

PLANT CELL RESEARCH CENTRE



The Plant Cell Research Centre (PCRC) will unlock the economic potential of gene editing in plants by developing universal tools for plant cell regeneration. PCRC is a public-private co-investment opportunity, hosted by two world-leading plant science research organisations, the John Innes Centre and The Sainsbury Laboratory in Norwich.

Vision

An open-access, species and genotype independent plant cell regeneration technology to accelerate the application of gene editing for crop improvement, biotechnology and conservation.

Unprecedented need

Population growth is increasing the demand for food, fuel, and fibre. A rapidly changing climate requires more resilient crops to secure harvests and protect nature. Human activity is accelerating the loss of plant species, and the need to grow more crops using less resources has never been greater. We need crops that need less fertilizers and pesticides, and that can thrive in future climate scenarios. To achieve this, we need a new generation of crops.

Opportunity

Recent advances in gene editing technology and changes in the UK's regulation of precision bred organisms creates an unprecedented opportunity. For the UK to become the world leader in the application of plant biotechnology and to support the development of climate-resilient crops, that require less inputs without losing yield, and to preserve biodiversity.

However, there are bottlenecks that hold us back. The current gene editing technology can only be applied to a fraction of plant species, and we need to be able to reliably generate full plants from gene edited plant cells. The plant cell regeneration technologies developed by the PCRC will be used to preserve, maintain and optimise plants for agriculture, conservation and in new systems to produce natural plant-based products medicines.



From discovery research through to translational outputs the PCRC will develop mechanisms by which a single plant cell can become a full plant, a process called plant cell totipotency. This universal plant cell regeneration technology will allow crop-independent gene editing to ensure that research discoveries reach their full potential.

Commercialisation will establish a UK-based service or CRO that can deploy these technologies to support the use of gene editing to the crop improvement, pharmaceutical or conservation needs of industry and society.

The PCRC will span fundamental discovery through to full commercial application - Technology Readiness Levels 1-7, and will:

- Accelerate the development of nutrient dense, low-input and climate resilient crops for UK agriculture.
- Support global food security and global sustainability goals as defined by the UN.
- Reduce the barriers to the adoption of plant production systems to bring plant natural product medicines to market.

Co-Investment

We are seeking £10m from DSIT through the Research Ventures Catalyst programme to support the fundamental / academic research within the PCRC. This will be for staff, consumables, facility access costs and for commissioning subcontracts.

We are seeking Private and 3rd sector co-investment to support infrastructure development, facilities, equipment and staff for BRAC the CRO and Service Company.

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