PRESS RELEASE
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Camena Bioscience and Constructive Bio join synthetic biology collaboration to develop plant genomics

- *Project backed by £9.1m funding from ARIA, the Advanced Research + Invention Agency, to develop synthetic chloroplast genomes*
- *Project is led by the Max-Planck Institute of Molecular Plant Physiology and also includes academics from University of Essex and UC Berkeley*

Cambridge, UK, 14 August 2025 – Camena Bioscience (Camena), an innovator in enzymatic DNA synthesis, and Constructive Bio (Constructive), a pioneer in whole genome writing, today announced they have joined a collaborative project led by the Max-Planck Institute of Molecular Plant Physiology (MPI-MP), Germany, for a research initiative to develop synthetic chloroplast genomes.

Until now, constructing synthetic chloroplast genomes has been extremely challenging due to their structural complexity and very large size. Camena and Constructive will overcome these critical technical barriers through application of their DNA synthesis technology and large-scale DNA assembly toolkit, respectively, to deliver highly complex constructs at scale, enabling high-fidelity DNA synthesis and full-genome assembly. Synthetic chloroplast genomes hold enormous potential, from optimising crop performance in response to climate change, to developing plants as sustainable biofactories for biofuels and pharmaceuticals.

Chloroplasts are specialised structures within plant cells that perform photosynthesis; capturing sunlight and converting it into energy. The chloroplast genome is the complete set of DNA contained within a chloroplast. Studying these genomes provides valuable insights into plant evolution and the blueprint for how plants capture energy and adapt to changing environments. Chloroplast genomes are typically 120–170 kilobases in length, highly AT-rich, and contain extensive repetitive regions. These features make them particularly challenging to sequence, synthesise, and assemble.

Camena and Constructive's innovations are foundational to the collaboration's effort to build fully synthetic chloroplast genomes. The project is backed by £9.1m funding from ARIA, the Advanced Research + Invention Agency, a non-departmental public body, sponsored by the Department for Science, Innovation and Technology, will be led by Dr. Daniel Dunkelmann at the MPI-MP, and also includes academics Pallavi Singh, University of Essex and Patrick Shih, UC Berkeley.

Dr. Steve Harvey, CEO of Camena Bioscience, remarked: "*Combining Camena's ability to synthesise DNA with Constructive's ability to assemble genomes precisely highlights the UK's leadership position in cutting-edge synthetic biology, and leading role in DNA sequencing innovation. We're delighted that Camena was the chosen DNA synthesis partner to deliver highly complex constructs at scale, and look forward to working with MPI-MP to realise their ambitious vision.*"

Dr. Ola Wlodek, CEO of Constructive Bio, added: *"Synthetic chloroplasts represent a groundbreaking leap for synthetic genomics, bringing pioneering ideas into reality and laying the foundation for a bioeconomy projected to surge to $30 trillion by 2050[1]. This leap is made possible by the combined capabilities of Camena and Constructive. We are excited to apply our transformative large-scale DNA assembly toolkit to help power a biomanufacturing revolution, and we believe it will*

deliver outsized ROI for savvy investors through disruptive innovation—while aligning with ESG mandates to safeguard planetary health and reshape entire industries for generations to come."

1. https://www.bcg.com/publications/2022/synthetic-biology-is-about-to-disrupt-your-industry

ENDS

Notes to Editors

Dr. Ola Wlodek, CEO, Constructive Bio and Dr. Steve Harvey, Co-founder and CEO, Camena Bioscience

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About Camena Bioscience

Camena Bioscience is a synthetic biology company with a novel enzymatic DNA and gene synthesis technology called gSynth®. Built on almost a decade of innovation and with deep insight to the challenges faced in the pharmaceutical and biotechnology industries, its platform is rewriting the possibilities of DNA synthesis. By unlocking access to genes with unparalleled accuracy and speed, gSynth is expanding the sequence space researchers can explore.

Camena Bioscience is headquartered in Cambridge, UK.

https://www.camenabio.com/

About Constructive Bio

Constructive Bio is a pioneer in synthetic biology with capabilities to rewrite entire genomes and incorporate multiple non-canonical amino acids in a single molecule.

Through exclusive access to breakthrough science from the MRC Laboratory of Molecular Biology, based on the research carried out by founder Professor Jason Chin, Constructive Bioscience is rewriting the genome to build biomolecules of the future. Their unique technology turns living cells into biofactories, creating sustainable new materials and therapeutics. With full control of the genetic sequence and code, we are exploring chemical space previously unreached by natural biology.

Constructive Bioscience is headquartered in Cambridge, UK.

https://www.constructive.bio/

About ARIA

ARIA is an R&D funding agency created to unlock technological breakthroughs for societal benefit. Created by an Act of Parliament and sponsored by the Department for Science, Innovation and Technology, we fund teams of scientists and engineers to pursue research at the edge of what is scientifically and technologically possible.

This project is part of ARIA's Synthetic Plant programme, a £62.4 million pound programme led by Programme Director Angie Burnett. The programme's aims are to unite expertise in synthetic biology with plant biology, opening pathways to a new generation of crops that can meet the future needs of humankind.

https://www.aria.org.uk/