A gut feeling: the current gap

Pulses for Healthy Guts
(and healthy environment) Workshop
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Drivers of innovation in food

• Responses to climate change, biodiversity loss.
  • Energy input and green house gas emissions for agriculture is substantial.
  • The major land use in agriculture is for meat production - pasture, animal feed.

• Increase in demand for vegan, vegetarian foods and plant protein.

• Successful innovation in food sector – technologies for meat replacements, wider ranges of products.
Health drivers of innovation in food

- Gut microbiome is an important ‘human organ’.

- Microbiome health influences many aspects of disease, drug therapeutic success, mental health.

- Food influences the gut microbiome health, diversity and composition in complex ways.

- Obesity and diabetes ‘epidemic’ worsened by poor food quality and poor availability of cheap healthy foods. Linked to gut microbiome
Opportunities with Pulses

• Legume plants (pulses) fix nitrogen, reducing energy and fertiliser inputs.

• Pulses high in protein.

• Plant protein production has less impact than animal protein

• Now recognised and pulse cultivation and consumption are promoted
  • Legvalue EU network
  • TRUE EU network (coordinated in Scotland)
  • Pulse Crop Genetic Improvement Network (NIAB, JIC, PGRO and others)
A gut feeling: the current gap

- OPPORTUNITY: develop and promote legume-based foods with the most beneficial fibre contents for health.
- Pulses are generally high in fibre
- Both water soluble and insoluble fibres are present in pulses

  - What are the beneficial effects of pulse fibres?
  - Which pulse fibres are most beneficial to the gut microbiome?
  - How do fibres vary between pulses (lentils/beans/peas/landraces?)
  - How are the beneficial fibres affected by processing in food manufacture?
A gut feeling: local opportunities

• Cambridge has very broad research and innovation expertise

• Large plant science research base (Plant sciences, Biochemistry, Sainsbury Lab, Crop Science Centre, NIAB)

• Manufacturing innovation (IFM), consumer choice research

• Medical research related to the microbiome (genomics EBI/Sanger, Pharmacology, MRC toxicology, biomedical campus, vet school)

• Vibrant local biomedical, food and agriculture industry and innovation in East of England
Improving health with diversity of good fibre.


• Establish links of mutual interest prior to future grant funding opportunities.

• Meet and connect through group discussions, Jamboard.

• Generate collaborations.

• Pump prime funding available for projects.
Dietary Fibre: Complex carbohydrates

- Discovering diversity in plant complex carbohydrates
- Genetics of plant carbohydrate biosynthesis
- Discovering mechanisms of carbohydrate breakdown by microbes

credit Wikipedia

Diabetes.co.uk