

Institution: University of Chester
Unit of Assessment: 3 - Allied Health Professions, Dentistry, Nursing and Pharmacy
1. Unit context and structure, research and impact strategy

A. Achievement of Strategic Aims

With a thriving research environment and research culture, Allied Health at Chester represents the **largest research corpus** at the university, with internationally recognised research staff, a vibrant postgraduate student community, and an expanding network of collaboration with professional, community and industry partners. Post REF 2014 has been an **enriching transformational period**, building on the future plans outlined in the previous Environment Statement, and evidenced by; a significant increase in category A staff numbers, consolidation of research infrastructure and group themes, the development of a new medical division, expansion and enhancement of doctoral provision, substantial growth in research income, and globally significant outputs shaping policy, practice and pedagogy.

Across the university, strategic aims of research have been primarily driven by the institutional vision, goals and objectives, encapsulated in the University of Chester's 5-year corporate plan (2015 - 2020). These have been further elaborated in the 2021-2026 Research and Knowledge Transfer Strategy; with a commitment to "Ensure that high quality research and innovative practices contribute to exceptional learning and teaching, that helps influence the development and improvement of society". The University of Chester is primarily a teaching and learning focused Institution, therefore, the **Vision** of the unit going forward is to embed **Research and Practice** and facilitate **Learning in Practice**. The practice-based strategy recognises the importance of building an integrated research and teaching culture; creating an environment that is collaborative, partnership-based, solution-focused, and supportive of both staff and students.

Since 2014, there has been a **significant restructuring and reconfiguration** of the disciplines which constitute Unit of Assessment 3, culminating in the establishment of three primary research strands; **Social Science** (Allied Health and Nursing, based at the Faculty of Health and Social Care), **Clinical Science** (Clinical Sciences and Nutrition, located within the Faculty of Medicine, Dentistry and Life Sciences), and **Biomedical Science** (Chester Medical School, also located within the Faculty of Medicine Dentistry and Life Sciences). These three strands encompass seven primary research groups, namely **Public Health; Food and Nutrition; Ageing and Veterans; Learning Disabilities and Mental Health; Clinical Care; Tissue Disease and Repair; and Cell and Molecular Pathology**, and one research cluster, **Pedagogy** (see fig.1).

The period of transition, reform, and consolidation across Allied Health between 2014 and 2020 is reflected in changes to these primary research groups; three new groups emerged (Ageing and Veterans; Public Health; and Food and Nutrition), two were reconfigured following the formation of the Medical Division (with Clinical and Biomedical Sciences evolving into Clinical Care, Tissue Disease and Repair; and Cell and Molecular Pathology), one was renamed to reflect the expertise of the group (becoming Learning Disabilities and Mental Health), and the other (Health Education and Practice Development) has been incorporated into the Pedagogy Cluster.

To achieve the plans identified in the previous REF submission, and to move our wider research agenda forward, we initiated a period of reflection, review and refocus, seizing the opportunity to realign our research ambition and strategy. The outcome has been a transformation of our operational systems, processes, and organisational culture, providing clarity and coherence, specifically:

Governance, Leadership, and Accountability – Subsequent to changes in senior management structure, the appointment of Dean Simpson in the Faculty of Health and Social Care in 2018 and Dean Alcolado in the Faculty of Medicine and Life Sciences in early 2020 has provided stability and a cohesive direction. The result has been greater clarity and quality of the research culture, an

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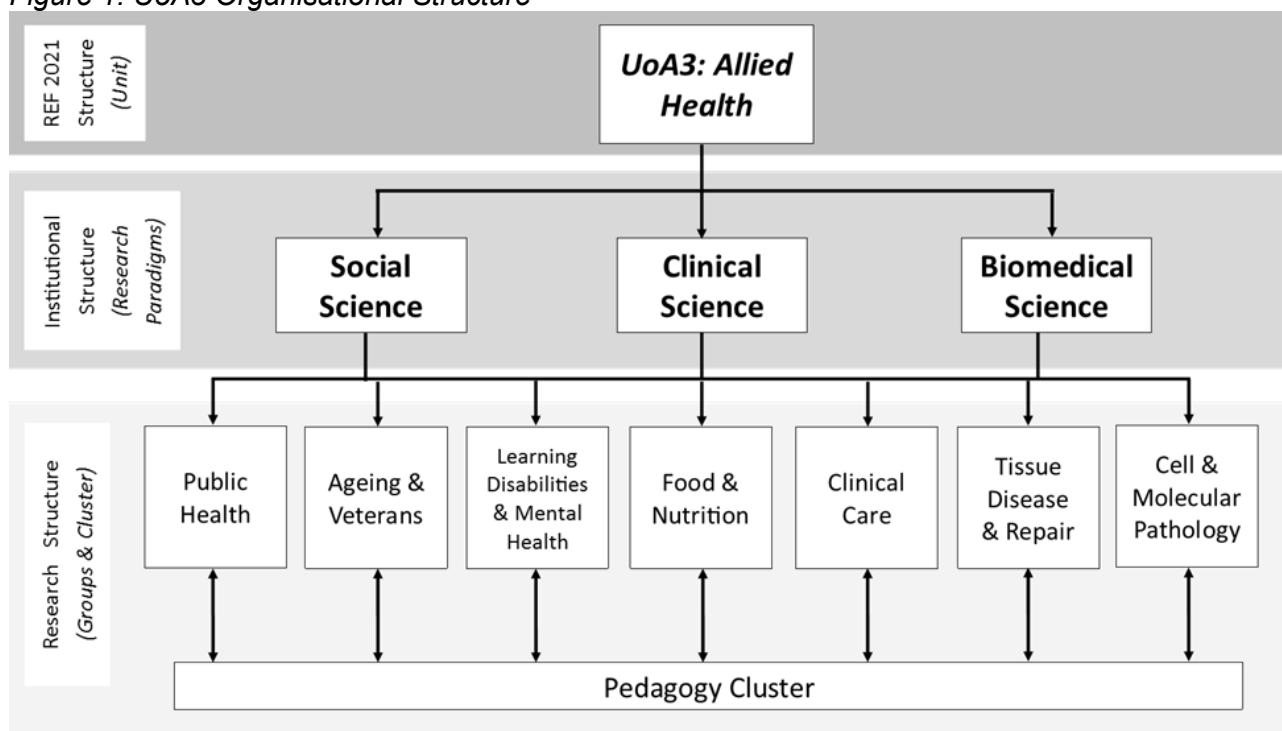
integrated agenda, and robust governance systems and processes, underpinned by enhanced principles and practices based on the values of openness, transparency, honesty and trust. Further, the establishment of the Chester Medical School with appointments of a new Head of School in 2019, a new Executive Dean of Faculty in 2020, and a series of recent academic staff from Professorial level to new investigators/lecturers, has initiated a renaissance in research emphasis and research. This university investment and leadership has resulted in major increases in research outputs and postgraduate student recruitment.

Quality Systems and Processes – A move towards an integration agenda between research, teaching and learning and knowledge transfer has improved cohesion of postgraduate provision, standardising the learning experience and staff allocations, and establishing a clear postgraduate student pathway from pre-application to completion. A Review of Quality and Research (Q&R) finances has streamlined funding processes, resulting in strategic allocation decisions and more wide-ranging sourcing of grants (advised by Research Committee and Faculty Management Group) with awards aligned to Research Group theme, staff expertise and areas with stronger research impact.

