EXECUTIVE SUMMARY

This report is the second of our new Institute of Translational and Stratified Medicine (ITSMed), launched in January 2014, with the aim of bringing together world class research strengths in both basic laboratory and translational clinical science. ITSMed research focuses on three themes: cancer; neurodegenerative diseases, and infection, with crosscutting expertise in diagnostics, health service research, and clinical trials. Our objective is to provide a permissive environment for effective collaboration and trans-disciplinary links, locally, nationally and internationally to develop world-class translational research of clinical relevance.

Our research strengths were confirmed by the excellent results from our submission to the Research Excellence Framework (REF) 2014 which ranked us first in the UK for quality of research outputs in clinical medicine, above medical schools at Oxford and Cambridge. Through our strong research performance, we have continued to attract leading international researchers to strengthen our offer. This has been achieved through our collaborative culture, attractive structure and world class facilities. Our research has been supported from funders including the UK Research Councils, National Institute for Health Research (NIHR), Cancer Research UK. We have also received significant support for the establishment of a charity funded Centre of Excellence for Brain Tumours and the Alzheimer’s Research UK South West Network Centre. Our health services research that develops systems and personalised interventions has received recognition from and significant funding through the NIHR including the Peninsula Collaboration for Leadership in Applied Health Research and Care (PenCLAHRC). Correspondingly, our researchers continue to publish in the highest impact journals including Nature Communications, Nature Genetics, Nature Neuroscience, Lancet Respiratory Science, Lancet Neurology, JAMA, HTA, PNAS.

An acknowledgement of our success not only came from results of REF 2014 but also from increasing collaborations with other research Institutes. For example, the Memorial Sloan Kettering Cancer Centre New York and Cambridge Institute of Medical Research. An important development has been our research links with China and Dr Bing Hu has been awarded ‘distinguished expert’ status by the Beijing government and an official collaboration with Capital Medical University, Beijing is being finalised.

2015 has seen the start of our new landmark 2,500 sqm biomedical research building. The £15m research facility is part of the University’s £25m investment in medical research and will provide a state-of-the-art laboratory environment to drive our ambitions for translational clinical research. Importantly, its close proximity to Derriford Hospital (Plymouth Hospitals NHS Trust) – one of Europe’s largest – will greatly enhance these developments in clinical research.

As well as delivering world-class research funded through large grants, ITSMed is investing in its ambition to proactively support and develop future researchers. In addition to developing medical research focused events with local schools and our highly successful Nobel Prize lecture series that brings students and researchers together, we have been a key partner in the establishment of a South West regional Masters in Genomics programme and welcomed 16 new PhD/MD students during the past year. Our regular seminars included high profile guest speakers, for example, Professor Siamon Gordon from the Dunn School of Pathology at Oxford University, Professor Maria Spillantini from Cambridge University and Professor Gail Johnson from the University of Rochester, USA. Our researchers have also given presentations at many international meetings.

In addition, and with the help of our press office and public events, we have organised information days and laboratory tours with Cancer Research UK, Huntington’s and Parkinson’s Disease fund raising groups and the Brain Tumour Research charity to support public engagement.

I hope this annual report will show that in our second year we have continued to consolidate and develop our strong research position and that we are on a trajectory to become a leading institute for translational medicine. I want to thank all of the Institute members for their hard work and commitment that has enabled us to continue this successful progress. Special thanks to Wendy Wilson and Tom Nicholson for their support in producing this annual report.

Professor Oliver Hanemann
Associate Dean Research
ITSMed OVERVIEW

Director: Professor Oliver Hanemann

ITSMed brings together our world class research strengths in both basic and translational clinical science. It provides a very strong environment for effective collaboration and trans-disciplinary links between clinical and non-clinical scientists through an integrative ‘bench to bedside and back’ research strategy.

ITSMed brings together our world class research strengths in both basic and translational clinical science. It provides a very strong environment for effective collaboration and trans-disciplinary links between clinical and non-clinical scientists through an integrative ‘bench to bedside and back’ research strategy.

ITSMed has two major research groups with combined facilities and resources that cluster researchers with recognised expertise to achieve critical mass in specific areas and to enable constructive overlap.

**Clinical Trials and Population Studies**

**Lead:** Professor Adrian Taylor

The Clinical Trials and Population Studies Group hosts large epidemiological studies and trials, health services, research and a UKCRC registered Clinical Trials Unit. In addition, its Medical Statistics group supports many local and national research projects, including genomics and biomarker studies and clinical trials.

