

# BalanCD HEK293 System

Maximize productivity in suspension cultures

Versatile formulation supports transfection and production including:

- Rapid, scalable production of viral vectors
- Use the same system for a wide range of HEK293 cell lines
- Increased productivity in transient protein expression

Fulfills regulatory requirements:

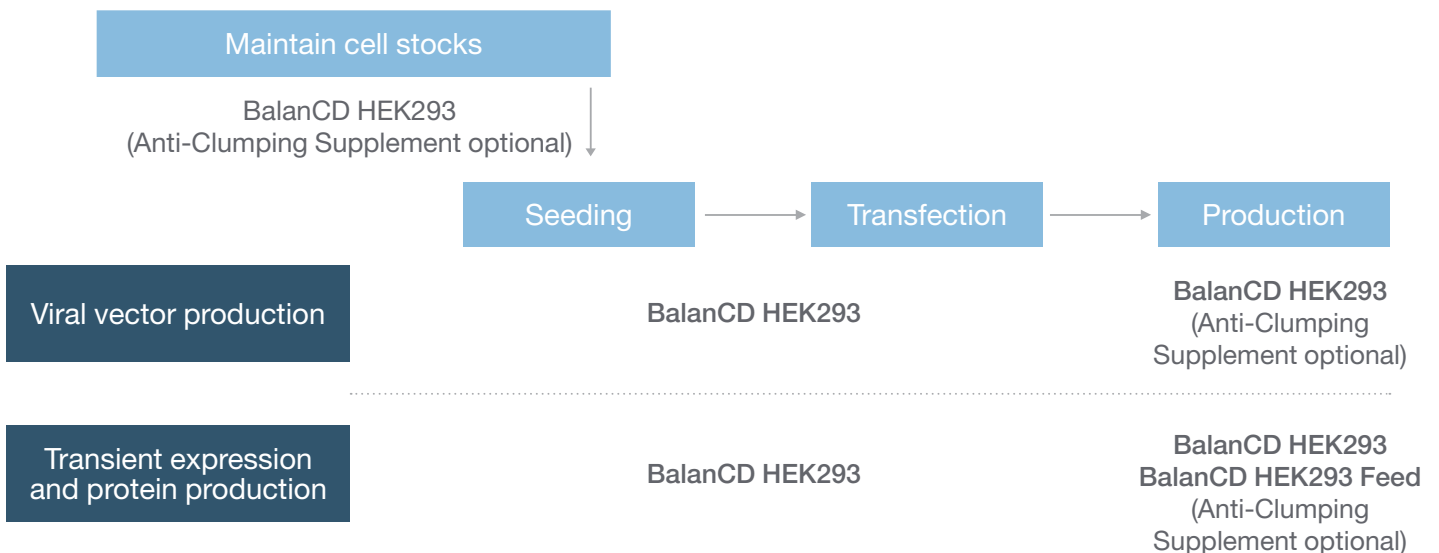
- Chemically-defined, animal-component free
- Drug Master File (DMF) filed with US FDA

Scalable protocol for use in flasks, spinner flasks, and bioreactors

BalanCD HEK293 is a scalable system designed to support growth and transfection of HEK293 cell lines in suspension cultures. Comprised of BalanCD HEK293 medium, BalanCD HEK293 Feed and Anti-Clumping Supplement, this highly versatile system supports a range of applications including production of viral vectors for gene therapy, transient protein expression and recombinant protein production. BalanCD HEK293 is part of the scalable BalanCD media and supplements platform designed to provide the optimal balance between growth and production to maximize productivity from mammalian cell cultures.



Use the same growth medium at every step and every scale



# With you at every step

From development through to large-scale production, success is highly dependent on providing the optimal culture conditions. The BalanCD platform of cell-specific growth media and feeds has been developed to avoid many of the challenges faced during cell line development through process optimization and into commercial production. These serum-free, chemically-defined media and their supplements provide the optimal balance between growth and production to maximize productivity at any scale.

## Media optimization and customization

Beginning with the most suitable BalanCD medium reduces development and optimization times required to achieve the required yield and quality of end-product. For those requiring customization to meet a specific need, experienced FUJIFILM Irvine Scientific professionals can provide efficient, cost-effective and time-saving assistance.

