cohorts (OxVASC, OPDC, MND) are included within the DPUK, and Oxford scientists are leading the informatics network (network lead: Simon Lovestone, clinical informatics lead: Mike Denis, Imaging informatics lead: Clare Mackay) and the stem cells network (network lead: Richard Wade Martins).

As outlined above, the local infrastructure for dementia research has been significantly strengthened as a result of new funding. The new ARUK Oxford Drug Discovery Institute (part of an alliance with similar facilities in Cambridge and UCL) occupies space in the new Target Discovery Institute and will bring several new senior faculty members across 3 University Departments. This adds to the NIHR Oxford Cognitive Health Clinical Research Facility (OCHCRF - PI: John Geddes); a state-of-the-art experimental neuroscience facility that brings together OH, OUH, and multiple departments of UoO (Psychiatry, Experimental Psychology, Clinical Neurosciences). In addition, OxDARE has made significant contributions to four major infrastructure projects. They involve: planning, designing, and obtaining funding for a Translational Cognitive Neuroscience Imaging Centre to be situated at the Warneford Hospital, planning and funding an imaging informatics system, rolling out the Clinical Record Interactive Search (D-CRIS) system, and setting up a participant registry.

Via OxDARE, the Theme has maintained an active portfolio of activities to involve and engage with the public, patients, carers, clinicians, and scientists. Following the first successful 'Oxford Dementia Day' (July 2013), organized by OxDARE in association with the Alzheimer's Research UK local network, we are currently organising a repeat event for later in 2015.

Annex 3: Additional points of interest during 2014/2015

April 2014

- **Stem cell therapies** could potentially reduce numbers of deaths from heart disease when used in addition to standard heart drugs and surgery, research suggests. Taking stem cells from a patient's bone marrow and injecting them into damaged heart tissue may become an effective way to treat heart disease, suggests a new study. Researchers reviewed data from the clinical trials that have been conducted so far of these novel therapies. 'This is encouraging evidence that stem cell therapy has benefits for heart disease patients. However, it is generated from small studies and it is difficult to come to any concrete conclusions until larger clinical trials that look at longer-term effects are carried out,' says Dr Enca Martin-Rendon of the University of Oxford and a member of the Cochrane Heart Review Group that carried out the study.
- The British Heart Foundation Health Promotion Research Group, based in the Nuffield Department of Population Health, has been officially designated as a **World Health Organization (WHO) Collaborating Centre**. The new centre will be known as the British Heart Foundation Centre on Population Approaches for Non-Communicable Disease Prevention. The overall aim of the Centre is to carry out research of the highest methodological quality that has the greatest possible influence on public health policy and practice, as it relates to the primary prevention of non-communicable disease (NCD).
- Research at OH takes place in many settings across Oxford, Buckinghamshire and parts of Wiltshire. The **NIHR Oxford Cognitive Health Clinical Research Facility** (CRF) at the Warneford Hospital works in collaboration with UoO and the OUH enabling people to take part in research into innovative treatments.

May 2014

- The second phase of the UoO's **Botnar Research Centre** was opened officially by HRH The Duchess of Cornwall. The £12m facility, at the NOC in Headington, carries out research to improve the treatment of arthritis, osteoporosis and other bone and joint diseases. It brings world-leading research together with NHS clinical practice, accelerating discovery into new treatments and services for patients.
- The **Royal Society** has elected six Oxford University academics as new Fellows, including three professors in the Medical Sciences Division. They are Professor Dorothy Bishop, from the Department of Experimental Psychology, and Professor Patrik Rorsman and Professor Rajesh Thakker, both from Oxford Centre for Diabetes, Endocrinology and Metabolism , Radcliffe Department of Medicine.
- The work of the AHSC and the AHSC is highlighted at **BioTrinity 2014** an event with a particular focus on partnerships between pharma, life and biosciences, universities and the NHS. The Oxford AHSN will be sponsoring for a third year in 2015.

