Module 1: Resource-full Waste

Degradation of non-recyclable, mixed waste to platform chemicals and feedstock for Poly-3-hydroxybutyrate (P(3HB)) production.

Polyurethane degradation

Functional Polyurethane (PUR) esterase with substrate analogue

Western Blot analysis suggests that the cosMV fusion protein is secreted

Poly-3-hydroxybutyrate synthesis from waste

SRF waste from POWERDAY used as a carbon source for P(3HB) production

Improved Poly-3-hydroxybutyrate production

Our model indicated that J23104 would improve P(3HB) production

We subsequently designed several new Biobricks

Constitutive Promoter, BBa_K1149052

Hybrid Promoter, BBa_K1149051

Europe’s Best New BioBrick Part or Device, Engineered

Our improved Biobrick makes 11 x more P(3HB)

Industrial Implementation

MG1655 transformed with our hybrid phaCAB bioplastic producing operon were cultured in a bioreactor at Imperial College London

Separation of 3HB via Membranes

Preliminary data in collaboration with Professor Livingstone group, Chemical Engineering at Imperial College London

Team & Attributions

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Many thanks to our sponsors

Richard Kelwick, Paul Freemount, Richard Kitney, Alex Webb, Kirsten Jensen, Guy-Bart Stan and the CSynBI team

Many thanks to our advisors

P(3HB) degradation

P(3HB) degradation

P(3HB) production

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