Workforce and Planning – In the Social Sciences strand, targeted recruitment of internationally recognised and distinguished scholars Kingston (2014), Finnegan (2016) and McSherry (2019) reaffirms the new strategic direction of research. The revised research strategy led to the establishment of the Centre for Ageing Studies in 2014 (facilitated by Kingston), evolving to include the Westminster Centre for Veterans Studies (first formed by Finnegan in 2016), and becoming the amalgamated Westminster Centre for Ageing, Mental Health and Veterans (2017). Chester Medical School matched this activity with the appointment of internationally recognised and distinguished scholars Michelangeli, Johnson (both 2015), and Steven Jones (2019), who have led additional appointments of research focused senior academics (Lucas and Randles) and several younger staff appointed to their first academic posts. These appointments and investment facilitated the establishment of the Chester Medical School Research Strategy, development of new research groups, i.e., Clinical Care, (led by Steven Jones), Tissue Disease and Repair (led by Johnson) and Cell and Molecular Pathology (led by Michelangeli), and the provision of an enhanced postgraduate training programme within the School. Refinements in postgraduate and staff development have culminated in the central alignment of services and provision, accompanied by greater lines of communication between Heads of Department and institutional level resources (i.e., the Research and Knowledge Transfer Office).

Performance and Research Management – Within the Social Sciences strand, the function of the Research Office was reviewed post REF 2014, and its roles and responsibilities were integrated into the newly created position of Faculty Co-ordinator for Research (Kingston). A similar role has recently also been created within the Chester Medical School (Steven Jones and Johnson). The ongoing refinement of research groups has been accompanied by a reduction in the range of staff research interests, but growing research and output delivery within the focused research themes. As a consequence of this refocus, an initial drop in staff numbers post REF 2014 was followed by a period of strategic external recruitment and internal promotion, enabling the achievement of a critical mass of staff aligned to the research expertise of the faculty. The revised organisational structure and research strategy is depicted in the following conceptual model (fig. 1).

Figure 1. UoA3 Organisational Structure



By remaining flexible to change during this transitional period, we have strengthened capability, capacity and confidence of the workforce and systems, progressing in our aspiration of an **Integrated Framework** for Research, Teaching and Learning, and Knowledge Transfer, as outlined in the emerging institutional strategy for multi- and interdisciplinary research under the Core Theme “**Health and Wellbeing**” (see Section 1. C. Future Strategic Aims).

B. Impact during the Assessment Period

This section explores the sub-themes, significant impact of research, and future research aims within each research group. Scholars from research groups also contribute to the cross-group Pedagogy Cluster, promoting an integrated vision of the Unit by undertaking research into teaching and learning theories and methodologies, and disseminating research findings to inform curricula designs and student experiences.

Research Group: Public Health

Overview:

The ethos of the Public Health group is in exploring health inequalities, targeting under-researched and neglected areas of society. Research interests include health promotion and healthy lifestyle behaviours targeted at vulnerable, high risk and hard to reach people, on both national and international levels (with specific interests in low- and middle-income countries in Africa, and the Middle East).

Significant Impacts:

Mabhala's research focuses on homelessness, sociology, and health. Research has conceptualised homelessness as manifestation of wider socioeconomic determinants, using novel qualitative methods with members of the homeless community, and leading to changes to homelessness strategies at county level. The work won the 2018 Educate North award and has fed into cross-national work with the European Federation of National Organisations Working with the Homeless (FEANTSA). **Speed's** research also focuses on under-researched groups, including a long-term qualitative investigation into the effects of honour killing on families in Palestine, studies into the health of older Chinese people in the UK, and a project looking at weight loss following breast surgery and adjuvant therapy showing that a telephone/minimal face to face support programme for exercise and diet enabled women to lose weight and keep to their diet long term.

Research Group: Ageing and VeteransOverview:

This group originated following the targeted appointments of two distinguished, world leading Professors within the specialities of Ageing, and Nursing and Military Mental Health. Research interests include societal views of ageing across the life course, dementia care, safeguarding, veterans' mental health and well-being, military nursing, scams, and social isolation.

Significant Impacts:

Finnegan researches the health and well-being of veterans with studies funded by the Ministry of Defence and the Armed Forces Covenant Fund in excess of £250,000. The "Finding the Forgotten" NHS-funded project sought to motivate veterans to notify primary healthcare (PHC) staff of their armed forces status, or register with a general practitioner, and to improve PHC staff's understanding of veterans' health and social care issues. This research adds to the limited international empirical evidence exploring help-seeking behaviour in an armed forces community. **Kingston's** research has explored social isolation and loneliness in an ageing population (£650,000 grant from the National Lottery); safeguarding adults at risk (as a co-applicant to the Economic and Social Research Council seminar series 'Safeguarding Adults and Legal Literacy'), the public understanding of Dementia utilising Mass Observation Data (presented at the 2020 International Annual Conference of the International Psychogeriatric Association), and the Health impact of 'Scams' (again using Mass Observation Data and accepted as a Symposium at the 2019 Gerontological Society of America). In 2019 Kingston was the Principal Investigator in a successful application to the United Kingdom Prevention Research Partnership, and was awarded £308,000 to develop (PETRA) Prevention of Disease Using Trade Agreements (<https://petranetwork.org>), involving multidisciplinary collaboration of UK universities, non-Governmental Organisations (NGOs) and charities.

Future aims of this group are to continue the development of studies on later life, with a particular focus on healthy ageing and quality-of-life enhancement.

Research Group: Learning Disabilities and Mental HealthOverview:

This well-established research group has continued to flourish and expand post REF 2014, gaining national recognition in a predominantly neglected yet fundamentally important area of research. Under the transformational leadership coordination of **Lovell**, the group has undergone a major period of review and refocus. Significant staff investment involving mentoring, coaching, and supervision has allowed the realignment of the group, maximising the potential of both senior staff and early career academics. The renaming of the Learning Disabilities and Mental Health group (from the Mental Health and Learning Disability Group submitted in REF2014) emphasises the group's expertise in the largely overlooked area of Learning Disability (LD) research. Research expertise includes forensic LD studies, cognitive behavioural therapy, violence and self-injury, control and restraint, stigma, and sleep therapeutics.

Significant Impacts:

Clinical violence within (LD) practice has been the focus of **Lovell's** research, with emphasis in the area of de-escalation of violence, culminating in the development of a theoretical model and commissioned teaching in LD secure services. This work has formed the basis of a case study for REF 2021, has been presented in a number of international and national forums, and has impacted LD staff practice, transforming practitioner's conceptualizations of de-escalation. **Mitchell** was involved in a commissioned project funded by the Department of Education "Constructing and Delivering Services of Support: an Evaluation of the Northwest Post-placement Adoption Support Service", investigating children deemed 'hard-to-place' due to a variety of mental health issues. **Chapman's** work centred on health consultations for people with LD. **Bowen's** work investigates the stigma of mental health across various forms of media, with novel studies examining newspapers' "Twitter" feeds in relation to mental health (the first study of its kind), contributing to a growing interest in social media, the news, and mental health. **Sutton** has focused on sleep hygiene education

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amongst children with developmental disabilities, and the use of storytelling and audio podcasts in qualitative research.