**Biomedical Research**

**Lead:** Professor Simon Jackson

The Biomedical Research Group includes basic and translational research in three themes: neurodegenerative disease, cancer and infection, immunity and inflammation. The Systems Biology facility provides cutting-edge support for proteomic and genomics studies of disease.

ITSMed is managed by a ‘management board’ that is comprised of the Director (Prof Oliver Hanemann) supported by the Research Group Leads (Professor Simon Jackson and Professor Adrian Taylor) and the Faculty’s Research & Innovation Business Partner (Dr Tom Nicholson).

**Clinical Trials and Population Studies**

**Lead:** Professor Adrian Taylor

The Clinical Trials and Population Studies (CTPS) Group, led by Prof Adrian Taylor, encompasses several research groups namely:
- **Primary Care and Health Services Group**
- **PenCLARHC**
- **Clinical Neurology Group**
- **Dental Health Research Group**
- **Peninsula Clinical Trials Unit**
- **Medical Statistics Group.**

Primary Care and Health Services Research, led by Prof Richard Byng, includes projects and staff associated with the NIHR Peninsula Collaboration for Leadership in Applied Health Research and Care (PenCLAHRC), as well as other research (e.g. on designing and evaluating complex interventions particularly to improve mental health from children to the elderly, addressing health inequalities, epidemiological psychiatry, and integrated care). Richard is also Co-Director of PenCLAHRC.

We are looking at how clinical and public health practitioners and patients work together to produce personalised treatment plans based on psycho-social as well as biomedical perspectives. Some of the most significant research studies have focused on developing systems and personalised interventions (in-person or remotely through web-based support) to address the needs of offenders, people with depression and other chronic conditions (e.g. metabolic, musculo-skeletal and COPD) and health behaviour change support for smokers and inactive patients. In addition to PenCLAHRC funding, over £5m in NIHR, Medical Research Council, charities, and other funding for developing and evaluating local health care innovations, and conducting systematic reviews has been received in the past 4 years for programme grants and individual studies, including randomised controlled trials, and intervention development in the UK and overseas.

The Clinical Neurology research group, led by Dr Camille Carroll, with Prof Jeremy Hobart, have developed an international reputation over the past 10 years for conducting clinical trials (e.g. SWIMS and CUPID) with patients with conditions such as multiple sclerosis, Parkinson’s disease and more recently dementia. The work has been funded by the NIHR, charities (e.g. MS Society) and commercial organisations (e.g. JP Moulton Charitable Foundation). Further work with partners across the world involves assessment using patented mobile health innovations for neuro-degenerative diseases (including dementia) (e.g. ACEnmobile) and for epilepsy risk detection (e.g. EpSMon) led by Dr Craig Newman.

The Clinical Trials and Population Studies Group is comprised of the Director (Prof Oliver Hanemann) supported by the Research Group Leads (Professor Simon Jackson and Professor Adrian Taylor) and the Faculty’s Research & Innovation Business Partner (Dr Tom Nicholson).

**PenCTU**

The PenCTU, accredited since 2008, and the only such NIHR Clinical Trials Unit in the South West, is Directed by Dr Siobhan Creanor and includes clinical, methodological and trial management expertise. The team of 15-20 staff support research from the application to trial and database management and dissemination stages, locally, regionally and nationally. They have a broad portfolio of studies including pilot and feasibility studies, and full trials to investigate the effectiveness and cost-effectiveness of medicinal and complex interventions.

The Medical Statistics group provide strong statistical support across a wide range of research, from laboratory-based studies to randomised trials. Dr Siobhan Creanor leads the group which works closely with the adjacent PenCTU, and collaborators across the UK. The group also manage large databases such as the Down’s syndrome screening Quality Assurance Support Service (DOASS), supported by the National Screening Committee for Public Health England. This involves regular analysis and reporting of laboratory data from approximately 500,000 prenatal screening tests performed across the UK each year. Additionally, DOASS analyses and reports on ultrasound image measurements from approximately 2,750 sonographers currently reporting to DOASS.
BIOMEDICAL RESEARCH

Lead: Professor Simon Jackson

Modern medicine faces many challenges including cardiovascular disorders, cancer, neurodegenerative diseases and new infectious threats. Thus, the Biomedical Research Group, led by Professor Simon Jackson, comprises research focused on three major themes underpinned by state-of-the-art genomic and proteomic technologies, cell biology, experimental models, next generation sequencing and bioinformatics:

- **Cancer**
- **Neurodegeneration**
- **Infection, Immunity and Inflammation**

The principal focus of research in the Biomedical Research Group (BRG) is to understand the molecular and cellular processes underlying human health and disease with a key aim to translate this into diagnostic and therapeutic applications and to guide preventative strategies. This focus aligns with key Research Council and EU strategic priorities and the Plymouth University vision for 2020.