June 2014

- In a UK first, patients of the **Oxford Cancer Centre** will receive fully integrated care for depression and other psychological problems based on novel research carried out by members of NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) Oxford. The Oxford Cancer Centre will hire a psychiatrist and three cancer nurses, who will be trained by Professor Michael Sharpe and Dr Jane Walker to deliver 'Depression Care for People with Cancer'; a screening and treatment programme that has been carefully developed and evaluated in clinical trials. This means that patients will receive specialist psychiatric care alongside their anticancer treatment, rather than having to go to separate services. This new programme is part of a wider development by OUH to provide high quality, evidence-based integrated care for patients with mental and physical comorbidity, in collaboration with the Comorbidity Theme of the CLAHRC Oxford. This also links with the Oxford AHSN's comorbidity clinical network led by Professor Sharpe and Dr Yousif.
- **Molecular dynamics simulations** by Dr Phillip Stansfeld in the lab of Professor Mark Sansom in the Department of Biochemistry, have helped to reveal how bacteria construct a barrier against antibiotics and the body's immune system. These fortifications are found in Gram-negative bacteria which cause

many different infections including salmonella, pseudomonas and meningitis. By impeding the construction of this barrier, it might be possible to tackle **antibiotic-resistant bacteria**. Dr Stansfeld provided molecular dynamics simulations for a structural study carried out by groups from the University of East Anglia and Diamond Light Source ((www.diamond.co.uk) . The researchers have published their work in Nature.

- More people than ever before are taking part in **dementia research studies**, according to figures from the NIHR. Funded by the Department of Health, the NIHR Clinical Research Network (CRN) has released figures showing that recruitment into dementia studies in England has increased by 13% over the last 12 months. The NIHR CRN ensures that research studies are set up and delivered quickly in the NHS. Oxford Health is now the 5th highest recruiter among all NHS trusts in the country. This marks a remarkable improvement, after coming 34th in the trust league table the previous year.

July 2014

- **Resistance** to the world's most effective anti-malarial drug, artemisinin, is now widespread across mainland Southeast Asia, seriously threatening global malaria control and elimination, according to a study led by UoO researchers based in Thailand. The study, which analysed blood samples from 1241 malaria patients in 10 countries across Asia and Africa, found that artemisinin resistance in the malaria parasite Plasmodium falciparum is now firmly established in Western Cambodia, Thailand, Vietnam, Eastern Myanmar and Northern Cambodia. There are also signs of **emerging resistance** in Central Myanmar, Southern Laos and Northeastern Cambodia.
- **Taking B vitamins** doesn't slow mental decline as we age, nor is it likely to prevent Alzheimer's disease, conclude UoO researchers who have assembled all the best clinical trial data involving 22,000 people to offer a final answer on this debate. High levels in the blood of a compound called homocysteine have been found in people with Alzheimer's disease, and people with higher levels of homocysteine have been shown to be at increased risk of Alzheimer's disease. Taking folic acid and vitamin B-12 are known to lower levels of homocysteine in the body, so this gave rise to the 'homocysteine hypothesis' that taking B vitamins could reduce the risk of Alzheimer's disease.
- **Oxford Health** is among five leading mental health trusts in England who have launched a partnership aimed at revolutionising dementia research in the UK. Researchers across South London and Maudsley NHS Foundation Trust (SLaM), Oxford Health NHS Foundation Trust, West London Mental Health NHS Trust, Cambridgeshire and Peterborough NHS Foundation Trust, and Camden and Islington NHS Foundation Trust will use software developed by the NHS using NIHR funding that takes information from patients' records without revealing sensitive information that could identify them or their carers. **D-CRIS: the Dementia Clinical Record Interactive Search** is a world-leading resource that was first developed at the NIHR Dementia Biomedical Research Unit at SLaM and the Institute of Psychiatry, King's College London. It will enable large datasets to be pooled so that research can be conducted at scale, providing researchers with access to one million patient records and enabling them to identify trends in the data and investigate why treatments work for some patients and are not as effective for others.

August 2014

- OUH has pledged its support for increased transparency in medical research by supporting the **AllTrials** campaign. OUH has signed the campaign pledge and commits to the principles that all clinical trials should be registered and the results should be published. The Trust supports a growing portfolio of more than 1,300 patient-centred studies and trials.
- **Depression and cancer**: the findings of the research team from the Universities of Oxford and Edinburgh are published today in three papers in the journals The Lancet Psychiatry, The Lancet and The Lancet Oncology. The team analysed data from more than 21,000 patients attending cancer clinics in Scotland and found that major depression is substantially more common in cancer patients than in the general population. Major depression was most common in patients with lung cancer (13%) and lowest in those with genitourinary cancer (6%). Moreover, nearly three quarters (73%) of

depressed cancer patients were not receiving treatment for their depression. The huge benefit.shows what we can achieve for patients if we take as much care with the treatment of their depression as we do with the treatment of their cancer. (Prof Michael Sharpe). To address the problem of inadequate treatment, the researchers evaluated the effectiveness of a new treatment programme called 'Depression Care for People with Cancer' (DCPC) in a randomised trial called SMaRT Oncology-2.