Sharma is Vice Chair of the Global Rural Mental Health section of the World Psychiatric Association, holding Visiting Professorships at the Indian Institute of Health Management Research (Rajasthan) and Datta Meghe University (Maharashtra) India. **Sharma** has contributed many significant developments in global mental health throughout his career as a consultant psychiatrist and senior academic, especially throughout the past decade. His focus is on low- to middle-income countries (LMICs) which have a huge burden of untreated mental illness, with insufficient mental health professionals. **Sharma** has developed and disseminated a Global Mental Health Assessment tool for use in primary care (GMHAT/PC) and a training package that can be used in many populations within existing limited resources. GMHAT/PC is a public domain (free to use) software education package for non-mental health professionals to carry out mental health assessments, generating diagnostic possibilities and treatment recommendations. GMHAT is reliable and practical for mental health assessments in LMICs where there are inadequate numbers of mental health professionals to offer services to the whole population, delivering a truly important global research impact (see Impact Case Study). Recent research has focused on GMHAT/PC's feasibility and acceptability to different populations, its validation in a variety of languages, and its use in co-morbidity cases.

Future aims of this group include the development of the further understanding of violence as a social phenomenon, and addressing interventions for utilisation by health and social care practitioners.

Research Group: Food and Nutrition

Overview:

Research within this department is incorporated into four key themes:

- **Cardiometabolic Health** – encompassing several aspects of cardiometabolic health with particular expertise in: micronutrient metabolism (particularly vitamin D) and cardiometabolic risk; nutritional clinical trials; cellular and metabolic alterations in cardiovascular disease and modulation of cardiovascular disease progression.
- **Functional Foods** – key theme of this Research Centre is to explore mechanistic understanding of how food nutrients influence human cellular processes, how they impact our understanding of the human microbiome and how the responses vary through population groups and across the life-course.
- **Hydrocolloids** – research objective to remove natural built-in variability and enhance functionality of hydrocolloids, with research expertise including emulsification technology; molecular weight characterisation of hydrocolloids; gelling properties of hydrocolloids; texture; and rheology.
- **Public Health Nutrition and Physical Activity** - research to understand the role of behaviour and supportive environments to enhance health and wellbeing.

Significant Impacts:

Mushtaq leads the Micronutrient Metabolism research group with a focus on investigating the effect of nutritional components, particularly vitamin D, on biomarkers of disease. This involves carrying out nutritional clinical trials, with published findings having significant potential on the treatment of nutritional deficiencies and disease risk. Key trials include a study to investigate the effect of vitamin D3 supplementation on asthma symptoms in adults (ClinicalTrials.gov NCT02359214); and a study investigating the effect of vitamin D3 supplementation on iron status in iron deficient women (ClinicalTrials.gov: NCT02714361). **Mushtaq** also set up a collaborative project with the Medical Research Council (MRC), Human Nutrition Unit at the University of Cambridge, to investigate the inhibitory effects of tea on iron absorption (ClinicalTrials.gov: NCT02365103). **Li** worked on an international collaborative research project (research partners including Massey University and the Christchurch Clinical Studies Trust) that generated new scientific evidence of the health benefits of Greenshell mussels to assist the industry in identifying and developing optimal Greenshell mussel-based functional food products (appealing to the emerging market of wealthy, ageing, health-conscious consumers, predominantly in China). **Li** contributed to the human intervention trial in

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measuring the concentration of active ingredients in the mussels and how much was absorbed by human participants.

Al-Assaf's research focuses on the structure-function relationship of hydrocolloids, molecular assemblies, formulations, emulsion technology, encapsulation, and radiation chemistry of hydrocolloids. **Ellahi** is one of the collaborators of the large-scale international collaborative project, the Gene–Nutrient Interactions (GeNuIne), investigating the effect of gene–nutrient interactions on cardiometabolic traits using population-based studies from various ethnic groups in lower middle-income countries. **Ellahi** has long-standing interest in the quality of training for nutritionists, being the only nutritionist member of the QAA review group for the Subject Benchmark Statement for Agriculture, Horticulture, Forestry, Food, Nutrition and Consumer Sciences (2016). **Morris** developed a 15-metre Shuttle Running Entrance Fitness Test for the College of Policing which has been rolled out across several police forces. **Kennedy** developed a novel compact training protocol for midwives to build knowledge and confidence in giving nutrition advice during pregnancy, leading to changes in the pre-registration curriculum for midwives in Wales.

Future aims include expanding on the high-quality research in the area of micronutrient metabolism and functional foods in health and disease, as well as continuing to conduct impactful research aiming to improve workplace health.

Research Group: Clinical Care

Overview:

The focus of this group is interdisciplinary clinical practice and research for patient benefit. The group (led by **Steven Jones**) recently developed with the recruitment of several academic appointments and experienced clinicians from the disciplines of psychology, nursing, physicians associate, treatment radiography, and medicine. The group aims to cultivate clinical academic staff towards clinical research careers. This group strengthens our research emphasis on national and international mental health development. **Steven Jones** is working with local NHS Trusts (Cheshire and Wirral Partnership NHS Trust) to develop collaborative research grants. Appointing two visiting Clinical Professors of Psychiatry (seconded from the NHS) has strengthened the clinical care group at Chester Medical School (Professor Taj Nathan in 2018 and Professor Sujeet Jaydeokar in 2020). To support interdisciplinary collaborations with other faculties, and local and national stakeholders (already underway with the Faculty of Health and Social Care), each group member will have special interests and the group ethos is to nurture these interests. Finally, group members of the three medical school research cluster groups may move between the groups or attend more than one group with the aim of sharing ideas and experiences for staff research development.

Significant Impacts

Steven Jones is professor of mental health at the Chester Medical School, working between the medical school and Faculty of Health and Social Care. He has been a project leader and coinvestigator for many international education and mental health research projects, for direct patient benefit, with long-standing international partnership with clinicians and academics from India. His research has concentrated on four major areas: deliberate self-harm, later life cognitive disorders, suicide reduction and substance misuse. **Mason-Whitehead** has worked in collaboration with clinicians at the Countess of Chester Hospital, conducting research focused on bowel disease, a condition with often devastating consequences where it is rewarding to have even a small impact, particularly in relation to quality of life. Ongoing work seeks to enhance critical understanding of stigma relating to health and illness through research, teaching, and supervision engagement. **Buckley** has been at the forefront of pragmatic approaches that inform clinicians how best to reduce cardiovascular risk and improve rehabilitation in patients and the wider community, i.e., worldwide. He has been a major influential figure in national and international bodies, most recently including the World Health Organisation (WHO); delivered keynote lectures at international academic meetings; and been widely engaged by the media as a subject expert. **Buckley** led on the British National Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation, and contributed to a global statement on the delivery of cardiac rehabilitation in

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LMIC's, serving on a specialist panel of the WHO 2017 – 2020 as part of the Rehabilitation 2030 Initiative.

Future aims are to develop work in neuro-psychiatry and neurodevelopmental disorders.

