



National Institute for Health Research

BIOMEDICAL RESEARCH UNITS

Introduction

The vision of the National Institute for Health Research (NIHR) is to improve the health and wealth of the nation through research.

This document sets out how the NIHR Biomedical Research Units are contributing to this vision. Information about other elements of the NIHR clinical research infrastructure can be found in companion documents.

Overview

The NIHR established the first round of NIHR Biomedical Research Units (BRUs) in 2008. Designation and funding for these BRUs ended in March 2012. Following a new, open competition launched in February 2011, the NIHR has designated and funded a second round of twenty BRUs within our leading NHS and University partnerships to drive progress on innovation and translational research in biomedicine into NHS practice. These BRUs undertake translational clinical research in priority areas of high disease burden and clinical need, and in which the country has identified research strengths. BRUs (along with NIHR Biomedical Research Centres) form the bedrock of the first two NIHR Translational Research Partnerships (see NIHR Briefing Document 4.10).

The aims of the BRUs are to:

- **Drive innovation** in the prevention, diagnosis and treatment of ill-health.
- **Translate advances** in medical research into benefits for patients.
- Provide a key component of the NHS contribution to our nation's international competitiveness by **building on the best research leaders and their teams** and enabling their host institutions to achieve or further develop critical mass in a priority research area:
 - supporting the further development of NHS/University partnerships with existing critical mass in the priority research areas, "building on the best";
 - enabling excellent, but comparatively small, research groups (comprising a relatively small number of research leaders, working in one of the priority areas, who are at the forefront of their field internationally) to achieve critical mass.

Selection and Funding

The BRUs were selected through open competition, by an independent International Selection Panel using the following criteria:

- **Quality, volume and breadth** of internationally-excellent biomedical and experimental medicine research and researchers.
- Existing **research capacity**, and plans for increasing capacity including training.
- **Strength of the forward strategic plan** and ability to generate a **step-change** in capacity to undertake experimental research in the relevant priority area.
- **Relevance of the research portfolio** to the health of patients and the public.
- **Track record** in translating advances in basic biomedical research into clinical research, and pulling through basic biomedical research findings into benefits for patients, the public and the NHS.
- **Strength of the strategic partnerships**, including those with industry and other NIHR--funded research Infrastructure.
- **Value for money.**

NIHR funding and designation has been provided for five years from April 2012, and covers the recurrent costs of patient based translational clinical research in the NHS. Eligible costs include:

- Research staff engaged on patient- or people-focused translational clinical research in the NHS.
- Research support staff supporting patient- or people-focused translational clinical research in the NHS.
- Research training, leading to a higher degree by research (e.g. MPhil, MD, PhD), for staff, of all disciplines, engaged on patient- or people-focused translational clinical research in the NHS.
- NHS support costs of patient or people-focused translational clinical research (e.g. pharmacy, pathology, radiology).
- Other, legitimate and reasonable, indirect costs within the NHS (e.g. accommodation, payroll, HR, finance).

The performance of each BRU is monitored and reviewed by the NIHR Central Commissioning Facility. BRUs that are not performing at the required standard will first be put on notice and, if the required standard is not achieved within a defined time-scale, funding will be withdrawn.

From April 2017, the current NIHR BRU designation will be discontinued.

A new, open competition has been launched to designate and fund NIHR BRCs over five years from 1 April 2017. All applications will be reviewed by an independent International Selection Panel who will make recommendations on NIHR BRC designation and funding. The outcome of the competition is expected to be announced by early autumn 2016.

COLLABORATIVE INITIATIVES

There are a number of collaborative NIHR initiatives which further build upon the significant investment in Biomedical Research Centres (BRCs) and BRUs, facilitate collaboration between the NIHR BRCs and BRUs and with other parts of NIHR and the wider research landscape and contribute to the NIHR vision of improving health and wealth of the country. These include the:

- **NIHR Translational Research Collaborations in Rare Diseases and Dementia**

The four NIHR Dementia BRUs participate in both the Rare Diseases and Dementia Translational Research Collaborations (for further information, see NIHR Briefing Document 4.2).

