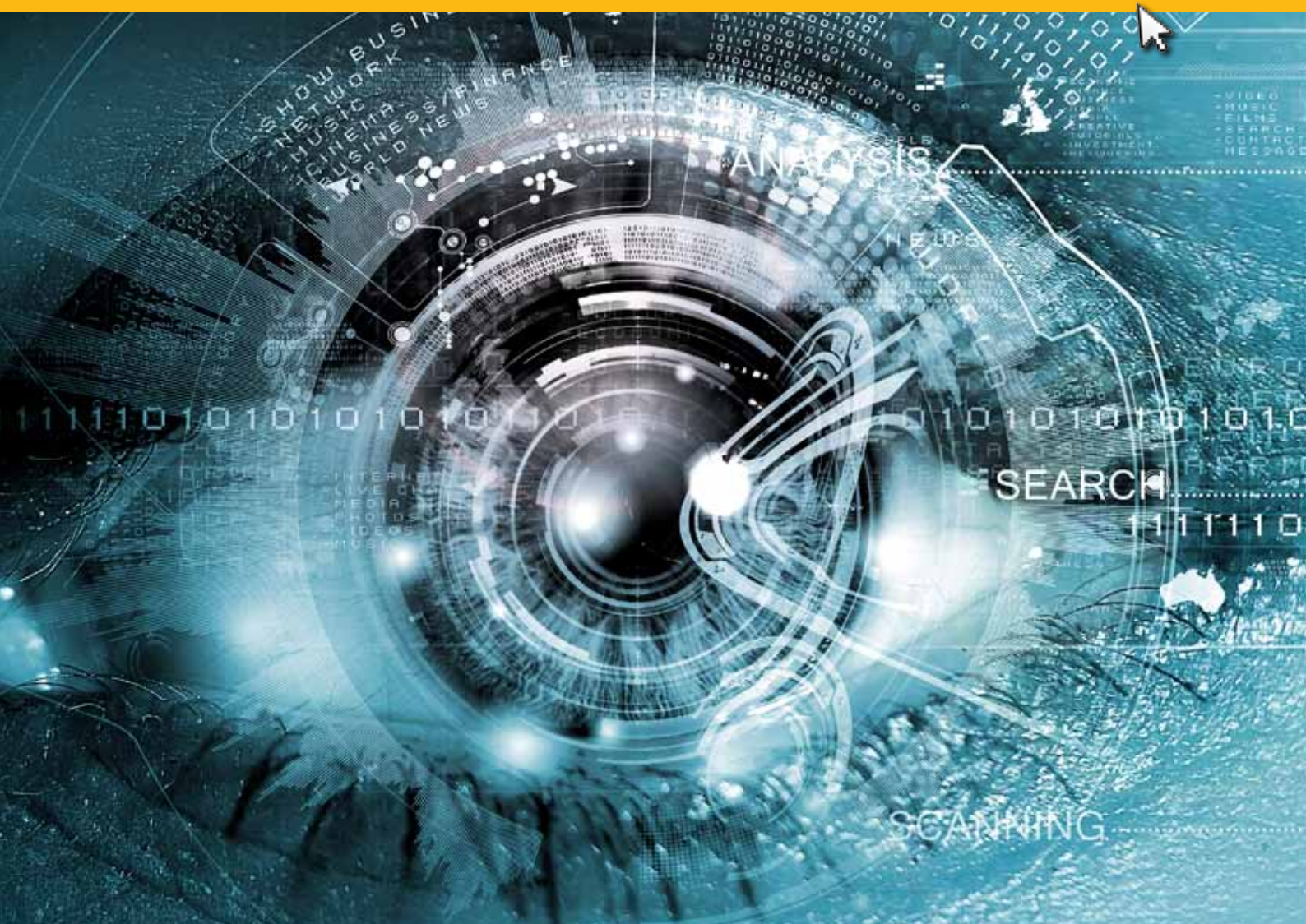


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Focus On ... Catapult Centres.



Business & industry

The Catapult centres are a powerful new initiative within the UK innovation landscape designed to help businesses develop exciting new ideas within receptive and invigorating environments.

These centres of excellence bridge the gap between business, academia, research and government; they promote collaboration and knowledge

exchange allowing many progressive businesses and organisations to build new partnerships with reduced risks. Catapults are an invaluable resource to companies in a wide range of markets and transform their innovative ideas into new products and services, generating economic growth.

Helping business

Catapults help businesses to adopt, develop and exploit innovative products and technologies.

As the next stepping stone towards commercialisation, they offer concentrated expertise in areas vital for that journey.

The benefits of working with Catapults:

- **Access to facilities:** Catapults have state-of-the-art facilities that the industry will want to use and engage with, that are too specialised or requiring capex beyond the means of many companies.





Feature / Focus on Catapult Centres

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These centres of excellence bridge the gap between business, academia, research and government; they promote collaboration and knowledge exchange allowing many progressive businesses and organisations to build new partnerships with reduced risks.

- **Skilled resource:** Catapults will employ skilled people to work collaboratively on innovation projects.
- **Access to a dynamic network environment:** Catapults will provide a neutral environment for potential customers to come to understand business-focussed innovation. Like minded people can come together and transfer knowledge as well as create networks. Ideas and concepts can be scoped and prototyped in a faster and more engaging environment than is possible in stereotypical industry environment. Catapults can provide access to technical expertise usually not available to SMEs.
- **Trusted environment:** Catapults will create an environment of trust, in which SMEs are happy to come and share thinking and ideas in the knowledge that intellectual property will be managed carefully.

Each centre adds an important new dimension to existing research

and development programmes established by Innovate UK, they will help business. Providing access to cutting-edge equipment, specialist facilities along with using the power of people and organisations working closely together, the Catapults unlock opportunity, reduce innovation risk and speed new products and services towards commercial reality.

Research base

Effective engagement with the UK research base is critical to the success of Catapults.

While Catapults centres do not provide funding to support the research base, they do work closely both with partners in the Research Councils and HEFCE and the research base directly to ensure that there are opportunities for collaboration.

Equally catapults may also be partners or collaborators with research base organisations on funding proposals to the Research Councils and HEFCE. >>>



Catapults are actively encouraging discussions with the Research Base to explore new ways of working in partnership. However, a range of Catapult-Research Base engagements currently exist to enable improved access to businesses of all sizes.

These can be categorised within the following areas:

1. Strategic Relationships – a series of formal partnerships between the Catapults and research base stakeholders have formed, these include:

- Catapult-University strategic relationships (UK and International)

- Government Departments/ Agencies (e.g. Research Councils, HEFCE, UK Trade and Investment)
- Businesses (of all sizes) and business groups (e.g. KTN Ltd)
- Governance/Advisory Group representation

2. Joint Programmes and Projects –

a large number of joint research and innovation programmes and projects exist where Catapult centres partner with the research base and business, these include:

- Collaborative projects
- Contract Research
- Large scale sector focussed

programme activities

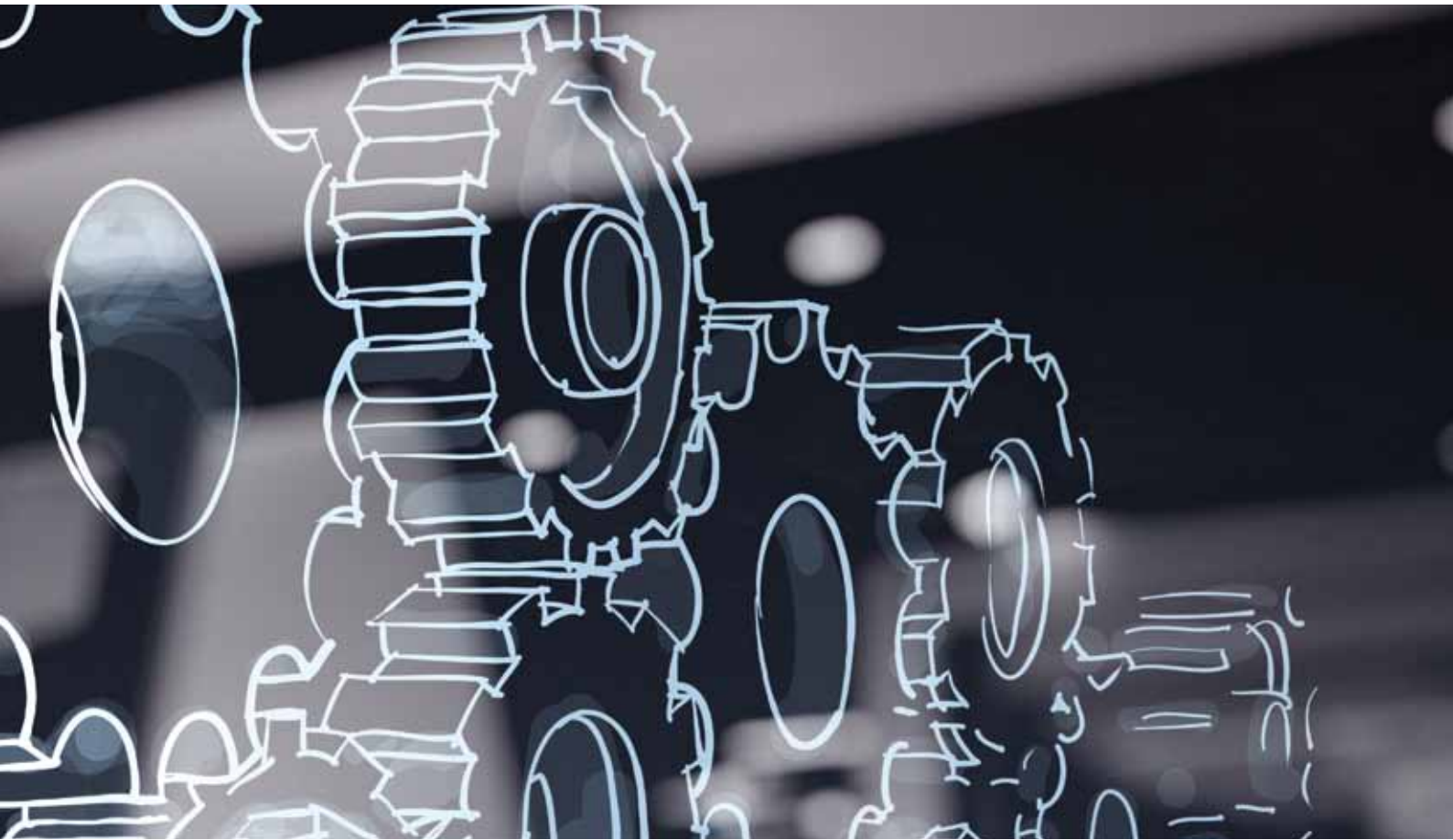
- Commercialisation activities
- Technology and Capability Roadmapping
- Networks

3. Developing People and Skills

– Catapult centres and the research base are engaged in a range of people focussed business collaborations including:

- Formal training provision (e.g. studentships – Centres for Doctoral Training, Doctoral Training Partnerships, CASE)





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Catapult centres and the research base work closely together in shaping the innovation eco-system and informing policy through activities

- Collaborative work through people exchange mechanisms (e.g. secondments, fellowships, Knowledge Transfer Partnerships)
- Continual Professional Development (e.g. MSc training)

4. Enabling Access to Capability

– Catapults and research base partners present unique opportunities to effectively utilise and share equipment and facilities including:

- Equipment sharing
- Shared asset registers
- Access to large scale facilities

5. Informing Policy Development

– Catapult centres and the research base work closely together in shaping the innovation eco-system and informing policy through activities such as:

- Joint input into Government inquiries/reviews (e.g. Science and Innovation Strategy)
- Participation on Government advisory/strategy groups (e.g. Industry Leadership Forums) ■

For more details on this topic, visit :
www.innovationtoday.net

Interview with ... Dr. Bernd Richert



→ Head of Unit Horizon 2020: SME Enterprise

1.

Dr. Bernd, please explain for our readers the targets and practices of the SME instrument in-line with Horizon 2020 and what the European Commission hopes to achieve for innovative SMEs...

The SME Instrument is a new activity under the European Union's Research and Innovation Programme Horizon 2020. This activity is exclusively dedicated to small and medium-sized enterprises (SMEs). It aims to help highly innovative companies with a realistic market opportunity to realise their innovation, development and growth strategy.

The Instrument provides funding for close-to-market activities, i.e.

activities where the development takes place under production conditions (Technology Readiness Level (TRL) of 6 or higher). Think, for instance, of a small test series in order to proof the viability of newly developed prototypes, a test production line, or the validation of new products with respect to standards and regulations, miniaturisation of new products, etc.

2.

How do you think the current program will help stimulate the European economy?

Although the SME Instrument has the somewhat impressive budget of nearly 3 billion € over seven years (2014-2020), I would not claim that we want to have

a tangible or measurable effect on the European economy as a whole. Besides the aim to identify, support and showcase some of the European champions among the most innovative SMEs and to help them grow, I see two objectives with this Instrument.

One is the role model of our approach with the hope that it might stimulate similar approaches at regional and national level.

I think that today we have many programmes available which support the creation of new companies and their first research and development (R&D) needs, but not many programmes supporting small companies to valorise and commercialise their R&D results until other forms of financial support, like loans or equity investments, kick in at a later stage and the innovation is in the market. And the other



 Interview / Dr. Bernd Richert

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Although the SME Instrument has the somewhat impressive budget of nearly €3 billion over seven years (2014-2020),

I would not claim that we want to have a tangible or measurable effect on the European economy as a whole.

objective is supporting a better European innovation environment including small and large companies, public and private investors, business angels and venture funds, but also public procurement organisations.

3

There is in place the three stage funding process for SMEs to obtain European Commission funding. Please explain a little further the rigours of this...

The Instruments provides funds in two different forms: A Phase 1 of 50.000 € in order to carry out detailed market, customer or IPR studies, to carry out some validation tests on an existing prototype or similar; and a Phase 2 of maximum 2,5 million € to implement the innovation and development strategy of the company. In addition, each company which is funded under the Instrument receives a few days of business coaching and

we are trying to build communities between the funded enterprises, but also with respect to larger companies, public and private investors, procurement authorities, etc.

In all Phases SMEs can apply alone or, if justified by the commercialisation strategy, together with other SMEs.

All other potential partners, like suppliers, knowledge providers, etc., would be subcontractors.

Applications can be submitted at any time until 2020 and we assess these applications four times per year. About 5-6 weeks after such a cut-off date we inform the applicants whether they will be supported.

The overall process until the grant agreement is signed and the first financial support is given takes three months for Phase 1 and six months for Phase 2, always counted from the respective cut-off date. ▶▶▶



4.

What key elements do you see as necessary for innovative SMEs to behold to obtain funding?

The funds are awarded through an open but highly competitive application process aiming to select only the most innovative, high-growth-potential enterprises.

External experts assess the innovation content (new to the respective market and/or market disruption), the market situation (competitors, market size, freedom to operate) and the company (existing or necessary competences, growth strategy, expected return of investment), very similar to the assessment scheme of any investor, with the difference that the funds of the Instrument are subventions and no reimbursement is expected. Success would be defined through the foreseen and realised company growth. We see that many entrepreneurs have great ideas but little to no knowledge about the market they intend to go into, very good technological skills but a partial or total lack of commercialisation expertise. An applying company has good chances to be funded if it combines an innovation which is totally new or even disruptive to the envisaged market combined with

a well thought commercialisation and growth strategy.

5.

What kinds of mentorship opportunities are there in place within the Horizon 2020 program for SMEs?

Within the SME Instrument each company receives business coaching, 3 and 12 days in Phases 1 and 2, respectively. But the SME Instrument is not the only such activity available to small companies. Interested companies might for instance check out the Start Up Europe Initiative with its investor readiness support or the ACE accelerator programme or Startify7, a team-building, thematically-focussed and lean-training system of summer academies for young future ICT entrepreneurs. The program covers many and varied industries and projects.

6.

Are there any innovative companies and projects more likely to receive funding than others? For instance, would a technological advancement have more of a chance than a medical one?

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...each topic under Horizon 2020, called Societal Challenges and Leadership in Enabling and Industrial Technologies, provides 7% of its respective budget to the SME Instrument. This means that the budgets differ according to the financial endowment of each of these topics.





This is not exactly how it works. In fact, each topic under Horizon 2020, called Societal Challenges and Leadership in Enabling and Industrial Technologies, provides 7% of its respective budget to the SME Instrument. This means that the budgets differ according to the financial endowment of each of these topics.

For instance, the ICT or the Health topic have higher budgets than the green biotechnology or the space technology topic.

A company interested to commercialise new ideas based on photonics technology might apply under the ICT, the energy, the health topic, etc., depending on which market segment it envisages. Applying companies are sometimes hesitating under which topic to submit. The best advice is to apply where the

market expertise of the company lies, e.g. a company with a clear expertise in the transport industry would apply there, regardless whether the innovation is based on nanotechnology, information technology or constitutes a serviced innovation.

For non-technological innovations, which don't find their place among the other more technological oriented topics we have the specific topic "New business models for inclusive, innovative and reflective societies".

7.

For you personally, what would be a great achievement of the program? Would it be one single company who received funding becoming

the next household name in their field, or would it be more of a numbers game, whereby many SMEs that's obtained funding were able to progress a fair amount?

Based on my belief that we need more role models of successful entrepreneurs in Europe who "made it", my very personal idea of success would certainly be a future household name, preferably in an attractive industry sector. But very similar to our "older sister", the US Small Business Innovation and Research Programme (SBIR), it might take quite a few years before we can come up with such success stories. Currently we focus on the follow-up investments companies obtain after our funding. And 10 million UK£ A-round a year after our initial grant is certainly a success, especially as company growth and job creation come with it. ▶▶▶



8.

With so many new companies failing within their first few years, is it a concern providing such large scale funding to SMEs?

Of course, also this scheme will have to face the same challenge any investor has to deal with: how to select a potentially successful company which finally excels on the long run? Innovation and market successes are very hard to predict, and we know this as well.

But small companies don't only fail because they make the wrong market prediction, underestimate existing competitors, have badly calculated their available resources or simply the market reacts differently than expected.

Great companies also fail because they cannot acquire the funds necessary to develop and implement an ambitious innovation and growth strategy due to the risk averseness of private and public financial actors alike.

And we also know that the commercialisation requires much higher amounts than the R&D phases preceding it.

That's where the SME Instrument wants to come in: a very rigorous

selection mechanism combined with sufficient funds to realise a tangible development in the company paired with business coaching and other services to make the funding more sustainable.

Therefore, I like to say: "No, sufficient funds are necessary to make it happen. Not in every case we will be successful, but overall I am confident we can make an impact in and with the companies we support."

9.

In 2020, when the current scheme has reached its conclusion, what plans are in place to keep SME innovation both funded and stimulated?

Well, if you had the chance to be part during the design of a new scheme and afterwards had the possibility to help implementing it, you want to see the scheme persevere and prosper.

We want to learn from our experiences and possible mistakes, and improve the SME Instrument over time.

For instance, after having designed and implemented most of our processes with fairly sufficient efficiency, we will this year work on improving the overall quality of the assessment of the

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We want to learn from our experiences and possible mistakes, and improve the SME Instrument over time.

For instance, ... we will this year work on improving the overall quality of the assessment of the applications





applications in order to select with even higher chances the real European SME champions. And of course, we want to become even faster as the most innovative companies have no time to loose on their way to new markets. I hope that such improvements and based on our growing knowledge and experience the SME Instrument will become a lasting part of the European innovation landscape, as the SBIR programme has achieved it in the United States.

10.

Finally, what advice would you give to SMEs looking to obtain funding through the project?

Let me reiterate what I said previously:

An applying company has good chances to be funded if it combines an innovation which is totally new or even disruptive to the envisaged market together with a well thought commercialisation and growth strategy.

Just the technical or technological competence is not enough, a clear market competence has to come with it.

And this could mean that it is too early for a young company to apply for the funding, because it has not yet reached the right stage and might still need to burn more funds in its research activities before it can aim to commercialise.

11.

Is it worth it, seeing to fairly low number of funded companies compared to very high number of applications?

Yes, because the chances are still comparably higher than applying with most if not all venture funds. And we have seen one thing already: going through the application process with dedication helps any company to focus its innovation and development strategy regardless whether or not the funding will be obtained. And this is helpful not only in this application process, but is useful for any investment application and at the end also for the company itself. ■



In Profile ... SynthSys.

→ Centre for Synthetic and Systems Biology

Our Vision

We will combine our research excellence in synthetic and systems biology to provide insights into natural systems and to apply this knowledge to the challenges facing biomedicine, animal health, agriculture, industrial biotechnology and global sustainability.

Our Mission

We will deliver world-leading research in systems and synthetic biology; combining theory and informatics with molecular biology to understand and re-design biological systems.

We are pioneering genetic and chemical tools to analyse the cell, technologies to quantify responses at the single cell level, and mathematical models to both predict and control cellular behaviour.

Our Centre

SynthSys was originally established in 2007 as a Centre for Integrative Systems Biology, funded by the BBSRC and the EPSRC. Since then, the Centre has expanded and now hosts a Synthetic Biology Research Centre funded by the BBSRC, EPSRC and MRC – the UK Centre for Mammalian Synthetic Biology.

SynthSys operates both as a virtual centre, embracing a community of more than 200 researchers across the University of Edinburgh, and as a physical one, in the purpose built CH Waddington building.

Partner with Us

Our research is broad and deep, addressing a diversity of scientific questions with wide ranging impacts. We engage in a broad range of collaborations

globally and welcome further opportunities to work with academia and industry. We offer our internationally recognised expertise, access to state-of-the-art technologies and specialist training. Our research has had impact in industrial biotechnology and bioenergy, in agriculture and the environment, and in animal and human health.

Our Capabilities

We offer access to a range of platforms that underpin research and innovation in synthetic and systems biology, bringing together state-of-the-art equipment with in-house experts to allow custom development and applications. Many of our experimental facilities are accessible on a fee-per-service basis.

The Edinburgh Genome Foundry – A BBSRC - funded, fully-automated system to assemble DNA and chromosomes.



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Machine Learning – Innovative data analysis combined with mechanistic modelling, network theory and robust data management.

Plant Phenomics – Tissue culture and biological containment, controlled growth environments and plant stem cell cultures.

Chemical Translational Biology –

Miniaturised drug discovery platforms including single bead analysis, single molecule scanning and single cell micro spectroscopy. ■





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