**Cancer**

We apply modern cell biology to elucidate the molecular pathology of cancer, in particular the development of brain tumours, lymphomas and oral cancer. Our success in this area is highlighted by the award of the Brain Tumour Research Centre of Excellence (Matthew Upton). The elucidation of molecular mechanisms of carcinogenesis allows direct translation into new therapies evaluated in clinical trials. For example, Professor Simon Rule has been awarded a significant grant by Cancer Research UK to lead a national research study (ENRICH) to compare the efficacy and side effects of using a BTK (Brdon’s Tyrosine Kinase) inhibitor in a trial against standard chemotherapy in patients with mantle cell lymphoma.

Dental interests in oral cancer are led by Dr Bing Hu and include early markers of initiation and biomarkers for metastasis. An important focus in the development of new therapies lies at the interface between two of our research areas; cancer and immunology. We are delighted that Jiang Li from Oxford University has joined us as Professor of Cancer Immunology and Dr Amiya Patra as a Vandervell Senior Research Fellow in Cancer immunity.

**Neurodegeneration**

Control of neuronal function is key to many of the most challenging diseases, including neurodegenerative conditions such as Parkinson’s Disease, Huntington’s Disease and Dementia. These conditions remain poorly understood, hindering the development of new treatments. We explore genetic and genetic approaches to identify neuropathologic pathways, novel disease markers and treatment targets. Professor Kim Tieu has been awarded grants from the MRC and NIH to investigate mechanisms of neuronal dysfunction and degeneration in Parkinson’s Disease and Dr Shouqiang Lou has been awarded funding by the MRC for his work on the role of autophagy and cell death in Huntington’s Disease. Collaborations between researchers in clinical neurology (Dr Camille Carroll) and neurodegeneration (Dr Oleg Anichtchik) and inflammation (Professor Simon Jackson) are investigating potential associations between lipopolysaccharide-induced inflammation and Parkinson’s disease and dementia.

**Infection, Immunity and Inflammation**

Development of antibiotic resistance and the emergence of re-emergent virulent pathogens is a significant healthcare challenge. In collaboration with Public Health England, the NHS and international partners, we are developing new models of infection to produce diagnostic targets, antimicrobial therapies and novel vaccines. We have been awarded funds to take new antimicrobial peptides, discovered by our researchers (Dr Mathew Upton), into early phase clinical trials. Dr Michael Jarvis is exploring the use of endogenous viral vectors as novel vaccines to combat infections of zoonotic origin including Ebola. Excessive inflammation and aberrant immune responses are a feature of many diseases and understanding how the immune response is triggered and controlled is an important area of our research. Research led by Professor Simon Jackson has identified lipid modifying enzymes as potential targets for novel immunomodulatory therapy.

**Experimental Models**

A feature of our experimental medicine approach is the development of unique cell models to study and understand differences between health and disease to help drive new diagnostic and therapeutic approaches. Supported by significant grant funding (including BBSRC, NERC, NC3R, Hadwen Trust) we are gaining increasing recognition for the development of experimental models that support the 3Rs agenda (replacement, refinement and reduction of animals in research), including cultures of patient cells to help develop personalised and stratified medicine approaches in brain tumours (Prof Oliver Hanemann) and novel 3D cultures and self-renewing macrophage lines for investigations in oral (Dr Vehid Salih) and pulmonary (Prof Simon Jackson, Dr Gyorgy Fejer) disease and molecular biomarker identification.

