RESEARCH NEEDS FOR A FUTURE FOOD SYSTEM

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PRESENTATION OVERVIEW

- About IFST

- Research needs – BBSRC

- Research needs – Innovate UK

ABOUT IFST

- **UK's leading professional membership body recognising and supporting those involved in all aspects of food science and technology.**

- **As a registered charity, we are independent of government, industry, lobby or special interest groups**

OUR MISSION

- Setting and recognising professional standards

- Delivering an independent voice

- Providing an accessible knowledge base

- Supporting the future of food

PUBLICATIONS

IFST promotes cutting edge research and technologies as well as the latest news and articles.
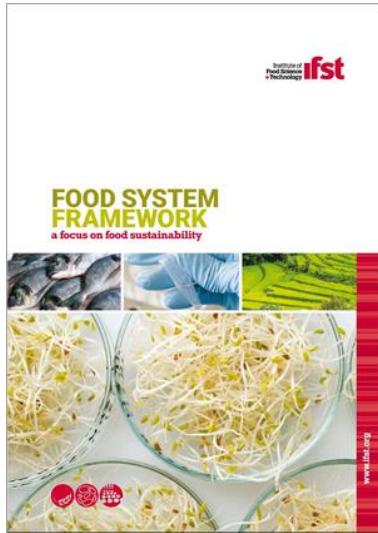
NEW!
IFST Food System Sustainability Framework

RESEARCH NEEDS - DRINC

- **Diet and Health Research Industry Club (DRINC)**
  BBSRC, the Engineering and Physical Sciences Research Council (EPSRC), the Economic and Social Research Council (ESRC), the Medical Research Council (MRC), and a consortium of food and drink companies.

- **Research priorities - relationship between diet and health:**
  - **Designing foods to maintain and improve health**
  - **Understanding the relationship between food processing and nutrition**
  - **Understanding food choice and eating behaviour to improve health through diet**

- **Also Crop, Sustainable Ag, other clubs**

RESEARCH NEEDS - DRINC

● Gut flora – understanding interactions (intra, inter) and relationship with health – pro-and pre-biotics, optimising delivery and efficacy

● New food compositions and processes, new protein sources

● Relationships between genes, diet and health, food selection – optimising biological outcomes

RESEARCH NEEDS - INNOVATE UK

A pre-competitive vision for the food industry: Top 10 Pre-competitive areas where research is needed
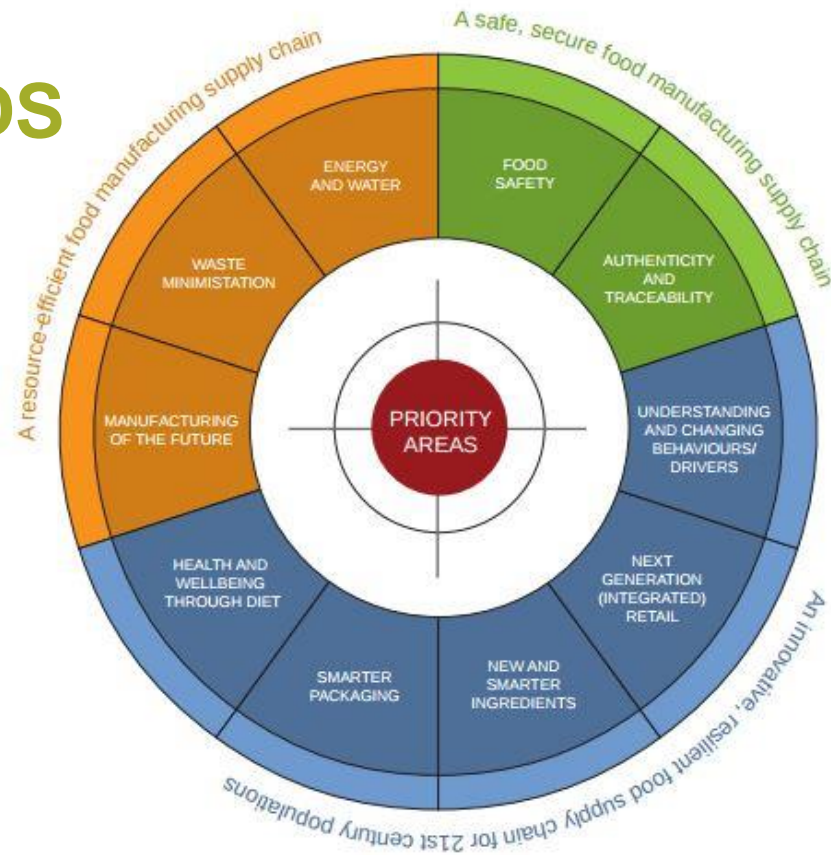
FOOD SAFETY

● Detection e.g. microbes, chemicals, foreign materials in 'real time' systems (Cobalt Light Systems?)

