5 Years of Successful Collaboration

Dr Mike Morris and Selwyn Owen
BEACON Business Development Managers
BEACON

NETWORK

• £21 Million, 5 year partnership between three Welsh universities and SME’s across a range of sectors to develop biorefining expertise in Wales

• Supported by ERDF through the Welsh European Funding Office (WEFO)

• Establish R&D links between industry and academia within Wales

SUSTAINABILITY

• Demonstrating the conversion of biomass to chemicals, fuels and biomaterials – BIOREFINING.
BEACON

IMPACT

• Creating new jobs in industrial bio-technology & supporting inward investment

• Promoting science excellence in and from Wales

• Developing new products and processes and IP that will support bio-economic growth, (helping to develop a new industry in Wales)

INNOVATION

• Collaborating with business to use plant derived products as alternatives to fossil fuel derived materials.

• Provides industrial partners with access to R&D capability, scientific expertise and a range of equipment at pilot-scale to develop economically viable industrial applications
From Plants to Multiple Products

BIOMASS
- Ryegrass
- Miscanthus
- Willow
- Oats
- Macroalgae

CONVERSION

PRODUCTS
- Chemicals
- Fuels
- Materials
- Natural Products
- Bio actives

Life Cycle Assessment – Financial & Carbon Accounting – Socio Economic Effects
Our Capabilities

Aberystwyth University
- Plant microbiology
- Fermentation biotech
- Down stream processing
- Biomass processing
- Thermochemical processing

Bangor University
- Bio-composite materials
- Biomass processing and extraction
- Life cycle analysis

Swansea University
- Microbial genetics
- Enzymology
- Fermentation
- Molecular modelling
Life Cycle Assessment & Techno-Economic Analysis

- BEACON have specialist life cycle and economic analysts
- A method to calculate the environmental footprint of a product
- Identifies hotspots within the material composition / production chain
- Fundamental to scale up and efficient processing
- Local energy monitoring of equipment
- Market-leading LCA analysis software
Regio Stars Winners 2014
# Performance Against Targets

<table>
<thead>
<tr>
<th></th>
<th>Target</th>
<th>Actual</th>
<th>% target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprises Assisted</td>
<td>125</td>
<td>138</td>
<td>110%</td>
</tr>
<tr>
<td>Collaborative R&amp;D projects</td>
<td>42</td>
<td>44</td>
<td>105%</td>
</tr>
<tr>
<td>Gross Jobs Created</td>
<td>52</td>
<td>48</td>
<td>92%</td>
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<tr>
<td>Enterprises Created</td>
<td>2</td>
<td>1</td>
<td>50%</td>
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<tr>
<td>Investment Induced</td>
<td>£7,000,000</td>
<td>£7,100,000</td>
<td>101%</td>
</tr>
<tr>
<td>Products, processes or services registered</td>
<td>7</td>
<td>7</td>
<td>100%</td>
</tr>
</tbody>
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How Can We Help You?

- Analyse waste streams for high value chemicals
- Risk free scale-up processing to demonstrate commercial viability
- Access to scientists, technology and funding
- Life cycle assessment (LCA)
Criteria for Assistance

BEACON assistance is free under de-minimis rules for companies in the convergence area of Wales

**Enterprise Assist**
- A short piece of work (minimum of 7.0 hours)
- Analytical work, literature review, seminars (Intellectual Property, Natural cosmetics)
- Access to funding, grant funding applications

**R&D Collaboration**
- R&D agreement: company in-kind contribution
Distribution of companies interacting with BEACON based on their SIC codes

- Biotechnology R&D: 23%
- Food & beverage processing: 13%
- Food & feeds: 10%
- Wood products: 5%
- Pharmaceuticals & chemicals: 6%
- Waste management: 5%
- Educational: 5%
- Agriculture: 6%
- Forestry: 4%
- Warehousing & storage: 1%
- Knowledge transfer: 3%
- Scientific consulting: 3%
- Environmental consulting: 11%
Case Studies
Compton Group

- Compton group aims to commercialise the output of successful research in the commercial exploitation of IP around biotech
- Looking for an improved means of separating the individual components in frankincense
- Successfully achieved a 99.9% purity through the use of BEACON automated flash chromatography
- Progress towards clinical trials
Innoture Ltd

- Next generation transdermal devices for use in medical drug delivery and diagnostics
- Collaboration partnership with BioComposites Centre to develop biopolymers for micro-needles for painless drug delivery
- Short Knowledge Transfer Partnership (sKTP)
- £36,338 Grant
- +1 Employed
iCRAB Project

• Pennnote – Industrial Biotechnologists - conversion of manufacturing waste into marketable resources.

• Collaboration to investigate alternative techniques for the fermentation of crab shell waste

• Successful 9 month technical feasibility study – integrated Chitin Ryegrass Acid Biorefinery [iCRAB]

• £126,000 from Technology Strategy Board (now Innovate UK)

• +2 Employed
Plant Fibre Technology

• Developers of new commercial opportunities and products made from plant fibres

• R&D to investigate the insulation potential of straw & grass materials

• Collaboration has led to the production of raw fibre materials for the development of natural sustainable insulation.
The Bio-based economy

EU Bio Economy Sectors

- €2 Trillion in annual turnover
- 22 Million jobs
- 9% of the Workforce

Estimated that **Direct Research Funding** associated to the bio economy strategy under **Horizon 2020** could generate approximately **130,000 jobs** and **€45 Billion** through value added in the bio economy sectors by **2025***

(*EC- Innovating for Sustainable Growth: A Bio Economy for Europe-2012*)
BEACON has helped forge collaborative links with a range of companies and research institutes including the following......
Diolch am Wrando

Thank you for Listening