To discuss your requirements, contact us at [getinfo@irvinesci.com](mailto:getinfo@irvinesci.com) or visit our website at [www.irvinesci.com/contact-us](http://www.irvinesci.com/contact-us)

## Rapid prototyping

Normally provided within 10 working days, a rapid prototyping service offers flexible, small-scale, non-GMP media production of liquid and powder formulations. By using the same raw materials sourced and quality-controlled as for our large-scale GMP manufacturing, this approach greatly facilitates the step from research to process development activities.

## A smooth transition into commercial production

FUJIFILM Irvine Scientific products and services are developed according to the highest medical standards. Every BalanCD product is subject to a stringent Quality System unrivalled in the industry. To fulfill quality and reliability requirements, proprietary and customized media are manufactured under fully cGMP compliant conditions in dedicated animal-component free, state-of-the-art facilities replicated in California and Japan. Comprehensive documentation, including information from Supply Chain Management through to Drug Master Files, is available to help minimize the regulatory burden.

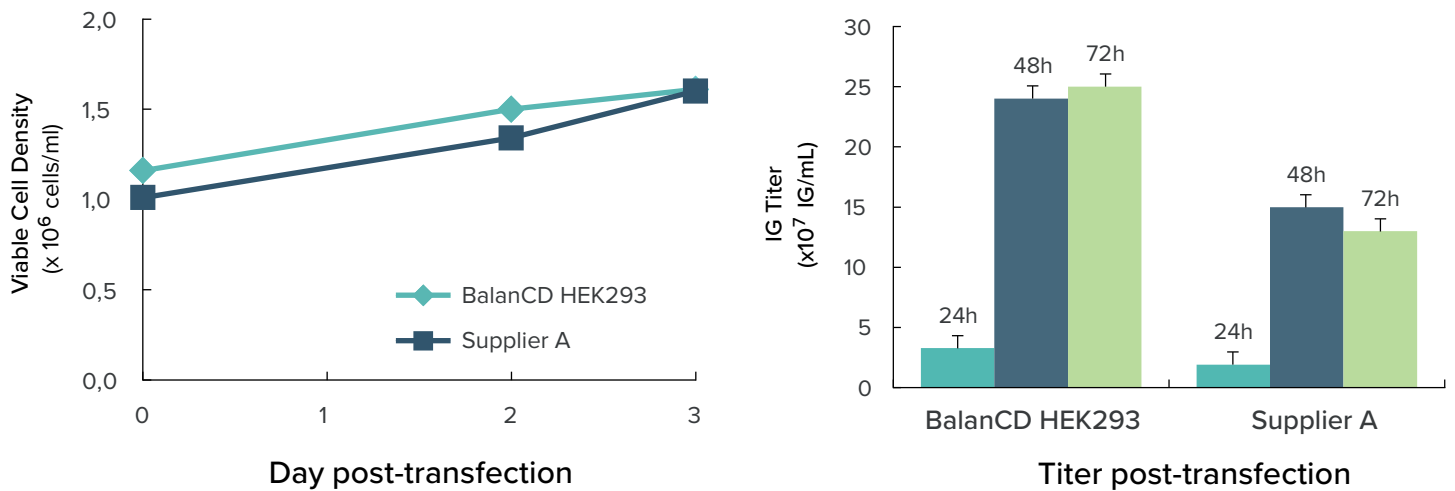
- FDA-regulated
- cGMP compliant manufacture
- ISO13485, EN 13485:2016 certified
- Drug Master Files