**Impact**

Our commitment to translational approaches for diagnostic medicine has been strengthened through applications of genomics, for example in detection of fetal DNA in maternal blood for pre-natal diagnoses (Professor Neil Avent) and identification of genes linked with neurological and psychiatric disorders (Dr Elaine Green). Prof Simon Jackson with Dr Tom Nicholson (Faculty R&I Business Partner) and David Mozely (University Technology Transfer Partner) were awarded funds from Innovate UK (ICURE) for the commercial development of a novel endotoxin assay to assess faecal contamination of water. The attainment of this award (a first for Plymouth) will provide a model for translational pathways of our research into commercial opportunities. Dr Oleg Anichtchik organised and chaired a session for “Alzheimer’s disease - Beyond the gene”, a joint meeting of the South West ARUK dementia network centre and Bristol and Cardiff network centres.

**Future Developments**

Translation of biomedical research will increasingly be developed across the boundaries of different scientific disciplines. We are actively engaged in multidisciplinary research applications and our biomedical researchers are developing collaborations with researchers in computing, mathematics, engineering, electrochemistry and environmental biology. For example, Prof Simon Jackson and Dr Gyorgy Fejer were recently awarded funding by NERC in a multi-institute programme to evaluate lung inflammatory responses to bioaerosols. Our research increasingly generates large data sets and we have appointed Matthias Futschik as Professor of Bioinformatics.

To strengthen our proteomic technology we have also appointed Dr Ansary Poetsch as Reader in Proteomics.

Development of our research will also require closer collaborative links with clinical colleagues, inter-disciplinary relationships across Plymouth University, the NHS and maintaining international networks with specialist research groups. Such relationships and our expanding research ambitions will be enhanced by the new Biomedical Research Building on the Plymouth Science Park adjacent to the John Bull Building that will accommodate our expanding systems biology technology and facilitate significant future research development.
ITSMed RESEARCH GRANTS AND OTHER INCOME

2015 has built on the highly successful first period of research funding for ITSMed and has seen a consolidation of grant income as awards in the previous year are converted into productive research. The research output and funding are evidence of the investment made in our world class researchers and facilities to support the Institutes aspirations and the continuing development of long term programmes of research and the added value of collaboration facilitated by the Institute.

Research income continues to be generated from a wide variety of sources as outlined within figure two and the table opposite, ITSMed is grateful for the support of all its funders in helping to deliver world-class research.