Research Group: Tissue Disease and Repair

Overview:

This group researches normal tissue function, how disease and injury result in aberrant tissue function, and how this can be corrected by enhancing the processes of tissue repair and regeneration. There are several newly appointed young investigators and more established academics with strong research activity in the fields of musculoskeletal pathophysiology, including orthopaedics, neurological damage, aspects of pre-and postnatal development, and cancer, with substantial integration into research activities within the Cell and Molecular Pathology group. The group has published extensively and widely, totalling 44 papers since 2014 in high impact factor journals including Nature Communications, Stem Cells, Stem Cells and Development, Scientific Reports, Redox Biology, Journal of Orthopaedic Research, Bone, FASEB Journal, Oncotarget, and Biomaterials.

Significant Impacts:

Johnson has a long history of research into musculoskeletal pathology, stem cells and regenerative medicine, with a focus on spinal cord injury (SCI). He has engaged with industry through iCASE awards, most recently establishing collaboration with the Veterinary Tissue Bank (VTB) in Chirk UK (BBSRC funded) to explore the potential application of adult stem cells for SCI in dogs with naturally occurring lesions. The VTB already treats arthritic dogs with MSCs to relieve symptoms, and cartilage repair is another important area of research in the Johnson group. These activities have been reported in international journals of repute, with papers recently on adult stem cell transplants for cartilage repair, the role of retinoic acid signalling in tissue regeneration, and biomarkers of spinal cord repair, through continued collaboration with researchers at the Robert Jones and Agnes Hunt (RJAH) Orthopaedic hospital. Johnson has collaborated extensively with clinicians and scientists internationally, working with orthopaedic specialists in Japan, and SCI specialists across the world, but centred in China to provide guidelines for clinical treatments using stem cells in humans. **Pickard** researches across a range of disease conditions and tissue repair/regeneration strategies, leading to a series of international and world-leading outputs. He has examined novel cell and gene therapies for neurological damage, including the use of nanotechnology, and reported the roles of long non-coding RNA in regulating gene expression and cell phenotype in relation to cancer. **Pickard** is a highly experienced cell and molecular biologist who has published more than 60 papers and several chapters, and continues to work in collaboration with other experts since his recruitment to Chester Medical School.

Nye was the first to summarise and detail the importance of oxygen levels within the human placenta. He has explored a novel method of measuring oxygen within the placenta and identified the use of advanced imaging techniques in proposing a new hypothesis for differential fetal growth in a major review, cited 18 times since publication in 2018. **Wilson's** research is focused on orthopaedics disease and repair, including cartilage damage and drug induced osteoporosis through combined genomic and proteomic analyses. **Wilson** was recruited from the Robert Jones and Agnes Hunt (RJAH) Orthopaedic hospital as an early career researcher, and has advanced to become a senior lecturer, continuing to collaborate with academics and clinicians based at the RJAH hospital, and has co-supervised Keele University PGR students through this research collaboration. **Power** has continued his research on an ovine model of skeletal under loading, receiving QR grant funding in 2019-20 from the University of Chester to continue an 'Investigation of osteocytic regulation of bone mass in an ovine skeletal model of mechanical under-loading', aiming to map in situ, osteoclastic bone loss with parameters indicating osteocytic regulatory activity in an ovine skeletal model of disuse osteoporosis. Data generated is expected to provide insight into the biological role of osteocytes within bone tissue experiencing conditions of reduced mechanical strain.

Research Group: Cellular and Molecular PathologyOverview:

This group is particularly interested in the molecular and cellular basis of diseases and their treatments. The group (lead by **Michelangeli**) has been expanding with the recruitment of several new academic appointments of highly experienced researchers and academics, who have shown great potential to further develop their research. One of the current major areas of research is the molecular basis and treatment of a range of cancers, encompassing basic cell-matrix biology, immunology, virology and vaccine development, pharmacology, and drug delivery in the research. Both **Lucas** and **Michelangeli** have been focused on translational medicine approaches to treating leukaemia and anti-cancer-drug resistant cancers, which crosses to research in tissue disease and repair – examining the potential of drug repurposing strategies for the treatment of human bone cancers and brain cancer. The group also has a strong research profile through research outputs, totalling 46 papers in high impact journals including Nature Nanotechnology, Haematologica, Leukaemia, Journal of Controlled Release, Scientific Reports, Matrix Biology, British Journal of Pharmacology, Journal of the American Society of Nephrology, and Human Molecular Genetics.

Significant Impacts:

Michelangeli's research focuses on discovering new drugs that can target and kill cancer cells through autophagic cell death pathways. Many cancer cells become mutated to de-activate the apoptotic cell death pathways through caspases, which is the cell death pathway utilised by many standard anti-cancer drug therapies. Thus, over time many cancers become resistant to standard treatments. Several papers published by the group in collaboration with others have led to the possibility of targeting and killing caspase-resistant cancers by inducing cell death through an alternative Ca²⁺-dependent, autophagic pathway. **Lucas** has previously shown that CIP2A is a clinical biomarker for patients with chronic myeloid leukaemia and suggested that patients who expressed high levels of this biomarker at diagnosis should not be treated with the current first line therapy. This study led to a grant to investigate the biomarker as a part of a national clinical trial. This is the only biomarker to predict which patients will progress to an advanced phase of the disease known as blast crisis, and will influence future treatment of patients. Her future work aims to understand the biology of CIP2A in cancer. **Randles'** research focuses on investigating Alport syndrome, a disease that impacts basement membranes in the eyes, ears and kidneys. His research also focuses on basement membrane ligands which affect signalling networks to direct cell shape and kidney filtration barriers.

Harrison is first author on a human Phase I trial for a Chikungunya vaccine. This uses the same vaccine vector as the current COVID-19 vaccine developed by the University of Oxford (also the site of the Chikungunya vaccine trial), and the results are extremely promising. Future research collaboration being funded with fellow CMS lecturer Dr Gareth Nye involves the Human Milk Bank at Exton Park, examining the immunological and molecular components of breast milk, and the role played by infectious diseases. **Harrison** is also collaborating with the Computer Science department to develop a novel, artificial intelligence-based programme to create a point-of-care diagnostic test for urinary tract infections. **Christopher Jones'** early career research involves the molecular mechanisms of HIV infection and immunoevasion, innate cellular mechanisms of antiviral immunity, and immune responses to infection. Specifically, his research investigates the activity of cellular proteins called 'restriction factors'. These proteins prevent viral infection by inhibiting specific steps in the viral life cycle, however, their mechanisms of action and mechanisms of regulation are not well defined. It is hoped that once these proteins are better understood, opportunities to harness their antiviral activity therapeutically will be identified. This research spans virology, biochemistry, microbiology, and immunology. **Favretto's** research has resulted in major papers of high impact detailing the application of nanotechnologies for gene and drug delivery. His work highlights novel procedures to enhance drug targeting, and maximise transfection efficacies, in addition to providing important new knowledge on the underlying mechanisms at play. **Favretto's** work was recently recognised when he was a key speaker at a Young Investigator Workshop of the Mercia Stem Cell Alliance annual meeting hosted at Chester in 2019, with over 60 participants.

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Future aims of the group are to increase research impact through clinical collaboration, strategically target funding streams, maintain high quality research outputs, foster staff development via the peer group system, and further integrate education and research training programmes with staff research activities.

