

# SECTOR SPOTLIGHT INDUSTRIAL BIOTECH

At Norwich Research Park we work collaboratively to understand the mechanisms by which plants and microbes produce new materials and molecules with bioactive qualities. Knowledge which can then be used to increase yields and create products of commercial and societal interest, such as personal care products, functional foods, new antibiotics and pesticides.

Schizosaccharomyces pombe NCYC 3092, also known as 'fission yeast' used in traditional brewing and as a model eukaryotic organism in molecular and cell biology.



Credit: Kathryn Cross & Carmen Nuevo-Padep



## RESEARCH FOCUS

### NATURAL PRODUCTS

Scientists are using genomics to understand biosynthetic pathways in greater detail. This new information is being used to enhance production and unlock access to novel bioactive compounds from plants and microbes.

### BIODESIGN

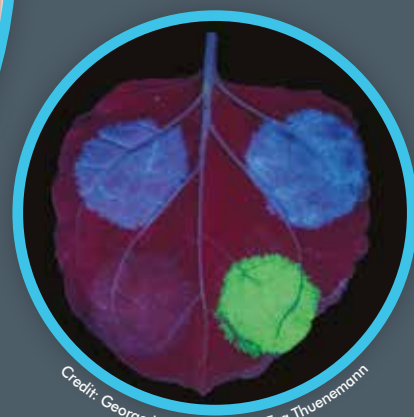
The manipulation of enzymes to produce new and potentially valuable bioproducts for applications in a broad number of sectors including food, pharmaceuticals, speciality and fine chemicals.

### BIOENGINEERING

With a focus on improving lives, we use biodesign techniques to develop plant or microbial 'Super Hosts' for the production of natural or engineered antibiotics, bioactives and vaccines.

### CARBOHYDRATES

Investigation of the use of sugars and carbohydrate-active enzymes for generation of biodegradable materials and bespoke functional foods, and for the generation of novel natural product and drug conjugates with enhanced target specificity.



Nicotiana benthamiana, a relative of the tobacco plant, is commonly used in plant research. Here, the leaf is used as a host organism to produce components of avenacin, a fluorescent antimicrobial produced by oat roots, which protects the roots from soil pathogens.

Credit: George Lomonosoff and Eva Thuenemann

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Professor George Lomonosoff (JIC), using individual plants to produce new high value products, including therapeutic drugs and vaccines.



Credit: George Lomonosoff

 Earlham  
Institute

 UEA  
University of East Anglia

 Quadram  
Institute  
Science • Health •  
Food • Innovation

 John Innes Centre  
Unlocking Nature's Diversity

## KEY RESEARCH ORGANISATIONS

- **John Innes Centre:** world-leading international centre of excellence in plant science, crop science, microbiology and genetics.
- **University of East Anglia:** UK top 15 university, world top 200 with major faculties in Science and Medicine.
- **The Earlham Institute:** one of the UK's leading institutes, applying genomics and computational approaches to advance bioscience.
- **The Quadram Institute:** working at a new interface between food science, gut biology, human health and disease.

## KEY BUSINESS ORGANISATIONS

- **Leaf Expression Systems:** a translational facility for research, development and manufacture of high value products in plants.
- **Genome Enterprise Ltd:** delivers next generation sequencing and associated bioinformatics analysis.
- **Iceni Diagnostics:** developers of bespoke sugars for use in rapid diagnostic tests, alternatives to antibiotics, biopharmaceuticals and vaccines.
- **Anglia Capital Group:** a network of investors and private venture capital funds, investing in hi-tech businesses and technology start ups.

## SERVICES AND FACILITIES

- **The Wolfson Fermentation and Bioenergy Unit:** a containment 2 facility with large-scale bioreactors (15-100 litres). It also houses continuous culture bioreactors for use in post-genomic studies on microbial physiology.
- **National Collection of Yeast Cultures:** one of the largest yeast collections in the world, supported by the BBSRC.
- **Science Facilities:** Analytical Services Unit, Proteomics Facility and Bioimaging.

## BUSINESS SUPPORT

- Free business coaching and mentoring.
- Angel network and grant signposting.
- Networking and events.

## PARK OCCUPIER BENEFITS

- Enterprise Zone business rate discounts.
- Purchasing scheme.
- One Nucleus membership benefits.
- Café and meeting rooms.
- Superfast broadband.
- Free on-site parking and Wi-Fi for visitors.

## SPACE

- **Accelerator lab:** Shared bench space plus access to shared equipment lab.
- **Accelerator office:** Shared office space.
- **Bioincubator:** Small laboratory and office units plus access to shared equipment lab.
- **Centrum:** Networking café, medium to large laboratory and office units.
- **Design and build:** Serviced plots ready for development.



Credit: Juan Pablo Gomez-Escribano

Antibiotic compounds produced by *Streptomyces coelicolor* prepared for analysis.

 Enterprise  
Zones

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