

flora bio™



WE ENABLE YOU TO PRODUCE  
*Biopharmaceuticals*

FLORABIO PRODUCTS AND  
SERVICES

# FLORABIO IN BRIEF

- Registered in April 2016, in Izmir
- 3 mio € invested
- 14 employees
- 350 m<sup>2</sup> cell culture area

# MANAGEMENT TEAM



Cem Erdem

- CEO & Founder of Florabio
- CEO & Founder of FlorabioACADEMy
- 2012 - 2017 - Head of "Biotech Investment Sales" at Sartorius Turkey
- 2004 - 2012 - Sales Manager for Sartorius Turkey
- 2002-2003 – Trainer at Sartorius AG
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# MANAGEMENT TEAM



## Dr. Aziz Cayli

- 2016 Co-Founder/CSO Florabio AS, Turkey
- 2005 – 2012 Founder/CEO, Cellca GmbH,
- Germany 2000 – 2005 Boehringer Ingelheim,
- Germany 1998 – 2000 Roche, Germany

\*Cellca GmbH was sold to Sartorius in 2015

\*Developed ActiPRO culture media and licensed out to GE Health Care

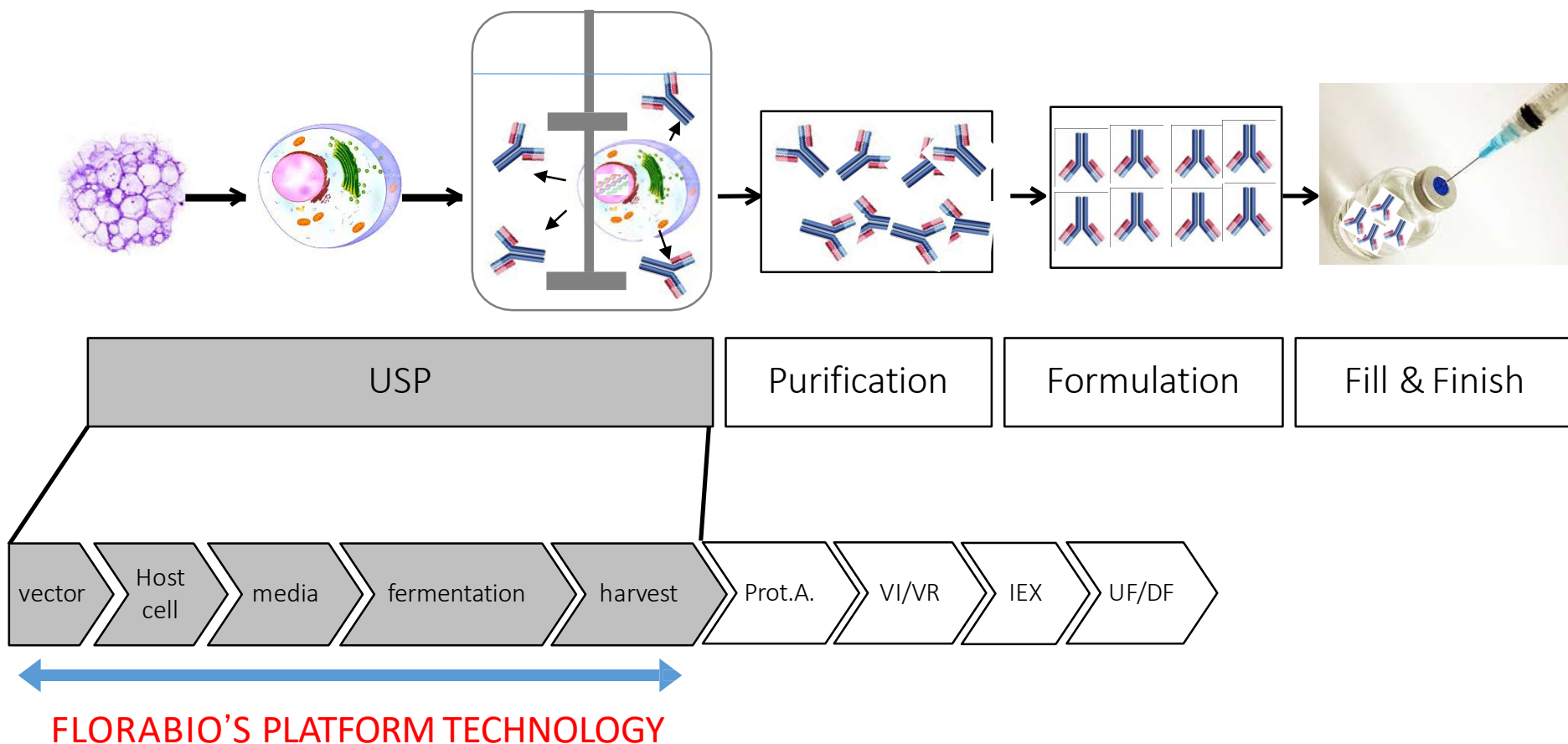
# MANAGEMENT TEAM



Dr. Joachim Walter

- SVP of Florabio DSP Department
- Consultant in Downstream process for many companies like, Ganymed, Affimed, Mabion, GE Healthcare, Regeneron, etc.
- Unit VP Head of Membrane Separation Sciences, GE Healthcare
- Head of Protein Chemistry 1985 – 2002, Boehringer Ingelheim

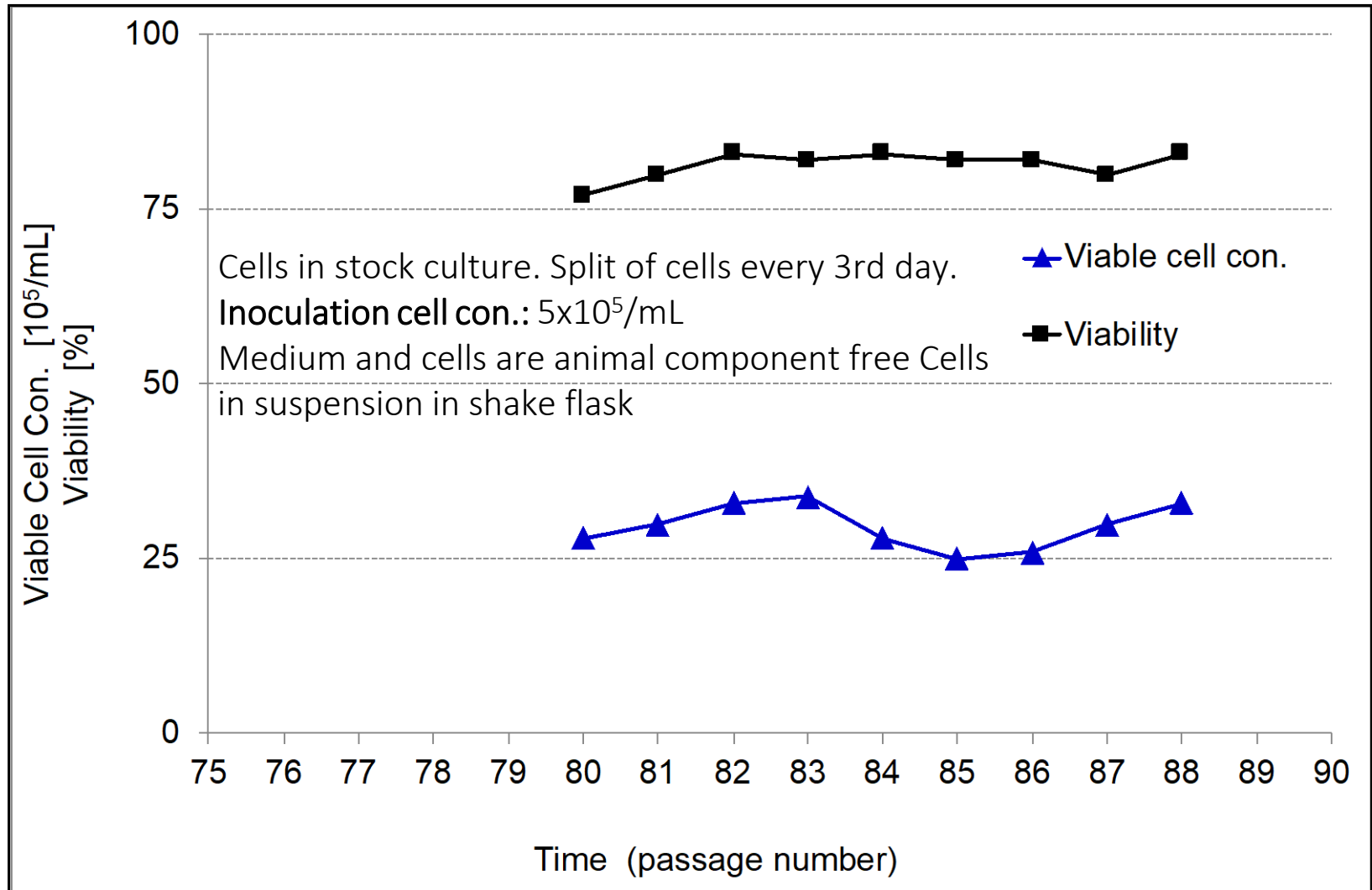
# PROTEIN AND VIRUS PRODUCTION PLATFORM TECHNOLOGY BASED