Research Cluster: Pedagogy

Overview:

Since 2014, the Health Education and Practice Development research group has been transformed into the Pedagogy research cluster. This has been driven by both external and internal factors, the former involving major changes in policy and practice within the Health and Social Care sector. Primarily, the development of the NHS Improvement Agenda has underlined the need for adopting an integrated excellence framework, shaping the way this research cluster has evolved. The constitution of this innovative cluster is in recognising the interplay between Research and Practice and Learning in Practice (an enhancement of practice development). Staff within the Pedagogy cluster sit within specific research groups but are collaboratively involved in work which informs curricula, teaching and learning, and the research agendas of the wider health and social care sector. Topics within this cluster include organisational and workplace culture, person-centredness (workforce), patient safety, quality and standards, evidence-based practice, clinical governance, and service improvement. Reaffirming the vision of the unit, the overriding aim of the Cluster is the pursuit and delivery of excellence in learning, research, and practice.

Significant Impacts:

McSherry's research into professional doctoral programmes led to the establishment of the 360 Degree Stakeholder approach to Professional Doctorate Programme Evaluation incorporating the (POPE) personal, organisational, professional and employer framework. The protocol for a Campbell Collaboration entitled 'Evidence-Informed Practice Educational Interventions for Improving Knowledge, Attitude, Understanding and Behaviour (Application of Evidence-Based Practice) of Undergraduate Health and Social Care Students: A comprehensive Systematic Review', was accepted and published in July 2019. **Chapman** has worked in cross-collaboration with colleagues in psychology, specifically Dr Claudine Clucas, to research respect in student nurses and nurses. This has yielded four co-authored papers in peer-reviewed journals. **Taylor's** research has explored the impact of Preceptorship for new registrants across the North West Region. The outcomes of this study have been disseminated both nationally and internationally and are published in the Journal of Clinical Nursing (2018). Two further studies have evaluated the impact of new workforce models in acute care service; 'The value of embedded secondary-care-based psychology services in rheumatology: an exemplar for long-term conditions', and 'An evaluation of the role of Cancer Nurse Specialists and Cancer Support Worker', presented as a poster at the UK Oncology Nursing Society Conference (2020). All studies identified significant implications for workforce design and service improvement and have pedagogical implications for the health and social care curricula.

C. Future Strategic Aims

Strategy

The appointment of a new Vice Chancellor in 2020 has facilitated a renewed energy, and following a period of reflection, a revised strategic direction for many areas of provision including research has been enacted. The revised strategic agenda has conceptualised a coordinated approach to the innovation and delivery of research activities encapsulated within **four key themes** designed to build upon University core values and expertise. For UoA3, the key theme concerns **Health and Wellbeing**. To direct future strategic research aims, this theme will be developed into a Research Institute to integrate health and wellbeing research across the university, and pool expertise across professions and specialities.

The **Vision** of the Health and Wellbeing Research Institute is to improve lives and communities through the design and delivery of innovative, high-quality, world-class research and impactful activity. This will be achieved by collaborating and working with our NHS, Social Care services, Local Authority, Councils, Research Councils UK, charitable organisations, local business, and

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commercial partners. In developing the institute there is a recognition that our work is targeted towards benefiting society and is undertaken in partnership with our patients and the public. The Institute of Health and Wellbeing, through collaborating with our partners and relevant stakeholders, will use novel and innovative research designs and methods to resolve complex problems.

The Health and Wellbeing Research Institute will provide the structure to further our research ambitions, by bringing together existing strengths, as well as developing new areas of collaboration and interdisciplinary working. This model of working through **integration** is aligned to the real world of work for our students, partners and visiting professors who are familiar with the social policy drive towards the integration agenda. This clarity of vision will further enhance the postgraduate research culture for our existing students in addition to creating opportunities for innovative PhD scholarships which reinforce partnerships with local communities and truly aspire to embed the Citizen Student philosophy.

Resources and Activity

Through strategic resourcing, we anticipate that our combined activities include:

- Increased quality and quantity of publication outputs
- Submission of more ambitious, higher value funding applications, including individual PhD and Doctoral Training Partnerships and post-doctoral fellowship funding applications. Existing QR funding might usefully be realigned to support this activity in our University Research Theme areas
- PhD supervision teams and enhanced supervisor mentorship schemes that support our new interdisciplinary research strategy. Research Themes will better encourage interdisciplinarity and ultimately increase the quality of the resultant research and impact
- Expanded international partnerships that connect existing individual activity and grow networks, including better utilisation of visiting researchers and professors
- Staff development and support to increase interdisciplinary research across faculties and Centres
- Increase board appointments, for example, journals, Non-Executive Director, Local Enterprise Partnerships (LEPs) and commercial sponsorship boards. Develop local connections to the LEPs, Academic Health Science Network, Clinical Research Network, local providers and commissioners of health and social care, and the third sector and private providers, and forge closer links with charities and government departments.

Cross-faculty projects are already taking place at the University, for example, Computer Science working with the Medical School and Public Health and Wellbeing on innovative uses of virtual reality for both teaching and in healthcare. To this end, the driving ethos of the Institute of Health and Wellbeing is to be inclusive, to bring together the collective expertise within the University of Chester (and beyond), and to maximise our capacity to **solve real-world problems** within the field.

2. People

A. Staff

Staffing Strategy

Staff strategy and development are driven by both the institutional vision, goals and objectives, (as encapsulated in the University of Chester's 5-year corporate plan 2015 - 2020), and the unit-level research vision regarding the integration of research, scholarly activity, knowledge exchange, and entrepreneurial endeavour. By taking account of these complementary visions, reflecting on the Unit's transformational period, and acknowledging feedback from REF 2014, the Unit has articulated **four staff-specific strategic objectives**.

Firstly, **to improve understanding of the Integration Vision of the Unit linking research, teaching, and learning, and to increase opportunities for staff and students to participate in knowledge transfer activities**. This is evidenced by targeted recruitment and retention of staff with

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research expertise in learning theories, methodologies, and practices; facilitated workshops for both staff and students; and by working alongside the Research and Knowledge Transfer Office.

Secondly, **to further raise the research profile and expertise of the Unit by consolidating research themes and collaborating with partners within and across research groups, faculties, and the wider health research community**; locally, nationally, and internationally. This is evidenced by targeted recruitment of world-leading specialists, the reformulation of research groups around these areas of expertise, and high-level joint peer review publications resulting from collaborations with fellow renowned academics from esteemed institutions worldwide.

Thirdly, **to address real-world health and well-being challenges and needs by developing, strengthening, and utilising partnerships and links to wider Allied Health Networks and communities**. This is evidenced by extensive consultancy and partnership work alongside NHS, third sector and industry stakeholders, the revalidation of the professional doctorate programme to accommodate sector needs and establish an alumni network of professionals across Allied Health, and the development of community partnerships to better identify health and wellbeing challenges with a goal to facilitate the co-production of potential solutions.

Fourthly, **to maximise capacity, capability, and culture for research excellence through the continuous development of new and existing staff**. This is evidenced by supporting staff to undertake further qualifications and other continuous professional development opportunities (including leadership training, supervision preparation and mentoring), the use of career development tools and programmes to 'grow-our-own' and allow staff to take control of their own career progression within a supported framework, and to provide funding and allocated time to allow staff to undertake advanced research skill development.

Staff Development

For the past 6 years, the university has successfully retained the Europe wide "Vitae HR Excellence in Research Award", with key projects linked to staff development (such as mentoring schemes, training via online Researcher Hubs, and an annual Research Festival), in addition to the "Investors in People Gold Award", in recognition of outstanding institutional workforce support. This Unit has fully participated in developments, making use of centralised tools such as new starter online induction packages and digital training for new supervisors.

At the Unit level, there have been significant changes to our staff workforce since REF 2014. There has been a high rate of staff turnover resulting from retirements, promotions, and staff moving to other institutions. This presented an opportunity for the faculty to refocus around remaining staff members' expertise, and to streamline research themes into consolidated groups. Further targeted recruitment and promotions have increased category A staff numbers from 23 FTE during REF 2014 to 34.11 FTE in REF 2021. To further reinforce the streamlining and focus of research groups, and to increase associations with both academic and professional allied health partners, eminent Visiting Professors have been appointed to collaborate with research staff on specific research and consultancy projects.

The Unit is proactive in supporting staff to undertake professional continuous development opportunities at both institutional and faculty level. Institutionally, all staff participate in annual Personal Development Reviews and Plans (PDRP), reviewing performance indicators linked to corporate objectives and personalised career targets. The university-wide Leadership Development Programme provides tools and techniques by which staff can improve their leadership knowledge, skills and confidence. At Unit level, research group leaders provide informal career-linked mentoring to Early Career Researchers; there are plans in place to formalise this highly successful strategy. Faculty-based lunchtime seminars and research masterclasses are open to all staff and students and are often opened up to public attendance.

From 2017, the Faculty Research Conference, which originated as a student only forum for presentations, has expanded into an annual, two-day, themed event which is open to all (staff, students, research partners, and the general public). The conference includes research training

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workshops, postgraduate presentations, staff lectures, keynote guest speakers and opportunities for networking. Each conference has a key theme; these are based around contemporary issues in health and social care, and how they impact on the development of curricula. For example, the 2019 event was themed around changing approaches to health and social care, including how the health community can collaborate with arts and humanities specialists in developing novel treatment methodologies, and the implications of cutting edge digital and technological advances on workforce training opportunities and patient experiences.

Investment in staff, in terms of both time and funding, has been extensive in the years following REF 2014. Results are apparent and still increasing, producing a vibrant, sustainable research culture, where staff are afforded opportunities to develop their individual career pathways, expertise, and ambitions. The vitality of the Unit wide staff research culture is reflected in that of its research postgraduate community.

B. Postgraduate

PGR strategy

Nearly a fifth of all postgraduates at the University of Chester sit within UoA3 (131 research postgraduate students, of whom 94 are doctoral). Since 2016, numbers of postgraduate students within the unit have increased by 20%. Of these, in 2016 25% were working towards professional doctorates, rising to 50% in 2019; this is indicative of the Unit's Vision, exemplified by Research and Practice, and Learning in Practice, and of the Unit's links with the wider professional health community and service demands. There are increasing numbers of international students joining MRes, feeding into increased PhD recruitment, and Doctorate in Public Health programmes.

A university restructure in 2017 led to the closure of the Graduate School and devolution of responsibilities for postgraduate strategy and development to Registry, Academic Quality and Standards (AQS), and individual Faculties. Senior Faculty Postgraduate Tutors (SFPGT) were appointed by Faculty Deans to lead on the operationalisation of strategy within Faculty. SFPGTs have been responsible for innovating and informing policy at a strategic level via University Postgraduate Sub Committee, Postgraduate Forum and University Research Ethics Advisory Board whilst communicating and implementing change in Faculty. This has enabled a more cohesive, robust, and targeted approach, and improvements in many areas of the provision have been achieved including enhanced metrics in the Postgraduate Research Experience Survey, students completing doctoral studies in a shorter time frame (for part-time students this is now on average 6-7 years), and increasingly students obtaining minor amendments at the viva voce examination. Consequently, the changes have impacted positively on the PG student experience and overall satisfaction.

PGR Development

There has been significant investment and improvement in the PGR research culture both strategically and within Faculties. The university appointed a Postgraduate Engagement and Enhancement Officer into AQS who led on the strategic offer. Working in co-production with SFPGTs and student representatives, there is a programme of generic interprofessional activities including an annual student-led symposium, a two-day writing workshop, study skills, and a newsletter. This encourages PG students to engage with the wider University PG cohorts, sharing learning and networking.

This has led to a steady increase in successful PhD completions across this REF period:

2013/14 – 1
 2014/15 – 1.75
 2015/16 – 9.65
 2016/17 – 3.3
 2017/18 – 8
 2018/19 – 6.3
 2019/20 – 7.1

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Complementing the University offer, Faculties provide a range of PG activities which are available to all PG students, including conferences and symposia, journal clubs, lecture series, specialist guest lectures and masterclasses. National and international conference attendance has increased and included PGR training in specialist workshops hosted at Chester, or with attendance elsewhere, e.g., the university is a partner member of the Mercia Stem Cell Alliance (MSCA), which holds annual workshops for PhD students and early career researchers in secretome biology (Chester), flow cytometry (University of Birmingham), and real time 3D culture (University of Manchester).

Within Faculties, the implementation of a revised, robust Annual Progress Review (APR) process has enhanced and improved the doctoral journey for students and supervisors. In the APR system experienced independent assessors are appointed at intervals throughout the programme of study to assess student achievement against pre-set criteria (milestones). This has been well received by students and supervisory teams and has led to improvements in student satisfaction and achievement.

C. Equality and Diversity

The unit adheres to the robust equality and diversity policies of the university. These are designed and implemented to maximise the potential and aspirations of all staff, including researchers. Post REF 2014, the university has successfully implemented a range of new standards, culminating in the achievement of a number of respected awards including an Athena Swan Bronze award, the Navajo Merseyside and Cheshire LGBTQA charter mark (one of only two universities to hold the award), the Equality Challenge Unit's Gender Equality mark, and the Job Centre Plus Disability Two Ticks symbol. All staff are required to undergo statutory equality and diversity training (including unconscious bias) via online modules. The Disabled staff group continues to make a significant impact, and further networks have now been created to support staff across the university, including the Women's network, the LGBT+ staff group, the Parents' network and the Carers' network, and a new Menopause network established in 2019. The Students' Union are working alongside the Time to Change organisation to combat mental health discrimination for students and staff. The annual Diversity Festival continues to be an important event in the university and local community calendars, with unit staff contributions in both attending and presenting.

At a unit level, two newly formed groups have contributed to resolving oft-overlooked issues linked to equality and diversity; a Student empowerment group and the Neurodiversity group, open to all staff and students, both those who identify as neurodiverse and those who wish to learn more about neurodiversity.

To capture the PGR student voice, enhance the student experience, and improve the quality of programmes, nominated student representatives attend relevant unit level boards and committees, which include the Research committee, Ethics committee, Doctoral programmes committee, and Professional Doctorate Programme management team.

The PGR student profile at the unit is diverse, with a range of age groups and professional backgrounds; this diversity is supported by offering variety of part-time and full-time study opportunities, with flexibility built into the design and delivery of curricula (for example, flexible modular learning, targeted timetabling), in order to accommodate the distinctive needs of students.

