

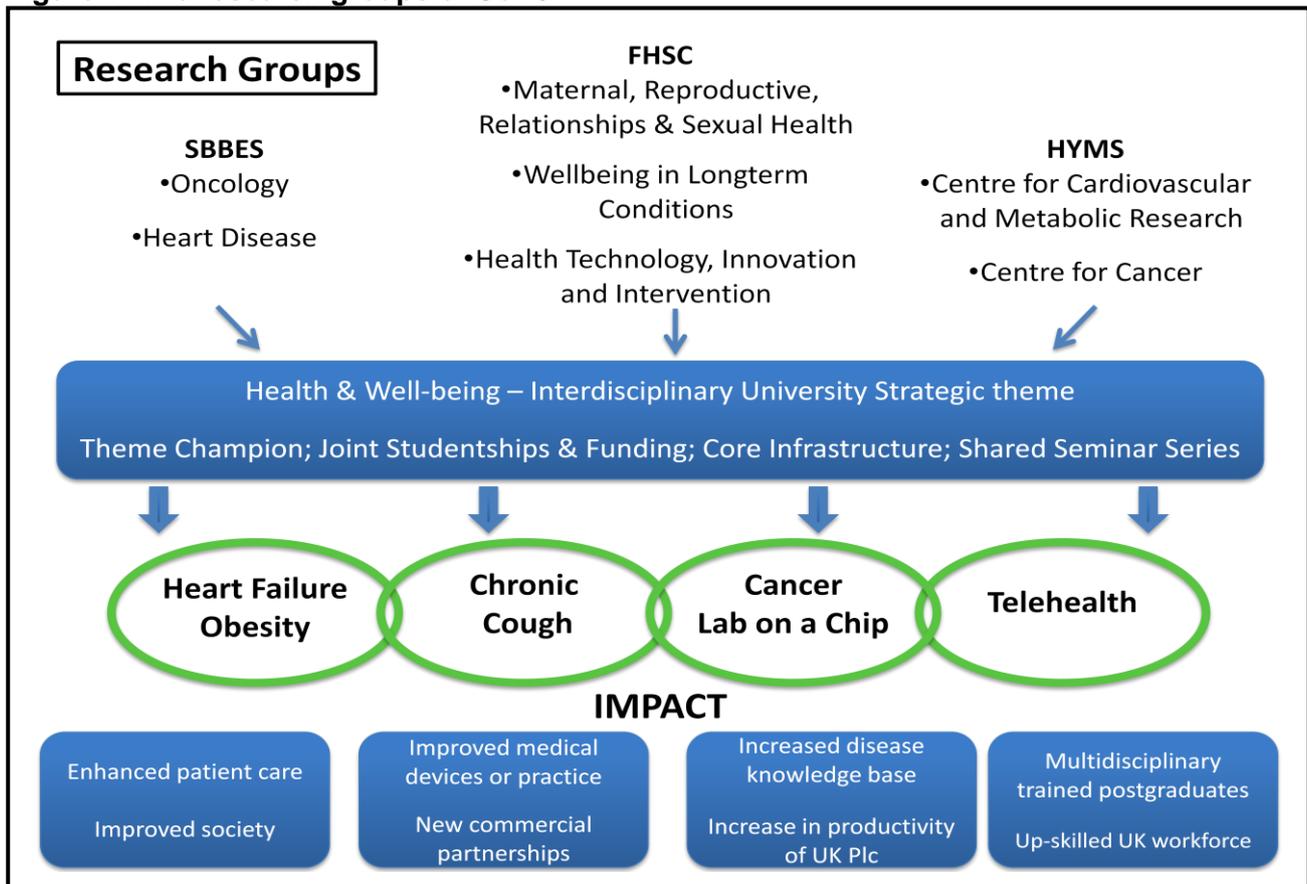
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<b>Institution:</b> University of Hull
<b>Unit of Assessment:</b> A3: Allied Health Professions, Dentistry, Nursing and Pharmacy
<b>a. Overview</b>

Since 2008 the University of Hull has continued to support multidisciplinary, translational research through substantial investment in staff and infrastructure. All faculties across the organisation contribute to the University's over-arching research theme of Health & Well-being. Following the appointment of Prof C. Pistorius as Vice-Chancellor in 2009, the University has undertaken a major reorganisation of its biomedical and health activities with staff now being located in either the Faculty of Health and Social Care (FHSC), the Faculty of Science & Engineering (School of Biological, Biomedical & Environmental Sciences; SBBES) or the Hull York Medical School (HYMS). The staff, facilities and research described in this submission are located in these three units and their relevant partner organisations, e.g. Hull & East Yorkshire NHS Trust. This submission comprises 11 FHSC staff, 12 Biomedical scientists and 13 Clinicians reflecting the complementary contributions of different disciplines to the research ethos at the University of Hull; 6 of the staff are early career researchers (ECR).