- An **anti-inflammatory peptide** discovered by David Greaves and his group in the Dunn School will be tested for its ability to treat psoriasis following a licensing deal between the UoO's ISIS Innovation and San Francisco start-up Rogne Biosciences. The company has raised over $1.5 million in seed financing to develop new, non-steroidal treatments for patients with mild to moderate psoriasis.

September 2014

- The £1.25 million University of **Oxford Isis Fund**, set up by Parkwalk Advisors and Isis Innovation in February, has made its first investments in medical device spin-out Oxtex and in Brainomix, a start up from the Isis Software Incubator which is developing software to improve stroke diagnosis.
- It was **World Alzheimer's** Day on 21 September and new study at Oxford Health might prove a source of hope for those living with the condition. The new trial taking place at the Warneford Hospital is looking at how Minocycline, a drug that has been used to treat acne and certain types of bacterial infections, may be used as a form of treatment for those with Alzheimer's. Minocycline is known to have an anti-inflammatory quality, and it is this quality that will be explored during the new trial, with inflammation in the brain believed to play an important part in the progression of Alzheimer's. Dr Rohan Vanderputt, consultant in old age psychiatry and the principal investigator for the Minocyline in Alzheimer's Disease Efficacy (MADE) trial. He explained: "We already know that Minocycline is relatively safe. This trial will help us find out whether it improves the symptoms of Alzheimer's disease and slows the expected rate of deterioration. "It will also inform which is the best dose of Minocycline to improve symptoms without causing side effects." The Minocycline trial will compare two different doses of minocycline with a placebo, which contains no active drug but appears exactly the same. The study is funded by the Department of Health and led nationally by Professor Robert Howard at King's College London, the trial sponsor. It is being run with the support of the National Institute for Health Research Clinical Research Network (NIHR CRN), which is in the research arm of the NHS.

October 2014

- An Oxford project harnessing technology to improve care for women who develop diabetes during pregnancy has won a national prize. The team behind the **GDm-Health gestational diabetes smartphone** app received the Best Digital Initiative trophy at the Quality in Care Diabetes Awards on 16 October 2014. The project is a collaboration between OUH and the UoO, funded by the Oxford Biomedical Research Centre. This is now being rolled out to other maternity hospitals in the region with the support of the Oxford AHSN to the benefit of patients.
- A £110m cancer research institute is to be established at the UoO, a development spurred by a £35m grant from the UK government. The **Precision Cancer Medicine Institute** will carry out research into a wide range of cancer therapies, including the use of genomics and molecular diagnostics, advanced cancer imaging, trials of new drugs, minimally invasive surgery and proton beam therapy. The aim is to understand how making cancer treatments less invasive and more directed to the characteristics of the patient's own tumour could improve cure rates. Scientists will now work to establish the new institute with a £35m grant from the Higher Education Funding Council for England (Hefce) through its UK Research Partnership Investment Fund (RPIF). This is to be matched with over £75 million of investment in financial contributions and support in kind from partners in the project. The proposed partners include Cancer Research UK; Roche Diagnostics; GE Healthcare; Mirada Medical; Brandon Medical; Blue Earth Diagnostics; and the University of Florida Health Proton Therapy Institute.
- The OUH Cardiology Department has been commissioned to carry out two heart procedures as part of a **national evaluation**. Both treatments involve devices being used inside the heart to reduce future risk of stroke. Oxford is one of a limited number of heart centres selected by NHS England to take part in its

£15m Commissioning Through Evaluation programme, which assesses promising specialised treatments where there is not yet enough evidence to support routine commissioning within the NHS. Not all centres which expressed an interest have been chosen to take part.