The Unit recognises the need to consistently reassess equality and diversity measures so as to avoid complacency or regression. Consequently, we acknowledge there are still some shortcomings in our current provisions as regards recruitment and development of research staff and students. Unit-level workforce analyses have revealed a lack of women in senior research positions, reductions in research career opportunities linked to unbalanced managerial workloads as teaching seniority increases, and the need for a review of the BAME strategy. To address these issues, the Unit is following institution level advice on fair recruitment outlined in the university-wide Positive Action in Recruitment Guide (such as ensuring mixed gender chairs and vice chairs on recruitment and research committees to try to tackle unconscious bias), conducting a Unit-level staff review regarding research vis-a-vis teaching workload allocations and consulting with specialist colleagues at both the International Centre and the University's Equality and Diversity team to raise awareness of

Unit-level environment template (REF5b)

developments to BAME staff and student policies across the University of Chester as a whole. The Unit's future equality and diversity aspirations are to continue to vigorously adhere to equal opportunities guidelines and policies, thus ensuring all staff and students are supported to realise their research and career ambitions.

3. Income, infrastructure and facilities

A. Income

The faculties contributing to UoA3 have seen year on year increases in research income (see table below).

Year	Health & Social Care	Medicine & Life Sciences	Social Sciences	Grand Total
2013/14	£241,137	£14,168	£172,500	£427,805
2014/15	£497,206	£138,429	£157,500	£793,135
2015/16	£784,683	£171,985	£22,833	£979,501
2016/17	£336,498	£103,188		£439,686
2017/18	£1,812,417	£171,295		£1,983,712
2018/19	£1,807,473	£49,089		£1,856,563
2019/20	£763,773	£146,080		£909,853
Grand Total	£6,243,187	£794,234	£352,833	£7,390,254

The increases suggest income more than doubles between 2013/14 to 2019/20, and increases also shows a substantial escalation over RAE/REF cycles with:

RAE 2008 - £1,500,000,
REF 2014 - £2,741,665 &
REF 2021 - £7,390,254

This demonstrates REF 2014 income was 1.8 times higher than RAE 2008, REF 2021 2.6 times higher than REF 2014, and 4.7 times higher than RAE 2008.

B. Infrastructure & Facilities

In order to undertake cutting edge molecular and cellular medical research, the University of Chester is equipped with much of the key equipment to facilitate such research. This includes all the basic laboratory equipment, e.g., cell culture facilities, UV-vis and fluorescence spectrophotometers, UV-vis and fluorescence plate readers, ultracentrifuges, qPCR and thermocycler systems, gel image analysers, HPLC and other chromatography systems, and 3 multi-channel flow cytometers. We have a dedicated cell imaging facility with 5 fluorescence microscopes of different capabilities, plus an Electron microscope facility (based at our Thornton site).

Chester Medical School (CMS) also has a contract with the [Liverpool Technology Directorate](#), to allow staff and PGR students to access their facilities. This includes access to MRI, Cell Imaging suites, Proteome Research, NMR Metabolomics, Cell Sorting and Isolation, Computational Biology, Biomedical Electron Microscopy, Pre-clinical Imaging, Genomic Research and the Gene Mill, and in vivo research facilities.

Through the Mercia Stem Cell Alliance, of which Professor Johnson was a founding member, and is still active on the organising committee, CMS PGR students are also able to access additional facilities through partner organisations.

There are facilities available for human clinical interventions including a phlebotomy suite, as well as an exercise physiology lab with gas (O₂/CO₂) analysers, cycle ergometers, treadmills, ECG equipment, bioelectrical impedance equipment, ambulatory blood pressure and pulse-wave velocity monitors and spirometry equipment. Researchers have access to NOWFOOD, an EU-funded centre of excellence supporting food and nutrition research, incorporating equipment for food chemistry and analysis, food rheology texture and structure, nanotechnology, allergens, contaminants, and

Unit-level environment template (REF5b)

authenticity. The centre also incorporates a fully equipped industrial production kitchen and a sensory suite.

There are four interprofessional simulation facilities available on central campus sites. The simulation suites were fully refurbished in July 2019 with a £500,000 investment and are designed to provide an immersive research and learning environment. Developing research utilising simulation is emerging, in particular in the incorporation of virtual reality to explore and experience the effects of an illness or sensory defect, for example following a stroke, hearing or sight loss. During the first wave of COVID-19, the facilities were utilised to train student nurses in the use of personal protective equipment, and to concurrently evaluate the experience of student nurses during a period of unprecedented national crisis. This has shown the potential of these facilities to serve not only as training resources but also to offer an immersive research environment, especially as regards pedagogy and professional practice studies.

4. Collaboration and contribution to the research base, economy and society

A. Collaboration and Contribution

Innovative collaboration and impactful contribution are core elements of the research culture at Chester; seeking to solve complex societal issues through the utilisation of key networks and partnerships.

Collaboration

From local to international level, researchers have formed effective collaborations with both academic and societal partners. Projects conducted alongside regional NHS partners include **Taylor's** work on Rheumatology, **Steven Jones'** on the impact of Coronavirus linked lockdowns on people with intellectual disabilities, **Nye and Harrison's** research into pregnancy related immunology alongside partnerships with the NOWfood milk bank and local midwives, and **Kingston's** work co-chairing NHS England National Safeguarding Steering Group, and chairing NHS England Safeguarding Adults National Network. Internationally, **Buckley** worked alongside the Azerbaijan State Academy of Physical Education and Sport evaluating standards for cardiac rehabilitation. **Li** researched with Massey University and the Christchurch Clinical Studies Trust in New Zealand and in China on the 'Musseling up: high-value Greenshell™ mussel foods' project. **Mabhala's** Homelessness research led to work with the European Federation of National Organisations Working with the Homeless (FEANTSA). **Ellahi** collaborated on the international project, the 'Gene–Nutrient Interactions (GeNulne) Collaboration' (led by the University of Reading), investigating the effect of gene–nutrient interactions on cardiometabolic traits in Ghana, Turkey and Sri Lanka.), while **Mushtaq** worked with the US National Institutes of Health (NIH) on their Vitamin D Standardisation Program (VDSP).

Staff have relationships with universities across the world, including Mysore Medical College and Research Institute India (**Steven Jones**), University of South Florida USA (**Finnegan**), University of Fukui Japan (**Johnson**), Macau University China (**Michelangeli**), University of Oxford UK (**Harrison**), University of Guelph Canada (**Li**), University Burgundy Dijon France (**Al-Assaf**), The Singapore Institute of Technology (**Speed**), Hacettepe University Turkey (**Ellahi**) and The University of Medical Science Iran (**McSherry**). A network of eminent visiting professors has allowed the formation of significant research partnerships and alliances. Novel techniques and methodologies have allowed greater collaboration with audiences oft excluded from research, for instance, **Kingston** and **Taylor** led researchers evaluating the Brightlife project, which worked alongside project partners to recruit and train non-academic 'co-researchers'; fostering local connections, facilitating research by people embedded within diverse communities and groups under study, and creating a new route into research for those from non-academic backgrounds..