The FHSC is divided into separate departments for teaching however research programmes are delivered through 3 interdisciplinary research development groups: Maternal, Reproductive, Relationships and Sexual Health; Well-being in Long-term Conditions; and Health Technology, Innovation and Intervention. Each of these, established in 2011, are led by a professorial team and support a wide range of methodological approaches that capitalise on the inter-professional synergies and complementary expertise that exist in the faculty.

**Figure 1: The research groups of UoA3**



SBBES is divided into two broad groupings: Biomedical Sciences and Environmental Sciences. The Biomedical group is returned as a key part of this UoA, whereas the Environmental group is submitted under C17 with colleagues from Geography. Biomedical research is mainly focussed on developing prognostic markers in solid tumours (specifically head & neck, mesothelioma and colorectal cancers), and better understanding of the processes of substrate utilisation and ageing in the heart. Both research topics exploit a breadth of technologies that utilise molecular, cellular, organ and whole animal models.

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HYMS, a joint department with the University of York, has 6 centres that encompass staff from both universities. The majority of staff from HYMS included in this submission are based in the Centres of Cardiovascular & Metabolic Research (CCMR) or Oncology. Work undertaken within these centres is focussed on thrombosis and haemostasis and heart failure, and novel methods of detection and therapy for specific solid tumours respectively. Studies of the fundamental mechanisms of disease as well as patient-based clinic trials are undertaken in both fields. Essentially the whole, as described in this submission is greater than the sum of the parts, as the Health & Well-being theme is a University wide multidisciplinary activity that complements the unit-specific work, which together provides a successful, sustainable, research environment.

The University of Hull has targeted for investment strategic research programmes in areas where it has existing and/or potential world-leading research. The topics specifically address key international health and social challenges many of which are at epidemic proportions in the population of Kingston upon Hull and the East Riding of Yorkshire. Strong partnerships with the local NHS Trusts have been forged over the past decade, allowing the population of Hull and East Riding to not only be a test-bed for trialling and implementing our new innovative technologies, but also the first beneficiaries of world-class research.

Units adopt supportive and inclusive policies on research whereby all staff are expected to contribute, thus early career staff are provided with research mentors to facilitate rapid integration and establishment of their own groups, most usually within an established professorial team. Key elements of the research ethos at Hull are:

- Defined, cross-cutting, research themes, e.g. tackling obesity, telehealth, managing heart failure, cough as a disease, to which staff are aligned. Staff are encouraged to contribute to more than one theme to facilitate knowledge transfer and highly innovative research.
- Supporting strategic initiatives. The University has recently opened a state-of-the-art clinical sciences building (Allam building), that links the Department of Chemistry (UoA8) with SBBES, and has built a pre-clinical imaging centre with PET-CT and SPECT-CT scanners to exploit the organisation's excellence in biological imaging agents. The Centre complements the clinical PET-CT scanning facility currently being built at Castle Hill Hospital that is funded by the local Daisy charity. The combination of facilities will allow efficient development of new imaging agents and ensure that patients in the local region receive the highest quality of care.
- Active research fora in each of the cross-cutting themes to promote and support the research process, relevant NHS staff and industry collaborators regularly attend and participate. The fora include research seminar programmes with external speakers addressing topical issues and innovations, workshops and stakeholder events.
- A high-quality, personalised, doctoral training experience for all postgraduate students. The programme, managed by the University's Graduate School, offers a wide selection of modules (>200) that allows students to acquire a breadth of transferable skills. The University of Hull has doubled the postgraduate cohort in the Health & Well-being theme over the past 4 years, and has plans to maintain numbers at approximately 120 students.

### **b. Research Strategy**

Following the highly successful UoA12 Allied Health submission in RAE2008 (ranked 6<sup>th</sup> out of 68) the University has continued investing in multidisciplinary, translational research in health with the aim of delivering world-class research that benefits patients. All the "Future Objectives" outlined in RAE2008 have been fulfilled, i.e. development of an academic PET-CT unit supported by a cadre of new appointments that will work in partnership with the clinical scanning facility supported by the Daisy charity; broadening of the cardiology research base both through the continued studies into cardiac resynchronisation therapy and the development of a centre of excellence in telehealth; and ever-closer partnership with the NHS evidenced by the increasing number of clinicians and nurses with honorary academic contracts and vice versa. Furthermore, the translational-health strategy resulted in investment of more than £10 million in new infrastructure, development of a world-leading centre for Cough research, and a doubling of total research income as compared with that submitted in RAE2008.

Heart disease, obesity, chronic cough, mental health and cancer remain some of the major health issues facing society. Researchers at Hull, in collaboration with academics around the world and partnerships with patients, user groups and commercial entities have worked closely with clinicians from the local NHS Trusts (Primary and Acute) in developing successful research programmes to

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understand these conditions better and to begin to address patient morbidity and mortality through new interventions and treatment management. The principal result is increased quality of life and psychosocial outcomes for patients. Following a major review of its aims and values in 2010, the University reiterated its support for interdisciplinary working and coupled this with a major investment in staff and infrastructure across the institution.

