

A Fully Integrated and Customisable Service Platform for R&D-Scale Protein Purification from *Escherichia coli* and Human HEK293 Cells

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Introduction

Bacterial and mammalian expression systems are frequently used for protein production at laboratory and industrial process scales. They offer a rapid and efficient method for high level production of recombinant (rec.) proteins suitable for affinity purification. *tebu-bio* provides a tagged-protein production platform in *Escherichia coli* (*E. coli*) and Human HEK293 cells that matches academic and company requirements for speed, quality and cost for a variety of downstream R&D applications (e.g. antibody production, *in vitro* assays, crystallography...). As a service provider, *tebu-bio* can handle a part of or the entire protein production project, from generation of the expression vector to the delivery of milligram quantity of high quality purified rec. protein. Projects are customisable to suit customers' specifications and protein properties with predefined milestones for complete control over the project's progress. This service platform is an ideal tool to speed up protein-based research programs thus facilitating decision making process by scientists. We describe below the workflow of the integrated rec. protein platform available from *tebu-bio*.

Prokaryotic Expression

Material & Method Options

	<i>E. coli</i>
Cell Type	BL21 derivatives
Expression Plasmid	pET, pGEX and custom
Cellular Targeting	Intracellular (default) Periplasm (option)
Production Format	Batch
Affinity Purification Tag	
Poly-His (6-12 a.a)	✓
GST (211 a.a)	✓
His-SUMO (108 a.a)	✓
Purification Medium	
NI-NTA	✓
Glutathion sepharose	✓
Ion exchange	✓
Size exclusion	✓
Purification tag removal	
TEV protease	✓
R3C (PreScission) protease	✓
SUMO protease 1	✓

Service Platform Description

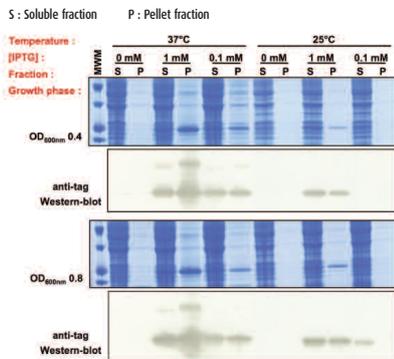


Eukaryotic Transient Expression

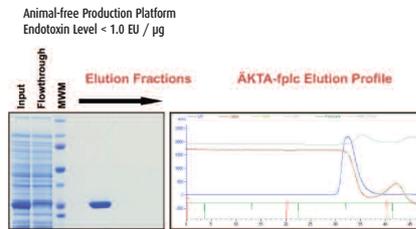
Material & Method Options

	HEK293
Cell Type	HEK293-EBNA1 serum-free adapted
Expression Plasmid	Proprietary oriP vectors
Cellular Targeting	Intracellular Medium
Production Format	Transient
Affinity Purification Tag	
Poly-His (6-12 a.a)	✓
StrepII (8 a.a)	✓
Fc (225 a.a)	✓
Purification Medium	
NI-NTA	✓
Ion exchange	✓
Size exclusion	✓
Protein A	✓
Purification tag removal	
TEV protease	✓
R3C (PreScission) protease	✓

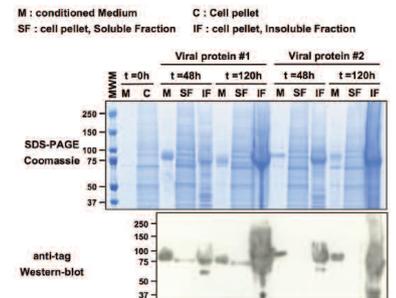
Expression Profile Optimisation



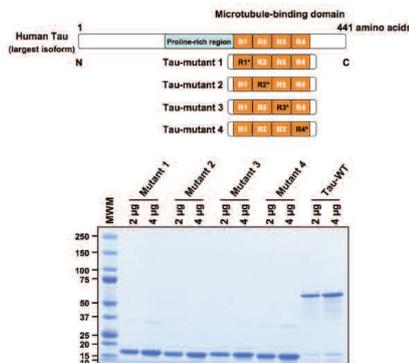
Protein Purification from Soluble or Insoluble Cellular Fractions



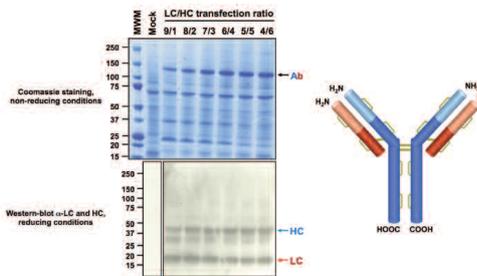
Secretion & Solubility Profiling



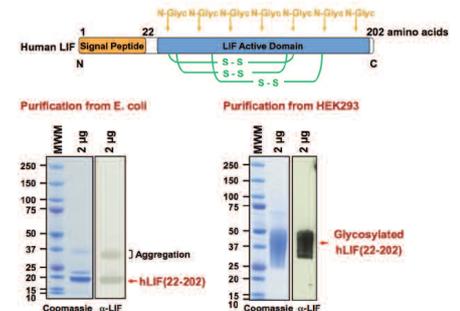
Generation of Protein Sets



Antibody Production Screening



Bio-active Proteins with Natural PTM



Conclusions

In the past years, the *tebu-bio* protein platform has successfully worked with customers from academic groups, biotech and pharmaceutical companies and provided them with specific benefits such as:

- Process expertise: steps are customisable and allow for complete project outsourcing in a GLP-like, ISO9001:2008 certified quality management environment
- Quality of delivered material: all process steps are performed in Europe by qualified Scientists to ensure short turn-around time and high performance
- No strings attached: process methods are made available to the customer for fast and efficient industrial exploitation with preservation of IP rights
- Complete transparency: project updates are provided weekly by a designated Project Manager and direct contact is maintained throughout project development

For more information, please feel free to contact our Sales Manager
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