Examples of our awards

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Centres involved</th>
<th>Funder</th>
<th>Income awarded</th>
<th>Outline of project</th>
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</thead>
<tbody>
<tr>
<td>Prof Liz Kay</td>
<td>CTPS</td>
<td>Wrigley</td>
<td>£70,106</td>
<td>A study investigating the effectiveness of an intervention to prevent oral disease in a highly vulnerable child population</td>
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<tr>
<td>Prof Liz Kay</td>
<td>CTPS</td>
<td>MRC</td>
<td>£152,573</td>
<td>A study investigating the feasibility of delivering an intervention to prevent oral disease in a high risk child population</td>
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<tr>
<td>Prof Adrian Taylor</td>
<td>CTPS</td>
<td>NIHR (PHR)</td>
<td>£708,763</td>
<td>(HS) Health Improvement Interventions for Offenders or Ex-Offenders under Community Supervision</td>
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<tr>
<td>Dr Helen Lloyd</td>
<td>CTPS</td>
<td>SW AHSN</td>
<td>£226,000</td>
<td>Torquay, Exeter &amp; Somerset Integrated Care evaluations</td>
</tr>
<tr>
<td>Dr Helen Lloyd</td>
<td>CTPS</td>
<td>NHS England</td>
<td>£99,997</td>
<td>Person Centred Care Metrics for Long Term Conditions</td>
</tr>
<tr>
<td>Prof Richard Byng</td>
<td>CTPS</td>
<td>Torbay Medical Research Fund</td>
<td>£161,286</td>
<td>How can multiple initiatives for integrated care improve experience and outcomes for patients with multiple long term conditions in the Torbay area?</td>
</tr>
<tr>
<td>Prof Richard Byng</td>
<td>CTPS</td>
<td>NIHR</td>
<td>£472,290</td>
<td>ENGAGER II - Developing and evaluation of a collaborative care intervention for prisoner, with common mental health problems near to and after release</td>
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<tr>
<td>Dr Kerryn Husk</td>
<td>CTPS</td>
<td>Public Health England</td>
<td>£49,399</td>
<td>Producing modelled estimates of the size of the lesbian, gay and bisexual (LGB) population of England</td>
</tr>
<tr>
<td>Dr Tom Thompson</td>
<td>CTPS</td>
<td>NIHR RfPB</td>
<td>£153,000</td>
<td>How can multiple initiatives for integrated care improve experience and outcomes for patients with multiple long term conditions in the Torbay area?</td>
</tr>
<tr>
<td>Dr Siobhan Creanor &amp;</td>
<td>CTPS</td>
<td>Public Health England</td>
<td>£489,000</td>
<td>Down’s syndrome screening Quality Assurance Support Service (DQASS)</td>
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<td>Dr Amy Baker</td>
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<tr>
<td>Medical Statistics</td>
<td>CTPS</td>
<td>Various</td>
<td>£55,000</td>
<td>Statistical input into trials and other medical research.</td>
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<tr>
<td>Group</td>
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<tr>
<td>PenCTU</td>
<td>CTPS</td>
<td>Various</td>
<td>£678,000</td>
<td>Conducting clinical trials, including supporting NIHR fellowships</td>
</tr>
<tr>
<td>Dr Shouqin Luo</td>
<td>BRG</td>
<td>MRC</td>
<td>£535,662</td>
<td>Targeting Bim as a dual regulator of autophagy and apoptosis to tackle Huntington’s Disease</td>
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<td>Dr Oleg Anichtchik</td>
<td>BRG</td>
<td>Northcott Medical Foundation</td>
<td>£38,304</td>
<td>Examination of an interaction between alpha-and beta-synucleins in alpha-synucleinopathy brains</td>
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<td>Dr Oleg Anichtchik</td>
<td>BRG</td>
<td>BRACE</td>
<td>£101,677</td>
<td>Alzheimer’s Research PhD Studentship</td>
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<tr>
<td>Prof Simon Jackson</td>
<td>BRG</td>
<td>Innovate UK</td>
<td>£35,000</td>
<td>icure award - Commercial Development of LPS assay</td>
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<td>Prof Simon Jackson</td>
<td>BRG</td>
<td>NERC</td>
<td>£280,000</td>
<td>Detection and characterisation of inflammatory agents in bioaerosols</td>
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<td>Dr Daniele Baiz</td>
<td>BRG</td>
<td>EU Marie Curie COFUND</td>
<td>£202,564</td>
<td>Cascade-Fellowship</td>
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<td>Dr Mathew Upton</td>
<td>BRG</td>
<td>BBSCRC</td>
<td>£218,000</td>
<td>Development of a platform for expression of antimicrobial peptides</td>
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<td>Dr Charles Affourtit</td>
<td>BRG</td>
<td>Daphne Jackson Trust</td>
<td>£55,113</td>
<td>Nitrate and Mitochondrial Function</td>
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<td>Prof Jeremy Hobart</td>
<td>CTPS</td>
<td>MS Society</td>
<td>£142,880</td>
<td>SWIMS study extension</td>
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<td>Prof Jeremy Hobart</td>
<td>CTPS</td>
<td>MS Society</td>
<td>£105,618</td>
<td>Integration of SWIMS &amp; the UK MS Register</td>
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<tr>
<td>Dr Rupert Jones</td>
<td>CTPS</td>
<td>Horizon 2020</td>
<td>£182,483</td>
<td>Free Respiratory Evaluation and Smoke-exposure reduction by Primary Health Care Groups (FRESH AIR)</td>
</tr>
</tbody>
</table>

* Projected funding level based on initial award funding may be subject to change based on progression of project
Keynote Lectures

**Speaker**
- Dr David Karlin, University of Oxford
- Dr Roy Chaudhuri, Sheffield University
- Dr Gikas Magiorkinis, University of Oxford
- Dr Karen Liu, Guy’s Hospital, London
- Dr Hans Dessens, London School of Hygiene and Tropical Medicine
- Dr Avinash R. Shenoy, London School of Hygiene and Tropical Medicine
- Dr Hans Dessens, London School of Hygiene and Tropical Medicine
- Dr Dranish R. Shaney, Imperial College London
- Professor Rainer Glass, Imperial College London
- Professor Arthur Butt, University of Munich
- Dr Nick Jakubovics, University of Cambridge
- Dr Nick Jakubovics, Newcastle Dental School
- Dr Lesley Bruce, Bristol Institute for Transfusion Sciences
- Dr Gordon Langley, Université Paris Descartes
- Prof Christopher Fegan, Cardiff University School of Medicine
- Prof Gail Johnson, University of Rochester, USA