*“A university must be driven by a quest for knowledge. The principle of ‘knowledge knows no boundaries’ applies as much internally as it does to the pursuit of knowledge in the global arena. By defining and advancing interdisciplinary themes that cut across its faculties, with appropriate organisational vehicles and structures to take them forward, the University can gain significant academic advantages.”* University of Hull Strategic Plan 2011-2015

### **Research highlights 2008 - 2014**

Staff in FHSC are currently leading a truly multidisciplinary project to develop a location-sensing nasogastric tube (NIHR i4i £885k 2011 - 2015). The University of Hull owns the intellectual property (PCT/GB2007/050326 – Regional Phase Entry completed, patent granted in USA and Australia and filed in Europe and Canada). The project team comprises nurses, electrochemists, biologists and surgeons; clinical trials are due to start at the beginning of 2014. The work has been nominated for both regional (Medipex Innovation Awards – a competition to identify teams working with the NHS whose ideas have / could lead to improvements in patient care) and international (Biotech Innovation Prize sponsored by Universal Medica – one of 5 finalists from over 200 applicants) awards. The Faculty’s highly successful work in telehealth and telemedicine (Impact Case Study 4) continues with a growing number of regional and international projects, e.g. becoming a reference site for the European Innovation Partnership on Active and Healthy Ageing; a CASE studentship (with Philips) was awarded to Goode and Barrett in 2013 entitled *Predictive Algorithms for Telehealth Service Improvement and Evaluation*. There have been four new senior appointments in FHSC, all of whom have been successful in obtaining external grant income, e.g. Galvin was awarded a grant in the area of humanisation of health care in a psychosocial context (NIHR £169k), comprising both theoretical and applied research which complements work by colleagues in HYMS (Johnson, Boland and Macleod). Jomeen and colleagues have obtained funding for the training of practitioners to support effective identification/management of perinatal mental health (Burdett trust £45k) and to prevent unplanned repeat teenage pregnancies (RfPB £103k).

An important, interdisciplinary technology currently being widely exploited by researchers in SBBES is the application of microfluidics to provide bespoke Lab-on-a-chip analytical devices. These devices have been used to maintain clinical tissue biopsies alive and functioning in a pseudo *in vivo* environment, allowing drug and radiation effects to be measured holistically in a biologically or clinically meaningful manner. Ongoing studies are investigating how such devices can be used to generate data on tumour biopsies in a patient-specific manner with the ultimate aim of guiding oncologists in terms of treatment options (personalised medicine). A second, newly established research platform is the University’s PET/SPECT pre-clinical imaging facility (see *Income, Infrastructure and Facilities*) that can be used to test novel radiotracers in tissues, organs and whole animals. Both of these areas are strengths of Analytical Chemistry and research outputs describing the methodology development and application of this technology are submitted under UoA8. The impact of this internal collaboration, led by Greenman, on health research at Hull has been very high: a 6 year research programme has been supported by RCUK (BBSRC, EPSRC & NC3Rs - >£2m total since 2008), TSB (£399k 2012-2015), EU FP7 (€1.1m 2012-2014) as well as local charities (£591k in total since 2008). Future work is being planned to exploit the soon to be completed clinical scanning facility on the hospital site, allowing existing probes to be enhanced through combinatorial chemistry and new probes to be developed. The combination of facilities in Hull is unique within the UK.

Naseem has been awarded three grants to explore the mechanisms of platelet function (BBSRC £241k, 2011-2013; BHF £186k, 2011-2012; BHF £195k, 2012-2014) and Chetter is PI on an HTA funded programme grant investigating the healing of surgical wounds (£>2m (2011-2015) and co-I on the IMPROVE trial (HTA £1m, 2009-2012). Atkin has attracted significant funding for clinical trials and mechanistic studies of functional foods (£939k in total from a variety of sources including Industry, Technology Strategy Board, and the Food Standard Agency); this research has led to the establishment of the HEIF5 funded Hull Obesity Nutrition Education Institute (HONEI) project

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(discussed more fully in the REF3A Impact Template as the initiative has major patient benefit). Cleland and Clark lead a variety of clinical studies on the causes and management of heart failure with grant income totaling >£1m in 2011-12. The majority of funding has come from the EU FP7 programme, NIHR, British Heart Foundation and Industry (see Impact Case Study 1).