# Rapid, scalable production of viral vectors

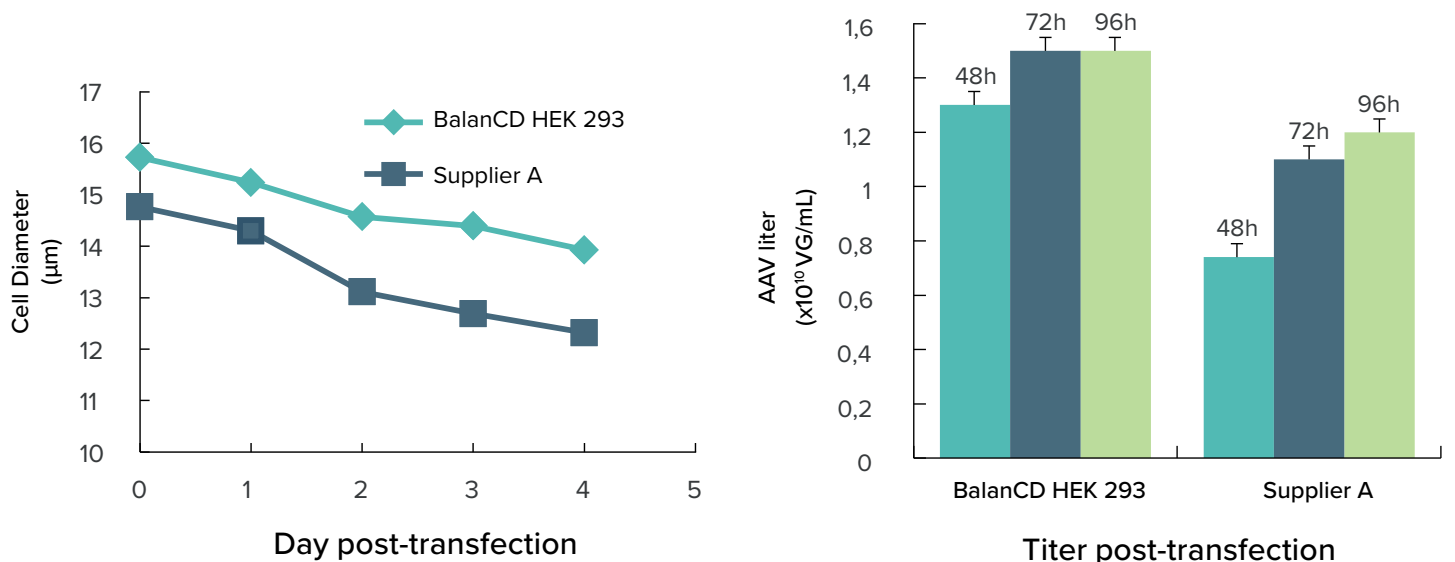
- Achieve optimal production yields within 48 hours
- Use the same medium for transfection and production
- Add Anti-Clumping Supplement to prevent aggregation

Simple, scalable protocol supports cell growth and increases yield of lentiviral vector



**Figure 1.** HEK293T cells were cultured in BalanCD HEK293 medium in a 2 L working volume bioreactor and passaged every 3–4 days. PEI-mediated transfection of 4 plasmids was performed 3 days after seeding at a DNA:PEI ratio of 1:1.5. Viable cell density was determined. Lentivirus titer was measured at 24, 48, and 72 hours post transfection.

Improved productivity of Adeno-Associated Virus (AAV) to a commercially-available medium