● Development of new antimicrobials/antibiotics

● Hygienic design of manufacturing plant and equipment (ISIS - train wheels/Harwell imaging with Tata?)

● Data/modelling in the food SC for holistic food safety management (including traceability and authenticity) (HPC?)

TRACEABILITY + AUTHENTICITY

● Characterisation of raw materials, to support verification and safety (growing location, chemicals,, allergens etc)

● Tracking raw materials in real time through the supply chain to prevent fraud

NEXT GENERATION RETAIL

● **How to provide healthy personalised low cost food, assembled and delivered in a complex supply chain**

NEW + SMARTER INGREDIENTS

● Clear understanding of the interaction between functional properties and process requirements

● New delivery systems that offer improved bioavailability and taste/ flavour sensations

SMARTER PACKAGING

● Smart materials that react to stimuli (e.g. environmental conditions) and adjust their protective functions accordingly

● Smart sensors for product spoilage, measuring changes in critical attributes of the product, e.g. microbial activity, necrosis by-products, pH, oxygen levels, CO_2 levels etc

(authenticity, safety/quality assurances and tamper evidence)

HEALTH + WELLBEING THROUGH DIET

- **Enhancing bioavailability of key dietary components using the physical structure of food including targeting to different regions of the digestive tract**

- **Enhanced nutritional density and quality of processed foods**

- **Fabricated foods with all the benefits associated with fruit and vegetables e.g. structure, bioactives etc**

- **Develop predictive models of the link between nutrition and health status**

MANUFACTURING FOR THE FUTURE

● **New technologies to transform ingredients into foods**

● **Sensors/measurement systems to automate, optimise factory and supplier processes**

● **Smaller, more agile and flexible manufacturing to support resource savings, personalisation and distributed manufacturing.**
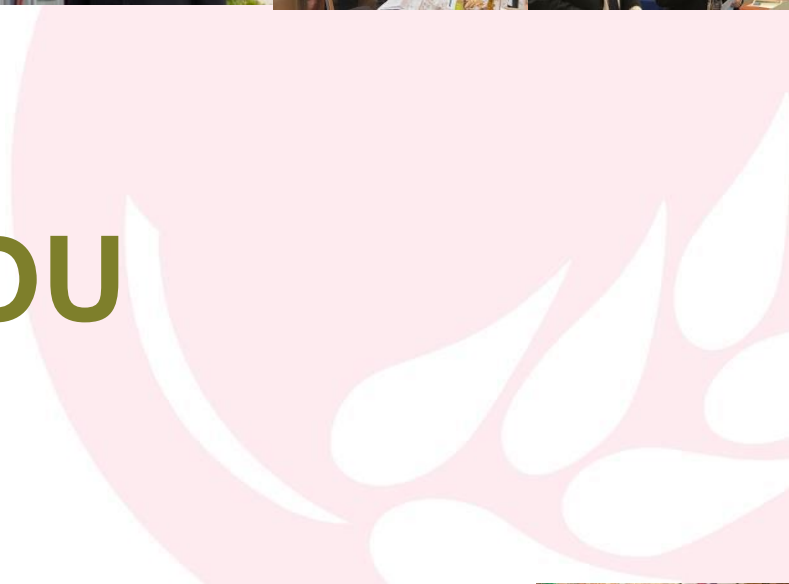
WASTE, WATER + ENERGY

● **Solutions for turning current waste streams into useful cost neutral, or higher value, commodities**

● **Improve resource efficiency (water and energy) with reduced greenhouse gas emissions in food processing**

SUMMARY

- **Think Sustainability**
  Resource reduction and re-use - materials, water, energy

- **Think Health (and Disease prevention)**
  Microbial human interactions (good and bad), detection and management of unwanted hazards and spoilage, nutritional availability and modelling of health outcomes

- **Think Innovation**
  Smart food safety management systems, new factory designs and processes, data management and a connected supply chain

THANK YOU