An excellent illustration of applied health research being conducted across the University, and not simply being restricted to the work submitted under UoA3 is by colleagues in the School of Engineering (submitted under UoA15). Fagan (Engineering) working with EII (NHS surgeon) has developed a new type of speech valve that gives people who have undergone laryngectomy better speech quality than that afforded by conventional technology and avoids the present requirement for the repeated surgical procedures that are commonly required in post-laryngectomy patients (i4i funding). It is estimated that there are approximately 4,000 valve users living in the UK and around 16,500 valve changes at an estimated cost to the NHS of nearly £10 million. Clinical trials are due to start late in 2013 of the Hull designed valve; a detailed business case for a spin-out company based on the University-owned intellectual property (IP) is being evaluated.

**Research Leadership**

The research groups within the Health & Well-being theme provide a thriving and vibrant research environment. There is a theme Champion, who importantly also chairs the Hull & East Yorkshire (HEY) NHS Trust Research & Development Committee, and an over-arching advisory committee comprising the Pro-Vice Chancellor (Research & Enterprise) and Deans of the relevant faculties. This committee ensures investment and funds are used appropriately to support strategic initiatives in a sustainable manner. All faculties and units have, since 2011, been required in their Annual Planning & Strategy documents to define how plans and any requested investment contribute to the cross-cutting research themes. Close collaboration with colleagues across the local and national NHS is fundamental to the success of much of the research undertaken within the Health & Well-being theme. At the local level this is facilitated by an NHS / University steering group co-chaired by the University's Vice-chancellor and Chief executive of HEY NHS Trust that meets on a quarterly basis.

**Research Aims**

Figure 1 above identifies the key areas in which the University of Hull plans to make or continue to make a significant contribution to research, in a manner that leads to significant benefit to patients and the wider society over the forthcoming decade. Specific goals include full commercialisation of the location sensing nasogastric tube following multi-centre trials and the development of other such devices including a rapid detection of sepsis using a Lab on a Chip approach. For all such studies a continued close partnership with the NHS (local and national) and the relevant user-groups remain essential – these will be strengthened through regular meetings, joint appointments and resource sharing.

With the completion of the clinical PET-CT unit there will be a focus on improving existing imaging agents in combination with the development of novel imaging tools exploiting the benefits of having an integrated interdisciplinary team. Agents for use in cancer as biomarkers as well as tracers for studying heart disease will be the principal focus of the group's research.

The research development group in the FHSC have well-advanced plans to develop both a Skin Care and Mental Health unit. Both units will be housed within the University's new Health Hub; a major capital investment of £24 million providing significant new and refurbished infrastructure to support collaborative research across the breadth of the Health & Well-being theme. These units will follow the strategy successfully employed for the PET-CT imaging units involving close collaboration with NHS staff, user groups and cognate disciplines from across the University.

Finally, as highlighted as a key impact of the research is the provision of highly-trained postgraduates that increase the UK's skilled work-force. An explicit aim for all research areas (new and existing) is to attract funding to boost the number of interdisciplinary studentships, this will be done by increasing the number of CASE awards, Knowledge Transfer Partnerships with industry, as well as applications for Doctoral Training Centres (DTC), as and when relevant calls are made. Such DTC bids will adopt the best practice from the University's recent successful bid for a £1.85 million AHRC Centre awarded in September 2013.

<p><b>c. People, including:</b></p> <p><b>I. Staffing strategy and staff development</b></p>
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The Units have adopted a similar staffing strategy in that all new appointments are placed in existing research teams, or where a new strategic area is created this will be led by a Chair appropriately supported by senior positions and junior academics. All early career staff members (ECR) in whichever unit are extensively supported. Measures include the allocation of both research and teaching mentors, and provision of a PhD studentship together with start-up funds (£10-20k/annum); together with an explicitly light teaching and administration load for the first three years of their tenure. Plans are developed so that all ECR submit to the most relevant new investigator grant-funding scheme in the second year of appointment, allowing refinement and resubmission in year 3 if unsuccessful. The central Staff Development Unit provides comprehensive training for all new staff commencing with an induction course and training in research supervision, plus the compulsory Higher Education Teaching Certificate for all staff without considerable teaching experience. Plans for study leave of varying lengths are encouraged from established members of staff to ensure staff develop / remain world-leaders in their field with extensive collaborative networks of peers, industry and colleagues in practice.

FHSC has benefited from a Fast Track Staff Development Programme that was adopted at the start of 2012 and has now completed its second year. It is proposed to run this for the next three years to ensure all staff have benefitted. This course, open to members of the Faculty and available to other interested parties including NHS staff, covers all aspects of research work, from creativity and project conception to management and approvals, effective communication, to public and patient involvement (PPI) and publishing. Staff in FHSC have doubled the number of grant applications in 2013, with a similar increase in success rates compared with 2012; staff feedback has highlighted that this is largely as a result of the Development Programme.

