ISOCHASSIS

OUR SUITE OF INDUSTRIAL MICROBIAL HOSTS FOR SCALABLE PROTEIN AND ENZYME PRODUCTION

ISOMERASE

www.isomerase.com

ISOCHASSIS

A COMPREHENSIVE COLLECTION OF PROPRIETARY ENGINEERED MICROBIAL HOSTS

ISOCHASSIS is Isomerase's platform of proprietary engineered microbial hosts designed to meet diverse industrial needs in recombinant protein and biologics production. Combined with our in-house high cell-density fermentation strategies, we maximize biomass and yield, ensuring efficient scalability for industrial applications. Our portfolio features *Escherichia coli*, *Pichia pastoris and Bacillus subtilis*. Our platforms are fully scalable and have been used for peptide, protein and enzyme production.

OUR PLATFORM HOSTS

Escherichia coli

Our extensive selection of *E.coli* strains, derived from the widely utilized industrial strain BL21 DE3. Our offerings include:

- BL21 DE3 Δ*lac*Y for tuneable induced expression.
- Protease deficient strains, with optional co-expressed chaperones, disulfide bond formation and rare codon expression.
- Recombinant protein expression at low temperatures (e.g., 12 °C).
- Experience in improving expression of toxic and low-yielding proteins.
- Metabolic and chromosomal engineering.
- Periplasmic secretion and isolation of target heterologous proteins using a range of secretion tags.
- A variety of replicative high and low copy vectors.
- A selection of constitutive and inducible promoters using various inducers.

Pichia Pastoris (Komagataella phaffii) GRAS

Our proprietary *Pichia pastoris* strains are engineered for high-level intracellular or extracellular protein production. *P. pastoris* does not produce endotoxins, making it an ideal system for biopharmaceutical production where endotoxin contamination is a major concern.
Our collection includes:

- Mut^{+} and Mut^{S} variants for controlled expression in methanol-induced systems.
- Protease-deficient strains to reduce protein degradation.
- Auxotrophic mutants for increased plasmid retention without the need for antibiotics.
- Methods for methanol-free expression.

> Our portfolio continues to grow as we invest in internal research to expand our strain offerings, ensuring we remain at the forefront of enzyme production technology.

We offer an extensive selection of promoters, options for stable episomal expression or chromosomal integration and a variety of secretion tags. Our high-density fermentation process can achieve expression levels up to 20 g/L after optimization.

Bacillus subtilis GRAS

Our *Bacillus* offerings include strains derived from *B. subtilis* Marburg, including wild-type, protease-deficient mutants and sporulation mutants.
Our collection includes:

- A suite of replicative and integrative vectors.
- Constitutive and inducible promoters.
- A range of protein secretion tags.

KEY BENEFITS OF UTILIZING OUR PLATFORM

Versatility and Customization

Our experience working with partners across a range of industrial sectors means we are specialized in **determining the best host** for your needs depending on your target's solubility, toxicity and processing requirements.

GRAS Microorganism: Generally Recognized as Safe by FDA, ensuring that the microorganism and its products are deemed safe for their intended applications in food and pharmaceutical industries.

Evaluation and Optimization

We provide our partners with the opportunity to **evaluate various combinations of system components** (e.g., promoters, plasmid vectors, selection markers) within our microbial host systems. This enables precise **evaluation of productivity and comparison against our other in-house expression systems**. This initial screening offers critical early insights into the productivity of different systems. By leveraging this data, you can select the optimal system from the outset, which is especially beneficial when producing novel biologics that are challenging to express.

Ownership

Strains specifically made for your target belong to you and come with full commercialization rights, ensuring **no downstream fees or royalties.**