- **The NIHR BioResource**

Leicester Cardiovascular BRU participates in the NIHR BioResource. The NIHR BioResource provides a national cohort of healthy patients, their relatives and volunteers who are willing to provide clinical information and samples that will enable them to be recalled by genotype and phenotype for early translational (experimental medicine) research studies and early phase trials (for further information, see NIHR Briefing Document 4.2).

BRU Research Areas

Details of the BRUs and their research areas are presented in the table below.

NHS Organisation	University Partner	Priority Area and Research Areas
Barts Health NHS Trust	Queen Mary, University of London	Cardiovascular Disease. <i>Research Areas:</i> Genomic Medicine and Vascular Pharmacology, Vascular Inflammation and Regenerative Medicine, Translational Cardiovascular Imaging, Cardiac Electrophysiology
Royal Brompton & Harefield NHS Foundation Trust	Imperial College London	Cardiovascular Disease. <i>Research Areas:</i> Advanced Imaging, Genetics and Genomics, Aorta and Aortic Valve, Complex Coronary Artery Disease, Advanced Heart Failure, Adult Congenital Heart Disease
University Hospitals Bristol NHS Foundation Trust	University of Bristol	Cardiovascular Disease. <i>Research Areas:</i> Reducing ischemia-reperfusion injury and systemic inflammatory response in adult cardiac surgery, Optimising peri-operative care in adult cardiac surgery, Optimising heart surgery in children with congenital heart defects, Interventional Cardiology, Vulnerable plaque and vascular remodelling, Cardiovascular regenerative medicine
University	University of	Cardiovascular Disease. <i>Research Areas:</i>

4.03 Biomedical Research Units
Version 11 (July 2016)

Hospitals of Leicester NHS Trust	Leicester	Cardiovascular Genetics and Biomarkers, Novel Cardiovascular Interventions
Nottingham University Hospitals NHS Trust	University of Nottingham	Deafness & Hearing Problems. <i>Research Areas:</i> Tinnitus Etiology and Management, Habilitation for Hearing Loss, Sensorineural Plasticity and Rehabilitation, Cochlear Implantation
Cambridge University Hospitals NHS Foundation Trust	University of Cambridge	Dementia. <i>Research Areas:</i> Novel Biomarkers based on genetics, imaging and cognition in neurodegenerative diseases, Screening of Novel Disease-modifying Therapies, Experimental Medicine Trials, Population and Public Health Implementation: developing novel tools for research and patient care in the community, Multi-disciplinary Research and Capacity Building: Collaborations with Physical Sciences
Newcastle upon Tyne Hospitals NHS Foundation Trust	Newcastle University	Dementia. <i>Research Areas</i> (focusing on dementia caused by Lewy body disease): Genetics and Epigenetic Mechanisms in Lewy Body Dementia, Neuroimaging, Biomarkers, Therapeutics, Clinical (Lewy Body Dementia: comprising dementia associated with Parkinson's disease and dementia with Lewy Bodies)
South London and Maudsley NHS Foundation Trust	King's College London Institute of Psychiatry	Dementia. <i>Research Areas</i> (focusing on late-onset dementias) : Experimental Medicine and Clinical Trials, Alzheimer's Disease, Frontotemporal Dementia and Motor Neurone Disease, Synuclein Dementias (dementia with Lewy bodies and Parkinson's disease dementia), Vascular Dementia, Biological Markers and Clinical Informatics, Dementia in Diverse Populations
University College London Hospitals NHS Foundation Trust	University College London	Dementia. <i>Research Areas</i> (focusing on young onset dementias): Molecular Mechanisms, Biomarkers of Change, Signatures of Disease
Nottingham University Hospitals NHS Trust	University of Nottingham	Gastrointestinal Disease. <i>Research Areas:</i> Infection, Inflammation and Clinical Consequences: Intestine, Liver, Gastroduodenal
Royal Liverpool & Broadgreen University Hospitals NHS Trust	University of Liverpool	Gastrointestinal Disease. <i>Research Areas</i> (focusing on pancreatic disease): New Biomarker Development, Novel Imaging Applications, Safer Drug Development, Early Phase Trials, Collaborative Technology Platforms, Industrial Partnerships
University Hospital	University of	Gastrointestinal Disease. <i>Research Areas</i>

4.03 Biomedical Research Units
Version 11 (July 2016)

Birmingham NHS Foundation Trust	Birmingham	(focusing on liver disease): Immune Modulation and Inflammation, Optimising Anti-viral Therapies for Hepatitis C Infections, Liver Regeneration, Repair and Stem Cells, Immunotherapy of Liver Cancer, Metabolic and Fatty Liver Disease, Hepatocellular Carcinoma and Clinical Trial Infrastructure
Central Manchester NHS Foundation Trust	University of Manchester	Musculoskeletal Disease. <i>Research Areas:</i> Prevention of co-morbidity, Prevention of disease and the complications of treatment, Inflammatory arthritis in adults, Inflammatory arthritis in children, Connective tissue disease, Evaluating New Therapies and Interventions, Non-genetic biomarkers (including imaging)
Leeds Teaching Hospitals NHS Trust	University of Leeds	Musculoskeletal Disease. <i>Research Areas:</i> Rheumatology Clinical Research, Bioengineering and Technological Interventions, Experimental Rheumatology and Inflammatory Mechanisms, Biomaterials and Regenerative Interventions, Imaging and Tissue Characterisation
Oxford University NHS Trust	University of Oxford	Musculoskeletal Disease. <i>Research Areas:</i> Orthopaedics, Rheumatology, Epidemiology and Risk Assessment
University Hospitals Bristol NHS Foundation Trust	University of Bristol	Nutrition, Diet & Lifestyle (including Obesity). <i>Research Areas:</i> Optimising Nutrition in Patients Undergoing Surgery or Other Major Hospital Treatment, Optimising Nutrition to Improve the Health of Children With Chronic Disorders, Nutrition and Lifestyle Interventions in Men With Prostate Cancer, Developing Interventions to Reduce Sedentary Time in People with Type 2 Diabetes
University Hospitals of Leicester NHS Trust	Loughborough University	Nutrition, Diet & Lifestyle (including Obesity). <i>Research Areas:</i> Describing and exploiting the potential of the physical activity and sedentary behaviour paradigms in the prevention and management of chronic disease, Exploring the interplay between physical activity, appetite regulation and nutritional factors and their impact on metabolic health and obesity in defined populations at risk of, or with established, chronic disease
Royal Brompton & Harefield NHS Foundation Trust	Imperial College London	Respiratory Disease. <i>Research Areas:</i> Acute Respiratory Failure, Severe Asthma, Chronic Suppurative Lung Disease, Interstitial Lung Disease, Chronic Obstructive Pulmonary Disease (COPD), Chronic Respiratory Failure/Sleep
Southampton	University of	Respiratory Disease. <i>Research Areas:</i> Allergy,

4.03 Biomedical Research Units
Version 11 (July 2016)

University Hospitals NHS Trust	Southampton	Infection and Immunity, Airways Disease, Respiratory Critical Care, Biomarkers and Ex-vivo Models for Stratified Medicine
University Hospitals of Leicester NHS Trust	University of Leicester	Respiratory Disease. <i>Research Areas:</i> Translational Molecular Discovery, Phenotyping and Biomarkers, Clinical Intervention

Further information

Detailed information about the resources and capabilities of the existing BRUs is available at [UK Experimental Medicine Resource Finder website](#), or contact the NIHR Office for Clinical Research Infrastructure at nocri@nhr.ac.uk.

Department of Health Lead:

Dr Tony Soteriou
Acting Deputy Director, Research Infrastructure and Growth
Research & Development Directorate
Department of Health
Email: R&D@dh.gsi.gov.uk