

Ulster opens a new NICHE facility dedicated to Nutrition and Cardiovascular Disease

Ulster University is delighted to announce the opening of a new state-of-the-art Nutrition and Vascular Studies unit. This new facility was previously based within the Medical Research Council's Elsie Widdowson Nutrition Laboratory in Cambridge in partnership with the *NNEdPro Global Centre for Nutrition and Health* and has now been transferred to Ulster. The new facility will be embedded within the **Nutrition Innovation Centre for Food and Health (NICHE)**, Ulster's Centre of Excellence for nutrition research, set up with European Union structural funds in 1996.

NICHE

With the goal of providing greater understanding of nutrition-related health issues, NICHE is focused on achieving impact through influencing food and nutrition policy aimed at disease prevention and driving innovation activities. NICHE is the largest centre for nutrition research on the island of Ireland and one of the largest within Europe. We are the top-ranked centre for nutrition research in the UK since the mid-1990s and have attracted research income to the University of over £50 million in the past 25 years. Our nutrition research activities are dynamically reviewed by an international NICHE Advisory Board which meets twice yearly.

The new Nutrition and Vascular unit: enhancing cardiovascular research at Ulster.

The new facility will greatly enhance our ability to conduct cutting-edge nutrition and cardiovascular research, a priority area within NICHE and a global health issue of particular concern for people in Northern Ireland. At Ulster, for example, we have been conducting pioneering research to address high blood pressure (hypertension), the biggest risk factor for heart disease and stroke globally, and have discovered a novel nutrition solution for preventing and treating hypertension. The state-of-the-art equipment in our new Nutrition and Vascular facility will allow us to extend this work and importantly, carry out studies that will enable us to gain a greater insight into how nutrition is influencing cardiovascular risk, as well as monitoring response to nutrition interventions over time. The new facility at NICHE will be co-led by Professor Mary Ward and Professor Sumantra (Shumone) Ray who holds a newly commissioned fractional chair in Global Nutrition, Health and Disease at Ulster. Professor Ray is also Executive Director of the NNEdPro Global Centre in Cambridge which coordinates a Nutrition Research and Innovation Consortium in Nutrition across Ulster, Parma, London (Imperial) and Cambridge. Through this unique partnership, we will be ideally placed to conduct novel studies investigating important relationships between diet and cardiovascular disease with impacts that can be readily translated to improve the lives of patients and the public. We will also be in a strong position to seek co-investment and expand our collaborative links across the island of Ireland, the UK and internationally

Hypertension

Hypertension (BP of $\geq 140/90$ mmHg) is the leading cause of preventable, premature mortality globally and is the primary risk factor for cardiovascular disease (CVD), in particular stroke. Over 1 billion people worldwide are affected by hypertension and despite the availability of effective anti-hypertensive medications, control rates remain poor. Public Health England (PHE, 2017) estimates that for every 10 people identified with elevated BP, a further 7 remain unaware of their condition. Meta-analysis data estimates that a 2mmHg reduction in systolic BP can reduce CVD risk by 10%, indicating that even modest BP improvements can be beneficial, while a more recent meta-analysis of 123 studies, including data from 613815 participants, reported that a 10mmHg reduction in BP is associated with a reduction in CHD by 17% and all-cause mortality by 13%. Furthermore, it is estimated that a reduction of BP by an average of 5 mmHg through improved prevention, detection and management, would save £850 million in relation to health and social care costs over 10 years.

Nutrition and vascular unit: detailed information regarding the equipment

The Nutrition and Vascular Studies Platform will allow key scientific insights into both the macrovascular and microvascular parts of the cardiovascular system. Our ultrasound suite allows for us to image the larger arteries of the cardiovascular system, and allows us to perform measurements that can identify arterial thickness in the carotid, smooth muscle by performing a stress response test that looks at changes to the diameter of brachial artery. Pulse wave analysis looks at the central blood pressure from the left side, and can indicate arterial stiffness by looking at the augmentation index. Laser Doppler Iontrophoresis looks at the macrovascular, and by setting wells to two set points on the forearm this can be used to determine the blood flow through a process of looking at how quickly a small current passes between the two. Pulse wave velocity can be measured by two devices within the lab, the Vicorder measurement uses blood pressure cuffs, and through inflation allows to look at transit times between the carotid and femoral artery, and is a key indicator for looking at arterial stiffness. The Sphygmocor measurement using tonometer placement generates wave forms taken from the carotid and femoral artery, and allows for looking at transit times between the two sites, and is a key indicator for arterial stiffness. Looking to the future and with the addition of the vascular platform here at Ulster this will allow for us to drive forward with conducting further and valuable research into cardiovascular disease and prevention.

The **NNEdPro Global Patron, The Lord Rana MBE, Baron of Malone**, will formally inaugurate the new platform in Coleraine on 21st June.

Quote from Lord Rana: *'the movement of the NNEdPro Nutrition and Vascular Studies Platform from Cambridge to Ulster University marks a key opportunity for NICHE to further its already pioneering reputation of world class research and innovation in nutrition and cardiovascular disease which is an important problem in the region and globally'*

Quote from Prof Ray: *'We at NNEdPro feel privileged to be joining forces with such first-class researchers in Human Nutrition at NICHE. I am confident that the creation of the new facility will pave the way to a highly innovative and impactful road ahead'*

Prof Ward Quote: *'We are delighted to announce our new facility at Ulster and which will greatly enhance our ability to conduct top-quality research to inform policy and practice aimed at preventing and treating heart disease and stroke. In parallel, we will continue to work in close alignment with key stakeholders including clinical colleagues, local and national charities as most importantly patients and the general public to ensure that the work is translated for maximum impact on cardiovascular health'*

Patient quote: Patrick McColgan

Further notes:

Heart disease statistics:

NI Chest Heart and Stroke: <https://nichs.org.uk/about-us/statistics/>

BHF: <https://www.bhf.org.uk/what-we-do/our-research/heart-statistics>
<https://www.bhf.org.uk/for-professionals/press-centre/facts-and-figures>

NICHE: <https://www.ulster.ac.uk/research/institutes/biomedical-sciences/research/nutrition-innovation-centre-for-food-and-health>

Public Health England:

Hypertension: <https://www.gov.uk/government/publications/health-matters-combating-high-blood-pressure/health-matters-combating-high-blood-pressure>

Cardiovascular disease: <https://publichealthmatters.blog.gov.uk/2019/02/14/health-matters-preventing-cardiovascular-disease/>

NNEdPro

NNEdPro: <https://www.nnedpro.org.uk/>

NNEdPro & NICHE Strategic Partnership: <https://www.nnedpro.org.uk/research-innovation>
NICHs: