This webinar will highlight to the chemicals sector; which UK competitions may be relevant, the benefits of grant funding and how it can help grow your business and highlight how the KTN can help you make the most of these funding opportunities.
Innovation Support Landscape
The UK’s Innovation Support Network for Business

Innovate UK

FUND

CONNECT

Grant Funding:
1. Delivery Plan 16/17
2. Grants with Partners

KTN
the Knowledge Transfer Network

CATAPULT

We work with Innovate UK

ktn-uk.org @KTNUK
KTN and Innovate UK funding

<table>
<thead>
<tr>
<th>TRL</th>
<th>MAIN FUNDER</th>
<th>MFG Readiness</th>
<th>RESEARCH COUNCILS</th>
<th>INNOVATE UK</th>
<th>REGIONS &amp; BUSINESS</th>
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<tbody>
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<td>Capability Validated over Range of Parts</td>
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<td>Capability Validated on Full Range of Parts over Long Periods</td>
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<td>Process Validated on Production Equipment</td>
<td>Or Demonstrator</td>
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The KTN
KTN is the UK’s innovation network. Our mission is to deliver economic growth.

We connect people to speed up innovation, solve problems and find markets for new ideas.

We bring together businesses, entrepreneurs, academics and funders to develop new products, processes and services.
The Knowledge Transfer Network
The UK’s innovation network

Connecting people to accelerate innovation

**Strategic**
Connecting people who wouldn’t usually meet to solve innovation challenges.

**Interdisciplinary**
Bringing together businesses and researchers from different sectors.

**Entrepreneurial**
Linking people with new ideas and technologies to partners and customers.

**Commercial**
Introducing innovators to public and private funders and investors.
Knowledge Transfer Network (KTN)
Clustered communities, groups and business programmes

Focus is on bringing together groups that would not normally meet

MATERIALS
Materials
Chemistry
Enviro. Services

LIVING
Agri-Food
Biosciences
Health

APPLIED
ICT
Electronics, Sensors
& Phototonics
Defence & Security
Space

PHYSICAL
Built Environment
Transport
Energy

CREATIVE DIGITAL
& DESIGN
Creative Industries
Digital Economy
Design

Sustainability, H2020, International, A2FF, Manufacturing, Design
Value is created from every great idea
A Grant Winners Perspective

David Randall
R&D Manager
Chemoxy International Ltd
Biotransformations

Overview

One of Europe's Largest and Most Trusted Contract Manufacturers

Enhanced Customer value

Key Strengths

✓ UK leaders in combined reaction/distillation
✓ Growing portfolio of low toxicity proprietary products.
✓ Excellent Reputation & Technical Strength
✓ Outstanding EH&S Performance.

Key Statistics

✓ 2015 Sales: >£48 million
✓ Number of employees: 139
✓ Number of customers/distributors: 100+
✓ Number of Own Products: 14
Capabilities

Reaction
- 8 Reaction Units 9-30m³
- Glass, Stainless Steel
- Chloride resistant steels
- Solids handling/Filtration
- Hazardous Chemistry

Distillation
- 7 High Resolution Fractionation Columns
- Up to 50 Theoretical Plates
- 0.7 – 1.5m Diameter
- High Vacuum
- Side Streams
- Temp to 240°C
Our Target Compounds

Our Own Product Range

- Esters of Dibasic and Monobasic Acids
  - Using Adipic, Succinic and Glutaric Acids, Acetic Acid, Ethylhexanoic Acid, Lactic Acid, Malic Acid etc.
- And Alcohols including simple C1 – C6 and Diols
- Anhydrides from above acids
- Ethers from above alcohols

So All the Above are targets for Biosynthesis
Funded Collaborations – How Did We Get Involved?

Several Government Agencies promote the funding of R&D for SMEs

- In UK, **Innovate UK** sponsors Collaborative R&D between Universities and SMEs supported by the work of the **KTN**
- In the EU, Projects involving Transnational consortia are supported by the Commission. UK support available from NCP’s, EEN, KTN
- The EPSRC/BBSRC supports Academics working with SMEs
- Individual National Assemblies also support projects relevant to their Nations.
Projects in our Portfolio

• The EU have supported an FP7 project – Waste2Go
  • Innovate UK have supported an IB Collaborative venture and a subsequent CR&D Project
  • The EPSRC/BBSRC support a Multi-Disciplinary Project on IB sourcing of valuable intermediates
  • The Welsh Assembly have supported the use of Grass as an Industrial Feedstock, with Bangor and Aberystwyth Universities, and several industrial collaborators.
Projects in our Portfolio (II)

• Proof of Concept Project
  • Foodwastenet have supported a project to convert sugars into useful speciality chemicals from Bread Waste

• The EPSRC/BBSRC support a Multi-Disciplinary Project on IB sourcing of valuable intermediates
• This agency supported our development of an enzymic transformation to replace a chemical and polluting process.

• A Technical Feasibility Study was applied for in 2012.

• This was successful and work commenced in 2013. Partners were Chemoxy, Biocatalysts Ltd and University of Northumbria – project succeeded!

• Application made for CR&D Funding which was successful

• Partners as above and CPI. Work commenced in May 2014

• KTN provided help with finding consortia partners and providing application advice
Dibasic Acids
Production from Waste Stream from Nylon Manufacture

• Innovate - sponsored project

• Production of a C6 Dibasic Acid via enzymic process

• Partnered by UNN, Biocats Ltd and CPI

• Lab and pilot scale production of dibasic esters

• Trialled as coalescing agents

• Patent in application

• Production costing now in hand
Succinic Acid

Production from Glycerol

- Current Innovate_UK sponsored project
  - University of Manchester Patented Process
  - Collaborative Project with Manchester and CPI
- Lab scale success
- Process requires optimisation and Economic Assessment
Succinic Acid

Production from Grass Liquor

• STARS Project with Consortium including Bangor
  • Succinic acid from grass liquor
  • Successful production at lab scale
  • Economics challenging!

Production from Waste Bread

• FoodWasteNet PoC Project with Consortium including EBRI, IFR and Hovis
  • Production of sugars
  • Conversion to Succinic Acid
  • Process requires optimisation
Lactic Acid

Production from Municipal Solid Waste

- FP7 (EU) sponsored project Waste2Go
  - Multi-company collaboration
  - Cellulosics converted to sugars and then to Lactic at CPI
  - Lab scale production of lactate esters
- STARS Project with Consortium including Bangor
  - Lactic acid from grass liquor
  - Successful production at lab scale
CONCLUSIONS

POSITIVES (OPPORTUNITIES)
• Collaboration with Universities and other companies very much enhances the success of SMEs.
• Collaborations work well if partners wisely selected
  • KTN able to help
• Serendipity pays a key role sometimes
• Gets round the “Not Invented Here” issue

CHALLENGES
• Getting collaboration and Confidentiality Agreements right
• Auditing can be daunting, but necessary

OVERALL – Definitely well worthwhile!
Opportunities for chemistry in the Innovate UK 2016/7 Delivery Plan
Innovate UK Delivery Plan
Financial Year Spend 2016/17 - Core Budget £561M

4 key sector groups

- Emerging and Enabling Technologies: 15%
- Health and Life Sciences: 21%
- Infrastructure Systems: 27%
- Manufacturing and Materials: 24%
- Open Programme: 13%
## Delivery Plan - Status

<table>
<thead>
<tr>
<th>Category</th>
<th>Round 1</th>
<th>Round 2</th>
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<tbody>
<tr>
<td><strong>Materials &amp; Manufacturing</strong></td>
<td>May 2016 £15M (Closed)</td>
<td>Opens 21 Nov 2016 £15M</td>
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<tr>
<td><strong>Infrastructure Systems</strong></td>
<td>Jul 2016 (Closed) £15M</td>
<td>Jan 2017 £15M</td>
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<tr>
<td><strong>Health &amp; Life Sciences</strong></td>
<td>Sept 2016 (Closed) £15M</td>
<td>Feb 2017 £15M</td>
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<tr>
<td><strong>Emerging and Enabling</strong></td>
<td>Oct 2016 £15M</td>
<td>Mar 2017 £15M</td>
</tr>
<tr>
<td><strong>Open Competition</strong></td>
<td>Jun 2016 (Closed) £14M</td>
<td>Dec 2016 £14M</td>
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Manufacturing & Materials Programme

Competition scope – the ‘must haves’

To be in scope, a project must cover one of the following areas:

- **Innovation in a manufacturing system**, technology, process or business model. For example, in process engineering, industrial biotechnology, mechanical conversion processes, coatings, surface engineering, textiles, supply chain management, new product introduction processes or remanufacture.

- **Innovation in materials development**, properties, integration or reuse. For example, for light-weighting, energy generation and storage (heat and electricity), electronics/sensors or operation in demanding environments.
You must show how your proposal will enable **a step change in productivity and competitiveness** for at least one **UK SME** involved in the project.
Manufacturing & Materials Programme

Competition scope – the ‘should not haves’

• In this competition, Innovate UK won’t fund compound semiconductor projects
  – There was a competition focused on this recently

• Innovate UK won’t fund projects that focus on product innovation where there is no challenge and innovation in the manufacturing process or materials
## Manufacturing & Materials Programme

### Competition scope – examples

<table>
<thead>
<tr>
<th>In scope</th>
<th>Out of scope</th>
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<tbody>
<tr>
<td>For example, a project focused on developing new material properties for a sensor or probe to allow it to operate in a harsh environment, or using sensor data to optimise a manufacturing process (such as in a factory or refinery) would be in scope.</td>
<td>But a project focused on the development of a new sensor or probe without a focus on manufacturing or materials challenges would not be in scope.</td>
</tr>
</tbody>
</table>

For example, a project addressing challenges in the chemistry of a formulation, leading to a process innovation, would be in scope. | A project developing a new formulation using existing, well-understood processes would not be scope. |
Manufacturing & Materials Programme

Briefing Events for Round 2

- 23 Nov London + webcast
- 24 Nov Glasgow
- 28 Nov Belfast
- 1 Dec Swansea
- 7 Dec Darlington
Emerging Technologies
Helping companies take the first steps in developing, testing and adopting new technologies emerging from science (e.g. graphene, biofilms, energy harvesting, quantum tech.)

Enabling Technologies
New technologies and capabilities can improve productivity and efficiency in existing industries across the UK economy (e.g. electronics, sensors and photonics)
Increasing agricultural productivity
Improved food quality and sustainability
Precision medicine
Advanced therapies
Biosciences

(Based on Round 1)
Open Programme
The competition brief asks for…

**Aim:**
- Help businesses develop new products, processes and services with commercial potential.
- Enhance UK competitiveness, growth and improve national productivity.
- Open to the best business-led ideas or concepts – we want to fast-track ideas to commercial success

**Scope:** To be in scope, a proposal must:
- demonstrate innovation leading to novel, new products, processes or services
- articulate a clear and anticipated growth impact for the business(s) leading to a significant return on investment (ROI)

(Based on Round 1)
Partner Competitions
Analysis for Innovators (A4I) - £6.5m Funding

• New funding programme offering cutting edge R&D, expertise & facilities to UK companies that want to solve an analysis or measurement problem from within their existing business.
• Innovate UK have partnered with - NPL, STFC, NEL & LGC - who run some of the most advanced cutting edge facilities, techniques and technologies available in the world, here in the UK.
• very different application process
• Opens January 2017, but IUK and KTN are running regional events now!
• Further info: https://connect.innovateuk.org
Partner Competitions
Design Foundations - £3m Funding

• Build the demand and capability of businesses to use design as a complementary approach/tool in the early stages of innovation.
• Focus on creating new collaborations between
• £3m available over 3 discrete rounds of funding across 2017, support project up to £100k.
• Call status: **Opens 09 January 2017**
• Contact us for further info!
<table>
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<tr>
<th>Category</th>
<th>Round</th>
<th>Opens</th>
<th>Registration Closes</th>
<th>Call Closes</th>
<th>Open</th>
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</thead>
<tbody>
<tr>
<td>Materials &amp; Manufacturing</td>
<td>Round 2</td>
<td>Opens 21 Nov 2016</td>
<td>Registration Closes 18 Jan 2017</td>
<td>Call Closes 25 Jan 2017</td>
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<tr>
<td>Emerging and Enabling Technologies</td>
<td>Round 1</td>
<td>Open</td>
<td>Registration Closes 30 Nov 2016</td>
<td>Call Closes 07 Dec 2016</td>
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Tips – Where are you Really on the TRL Scale?

**TRL 1** - Basic principles observed and reported.

**TRL 2** - Technology concept and/or application formulated.

**TRL 3** - Analytical & experimental critical function &/or characteristic proof-of-concept.

**TRL 4** - Technology basic validation in a laboratory environment.

**TRL 5** - Technology basic validation in a relevant environment.

**TRL 6** - Technology model/ prototype demonstration in a relevant environment.

**TRL 7** - Technology prototype demonstration in an operational environment.

**TRL 8** - Actual Technology completed & qualified through test & demonstration.

**TRL 9** - Actual Technology qualified through successful ‘mission’ operations.
Tips - Refining your application

• Do I really understand the market?

• Do I have in-house capabilities to do this?

• Do I have connections with other companies to help explore this?
Tips – Writing a successful application

- KTN Guide
- KTN can review your proposal!!
- KTN Grant Writing Workshop Jan 2017
  - https://www.eventbrite.co.uk/e/grant-writing-workshop-tickets-29221933590
Tips – Do you know your social & environmental impacts?

horizons.innovateuk.org
Tips – Check out previous round winners!

The Real Application Process

- Initial idea
- Identify capability gaps
- Find partners
- Explore Manufacturing & Materials Programme
- Check Scope (IUK)
- Funding Route
- Develop Proposal
- Funding Route

HORIZONS

Think future

KTN
the Knowledge Transfer Network

Innovate UK

We work with

ktn-uk.org @KTNUK
Grant funding landscape – lots of options!

EU funding sources
- **Horizons 2020**
  - Work Programmes
  - SME Instrument (H2020)
  - Fast Track to Innovation Pilot
- **EuroStars**

UK sources
- **Innovate UK**
- Regional funding (ERDF)
- Other
Access to Funding & Finance Activities
KTN Business Programme

Support to secure the funding you need to develop innovative new products and services.

Find Funding
Comprehensive funding search of >8000 opportunities, Digital Refer tool >230 organisations

Public & Private
Introducing innovators to public and private funders and investors.

Investor-Readiness
Support to get investor ready with opportunities to compete in Pitchfest events.

Local Ecosystem
Linking investors, inventors and entrepreneurs across the Venturefest network & Entrepreneurs Forum.

KTN Business Programme
Support to secure the funding you need to develop innovative new products and services.
Stay in touch

KTN newsletters
• http://www.ktn-uk.co.uk/subscribe-2/

LinkedIn Chemistry Group
Twitter: @KTNUK_Chemistry

Innovate UK grant funding competition website
• https://www.gov.uk/government/collections/innovation-grants-for-business-apply-for-funding

Innovate UK Competition Helpline
• 0300 321 4357
• support@innovateuk.gov.uk
Meet the team
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No wrong
doors policy!
Thank you – Time for Q&A!