WGIN Stakeholder Meeting

Dec 2012

Integrated Biorefining Research and Technology Club (IBTI Club)

Peter Werner

Seeding the future
since 1856

KWS

Membership of IBTI

The club currently has 10 company members:

- Biocaldol Ltd
- BP Biofuels UK Ltd
- British Sugar Plc
- Croda Enterprises Ltd
- Green Biologics Ltd
- HGCA
- InCrops
- KWS UK Ltd
- Syngenta Ltd
- TMO Renewables Ltd

3 phases of funding

- Phase 1 grants awarded 2009
  - Optimization of Wheat and Oilseed Rape Straw Co-products for Bio-alcohol Production, Ian Bancroft (JIC) and Keith Waldron (IFR)
  - Aromatic Feedstock Chemicals from Degradation of Lignin, Tim Bugg (Warwick)
  - In Silico Study of Lignocellulosic Biofuel Processes, Michael Bushell (Surrey)
  - Engineering Oilseeds to Synthesise Designer Wax Esters, Jonathan Napier (Rres)

3 phases of funding

- Phase 2 grants awarded 2010
  - Biotransforming Phenylpropanoids derived from Biorefining: a Toolkit Approach, Rob Edwards, (York)
  - Fine chemicals from lignocellulosic fermentation residues using heterogeneous catalysis, Mike Jarvis (Glasgow)
  - Process Intensification for Acceleration of Bio & Chemo Catalysis in Biorefining, Adam Kowalski (Liverpool)
  - Evaluation of consolidated bioprocessing as a strategy for production of fuels and chemicals from lignocellulose, David Leak (Imperial) COMPLETED
  - Isolation, fractionation and modification of fructans from rye-grass to produce novel biosurfactants and polymers as part of a rye-grass biorefinery, Peter Williams (Glyndwr)

3 phases of funding

- Phase 3 grants awarded 2012
  - A study of metagenomics-informed biochemical functionality of microbial fuel cells using DDGS as a substrate, Mike Bushell (Surrey) and Julian Marchesi (Cardiff)
    - Aims to use Dried Distillers Grains with Solubles (DDGS) pre-drying as feedstock for microbial fuel cells
    - The species selected for the MFC will be identified by analysing genes from whole populations (metagenomics)
    - Population will be fine tuned by rewarding high output with nutrients leading to evolution of an efficient community

3 phases of funding

- Phase 3 grants awarded 2012
  - Development of a process scheme for the production of high value functional products from DDGS, Dimitrios Charalampopoulos (Reading) and Peter Shewry (RRes)
    - DDGS will be used as feedstock for several medium to high value products
    - Arabinoxylan will be transformed into arabinooligosaccharides that have prebiotic activity
    - Gluten will be used to produce biodegradable film packaging
    - Betaine and choline are concentrated in DDGS. The project will explore extraction for direct use as nutritional supplements

3 phases of funding

- Phase 3 grants awarded 2012
  - Fractionation and exploitation of the component value of DDGS, David Leak (Bath), Gary Lye (UCL), Regina Santos (Birmingham) and Caroline Rymer (Reading)
    - Enhancing the food/feed value of DDGS using methods to remove fats, fibre and other non-starch carbohydrate
    - Carbohydrate extracted from DDGS could be fermented in a second process to yield high value products. Microbial organisms specialised to this will be developed
    - The protein fraction being rich in certain amino acids will be used to make specific chemicals