**Title**
- How to find the function of your gene by sequence analyses
- Cheap as chips - making the most of the E50 bacterial genome
- Breaking down Hepatitis C transmission diversity with evolutionary epidemiology: implications for public health interventions
- “GSK3 roles in neural crest cell motility and pluripotency”
- Molecular studies of the malaria parasite cytoskeleton
- Inflammasomes in Host Defence against Bacterial Infections
- “The pro-and anti-tumourigenic effects of parenchymal cells in gliomas”
- Post translational modification of proteins in malaria parasite biology
- “GLIA: where would we be without brain glue?”
- Ionic channels in Red Blood Cell membranes in health and disease
- “Untangling the role of protein aggregation in neurodegenerative diseases”
- Oral biofilm ecology: social networking on a microbrial scale
- Cation leaky red cells
- cAMP-signalling in Plasmodium falciparum-infected red blood cells
- I know its only chronic lymphocytic leukaemia .......... 
- “The degradation of tau by selective autophagy”
- The pro-and anti-tumourigenic effects of parenchymal cells in gliomas
- Post translational modification of proteins in malaria parasite biology
- “GLIA: where would we be without brain glue?”
- Ionic channels in Red Blood Cell membranes in health and disease
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- Oral biofilm ecology: social networking on a microbrial scale
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- cAMP-signalling in Plasmodium falciparum-infected red blood cells
- I know its only chronic lymphocytic leukaemia .......... 
- “The degradation of tau by selective autophagy”

**PUBLICATIONS**

These are some examples of recent publication

**Biomedical Research**


PRESS COVERAGE

Announcement of new research facilities
In early 2015 we announced our intention to build new research facilities adjacent to our main building on Plymouth Science Park. The new facilities will bring our Medical, Dental and Biomedical scientists together in one place for the first time and, being sited close to Derriford Hospital, will allow greater collaboration with our clinical colleagues and their research projects.

- Times Higher Education
- BBC Spotlight
- ITV Westcountry
- The Herald
- Western Morning News
- BBC Radio Devon
- BBC Radio Cornwall
- Radio Plymouth

Local anaesthetic could affect the development of children's teeth
Dr Bing Hu led an international research team which found for the first time that local anaesthetic may cause deformities in the development of children’s teeth.

- Dentistry
- Cosmetic Dentistry
- British Dental Journal
- Day Nurseries
- The Herald
- Western Morning News

Development of production system for new antibiotic
Dr Mat Upton joined forces with biotechnology and synthetic biology business Ingenza, to develop a scalable synthetic biology production system for penicillin.

- BBC Radio 4 Today
- BBC Radio Devon
- BBC Radio Cornwall
- Manufacturing Chemist
- MyScienceNews
- Science Web
- Voice of America
- BBC Spotlight
- ITV Westcountry
- Western Morning News

Study investigates a potential therapy at cellular level for Huntington's disease
Dr Shouqing Luo received a grant of £520,000 from the Medical Research Council to investigate the potential of manipulating activity at a cellular level in order to develop an effective therapy for Huntington's disease. His team is analysing a protein called Bim, which causes cell death in various tissues including those of the brain, and which regulates two important cell functions: autophagy and apoptosis.

- BBC Spotlight
- ITV Westcountry
- The Herald
- MyScienceNews
- Western Morning News

Effectiveness of a herpesvirus cytomegalovirus-based vaccine against Ebola virus
As the latest in a series of studies, researchers at Plymouth University, National Institutes of Health and University of California, Riverside, showed the ability of a vaccine vector based on a common herpesvirus called cytomegalovirus (CMV) expressing Ebola virus glycoprotein (GP), to provide protection against Ebola virus in the experimental rhesus macaque, non-human primate (NHP) model. Demonstration of protection in the NHP model is regarded as a critical step before translation of Ebola virus vaccines into humans and other great apes.

- Voice of America
- PBS
- Vaccine News Daily
- Science Daily
- Western Morning News

National award for animal testing alternative
Dr Georgy Fejer received funding from the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), for his work developing the lab-based creation of a type of mouse cell line which could be used in place of live animals for research related to infectious diseases.

- Medical Xpress
- Medical News Daily
- The Herald
- Western Morning News
- Research Fortnight

World first blood test reduces risk and increases accuracy in prenatal testing
A simple blood test that can detect foetal blood group, sex, and genetic conditions in unborn babies is the result of a collaboration between Plymouth University and Plymouth Hospitals NHS Trust. The DNA test costs pence and is non-invasive – as opposed to the traditional amniocentesis test that is available on the NHS, involves a needle and carries a minor (1%) risk of miscarriage. A similar non-invasive foetal DNA test is available privately in the UK but costs hundreds of pounds.

- Medical Xpress
- Medical News Daily
- The Herald
- Western Morning News
- BBC Radio Devon
- Voice of America
- The Herald
- Western Morning News
- Science Daily
- Voice of America

Staff list

<table>
<thead>
<tr>
<th>Professor C Oliver Hanemann</th>
<th>Dr Ashwin Dhanda</th>
<th>Dr Tracey Madgett</th>
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<tr>
<td>Professor Simon Jackson</td>
<td>Dr Craig Donaldson</td>
<td>Dr Val Mann</td>
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<td>Professor Adrian Taylor</td>
<td>Dr Xinpeng Dun</td>
<td>Dr Lynn McCallum</td>
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<td>Professor Neil Avent</td>
<td>Dr Doyo Enki</td>
<td>Dr Roy Moate</td>
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<td>Professor Richard Byng</td>
<td>Dr Gary Farnham</td>
<td>Dr Aisling Murphy</td>
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<tr>
<td>Professor Matthew Cramp</td>
<td>Dr Gyorgy Fejer</td>
<td>Dr Mona Nasser</td>
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<td>Professor Robert Fern</td>
<td>Dr Arif Felek</td>
<td>Dr Craig Newman</td>
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<td>Professor Jeremy Hobart</td>
<td>Dr Dan Felmlee</td>
<td>Dr Tim Nutbeam</td>
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<td>Professor Liz Kay</td>
<td>Dr Andrew Foey</td>
<td>Dr Cath Quinn</td>
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<td>Professor Ji-Liang Li</td>
<td>Dr Simon Fox</td>
<td>Dr Gail Rees</td>
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<td>Professor David Moles</td>
<td>Dr Elaine Green</td>
<td>Dr Iain Robinson</td>
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<td>Professor David Parkinson</td>
<td>Dr Doha Hegazy</td>
<td>Dr Carl Roobottom</td>
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<td>Professor Jonathan Pinkney</td>
<td>Dr Joanne Hosking</td>
<td>Dr Vehid Salih</td>
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<td>Professor Simon Rule</td>
<td>Dr Bing Hu</td>
<td>Dr Anas Sattar</td>
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<td>Professor Kim Tieu</td>
<td>Dr Kerryn Husk</td>
<td>Dr Vikram Sharma</td>
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<td>Dr Wondwossen Abate Woldie</td>
<td>Dr Claire Hutchinson</td>
<td>Dr David Sheridan</td>
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<td>Dr Charles Affoutrit</td>
<td>Dr Michael Jarvis</td>
<td>Dr Feisal Subhan</td>
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<td>Dr Sylwia Ammoun</td>
<td>Dr Kris Jeremy</td>
<td>Dr Stephen Thompson</td>
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<td>Dr Oleg Anitchkik</td>
<td>Dr Rupert Jones</td>
<td>Dr Tom Thompson</td>
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<td>Dr Tony Kehoe</td>
<td>Dr Mathew Upton</td>
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<td>Dr Claudia Barros</td>
<td>Dr Shagun Khera</td>
<td>Dr Philip Warburton</td>
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<td>Dr Louise Belfield</td>
<td>Dr Michele Kiernan</td>
<td>Dr Svetislav Zaric</td>
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<td>Dr Robert Belshaw</td>
<td>Dr Nicola King</td>
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<td>Dr Torsten Bossing</td>
<td>Dr Tim Kirkpatrick</td>
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<td>Dr Sarah Brand</td>
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<td>Mrs Siobhan Creanor</td>
<td>Dr Shouqing Luo</td>
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Plymouth University
Peninsula Schools of Medicine & Dentistry
The John Bull Building
Plymouth Science Park
Research Way
Plymouth
PL6 8BU

Email: psmdresearch@plymouth.ac.uk
Telephone: 01752 437395
Fax: 01752 517842
Website: www.plymouth.ac.uk/peninsula

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