A recent independent report has quantified the economic impact of IFR’s research on improving health and reducing the economic burden that diet-related diseases place on our healthcare system and the wider society. Every £1 invested in IFR research funding provides a return on investment to the UK economy of over £8.
The Institute of Food Research (IFR) is the only publicly funded UK research institute that focuses on the underlying science of food and health to address the global challenges of:

- Food Security
- Diet & Health
- Healthy Ageing
- Food Waste

The IFR aims to be an international leader in research that addresses the fundamental relationships between food and health, food and the gut and the sustainability of the food chain in order to further the production of safe, healthy foods.

The IFR receives the majority of its funding from the Biotechnology and Biological Sciences Research Council (BBSRC). It also receives funding from the other Research Councils, government agencies and departments, the EU, charities and industry.

Europe’s largest concentration of research in food, health & the environment

The IFR’s impact is enhanced through its location on the Norwich Research Park, one of Europe’s largest single-site concentrations of research in Food, Health and Environmental Sciences. This means that it has strategic links with other Norwich Research Park partners including the Norfolk and Norwich University Hospital, the John Innes Centre, The Sainsbury Laboratory, The Genome Analysis Centre, and the University of East Anglia’s Schools of Biological Sciences and Environmental Sciences, as well as the Norwich Medical School. This allows for a multi-disciplinary approach to research, from sustainable food production to human health impact.
Eat your way to healthy ageing

Food is the UK’s biggest manufacturing sector, and the IFR’s research and innovation are supporting growth in this sector and the UK economy as a whole. Its research is addressing some of society’s major concerns.

- How do we maintain a safe supply of food, with sufficient, if not better, nutrition?
- How can diet maintain health, and how do we maintain the health of our digestive system?
- How can we best reduce food waste, or exploit it to improve sustainability?
- How can what we eat help us age more healthily, and so reduce the burden of age-related disease on the healthcare system?

Whilst lifespan in the western world has increased, the number of years we are free of chronic diseases hasn’t. IFR science informs UK and EU Government policy making and the development of appropriate, science-based regulations that ensure a safe supply of food.

Training tomorrow’s scientists

Training the food and health scientists of the future is an important part of IFR’s mission. PhD students are hosted in research groups by world leaders in their field, with the benefit of easy access to the student life at the University of East Anglia. IFR is a partner in the Norwich Biosciences Doctoral Training Partnership Programme, which brings together the resources of the world-class research institutions on the Norwich Research Park. The IFR is also a specialised international training centre for EU PhD students and postdoctoral scientists.
Ensuring diets have sufficient nutritional value for health is an important part of food security.

Many plant-based foods contain bioactive compounds that may help to maintain health or prevent disease. The IFR is improving our understanding of how these bioactive compounds work – how they are taken up by the body and how they modify our bodies’ processes.

We are also gathering the highest quality dietary evidence needed to improve public health, and investigating ways of developing crops or processed foods with enhanced nutritional value.

The physical structure of foods is complex and changes during digestion, altering how nutrients and bioactive components are delivered to the body. We are seeking to understand the physical structure of foods and how, at the molecular level, they interact inside our bodies to deliver nutritional benefits. With this knowledge we can develop foods with enhanced nutritional and functional properties.

The Institute of Food Research has a unique multidisciplinary programme of research that focuses on how the Gastro-Intestinal (GI) tract and the microbial communities it hosts function and protect our health. The aim of this research is to develop the knowledge to produce intervention strategies that will lead to a reduction of GI disease and promote a life-long healthy GI tract, leading to healthier ageing, improved public health and reduced pressure on health and social care.
Industrial biotechnology & exploitation of agri-food waste

The food chain produces a variety of plant-based waste. We are undertaking research to turn this waste into valuable products, including ethanol and platform chemicals. This helps to improve environmental and economic sustainability, and will reduce or find better uses for waste streams from food production across the entire food chain.

Food safety & security

The food chain needs to supply safe, nutritious food to an ever-increasing world population whilst addressing unacceptable levels of human illness across the globe caused by bacterial foodborne pathogens. At the IFR we investigate how bacteria adapt to survive and multiply in the food chain and how they evade our defences to cause disease. Our research programme focuses on three major foodborne bacterial pathogens of the greatest concern in the UK: Salmonella, Campylobacter and Clostridium botulinum. Salmonella and Campylobacter bacteria are major causes of food poisoning in the UK and worldwide. C. botulinum is responsible for botulism, a severe and deadly disease.