Contribution

Allied Health at Chester seeks to use research to propose novel solutions to real-life problems, whether affecting local communities, or global populations. The following are some examples of contributions to communities, organisations, and the research base in general. As a non-executive Director of Brio Leisure (a Cheshire-based leisure centre operator), **Kennedy** has implemented

Unit-level environment template (REF5b)

research into the social-return-on-investment (SROI) for physical activity locally, showing a £15 million SROI of Brio Leisure services (a Cheshire-based leisure centre operator) to the local economy and population, influencing leisure service delivery by the Local Authority. **Mitchell** was jointly involved in a commissioned project funded by the Department of Education 'Constructing and Delivering Services of Support: an Evaluation of the Northwest Post-placement Adoption Support Service', which looked at hard to place children due to a variety of mental health issues. **Mabhala's** work on homelessness received front-page coverage in Chester-based newspapers and on BBC news, stimulating debate on social media and amongst the public, and continues to inform Cheshire West and Chester homelessness reduction strategy.

Buckley has appeared on both BBC and Channel 4 programmes on the Sedentary Office. His expertise in cardiac rehabilitation has led to advising MacMillan Cancer Care and the Royal College of Anaesthetists in developing national exercise standards for patients with cancer, and authoring contributions to the International Olympic Committee Manual of Sports Cardiology. **Li's** work on food salt content has contributed to successful creation of products with full flavour and healthier levels of fat and salt; a marketable attribute with significant opportunity to improve consumers' health. Sainsbury is selling 10% more meals as a result of generating competitive advantage through health differentiation. **McSherry's** Professional Doctorate Programme Evaluation incorporating the Personal, Organisational, Professional and Employer (POPE) framework has influenced doctoral teaching on a national scale. **Speed's** long-term qualitative investigation into the effects of honour killing within Palestinian families showed such killings increased shame and stigmatisation within communities, contributing significantly to an understudied topic. Investigating new drugs that can target and kill cancer cells through autophagic cell death pathways, **Michelangeli** has collaborated on research which has led to the possibility of destroying caspase-resistant cancers by inducing cell death.

With plans for the new Health and Wellbeing research institute underway, there is potential for ever closer working relationships between staff within and across units at the University of Chester, promoting sustainability of research across the institution, with consequent facilitation and encouragement of opportunities to contribute to impactful research with partners, stakeholders and communities.

B. Indicators of Wider Influence

Keynotes/Expert panels

- **Al-Assad:** Keynote, The World Conference on Gum Arabic organised by United Nations Conference on Trade and Development "UNCTD". Khartoum, Sudan 2019, postponed due to the political situation in Sudan. Represented the UK in the Technical Experts Meeting organised by the International Atomic Energy Agency on the use of Radiation Technology in the Development of Active Packaging Materials, Budapest, Hungary, 2019.
- **Buckley:** Keynote, International Congress of Cardiology, Beijing, China, 2015.
- **Ellahi:** Keynote, Pakistan University of Agriculture Faisalabad, Palm Oil and its Future Perspectives, 2020. Keynote, Nutrition Research Methods conference Dec 2016 University of Agriculture, Pakistan. Invited speaker and delivered two workshops for capacity building at the Federation of African Union of Nutrition Scientists Conference (Tanzania 2015). Speaker at UK-Pakistan Research collaboration workshop funded by the British Council in Islamabad March 2015.
- **Finnegan:** 3rd Nurse Education Today International Lecture, Scotland 2016. USA Academy of Nursing Expert panel Military Veterans Research Collaboration, Washington USA 2018. North West Academic Research Forum UK 2015.
- **Johnson:** Global Initiative for Academic Networks, DST/UKIERI Symposium, Stem Cells and Tissue Regeneration, Chennai, India.
- **Kingston:** Co-investigator for ESRC funded seminar series SALLY 'Safeguarding Adults and Legal Literacy' Economic Evaluation of Serious Case Reviews, 2018. Invited Annual lecture: The Frank Glendenning Memorial Lecture, Educational Gerontology, 2017.
- **Li:** Nutraceuticals and Healthy Diets, New Zealand, 2016.

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- **Lovell:** Grundlegende Voraussetzungen der Behandlung und Heilung im Massregelvollzug (20th Forensische Fachtagung) (Bergen Hau, Germany) 2014. Engaging with Families and Communities', University of South Australia, Adelaide, Australia 2015.
- **Lucas:** Invited speaker European School of Haematology Portugal 2014, 2015 and 2017.
- **Speed:** Older Chinese people in the North West of England, attitude to health and illness. Invited presentation, HUST University, Wuhan, China, The issues, challenges and problems of talking about end of life care with Chinese people: a review of the preliminary evidence. Singapore Institute of Technology, Singapore 2014.
- **McSherry:** SYNAPSE-2018 1st International Physiotherapy Conference, Exploratorium, Chitkara University, Punjab, India, 2018. An Introduction to Improvement Science. 5th International Conference on Professional Doctorates (ICPD-2015), Belfast, Ireland United 2016. Practice Development & Patient Safety Keynote/Workshop Tehran University of Medical Sciences School of Nursing and Midwifery Tehran, Iran 2015. Visiting/keynote Speaker Essence of Nursing - quality. Croatia Nurse Association, Croatian Director Association and Nurse Association for Quality 2014.

Editorial Boards

- **Al-Assaf:** International Journal of Food Science & Technology Editor, International Journal of Biological Macromolecules
- **Finnegan:** Nurse Education Today (Assistant Editor), Journal of Advanced Nursing International Board
- **Steven Jones:** Mental Health Nursing
- **Johnson:** Spinal Cord (Nature Journal), Bioscience Reports, Veterinary Neurology and Neurosurgery
- **Kingston:** Journal of Adult Protection, Social Welfare Ethics and Health Expectations
- **Michelangeli:** Nature Cell Biology, Journal of Cell Science, Journal of Bioscience Reports
- **Speed:** Associate Editor for Primary Healthcare Research and Development

Patents

Lucas: New priority patent application FI20195315, filed 18.04.2019, METHOD FOR PREDICTING RESPONSE TO TREATMENT WITH TYROSINE KINASE INHIBITORS AND RELATED METHODS

Staff Memberships of Associations

- **Al-Assaf:** Technical Expert and Consultant, International Atomic Energy Agency, Life membership, International Society for Hyaluronan Sciences
- **Finnegan:** North West Armed Forces Network Committee and MOD Veterans' Strategy Academic Advisory Group
- **Johnson:** Steering Committee for the Mercia Stem Cell Alliance
- **Michelangeli:** Executive Committee member / Trustee, UK Biochemical Society Education Committee, member of Federation of European Biochemical Societies (FEBS) education committee

Visiting Professorships

- Sir Professor Paul Cosford (Emeritus Medical Director of Public Health England)
- Professor Jennie Harries (Deputy Chief Medical Officer England)
- Professor David Hunter (former Chief Executive, Nuffield Foundation)
- Professor Duncan Selby (previous CEO Public Health England)
- Professor Richard Parish (previous CEO The Royal Society of Public Health)
- Professor Susan Benbow (previous Chair of the Faculty of Old Age Psychiatry)
- Professor Paul Lincoln (previous CEO The Health Forum)
- Professor Martin Vernon (National Clinical Director for Older People and Integrated Care NHS England)