Institution: University of Roehampton

Unit of Assessment: Panel A, UoA 3 Allied Health Professions, Dentistry, Nursing and Pharmacy

a. Context

Allied Health at the University of Roehampton is a specialist research unit that conducts both fundamental and translational research in selected areas of biomechanics, the regulation of metabolism, neurosciences, and cell biology and microbiology. Our objective is to translate our research in order to improve the approaches to therapy and the quality of life for a range of patients. Consistent with this objective, and our increasing research focus on long-term and age-related disease, we target two main groups of non-academic users to ensure positive outcomes for people with long-term and age-related health conditions, for example, amputations, obesity, metabolic disorders such as polycystic ovary syndrome (PCOS), and neurodegenerative disorders such as Parkinson's disease (PD). These are (1) charities and industrial partners who are funding our research and/or collaborating with us, and (2) health professionals and practitioners including physiotherapists, prosthetists, dieticians, nurses and doctors.

(1) Charities and industrial partners: The main users of our research in this area include key organisations with which members of our research group have developed partnerships or close working relationships. These incorporate charities (for example, Limbpower, the National Osteoporosis Society, PCOS UK, and Verity), professional bodies (such as the British Dietetic Association and the English National Ballet) and industry and business partners (for example, Blatchford Ltd, Kellogg's, and WestFocus). Our main types of impact on these groups include influencing the design of products, such as Strike's research on amputee mobility in collaboration with Blatchford Ltd, and enhancing service provision, for example through our work on age-related disease with the English National Ballet (see case studies). We have also enhanced the knowledge of industrial partners, enabling them to make decisions, including around marketing, for example our research on healthy eating, the role of breakfast and our work with Kellogg's.

(2) Health professionals and practitioners: Working with health professionals and research partners, we conduct interdisciplinary, high impact research on long-term health conditions, which has influenced physiotherapists, prosthetists, dieticians, nurses and doctors. Our main impact from research in diet, lifestyle and physical activity has led to improved understanding of the beneficiaries in managing health conditions. For example, our research into the regulation of metabolism in PCOS has influenced professional training of dieticians, leading many to change their management of PCOS. In neurosciences, research in relation to novel psychoactive drugs, such as the potentially addictive and dangerous stimulant properties of Benzofury (a 'legal high'), has led to the Advisory Council on the Misuse of Drugs (ACMD) recommending that it be controlled under the Misuse of Drugs Act (1971), and to a change in the advice given to clients by the KLEAN Treatment Centre in the USA.

b. Approach to impact

We have adopted a user-driven approach to our translational research, which engages users throughout the whole research process, from inception to dissemination. By placing this emphasis on the full life-cycle of research, we ensure that the intended benefits are felt. This approach is achieved through different pathways which are employed to develop impact, and relate specifically to the main users of our research. These are 1) through actively seeking opportunities for new collaborations, and maintaining and developing productive relationships, and 2) direct engagement with the main beneficiaries of our research. We also have a long-standing commitment to public engagement, which ensures the benefits of our research are felt more widely. This approach has been delivered in the following ways:

1) We have actively sought new collaborations with the potential users of our research, who often fund our projects and/or are active collaborators. For instance, initial research on diet and body weight (later published in *Pub Health Nut* 15:238-245, 2012) caught the attention of Kellogg's, which then agreed to fund two projects and become our formal, long-term research partner. This has shaped our strategies regarding research into the relationship between breakfast consumption and body weight, which in turn has led to further publications (*Appetite* 60: 51-57). Examples also come from our research in biomechanics, where innovative prosthetic designs and new exercise guidelines for amputees have been developed in collaboration with leading charity Limbpower, and our research has led to the use of dance as a physical activity intervention in managing Parkinson's Disease. Some of these developments have now been adopted by industry (e.g. Chas A Blatchford & Sons Ltd) and charities (e.g. English National Ballet), leading to increased public

uptake of our knowledge. These users play a significant role in informing our research strategies. Long-term industrial partnership has proven a key pathway to research impact for our unit, and this is sustained by having a common desire to pursue research excellence with mutual benefits to academia and industry.

2) We have sought to engage health professionals and practitioners directly in order to ensure the benefits of our research. For example, our researchers regularly deliver talks, workshops and seminars to health professional groups, and have contributed to practitioner guides and professional news bulletins. We communicate with patients and health professionals throughout the research process, in order to fully develop and assess the impact of our work. We have disseminated our research through the British Dietetics Association, the Nutrition Society and PCOS UK. For example, initial research on PCOS and nutrition (*J Hum Nut Diet* 21:377, 2008) led to a conference in collaboration with PCOS UK at University of Roehampton (April 2009), which attracted the attention of healthcare professionals from across Europe. This research has raised awareness of the diversity of symptoms, long-term effects on health and also new dietary and lifestyle options for managing PCOS among dieticians, nutritionists and health professionals. It subsequently led to the inclusion of a new chapter in the latest edition of the *Manual of Dietetic Practice*, providing new healthcare training information (Jeanes 2013: Dietary management in PCOS. *Manual of Dietetic Practice* 5th Ed.). Further training publications include an article published in the magazine, with advice from Jeanes et al.'s research, *Dietetics Today* (2013) which is delivered to over 7,000 registered dieticians. Thus our research has raised awareness of dietary management options and contributed towards continuing professional development of healthcare professionals. In June 2013, we sought to strengthen our work in this area, and held a well-attended symposium on the current and future potential for impact of health sciences research at Roehampton. It covered the range of research in our unit, and potential beneficiaries of our research (e.g. dieticians interested in PCOS management) were invited to this event.

