

A large, abstract graphic on the left side of the page features a dark teal, circular pattern resembling a microscopic view of cells or a virus. This pattern is set against a lighter teal background that curves around the right side of the page. The overall design is clean and professional, with a focus on scientific imagery.

## Contract Research and Production Services

Maximize your investment in time and resources with the trusted baculovirus expression experts



An **Advancion** Company

# Your partner for custom baculovirus expression services

Expression Systems specializes in providing services utilizing the baculovirus expression system. Beginning with a gene sequence, we can optimize the sequence, build a viral vector, express the target at scale, and deliver purified product –

from recombinant proteins and vaccine candidates to AAV viral vectors. We can manage the project from gene design through delivery of purified product, or transfer a process intermediate to customers for further processing.



## 01 | Molecular Biology

Beginning with a sequence file, our scientists will review and modify the gene sequence with a focus on increasing expression yield and facilitating downstream processing. Molecular biology capabilities include:

- Cloning into an appropriate shuttle vector for virus generation by co-transfection or transposition to generate a bacmid
- Manipulation of sequence elements to simplify the purification process, facilitate secretion of intracellular proteins, and optimize expression in insect cells
- Bacmid preparation



## 02 | Recombinant Baculovirus Generation

With an optimized expression cassette cloned into the shuttle vector, we will generate a stable high-titer, low-passage virus stock with minimal defective virus particles. Expression Systems' molecular reagents and expertise are combined to provide the following services:

- Virus generation by co-transfection with BestBac™ linearized baculovirus DNA
- Virus generation by transfection of bacmids
- Amplification or recombinant baculovirus to a high-titer stock, from milliliters to hundreds of liters
- Purification of virus to achieve a clonal stock with a high proportion of virions expressing the target protein
- cGMP banking of Master Virus Seed Stocks to enable further cGMP manufacturing



### 03 | Recombinant Protein Expression Study

Expression Systems designs custom expression studies testing combinations of variables to determine upstream conditions that deliver increased expression yields while maintaining the critical quality attributes specific to the target protein and suitability for further downstream processing.

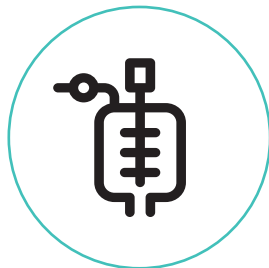
Typical expression studies incorporate selection of cell line, multiplicity of infection, infection density, harvest time and feed strategy. Cultures are analyzed to determine what conditions return the best yield and highest quality product.



### 04 | Upstream Production

With knowledge gained from the expression study, our scientists will develop a custom expression scale-up strategy for a production culture that will meet product yield and quality requirements. Deliverables may include:

- Expression supernatant and cell pellets for further processing
- Concentrated supernatant
- Buffer exchanged supernatant
- Purified protein



### 05 | Downstream Processing

To complete our end-to-end service offerings, Expression Systems harvests the production culture and continues through downstream processing to deliver a purified product. From initial recovery through chromatography and exchange into the formulation buffer, our downstream processing laboratories are equipped to handle numerous process flows in order to yield a final, purified product that meets required specifications.

## Did you know?

Expression Systems offers a baculovirus titering service with ultra-fast turnaround

Understanding the infectious titer of your baculovirus stock is key for optimizing expression and developing a reproducible upstream process. Our baculovirus titering service utilizes the flow cytometric titering assay which offers several advantages over other established methods.

With the exception of qPCR, which does not quantitate infectious virus and overestimates titer, our flow cytometric titering assay has the shortest turnaround time in the industry. If samples are received by noon on Wednesday, the customer can expect to receive titer data the following afternoon.

## About Expression Systems

Founded in 1997, Expression Systems, now an Advancion company, is dedicated to supplying and servicing the cell culture and bio-industrial markets with innovative cell culture media formulations, as well as cell lines, molecular tools, reagents, and contract services. The company specializes in the baculovirus expression vector system (BEVS) and has deep expertise across the process from gene optimization to protein purification. Its well-characterized, high-performing line of insect

cell culture media is recognized as the industry standard by structural biology researchers and biologics manufacturers to produce certain drug candidates, protein-based therapies, vaccines and gene therapies efficiently and cost-effectively. In November 2022, Expression Systems was acquired by Advancion, a leading global manufacturer of specialty life sciences ingredients, including TRIS AMINO™ tromethamine, TRIS AMINO™ HCl and HEPES buffers.

### Quality, Risk Management and Regulatory

- Expression Systems Quality Management Systems (QMS)
- ISO 13485:2016 certified
- FDA registered
- 2,500 sq. ft. cGMP clean rooms
- Adheres to 21 CFR 820 cGMPs
- Adheres to 21 CFR Part 210 and 211 where applicable

### Contact Us

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