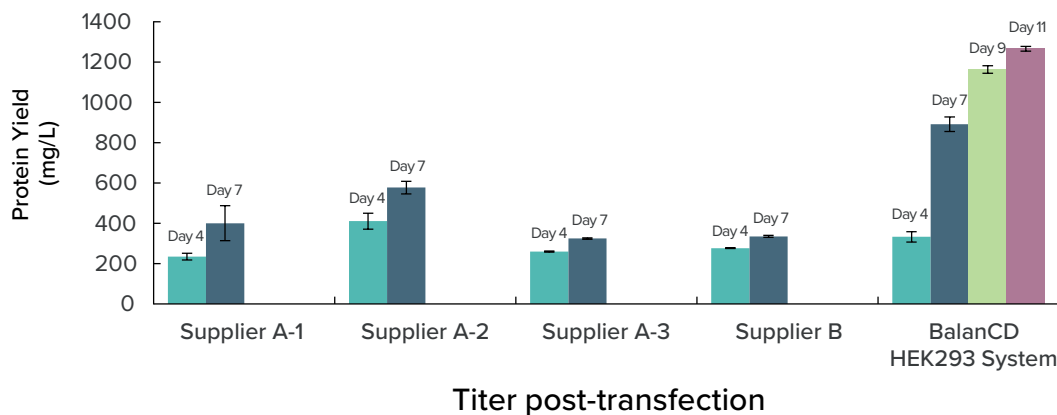
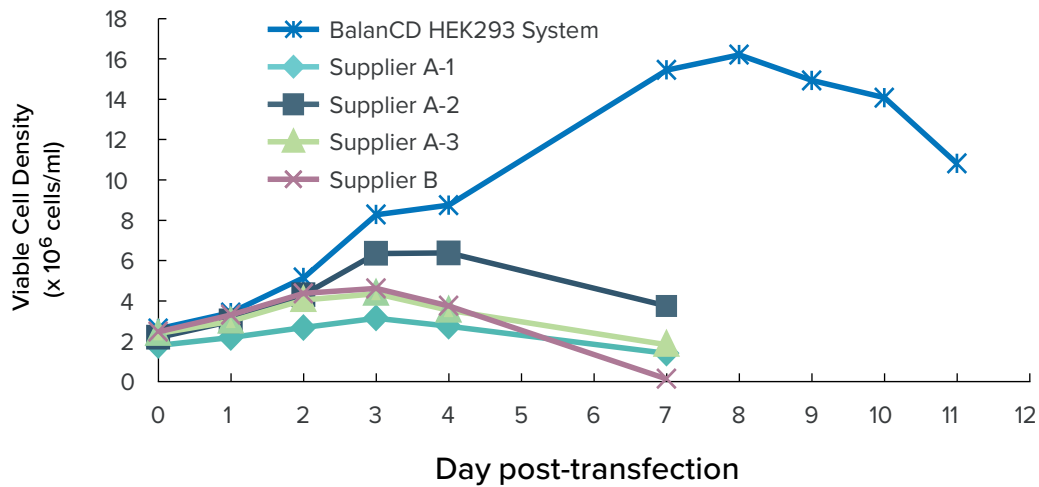


**Figure 2.** HEK293VC cells were cultured in a 2 L working volume bioreactor. PEI-mediated transfection of 3 plasmids was performed 3 days after seeding at a DNA:PEI ratio of 1:1.5. Cell diameter were determined. AAV titer was measured at 48, 72, and 96 hours post-transfection.

## Increase productivity in transient protein expression

- Achieve gram-scale yields of proteins using a simple scalable protocol
- Grow, transfect and produce in BalanCD HEK293 medium
- Maximize yield by adding BalanCD HEK293 Feed and Anti-Clumping Supplement post-transfection

Two-fold increase in titer compared to other commercially-available media

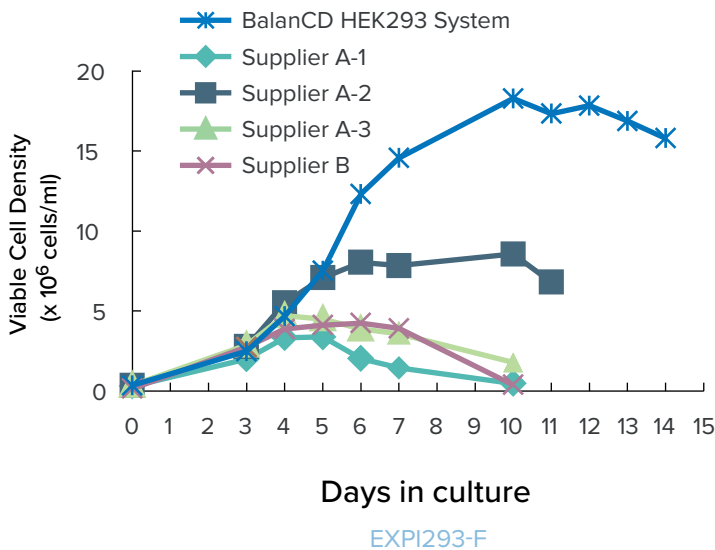
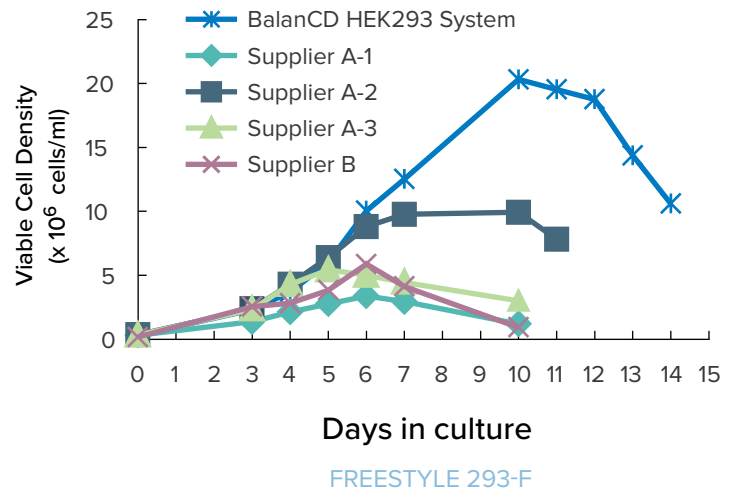
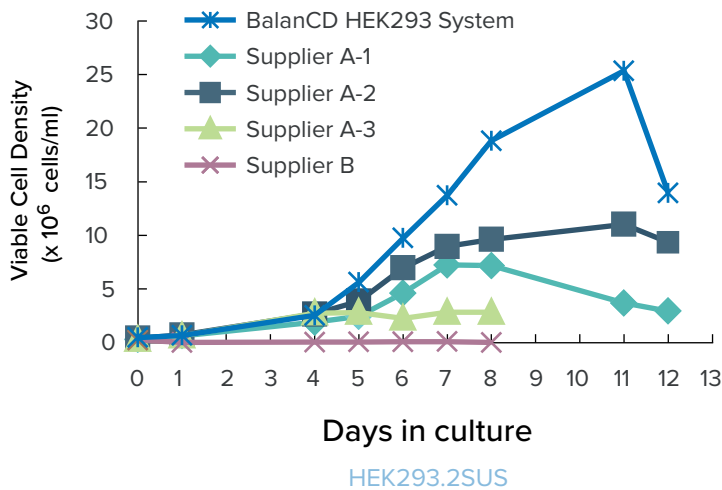


**Figure 3.** HEK293-6E cells were cultured in duplicate 125 mL Erlenmeyer flasks with a 30 mL working volume. Cells were seeded at  $3 \times 10^5$  cells/mL in BalanCD HEK 293 medium. PEI-mediated transfection was performed on day 3 to produce a biosimilar antibody. BalanCD HEK293 medium was supplemented with a 5% v/v addition of BalanCD HEK293 Feed on days 1-4 post-transfection. Protein titer was measured on days 7, 9, and 11 post-transfection. Cultures were terminated when viability dropped below 70%, (data not shown). Data shown represents the average of two duplicate cultures.

# Use the same system for a wide range of HEK293 cell lines

- Achieve higher cell densities while maintaining viability
- Increase culture longevity and maximize growth by adding BalanCD HEK 293 Feed
- Add Anti-Clumping Supplement to prevent aggregation

## Comparison with other commercially-available media



**Figure 4.** Three different commercially available HEK293 cell lines were cultured in 125 mL shaker flasks, at a working volume of 20–25%. Cells were seeded at 3 x 10<sup>5</sup> cells/mL, in duplicate, BalanCD HEK293 medium, supplemented with Anti-Clumping Supplement, and fed on days 3, 4, 5, and 6, at 5% v/v. Data shown represents the average of two duplicate cultures.

# Ordering Information

Item	Catalog #	Size*	Additional Information
BalanCD HEK293, liquid	91165-1L	1 L	
BalanCD HEK293, powder	94137	10 mL Made to order on request*	Chemically-defined, animal-component free formula Drug Master File submitted to US FDA
BalanCD HEK293 Feed, liquid	91166-500 mL	500 mL	
Anti-Clumping Supplement, liquid	91150-50 mL	50 mL	

\*Custom sizes and packaging available on request.

BalanCD HEK293,  
Anti-Clumping Supplement,  
BalanCD HEK293 Feed



## Life.Support.

With over 45 years of industry experience, FUJIFILM Irvine Scientific is focused on providing the highest quality cell culture media. We are dedicated to bringing life to products, and ultimately, to the patients who benefit from the resulting therapeutic advances. World-renowned for our unwavering commitment to full-spectrum partnership, FUJIFILM Irvine Scientific has defined the industry standard in support, innovation, and best-in-class turnaround time.

**FUJIFILM**  
Value from Innovation

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