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

www.ifst.org
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, CO2 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