The University is fully committed to equality of opportunity and respecting diversity for both staff and postgraduate students, and a range of training opportunities are available. The University is fully committed to the principles of Athena SWAN and a steering committee chaired by the Pro-Vice Chancellor (Research & Enterprise) oversees staff development. In a similar manner the University recognises the need to enhance the career development of post-doctoral research scientists and has established a steering group, comprising representatives from all faculties to oversee the implementation of an action plan developed in consultation with staff, following the release of the Concordat to support the Career Development of Researchers. Importantly this group has representation from the post-doctoral researcher community. The plan highlights the achievements to date ([www2.hull.ac.uk/theuniversity/research/theconcordat.aspx](http://www2.hull.ac.uk/theuniversity/research/theconcordat.aspx)) and details future actions with the monitoring timeframe.

### c. II. Research students

Following the success of the submission in RAE2008 the University has continued to invest in a series of PhD studentships across the health and well-being theme. The investment, matched by externally-funded studentships has meant that the number of completed postgraduate students has risen year on year from 13 in 2010-2011; 29 in 2011-2012 to 38 in 2012-2013. A continued increase is expected for 2014 and 2015 with an expected steady-state plateau of approximately 50 completed postgraduates / year from then on. Over the REF period there have been 117 successfully completed postgraduate degrees, which is equivalent to almost 0.7 postgraduates / academic FTE / year. This figure represents a 70% increase on the number of successful postgraduate students associated with UoA12 in RAE 2008.

The University annually funds a cohort of PhD studentships (65-80 full fees and fee waivers). These are allocated to Faculties that then run an internal competition to select the best projects. Supervisory teams are encouraged to be multidisciplinary and cross-faculty in nature, to promote interdisciplinarity. A key facet of the projects is the fit with strategic themes, sustainability and ease of appropriate translation, i.e. device development, incorporation into policy or health-care improvement. Students become embedded in the relevant research groups, benefiting and contributing to the thriving research ethos. An annual PhD forum is held at which students give either a poster (years 1 and 2) or oral presentation (year 3). Presentations are both peer- and academic-assessed, providing objective and supportive feedback.

The purpose built University Graduate School is both the administrative centre for postgraduate research students and a resource with its own 24-hour IT facilities and common rooms. It oversees a rigorous annual monitoring of research student's progress, i.e. at the end of year 1 and year 2 reports are submitted and examined by two independent academics, an oral examination

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takes place to ensure that the student is able to verbally “defend” and communicate their work. Students’ progress is monitored by a departmental Postgraduate Research Director, who acts as the link to the Graduate School. All students at the University of Hull undertaking an MSc, MPhil or PhD will join the Postgraduate Training Scheme, and undertake modules providing generic research or other additional skills, e.g. language courses. Interdisciplinary modules offered include: “Project Managing your Research Degree”, “Career Management Skills for Research Students”, Enterprise and Entrepreneurship”, in addition there is an annual “PhD Experience” conference organised by students hosted by the Graduate School. An innovative online Graduate Virtual Research Environment has compiled a collection of more than 200 video stories from postgraduates across the Institution highlighting achievements and advice on almost any aspect of the research degree “journey”. The wide choice of modules available across the Institution mean that students, in consultation with their supervisors, can select a personalised set of courses that enhance the postgraduate experience and ensure that students are exceptionally well-qualified for their choice of career. In addition all units offer specific departmental postgraduate training programmes to ensure a high-quality research training.

### **d. Income, infrastructure and facilities**

Research income has remained relatively consistent over the REF period (approximately £3.3 million/year) however there was an £800k rise between 2012 and 2013 (£4.3 million); a similar increase is predicted for 2014. The total of £17.9 million spend equates to £105k / academic FTE / year, this is a 15% increase on the amount awarded to staff in RAE2008. In addition there has been a total of £1.2 million NIHR income in-kind to support the clinical research facilities at HYMS. Notable highlights for 2013 are the substantial increases in NIHR and UK charities income reflecting the success of high quality, translational, research projects. The Daisy Charity has committed to a further donation of £0.5 million to support PET-related research in 2014.

The three faculties are all situated on the main Hull campus and contribute research laboratories, offices and meeting spaces relevant to their discipline. The Allam building (completed in October 2012) provides 1600 m<sup>2</sup> of purpose-built research laboratories, sited between SBBES and the Department of Chemistry. Furthermore a new PET/SPECT pre-clinical imaging facility has been constructed, linked to the existing specialist animal unit, facilitating access whilst maintaining security. This facility is equipped with a mini-cyclotron (ABT Molecular Imaging, Inc), only the second unit of its type in the UK that produces microlitre quantities of <sup>18</sup>F and <sup>68</sup>Ga. The unit has two bespoke research hot cells as well as Nano-PET/CT and Nano-SPECT/CT *in vivo* preclinical scanners (Philips Bioscan, Inc), offering state of the art radio-imaging capabilities as well as full radiochemistry synthesis (radioHPLC, radioTLC, and LC-MS) and biological assay provision.

