UK Research and Innovation

GROWING KENT & MEDWAY

University of Kent

THE BIOTECHNOLOGY HUB FOR SUSTAINABLE FOOD & DRINK

Part of the Growing Kent & Medway Programme

The Biotechnology Hub

The BioTechnology Hub for Sustainable Food & Drink provides businesses with new research possibilities; from alternative ways to manage crop diseases to environmentally-friendly packaging options.

Growing Kent & Medway is an innovation cluster focusing in climate-smart, sustainable food and drink production. The cluster is investing in research facilities across the region to help horticultural and non-meat based food and drink businesses to innovate and grow.

Join our network and get access to grants, business support and research facilities.

Located in Canterbury Kent, the Biotechnology Hub applies high-tech approaches to production and processing of high-value foods and plant-based compounds from plant material and waste, pathogen identification and control, and maintenance of healthy soil.

It specialises in sustainable food and drink research and is run by some of the leading experts in plant biology, post-harvest and packaging.

With new cutting-edge equipment, the research team based at the Hub are able to support horticultural and plant-based food and drink businesses to solve a wide range of challenges:

- identifying and controlling crop diseases and pathogens
- optimising plant growth conditions
- developing sustainable packaging
- improving biocontrols
- creating new sources of proteins for food
- producing high-value compounds, like fragrance or enhanced flavour, from plant material and waste
- analysing chemical components
- maintaining healthy soils.

Benefits to business

Do you want to:

Increase crop yield? Reduce waste? Improve nutrient value? Develop disease resistance? If so, we can offer the following expertise and services.

- Production of high-value molecules from plant samples or waste extracts
- Identification of bacterial, fungal or viral pathogens
- Identification and measurement of key compounds in your product, including flavors, nutrients, and aromas.

By working with the Biotechnology Hub, you have access to the research experience, knowledge and resources at the School of Biosciences at the University of Kent.

Facilities and equipment

To help you test and research better quality products and features, the Biotechnology Hub has invested in new state-of-the-art equipment, including:

- Cell Image Analysis Facility
- Biomolecular Science Facility
- Biological Nuclear Magnetic Resonance (NMR) Facility
- biosensor development
- other specialist equipment available is: animal cell culture facilities, animal cell and bacterial fermentation, cell sorting, anaerobic sample handling, fast reaction kinetics, parallel computing cluster, laser trap rig, automated sample handling.

Case study: Upcycled Foods: getting the goodness out of Kent cherries

Worldwide, cherry based products are popular health foods due to their high content of natural compounds called anthocyanins. In this project the University of Kent team are working together with Kent cherry grower, Rent a Cherry Tree, to determine the health benefits of a variety of Kent cherry products. This will provide Rent a Cherry Tree and other local growers with strong scientific knowledge on their products. A growing consumer demand for healthy and sustainable products that also reduce waste provides a major opportunity for these growers to expand by targeting a wider customer-base. This will create jobs, promote economic growth and reduce agricultural waste in Kent.

This is a DEFRA Farming Innovation Programme funded R&D Collaboration.

Academics involved: Dr Marina Ezcurra and Dr Jennifer Tullet.

Case study: The role of biochar in increasing crop land productivity and the removal of atmospheric greenhouse gases

Academics from the University of Kent are working with Re-Generation Earth (a Kent based business) to investigate how a modern biochar production facility can play its part in the reversal of climate change and increasing productivity of soils on local farms in the Kent and Medway region. By working with an innovative plasma biochar retort the project will demonstrate efficient on farm biochar production, demonstrate how much CO2 can be removed from the atmosphere and locked into soils and how biochar can increase soil fertility and productivity.

The project will work out the life cycle analysis of the carbon embedded in biochar when applied to land and the benefits to soil fertility and in particular the soil microbiome and how that influences soil fertility.

This is a Growing Kent & Medway funded R&D Collaboration.

Academics involved: Dr Robert Barker and Dr Anastasios Tsaousis.

Case study: Investigating the biochemical profiles in Nashi Gold pear hybrids for potential health benefits

The existing UK fruit juice market is enjoying faster sales growth than any other food and drink sector, but most European pear producers in the UK believe growing purely for the juice market is unviable. The Asian pear, however, has different characteristics and is better for juicing as it is juicy and not pulpy and the juice itself is pleasing to drink. The full health benefits of this unique product are not yet known, and there is a vast untapped market for this type of product. This project aims to identify the bioactive and nutrient compounds in Nashi pear (Asian pear) grown by L.J. Baxter & Son, which will allow the identification of new markets, allowing for increased productivity and increased sales.

This is a Growing Kent & Medway Business Innovation Voucher funded collaboration.

Academics involved: Dr Andrew Simkin and Dr Lori Fisher.