We provide microbiological food safety solutions for industry, for example on extending shelf life, whilst conducting leading edge fundamental research on foodborne pathogenic bacteria.

We utilise complex data sets and network analysis to better understand increasingly large amounts of data on food safety, from the molecular level to the food supply chain. Microbiological data curated in the ComBase National Capability helps ensure new food formulations are safe. The aim of this research is to prevent disease by minimising the risks posed by foodborne pathogens throughout the food supply chain.

ComBase (national capability)

ComBase is a freely available web-based system to help assess microbiological risk, estimate the shelf life of food and to optimise food formulation, production, transport and storage. It is used on a daily basis by the food industry and academics across the world.
Food databanks (national capability)

Food Databanks manages data on the composition of foods eaten in the UK. As well as providing the nutritional information for food labelling, this data underpins research at the IFR, across Europe and beyond into the links between diet and health whilst helping to inform policy to promote a healthy lifestyle.

National Collection of Yeast Cultures (national capability)

The National Collection of Yeast Cultures is one of the largest yeast collections in the world, making it a valuable resource for academics as well as industry. In addition to preserving and understanding biodiversity, NCYC is using state-of-the-art techniques to characterise yeast strains for brewing and baking. NCYC is involved in IFR’s research into developing biofuels and other useful compounds to replace expensive products derived from fossil fuels.

The IFR is home to 3 National Capabilities, these are significant areas of knowledge, tools & expertise that are publicly funded for the benefit of the nation.
We work with industrial partners to deliver benefits from our research to consumers.

The Food and Health Network (FHN) links IFR science with business. It currently has around 250 corporate members in its network, including 70 SMEs. Through subject-specific Expertise Cluster meetings and confidential one-on-one meetings, FHN consults with IFR scientists and effectively channels scientific research into applications, boosting the overall economy and delivering healthier, safer foods to benefit the overall health of the nation.

IFR Extra Ltd is a commercial subsidiary of the IFR, supplying short-term and applied research projects, trouble-shooting, specialist analysis and consultancy work. IFR Extra makes IFR expertise more readily available to small and medium-sized companies, as well as large multi-nationals.
Establishing durable cooperation and collaboration in global research partnerships in food and health is a key objective of IFR’s International Office, which facilitates international contacts, networks and activities between scientists, academics and the food industry. IFR provides the secretariat for the FOODforce network of leading food research centres across Europe to share science, develop future strategies and help inform policy. It plays an active role in the European Technology Platform Food for Life, and is a founding member of the UK National Technology Platform for Food. Both of these platforms are forums for bringing together scientists and industry to share knowledge, discuss future direction and provide a communication conduit to regulators and policy makers.

International networks

Facilities

The Human Nutrition Unit

The Human Nutrition Unit gives IFR researchers the opportunity to carry out food intervention trials with human volunteers to investigate the effects of food on human health.

The Analytical Sciences Unit

The Analytical Sciences Unit (ASU) provides specialist expertise and state-of-the-art equipment in bioimaging down to the nanoscale, as well as in bioinformatics, statistics and metabolite analysis. In addition to supporting science at the IFR and beyond, the ASU is developing new analytical techniques to address new and emerging food related problems, such as food authenticity.

The Proteomics Facility

The Proteomics facility works with IFR scientists on the identification and characterisation of proteins for a range of different applications.
IFR has a long tradition of public engagement and science communication, reflecting the importance of food in everyday life. Through its varied public engagement activities, IFR aims to raise awareness of advances in state of the art knowledge in food, diet and health research, promote wide engagement, via dialogue, on issues of public concern and inspire the next generations of researchers and citizens.

A regular events programme and visits involving the general public, special interest groups and schools provide opportunities for IFR scientists to engage with the public. IFR actively connects with the news media, policy makers and industry to communicate its scientific research to the wider society, as well as inviting engagement on its work through social media.
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IFR receives strategic funding from the Biotechnology and Biological Sciences Research Council