The University is establishing centralised research facilities, having successfully established a microscopy cluster in 2007 equipped with SEM, TEM, AFM/STM, Fluorescence, Raman and Confocal fluorescence microscopes, the latter was replaced in 2011 with a Zeiss Axioplan confocal unit. In 2013, as part of the Allam development, £400k was invested in mass spectrometry to purchase a suite of Bruker instruments: MaXis Impact HR QToF LCMSMS with a nano LC system and full proteomic software suite, an Autoflex Speed MALDI ToF/ToF MSMS and an HCT Ultra with ETD ion trap MSMS plus Agilent 1100 HPLC. Both facilities have an academic director who provides research leadership and training for postgraduate researchers, and technical support for routine sample analysis and equipment maintenance.

The Allam building, pre-clinical Imaging centre and mass spectrometry equipment has cost in excess of £10 million, and was supported in part through a £2.9 million philanthropic donation; additional funding came from the Daisy charity (see below) and University. Research staff from all the contributing units (FHSC, SBBES and HYMS) work within these buildings, in close collaboration with clinicians from the local acute and primary care NHS Trusts, and academics from other University Departments.

The strategic partnership with the Hull & East Riding Medical Research (Daisy) Charity has been highly productive, resulting in purpose built laboratories and clinical trials facilities (£8 million) on an acute Trust site (the Daisy building – opened in 2010, <http://www.daisyappeal.org/>) as well as an initial £1 million contribution to the University’s PET/SPECT pre-clinical imaging facility. The collaboration continues as the Charity develops its Phase 2 project, to construct a fixed site clinical PET-CT scanning unit with an on-site cyclotron exploiting the University generated Lab-on-a-chip technology for patient benefit. The current research programme underway at the University is

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optimising a way of validating dose levels on chip – a microfluidic approach is essential as only microlitre volumes of radioactive tracer are produced and the majority of this is required for labelling the imaging drug. The foundation stone of the Clinical Unit was laid in December 2012, and it will be operational and scanning patients by April 2014.

The University achieved a substantial increase in its allocation under the last round of the Higher Education Innovation Fund (HEIF); this is due to its consistent performance in the income-based funding criteria of the Government. From 2011 – 2015 the University is being awarded £1.96 million annually; this is an increase of £630k per year funding from 2007 – 2011 (HEIF4). In Health this funding has been used principally to support the HONEI project and the University's Centre for Telehealth, the latter work is exemplified in Impact Case Study 4. Briefly, the Centre for Telehealth brings together expertise from primary and tertiary care, industry, local authorities, the voluntary sector and academia to deliver novel, user-centred, telemedicine. An NHS-commissioned heart failure telemonitoring service operating in Hull since 2009 has been identified by the King's Fund as an example of best practice. The Centre's activities have not only brought substantial patient benefit but have resulted in cost savings to the Care Commissioning groups (approximately £100k / year in Hull).

In addition to the new facilities the University has increased its research capacity through a series of 14 new appointments across the relevant Departments from 2011 onwards (e.g. 4 chairs of Nursing & Midwifery in FHSC and 3 senior lecturer/lecturers in Molecular Oncology in SBBES). As stated above these new appointments have all been given PhD students and other appropriate research support, allowing them to quickly make a major positive contribution to the research environment in Hull; all have had success with pump-priming or equipment grants and are included in this UoA3 REF submission. The combination of increased research income and expansion of the postgraduate student cohort demonstrate a thriving, sustainable, research environment.

**e. Collaboration and contribution to the discipline or research base*****Patient Public Involvement***

Research within UoA3 is critically dependent on both the patient community and general public. Various patient and carer groups are fully involved in the research planning, testing and dissemination these include: Nasogastric carer/user group; Humber Laryngectomy club, and MacMillan Cancer network. Jomeen has received funding from the Research Design Service to organise a PPI event for patients and their families with perinatal mental health issues, as has Ersser and colleagues to establish a group to input into studies in the Well-being and Long-term Conditions research development group. PPI is facilitated through the strong collaboration between UoH and HEY NHS Trust. Nurses and clinicians have joint appointments and non-clinical staff have honorary contracts allowing interaction with patients and carers.

Engagement with the general public is undertaken via a series of public lectures ([www2.hull.ac.uk/administration/cdte/opencampus/annualpubliclectures.aspx](http://www2.hull.ac.uk/administration/cdte/opencampus/annualpubliclectures.aspx)), bespoke publications such as *Research Review* or project-specific newsletters, e.g. location-sensing nasogastric tube, press briefings and the UoH website. Furthermore many staff are involved in the highly successful Café Scientifique where their work is presented and discussed in a public forum.