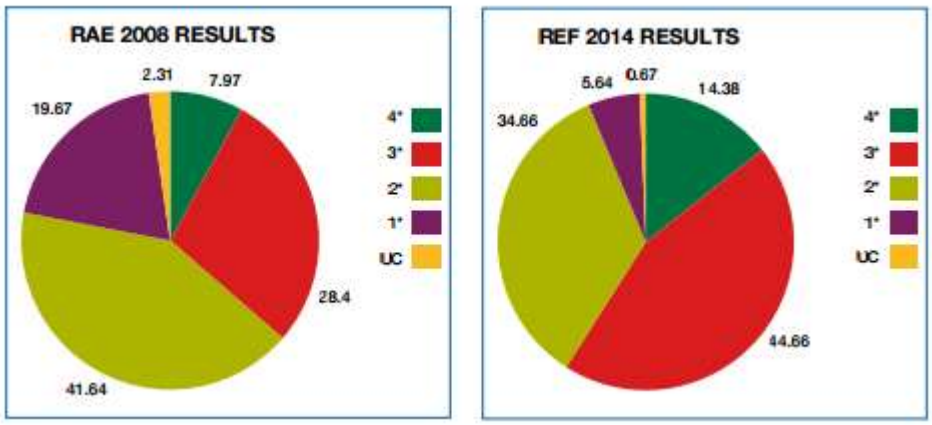
- OBU will partner with the UoO, the Pirbright Institute, Diamond Light Source, STFC Central Laser Facility and the ISIS Neutron Source in a £12.5 million Doctoral Training Programme. The Biotechnology and Biological Sciences Research Council (BBSRC) announced it would provide £125M of funding over five years to leading universities and scientific institutions through doctoral training partnerships. The funding will support bioscience students, equipping them with the skills to tackle major global issues – this will support economic growth through research and skilled staff.

November 2014

- **New vaccine** generates strong immune response against hepatitis C. A new hepatitis C vaccine developed by UoO scientists has shown promising results in an early clinical trial, generating strong and broad immune responses against the virus causing the disease. The study was funded by the Medical Research Council and the European Union, with support from the Oxford Martin School at UoO and the Oxford Biomedical Research Centre. The vaccine was found to be very safe and well tolerated in the 15 healthy human volunteers who took part in the phase 1 safety trial. A trial to test the efficacy of the vaccine is now underway among intravenous drug users in two sites in the USA. It is the first hepatitis C vaccine to reach this stage of clinical trials. The aim is to see if the vaccine is able to offer any protection from infection in this group at high risk of hepatitis C compared with placebo.
- The Highfield Unit Oxford (part of OH) has been praised by Jean Christensen, Professional Officer for Nursing and Midwifery and Care at the Department of Health, following a visit to the **adolescent mental health** inpatient unit. “The facilities are unlike anything that I have ever seen in NHS provision,” she writes in her Department of Health blog, “but one young person summed up for me in just two words what she felt the best thing was about the Highfield. She simply said “the staff”.

December 2014

- The OUH has been designated as one of eleven **Genomic Medicine Centres** across the country that will lead the way in delivering the 100,000 Genomes Project. The initiative involves collecting and decoding 100,000 human genomes - complete sets of people's genes - that will enable scientists and doctors to understand more about specific conditions.
- HIV is evolving to become **less deadly and less infectious**, according to a major scientific study. The team at the University of Oxford, lead by Prof Philip Goulder, shows the virus is being "watered down" as it adapts to our immune systems. The study said it was taking longer for HIV infection to cause Aids and that the changes in the virus may help efforts to contain the pandemic. Some virologists suggest the virus may eventually become "almost harmless" as it continues to evolve.
- The **Research Excellence Framework (REF 2014)** results confirmed the UoO’s world leading position in medical sciences research. The University ranked top for the overall quality of submissions in the following three areas: Clinical Medicine; Public Health, Health Services and Primary Care; and also in Psychology, Psychiatry and Neuroscience. Within Biological Sciences, Oxford produced the largest volume of world leading and internationally excellent research in the exercise. The University overall has the largest volume of world leading research and impact submitted to the REF exercise.
- OBU’s Faculty of Health and Life Sciences results were very strong with over 95% of research internationally recognised and, within biological sciences, 80% of impact rated 3* or 4*; in health research 90% of impact rated world leading or internationally excellent. Improvements since 2008 are shown below:



January 2015

- The first results from a trial of a **candidate Ebola vaccine** at UoO suggest the vaccine has an acceptable safety profile at the doses tested, and is able to generate an immune response. 'The vaccine was well tolerated. Its safety profile is pretty much as we had hoped,' said Professor Adrian Hill of the Jenner Institute at UoO, who led the trial. The researchers say these results suggest the vaccine is suitable for further testing in West Africa during the current outbreak, with the aim of determining whether the vaccine offers protection against Ebola.
- The brain is an adaptable organ which can adjust the messages it sends in people who have only one hand. An **Oxford-led research project** sheds new light on what happens to the large parts of the brain that control hand and arm movements when a hand is missing and how the brain adjusts to find new ways to complete everyday tasks like tying shoelaces. It could have widespread implications, particularly in helping amputees and people with congenital limb deficiency make best use of their residual arm – both with and without prosthetics. The study was led by the UoO in collaboration with OUH supported by the Wellcome Trust and the artificial limb provider Opcare. The results are published in the eLife journal (http://elifesciences.org/).

February 2015

- OBU was awarded more than £4.1m by the Higher Education Funding Council England (HEFCE), to invest in new facilities in the **biosciences**. The investment, which will be matched by OBU, is part of a Government initiative to develop STEM (science, technology, engineering and mathematics) provision in UK Universities.
- The UoO announced that the first collaborative research projects to be agreed by the University under the Pfizer Rare Disease Consortium have been signed. The collaborations are the result of a strategic alliance to develop new treatments for rare diseases which was put in place by the UoO, Imperial College London, University College London, King's College London, Queen Mary University London, and Cambridge University acting through GMEC Pfizer will be collaborating with the UoO in haematology and neuromuscular disorders. Michael Skynner, Head of Rare Disease Alliances, Pfizer, says "I am delighted to see concrete output from the first Pfizer Rare Disease Consortium call for proposals with GMEC, in the form of three funded research proposals at UoO. I look forward to a close scientific interaction between Oxford and Pfizer over the next three years".
- A new website (**www.patientsactiveinresearch.org.uk**) has been launched to promote patient involvement in research by 'match-making' patients, carers and other members of the public who are interested in medical research with researchers working in hospitals and universities across the Region. Patients, carers and other members of the public can play a vital role in medical research. By working as partners with researchers, they can help to ensure that research focuses on what matters to patients, is carried out in ways that feel right for them and the results made public to all who can benefit. The

AHSC, the AHSN, the BRC and the CLAHRC are coordinating their work on patient and public experience and involvement.

March 2015

- OBU held its **Annual Science Bazaar** on 21 March 2015 aimed at children between 5-15 – part of the AHSC patient and public engagement work. The AHSN also took an active part in this Oxford Science Festival working with clinicians from both Universities and the NHS Trusts.
- **World-first TB vaccination trials** enter next stage. The first ever trials of an aerosol vaccination for tuberculosis in Oxford have shown promising results and volunteers are now being sought for further studies. UoO researchers working at the Churchill Hospital found superior immune responses in the lungs from the trial of a vaccine given via an aerosol, which creates a mist that is inhaled through a nebuliser, a simple technology already in common use to treat asthma
- The OUH became the first in the world to assess newborn babies using **international standards** which were developed by the UoO with the aim of ensuring that every newborn baby across the world is evaluated in the same way.
- The NIHR has just published its latest research activity league table across the NHS for 2013/14. This table details the number of studies undertaken by each individual trust, and the number of patients they recruited. OUH ranks second in the table for acute trusts, by recruiting 18,422 patients. The excellent clinical research recruitment performance from both OUH and OH is a great reflection of the close working between the Research and Development teams, Principal Investigators and the AHSC).
- A new technique, which has the potential to **improve outcomes for patients with heart failure,** is being researched by a team in Oxford. The team, at the Oxford Heart Centre in the John Radcliffe Hospital, has been given a grant of nearly £94,000 by national charity Heart Research UK to look into new ways of re-synchronising the heart with a pacemaker technique that could be more effective than that currently used.
- **McLaren Applied Technologies and the UoO** have announced a new partnership that aims to improve the efficiency of patient care and optimise the treatment journey for serious conditions. The agreement will focus on three core areas:
    - Surgical simulations and outcomes monitoring – creating programmes which advance surgeon training methods, improve patient preparation for surgery and enhance the monitoring of surgery effectiveness.
    - Clinical care optimisation – improving patient care journeys in key need areas, while reducing complications and length of stay in hospital.
    - Facilities optimisation - reviewing the management and allocation of critical medical resources (such as emergency departments) and clinical staff in order to optimise efficiency and availability
- OBU has seen a significant increase in **Quality-related Research (QR)** funding from the Higher Education Funding Council for England (HEFCE). The University's QR funding for 2015-16, announced last week (26 March) has risen from £3.44m to £4.84m. This equates to an increase of 41 per cent compared to a three per cent rise across the sector. This significant increase means that Oxford Brookes is the 8th best performing university for increasing its funding.
- NIHR publishes The NIHR: an engine for growth. The document highlights the vital importance of collaborating with industry; underpinning international competitiveness; creating a highly skilled workforce; supporting efficient use of NHS resources; and contributing to a healthier population.