



Biomultifold[®]

Microbial Expression Technologies



Paras Biopharmaceuticals Finland Oy

Recombinant Biologics CDMO, Biosimilars & Bioprocess Enzymes
(Recombinant Proteins in *E. coli*, *Pichia*, and *Saccharomyces*)

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Focused Approach

Paras Biopharmaceuticals approach is to produce high quality Novel Biologics / Biosimilars and long therapeutic peptides in most economical manner. The company utilizes the strong scientific expertise and industrial experience of its team to achieve highest production of biologics at scale up level.

Biomultifold[®] Microbial High Expression Technologies

Biomultifold[®] provides an innovative and highly efficient process for the production of recombinant proteins using an *E. coli* expression system. Biomultifold[®] enables to achieve expression levels of multigrams of therapeutic proteins per liter of fermentation. This facilitates a very economical and cost effective system for manufacturing of recombinant proteins and their scale up production. Biomultifold[®] is therefore, the most suitable technology for the large scale production of Novel Biologics / Biosimilars and therapeutic products at the commercial scale.

Unique Genetic Construct

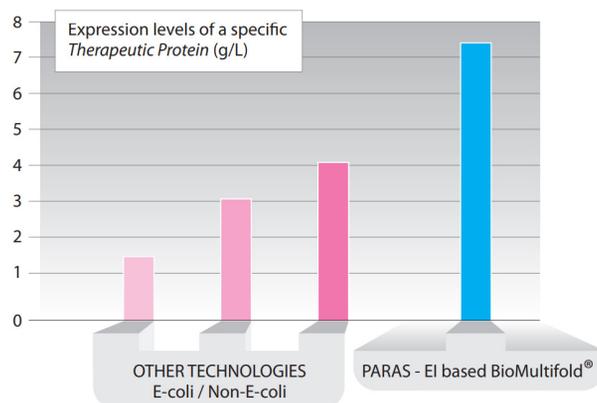
The genetic construction of proprietary plasmids of Paras Biopharmaceuticals is developed with the most optimum genetic codes selected for each amino acid of the therapeutic product. A selective combination is then developed by the most advanced optimization programs available in the industry to achieve the highest levels of protein expressions. Genes are coupled with suitable fusion partners, with a unique combination of therapeutic proteins and therapeutic peptides.

Gene Construct



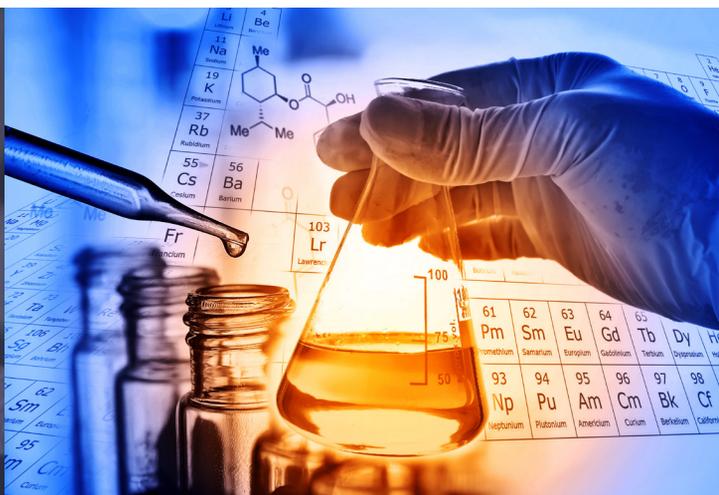
Economical Multiple Inducer

One of the most advanced features of Biomultifold[®] *E. coli* based technology is achieving high biomass and production with a very economical multiple inducer. The proven Biomultifold[®] technology comprises of a tightly regulated expression system induced by a low cost, non toxic proprietary inducer. As the inducer is completely non-toxic, it leads to simplified post production phase of protein purification, also significantly bringing down the purification costs.



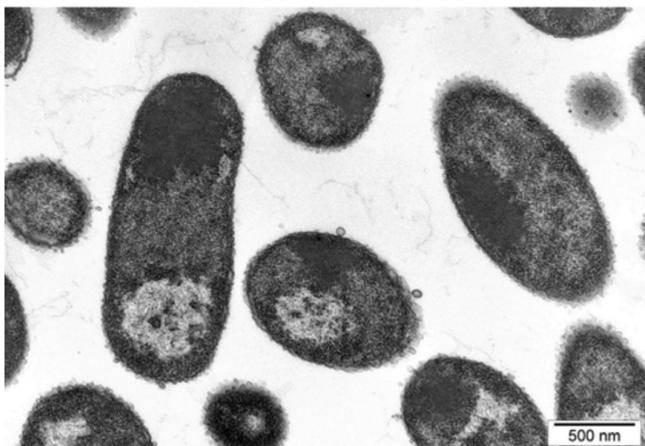
Biomultifold[®] -Technology Spotlight

- Achieve multigrams level of production of therapeutic proteins per liter of fermentation
- Unique Paras economical multiple inducer based high expression technology



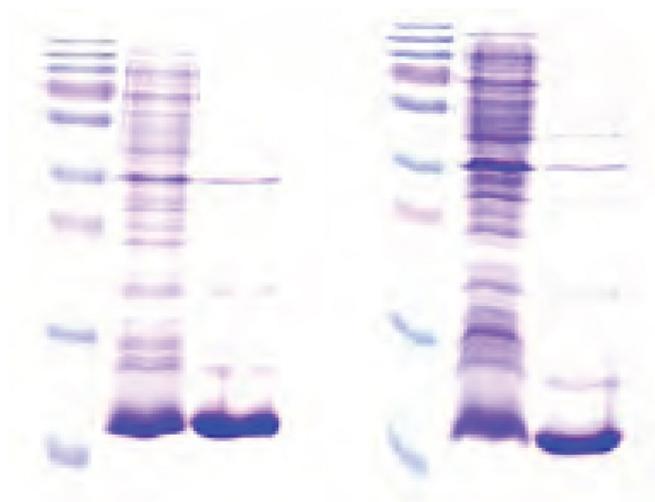
High yield recombinants

Paras Biopharmaceuticals has developed very high yielding and stable clones for the production of recombinant proteins. Paras Biopharmaceuticals utilizes core facilities to carry out electron microscopy studies to establish production of Novel biologics / Biosimilars and long therapeutic peptides in recombinant *E. coli* strains.



Electron micrograph of single cells of recombinant *E. coli* strains (clones) expressing recombinant proteins. Using Biomultifold® technology the *E. coli* strains produce very high concentrations of therapeutic proteins, shown as deposits of products in the cells.

Product Validation & Characterization



SDS-PAGE showing production of high concentrations of 2 different therapeutic proteins.

Benefits

- Innovative process optimization that multiplies the production of biopharmaceuticals in *E.Coli*
- Very high biomass development
- Very high levels of product titers
- No need to change your clone - Easy regulatory process.
- Improved economics / Lower production costs.
- Technology is ideal for a robust scale-up production process.
- Applicable for a wide range of biopharmaceuticals including its suitability for the production of antibody fragments in *E.Coli*





For more details, write us to

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