

PERG Survey (2007) Bottlenecks in Protein Expression

The goal of this survey was to identify what problems create “bottlenecks” for labs that perform recombinant protein expression services.

The survey was administered through SurveyMonkey.

A total of 33 people responded to the survey.

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What process is the biggest bottleneck in protein expression in your laboratory?

Gene Cloning	3
Bacterial Expression	15
Insect Cell Expression	19
Yeast Expression	3
Mammalian Expression	22
Purification	44

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What is the most frequent problem that you encounter when dealing with bacterial expression?

Low / No Expression 25%

Solubility / Inclusions 75%

Most survey respondents reported that 50 – 75% of projects involve solubility problems. Sometimes customers send a vector to the core lab after they failed to generate soluble protein.

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How many expression constructs does your facility design and test for a given protein?

1	13%
2-5	49%
6-12	16%
12-24	10%
>24	13%

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How many expression conditions does your facility test to optimize expression from a given construct?

1 6%

2-5 42%

6-12 35%

>12 16%

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What is the most frequent problem encountered with insect cell expression systems?

Low expression / Secretion into media

What is the most frequent problem encountered with mammalian cell expression systems?

Low expression

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How do you proceed when an expression project fails?

Change expression system

Change growth conditions

Change fusion tag

How frequently do you remove tags?

50% or more / and "this never works"

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Are there other questions or issues that you would like to see covered in future surveys or presentations?

1. What are approaches for higher throughput?
2. End uses of proteins and typical scale of work
3. What tags do people use?
4. What depth of characterization is required?
5. What systems do people use and what are the success rates?
6. Utility and benefits of large-scale mammalian cell culture
7. Final buffer configurations to minimize aggregation
8. Purification conditions
9. How do people handle protein solubility problems?