Multi-disciplined science approach improves diet and health

The work of researchers in inter-connected nutrition science disciplines has delivered some of the most significant positive impacts on human health this century, according to Nutrition science past and future: Celebrating a multi-disciplined approach, published today by the British Nutrition Foundation (BNF) as a 50th anniversary Special Issue of Nutrition Bulletin.

The cutting edge study of epigenetics to unravel how nutrition can regulate the genome and impact on health and wellbeing throughout life; the important insights from epidemiological research about diet-disease relationships; the discovery of new food components such as phytochemicals and their potential role in disease prevention, are just a few of the areas discussed in the Special Issue. It charts progress in knowledge about diet and health, through the work of eminent experts, and the role of BNF over the last 50 years in helping to disseminate evidenced based findings and making nutrition science accessible to all.

Underpinned by a multi-disciplined research approach, the twelve articles published in the Special Issue, highlighting work in the areas of epidemiology, biochemistry, behavioural science, food science and technology, biomedical science, and epigenetics, show that nutrition is “one of the most exciting areas of science with so much potential for positive impact on human health”, according to Professor Christine Williams, Professor of Human Nutrition at University of Reading, Chair of the Board of Trustees at BNF, and author of the Special Issue’s Editorial.

Perhaps the single most important contributor to scientists’ understanding of the association between diet and cancer risk in the past half century has been large scale population cohort studies. Professor Martin Wiseman, University of Southampton and World Cancer Research Fund (WCRF) International, writes in the Special Issue that “nutritional epidemiology has been the main basis for our understanding of the causes and potential prevention of obesity, type 2 diabetes, cancer and cardiovascular diseases”.

Professor John Mathers, Professor of Human Nutrition and Director of the Human Nutrition Research Centre, Newcastle University, is at the forefront of cutting edge research in epigenetics and discusses advances in this field in the Special Issue.
Mathers says: "Arguably, the big discovery of the 20th century was the structure of DNA and how the information in genes is stored and used. In the last 50 years, another big biological discovery has been epigenetics. We’ve learned that diet has a role in switching genes on and off and that the mechanisms involve changes in epigenetic marks and molecules. We are now working out how what we eat influences our health and wellbeing throughout the life-course and how this involves epigenetics."

It was not until some 30 years ago that another of the most important developments in the understanding of diet-disease relationships was made, as epidemiologists identified that the link between diet and growth during early life had a significant impact on risks of obesity, cardiovascular disease and type 2 diabetes in later life.

Professor Sian Robinson, Professor of Nutritional Epidemiology, University of Southampton, explains: “A body of epidemiological evidence now links experience in fetal and early postnatal life to an individual’s later risk of obesity – pointing to the importance and role of ‘developmental influences’, such as maternal obesity, excess weight gain in pregnancy and short duration of breastfeeding, in the aetiology of childhood obesity.”

Obesity remains an urgent priority for nutrition science and the study of human behaviours that underpin when, what and how much we eat, and the complex interactive relationships between energy intake and energy utilisation are key to reversing the epidemic.

Professor John Blundell, Chair in Psychobiology, School of Psychology, University of Leeds, says: “Behaviour is vital for nutrition since it is the only route through which nutrients can enter the body to exert their physiological and biochemical actions. The variability in individual needs, choices and patterns of behaviour reflects the essence of being human. In contrast, the environment and the market place – driven by the demand to stimulate economic growth – deal with people on the basis of ‘one size fits all’. This uniformity, together with abundance (in rich countries) of food and eating opportunities, works against the ability of people to make rational food choices based on individual requirements."

The Special Issue illustrates how a multi-disciplined scientific approach, and collaboration between the scientific community and industry, can have a positive impact on health outcomes, reducing risk of cardiovascular disease, obesity, type 2 diabetes and cancer. Professor Williams believes that reformulation of foods through processing and innovations in agriculture have played an important role in reducing potentially harmful and enhancing potentially beneficial dietary components in people’s diets. She says: “We need a clear code of practice for research collaborations
between academia and industry, both to protect the independence of the researcher and to ensure the role which industry could play in improving the diets of populations is optimised.”

Professor Williams’ comments echo the findings of a recent report by the Office for Strategic Coordination of Health Research on the state of nutrition and health research, which highlight that funders and researchers need to work with all stakeholders, including those across all sectors of the food industry, as well as emphasising the global nature of the challenges in tackling nutritional health. In order to ensure that the track record of successes described in this Special Issue over the past 50 years can continue in the decades to come, it’s vital that funding across the scientific disciplines is maintained and multidisciplinary work continues to be centre stage.


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About the British Nutrition Foundation (BNF)

Making nutrition science accessible to all.

BNF was established 50 years ago and exists to deliver authoritative, evidence-based information on food and nutrition in the context of health and lifestyle. The Foundation’s work is conducted and communicated through a unique blend of nutrition science, education and media activities. BNF’s strong governance is broad-based but weighted towards the academic community. BNF is a registered charity that attracts funding from a variety of sources, including contracts with the European Commission, national government departments and agencies; food producers and manufacturers, retailers and food service companies; grant providing bodies, trusts and other charities. Further details about our work, governance and funding can be found on our website (www.nutrition.org.uk) and in our Annual Reports.