Our UoA also has a long-standing history of direct public engagement in order to maximise the reach and benefit of our research. Feedback from this engagement has also driven the UoA in new research directions. For instance, in collaboration with the Shape Arts, and through a public event funded by the Wellcome Trust, we examined how older people and people with disability performed dance movements, despite their compromised physical functions, and this helped further develop dance as a novel therapeutic intervention. We disseminate research through broadcast media to reach the wider public audiences. Our dance research appeared on the BBC and Channel 4 (e.g. http://www.bbc.co.uk/news/health-21682196), and we were invited to present research on novel psychoactive drugs to the media at the press conference reporting on the Festival of Neuroscience, 2013. We regularly participate in local science festivals and organise Brain Awareness Week events (co-ordinated worldwide by the Dana Alliance for Brain Awareness), which are attended by school children and teachers. Our long-standing contribution to public engagement was recognised in the Wellcome Trust-funded ScoPE project *'Scientists on public engagement'* (LSE, 2009). Raising the awareness of our research is central to our aim of maximising its impact. Our public engagement work in dance has led to awards of significant funding by the English National Ballet, enhancing the reach of the impact of our work through a national programme, and demonstrating the interlinked and mutually reinforcing benefits of our approach.

A broad range of support is provided to facilitate these activities. External training on engagement and impact has been provided for unit members. In addition, the Senior Research Officer appointed to help with institutional development of impact provides one-to-one training and advice. The university's communications department has provided support during media engagement activities. Individual researchers are further supported through mentoring by the departmental Impact Mentor and other senior academic staff, and by group peer-review of project plans and funding bids, with particular focus on outlining of 'pathways to impact'. Our department has a Research Facilitator who provides guidance and supports research-led engagement and partnerships. Training is provided to this post-holder to ensure that they are providing relevant support for impact evaluation across the UoA. Impact is a key aspect of our research activity, and researchers with high-impact projects (for example PCOS and see case studies) have been supported to concentrate their efforts in this area. As such, impact is an element in individual research plans and is formally recognised in the university's criteria for appointments and promotions. Impact also features strongly in departments' annual business plans and workload

models. In addition, departmental funds are made available for impact activities, and for seed-funding of research activities with significant impact potential. The departmental Research Advisory Group is also responsible for monitoring impact and advising on strategies for its development.

c. Strategy and plans

A commitment to research excellence will continue to underpin the development of our impact strategy in the future. This UoA will further develop the user-driven strategies of engagement that will focus on our capacity to build, develop and sustain partnerships with industry and charities. Using the support structures that we have put in place for impact, we intend to increase the reach and significance of our impact through the following plans:

In the field of biomechanics, we will bring to fruition a current project on early diagnosis of vertebral fractures in older patients using acoustic emission, in collaboration with St George's University of London (SGUL, charity sponsorship). We will also continue to focus our work on the neuromuscular functions of the older adults, including the mechanism of rapid muscle force production, and shall translate such findings into effective interventions for improving mobility and preventing falls.

In the area of metabolic studies, we intend to develop our relationship with Kellogg's and other industry partners, and in the process address increasingly important issues related to obesity and healthy eating, and new research on nutrition in the elderly and those with age-related conditions. We continue to inform health care professionals about PCOS and are currently working with the South West London Academic Health and Social Care System as well as GPs to improve recognition and treatment of the disorder.

In the neuroscience area, we will continue developing our research on novel psychoactive drugs. We also intend to build collaboration with the Angelus Foundation, a charity led by John Ramsey of SGUL, whose mission is to save lives by providing information to young people about the dangers of 'legal highs'. Other priorities in this area of research include the identification of novel neuroprotective substances, e.g. kisspeptin compounds, for potential use in Alzheimer's disease (patent filed, research sponsored by West Focus), which will be a particular area of our application in the coming years.

Our growing focus on translational research in the areas of cell biology and microbiology will increase the reach and significance of our impact in particular. For example, research currently funded by Arthritis Research UK is aimed at achieving impact from developing novel interventional strategies for management of autoimmune diseases. Similarly, Letek's unravelling of the host molecular factors involved in MRSA intracellular proliferations may lead to the discovery of novel tools to control the spreading of the pathogen and to increase the efficacy of the currently available antibiotics (these are major problems in health care) which has the potential to open new avenues for the development of novel anti-staphylococcal treatment approaches in collaboration with private companies. Busch will also build on his strong links with a US-based biopharmaceutical company, with his research on kinetic proteomics using mass spectrometric measurement (in collaboration with the University Cambridge) having significant commercial potential. Our department will support this work by providing visiting fellowships and dedicated impact sabbaticals to encourage the exchange of good practice, and the consolidation of formal relationships with external partners.

We will ensure the recognition of our impact in these areas by systematically collecting evidence of impact. The university is developing a database to record evidence of impact that supplements the media tracking software that is already used for this purpose. Staff in the UoA will be supported to maintain these records by the Research Facilitator, and the department Impact Mentor will provide with the training needed to equip them with skills to assess the impact of their own research.

d. Relationship to case studies

The selected case studies exemplify our approach to impact, which involves communicating our research to the public and collaborating with user groups. The first case study involves working with amputees, the leading amputee charity Limbpower and the prosthetics company Chas A Blatchford & Sons Ltd. The second involves patients with Parkinson's Disease and our partnership with English National Ballet. The first case study shows how we have improved prosthetic design and the awareness of the role of exercise among amputees and health professionals. In the second, we highlight how our research has led to the development of dance as a novel form of clinical intervention for patients with Parkinson's Disease. Both case study leads were supported to concentrate on research with high-impact potential in this cycle.