Case study: Investigating the impact of novel punnet to remove a plastic soaker pad whilst maintaining the quality and shelf life of fruit

The project will determine the effectiveness of a recyclable novel punnet, created by Sharpak Aylesham Ltd, to maintain and extend the quality of fruit over the shelf-life period after standard transit periods compared to punnets containing the standard and alternative pads on the market for retailers.

If the product is successful, it will offer a viable alternative to retailers looking to meet their Plastic Pact UK pledges, and ultimately improve resource use and support UN Sustainability goals by reducing greenhouse gas emissions by improving the plastics circular economy and simultaneously reducing food waste. The replacement of this product with the standard pad currently use would save 3.6million square meters of plastic a year.

This is a Growing Kent & Medway Business Innovation Voucher funded collaboration.

Academics involved: Dr Lori Fisher.

Case study: Marker assisted breeding to generate powdery mildew resistant hop cultivars

Powdery mildew is one of the most important diseases threatening UK hop production. An untreated epidemic of hop powdery mildew leads to significant yield loss and cone spoilage. This project, with Wye Hops, aims to develop markers which tag the R2 powdery mildew resistance loci, identify the powdery mildew resistance gene, and validate resistance markers to confirm the development of a functional marker. There is a huge potential for growth in the UK hop breeding market particularly where the industry is empowered by advanced genetic techniques and research. This project will enhance UK hop grower productivity through preventing disease induced yield loss and crop wastage.

This is a Growing Kent & Medway Business Innovation Voucher funded collaboration.

Academics involved: Dr Helen Cockerton.

The University of Kent Regional Leaders in R&D

In REF2021, the University of Kent was confirmed as a leading research university, with the majority of our REF submissions rated as world-leading or internationally excellent.

Research and Innovation across the University of Kent is cross-disciplinary, offering a way to bring our skills together on collaborative projects.

Complimentary areas of expertise at the University of Kent include:

- industrial biotechnology
- infection and drug resistance
- cellular architecture and dynamics
- reproduction, evolution and genomics
- modelling and data science
- operations and supply chain management
- logistics and transportation
- environmental systems management
- smart environments and internet of things
- sensing technology, smart monitoring and modelling
- AI, machine learning and data analytics.

Work with us

The Growing Kent & Medway team based at the University of Kent collaborates with businesses across the agriculture, horticulture, and food and drink sectors to solve real-world industrial problems.

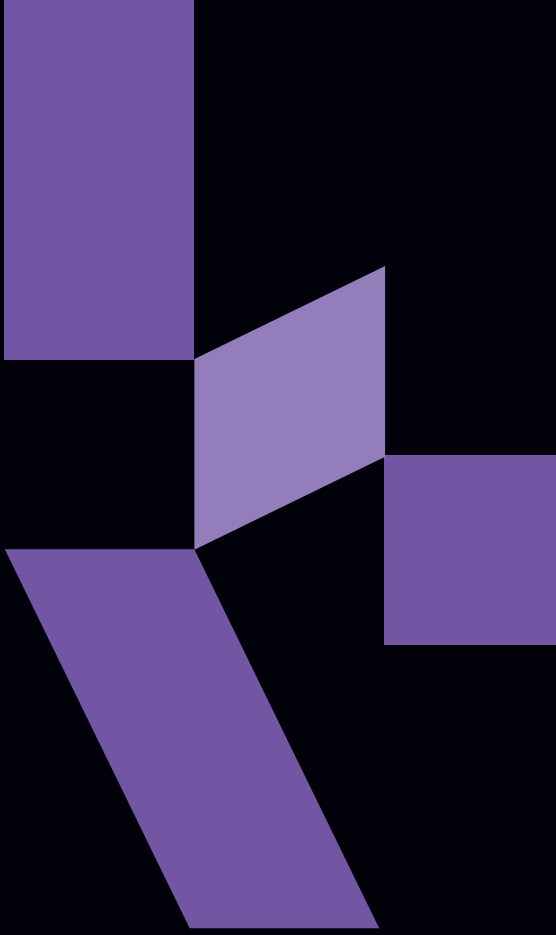
We are open to collaboration and welcome partners for research and to develop ideas through to industrial application.

If your business needs a horticultural solution, has a biotechnology challenge, looking to undertake research, or would like to understand more about what we do, do not hesitate to contact us. We support businesses with:

- Growing Kent & Medway tailored mentoring
- access to state-of-the-art equipment and facilities
- contract research
- collaborative research grant applications
- consultancy
- student projects and placements.

We understand needs vary for businesses and we offer tailored support depending on your needs.

FOR BUSINESS ENQUIRIES PLEASE CONTACT GROWINGBIOTECH@KENT.AC.UK.



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