***Commercial links***

The University acts as an anchor institution in the region providing effective and wide-ranging engagement with business and external economic communities. It has representation on regional boards of influential boards including the Humber Local Enterprise Partnership, CBI and Chambers of Commerce. The VC is on the steering group of the new National Centre for Universities and Business (NCUB) and ensures senior University representation across a range of special interest groups. The University's Enterprise Centre, opened in 2008 has hosted almost 100 start-up companies, it is open to students, graduates and staff who wish to nurture their business idea with support from academia. The Centre is well connected to the region and is home to *For Entrepreneurs Only*, a group of the regions leading businessmen with a combined worth of around £2billion. It also hosts a students' enterprise society and the research Funding Office. Extensive links with commercial partners both in a consultative and collaborative development role exist. Commercial partners include: Novartis, The Wellcome Trust, GE Healthcare, Smith & Nephew, Photopharmica, Pfizer, Profibrix BV, GlaxoSmithKline, Proctor & Gamble, Boehringer Ingelheim, Merck-Serono, LeoPharma, Croda and Schering Plough, MerckSharpDohme.

**Environment template (REF5)*****Distinguished lectures***

Staff have given a plethora of invited and plenary lectures around the globe with more than 150 since 2008, e.g. **Ersser** gave the key-note presentation at the 4<sup>th</sup> National Seminar on Evidence Based & Integrated Medicine for Lymphatic Filariasis, other Chronic Dermatoses and HIV/AIDS. Kerala, India (Nov 2009). **Johnson** gave the Magnus Huss 10<sup>th</sup> memorial lecture and seminar, Stockholm, Sweden (Apr 2013); **Macleod** gave the key-note presentation to the 6<sup>th</sup> National Children & Young People Survivorship Workshop, London (Oct 2011); **Maraveyas** gave the Special Invited Lecture at the 45<sup>th</sup> NCI Conference, Cairo, Egypt (Apr 2013); and **Markova** gave the key-note lecture at the XV Update in Psychogeriatrics, Barcelona, Spain (May 2010).

***Editorial Board Membership***

All staff contribute to their disciplines through peer review both in terms of serving on editorial boards and on grant review panels, e.g.

**Atkin** is an editor of *PLoS One* and on the editorial board of the *International Journal of Endocrinology*.

**Clark** is on the editorial boards of *Journal of Cardiac Failure* and *BMJ Case Reports*; and is assistant editor of *Heart*.

**Ersser** is on the editorial board of *Community Dermatology* and *Dermatological Nursing* and was previously a member of the board for *Journal of the Dermatology Nurses Association* (2007-2011), being the invited guest editor for the inaugural international edition.

**Galvin** is on 6 editorial boards including *Indo Pacific Journal of Phenomenology*, *Phenomenology and Practice*, *Journal of Multidisciplinary Healthcare* and the *International Journal of Qualitative Studies on Health and Well-being*.

**Gardiner (A)** is on the editorial board of *Gastrointestinal Nursing*.

**Glover** is on the advisory board for the *Journal of Reproductive and Infant Psychology*.

**Greenman** is on the editorial boards for *Cancer Immunology Immunotherapy*, *Current Analytical Chemistry* and *Disease Markers*.

**Hart** is on the editorial board of *ISRN Pulmonology*.

**Hayter** is an editor of the *Journal of advanced Nursing* and on the editorial boards of *Journal of School Nursing* and *Journal of Nursing Interventions*.

**Johnson** is on the board of *British Journal of Hospital Medicine*, the *Palliative Care Formulary* (Eds Wilcock and Twycross), is associate editor of *BMC Palliative Care* and invited guest editor of a special edition of *Palliative Medicine* focused on palliative care for non-malignant disease.

**Jomeen** is sub-editor of *Women and Birth* (Journal of the Australian College of Midwives) and on the editorial boards of *British Journal of Midwifery* and *Journal of Health, Organisation and Management*.

**Maraveyas** is managing editor for *The Journal of Pancreas* as well as being on the editorial boards of *The World Journal of Gastrointestinal Oncology* and the *Forum of Clinical Oncology*.

**Morice** serves on the editorial boards of *British Journal of Clinical Pharmacology* and *Thorax*.

**Naseem** is an editor of *General Thrombosis and Haemostasis*.

**Pires** is an editorial board member of *Journal of cancer research and Therapeutic Oncology*.

**Rigby** is statistical advisor to *Developmental Medicine and Child Neurology*, as well as being on the editorial boards of *Disability and Rehabilitation* and *Health Education Research: Theory and Practice*; in the area of cardiology and cardiovascular disease.

**Rivero** is an associate editor for *BMC Cell biology*.

**Seymour** is on the editorial board of *Frontier in Bioscience*.

**Sturge** is on the editorial board of *Journal of Cancer Research and Therapeutic Oncology*.

**Turnbull** is on the editorial board of *Photodynamic Diagnosis and Photodynamic Therapy*.

**Watson** is Editor-in-chief of the *Journal of Advanced Nursing* and was previously Editor-in-chief of the *Journal of Clinical Nursing* (2008-2011). He is also a member of the editorial board of *Contemporary Nurse*.