Integrated Solutions

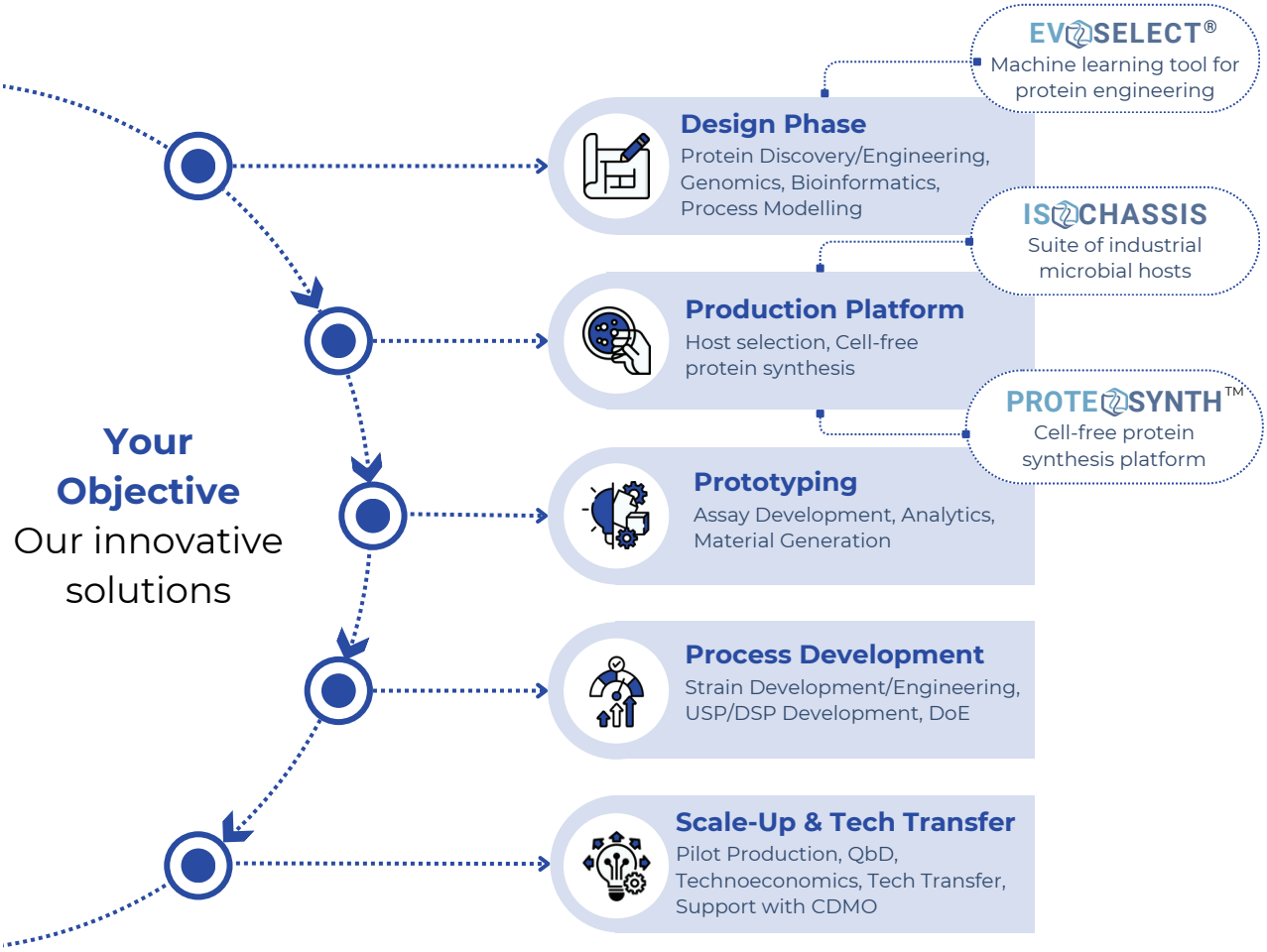
Our platforms offer a fully integrated approach to enzyme development, **eliminating the need for complex and time-intensive technology transfers** between multiple providers.

We have extensive experience across various microbial hosts. If your preferred host is not listed, we invite you to discuss your needs with our team. We are ready to explore and develop alternative microbial hosts tailored to your project.

SEAMLESS INTEGRATION WITH THE ISOZYM™ PLATFORM

ISOCHASSIS is an integral component of our ISOZYM™ platform, which provides an **end-to-end solution for protein production**. The ISOZYM™ platform supports the full spectrum of enzyme discovery and development – each step can be executed as standalone work package based on the partner's current research or development stage, or combined into a cohesive workflow to support end-to-end enzyme production (Scheme 1). By partnering with us, you gain access to a comprehensive suite of services, ensuring consistency, efficiency and accelerated timelines across all stages of development. In addition, Isomerase provides **consultancy support** at every step of your process, including **risk assessment and technoeconomic analysis**. We offer insights into cost optimization, risk mitigation, and sustainable innovation to ensure economic viability and operational excellence.

ISOZYM™



Scheme 1 | Overview of the ISOZYM™ platform.
The platform's modular design allows for targeted engagement while maintaining compatibility across all stages, enabling partners to integrate our expertise seamlessly into their development pipeline.

SPEAK TO OUR TEAM

To learn more on how to leverage our platforms for your protein projects, please contact us at **bd@isomerase.com**.

www.isomerase.com

SILVER | Top 15% ecovadis Sustainability Rating FEB 2024

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