***National/International advisory panel membership***

**Atkin** is Chair of the UK special interest group in Polycystic Ovary Syndrome from the Society of Endocrinology and the UK Government representative to the organizing committee for aspartame at the European Food Safety Authority.

**Clark** is Chair of the British Society for Heart Failure and Specialist Advisor to NICE's Interventional Procedures Programme (Heart).

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**Ersser** chaired the nursing scientific meeting at the World Congress of Dermatology in South Korea (2010), is a member of the Health Technology Appraisal Advisory Panel (Dermatology), and a member of the WHO-International Society for Dermatology, Community Dermatology Task Force; and the Medical and Scientific Committee, Psoriasis Association (UK).

**Frizelle** is Chair of the Faculty for Clinical Health Psychology, British Psychological Society; and has been a long-serving faculty member of the European Association of cardiovascular Prevention and rehabilitation (2004 – present).

**Galvin** is the founding chair and member of the European Academy of caring Sciences (2007-present) and is a member of the Phi Mu English Chapter Honor Society of Nursing Sigma Theta Tau International body (2011 – present)

**Hayter** has served as Chair of Investigating Committee Panels for the Nursing & Midwifery Council, UK Nursing Regulator.

**Johnson** is a member of six national steering groups including: National Council for Palliative Care's heart failure policy group; Palliative Care Clinical Studies group of the National Cancer Research Institute; and Research steering group of the Marie Curie Cancer Centre/British Heart Foundation Caring Together project.

**Jomeen** is a member of the UK Royal College of Obstetricians and Gynaecologists Intrapartum Clinical Study Group, a member of the UK Health Technology Assessment Programme, Maternal, Neonatal and Child review panel, and was chair of the Scientific Committee – Society for reproductive and Infant Psychology Conference, Nottingham 2011.

**Macleod** chairs the Royal College of General Practitioners *Health Inequalities Standing group* (2010-). She is a GP clinical advisor for the NICE-led QOF process (2010-) as well as being on the General Practice Advisory group (2008-) and National Awareness and Early Diagnosis research workstream (2010-2013) for Cancer Research UK.

**Maraveyas** is a member of the International Review panel for the international guidelines for the Management and Prophylaxis of VTE (2012-13) as well as being a member of the NCRI Supportive and Palliative Care (SuPAC) committee (2012-). Finally he has a consultancy role with four international pharmaceutical companies.

**Morice** was elected President of the Yorkshire Thoracic Society (2012) and the NEYNL CLRN specialty lead for Respiratory Medicine (2012). Morice has sat on at least 3 pharmaceutical advisory boards each year for all the major pharmaceutical companies.

**Naseem** is Deputy Chair for the Medical Review Panel of Heart research UK.

**Rigby** was appointed to the NICE committee for Health Technology Appraisal (2011-2014)

**Seymour** was elected to the Heads of Universities and Centres of Biomedical Sciences Executive (2009-2013) and is on the panel of Directors of the Society for Heart and Vascular Metabolism.

**Turnbull** chairs the Diagnostic Technologies and Screening Panel for NIHR HTA (2009-); is a member of the NIHR HTA Prioritisation Group (2010-) and Rapid Trials and Add on studies Call Board (2012-13)

**Watson** was appointed to 2014 REF panel UoA3 for Allied Health Profession, Dentistry, Nursing and Pharmacy. He is a member of the International Scientific Committee and Ethical Committee, Centre of Excellence for Nursing Scholarship, Nursing Board of Rome (Italy) and the Humanities and Social Sciences Panel, Research Grants Council, Hong Kong SAR (China). In 2013 **Watson** was appointed by the Lancet to lead a commission into UK nursing.

### Awards

**Ersser** is an adjunct Professor of Nursing at the Memorial University of Newfoundland, Canada (2011-) and Honorary Professor of Nursing, University of Cape Town South Africa (2011-)

**Galvin** is a Fellow of the European Academy of Nursing Science (2006)

**Greenman** was awarded a UKTI award in January 2008 in collaboration with Prof Montero (Milan, Italy), and Heart Research UK's inaugural Researcher of the Year in 2012.

**Hayter** was elected a Fellow of the American Academy of Nursing in 2013.

**Jomeen** is an adjunct Professor at Griffiths University, Brisbane, Australia (2011-)

**Pires** (ECR) won 1<sup>st</sup> prize for the her oral presentation at the 3<sup>rd</sup> EU-IP DNA Repair Workshop for the best Young Scientist, Taormina, Italy

**Maher** was named as the Irish Cancer Society Researcher of the Year 2012.

**Watson** became a Fellow of the European Academy of Nursing Science (2008), Fellow of the Royal College of Nursing (2009), Fellow of the Society of Biology (2009) and Fellow of the Faculty of Nursing and Midwifery of the Royal College of Surgeons of Ireland (2009).