FlorabioHEK293 Cell Line

# Stock Culture Performance



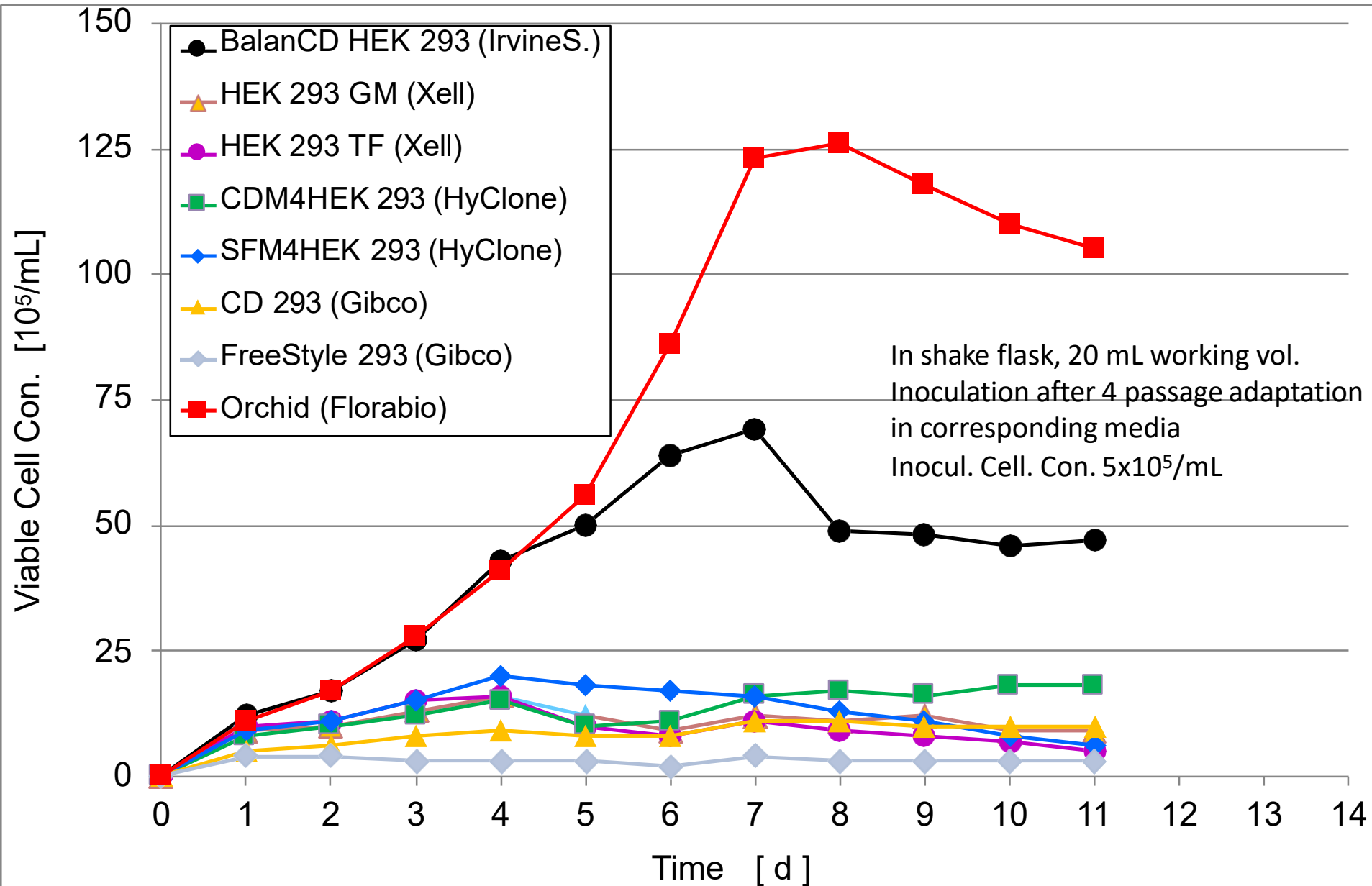


# ORCHID

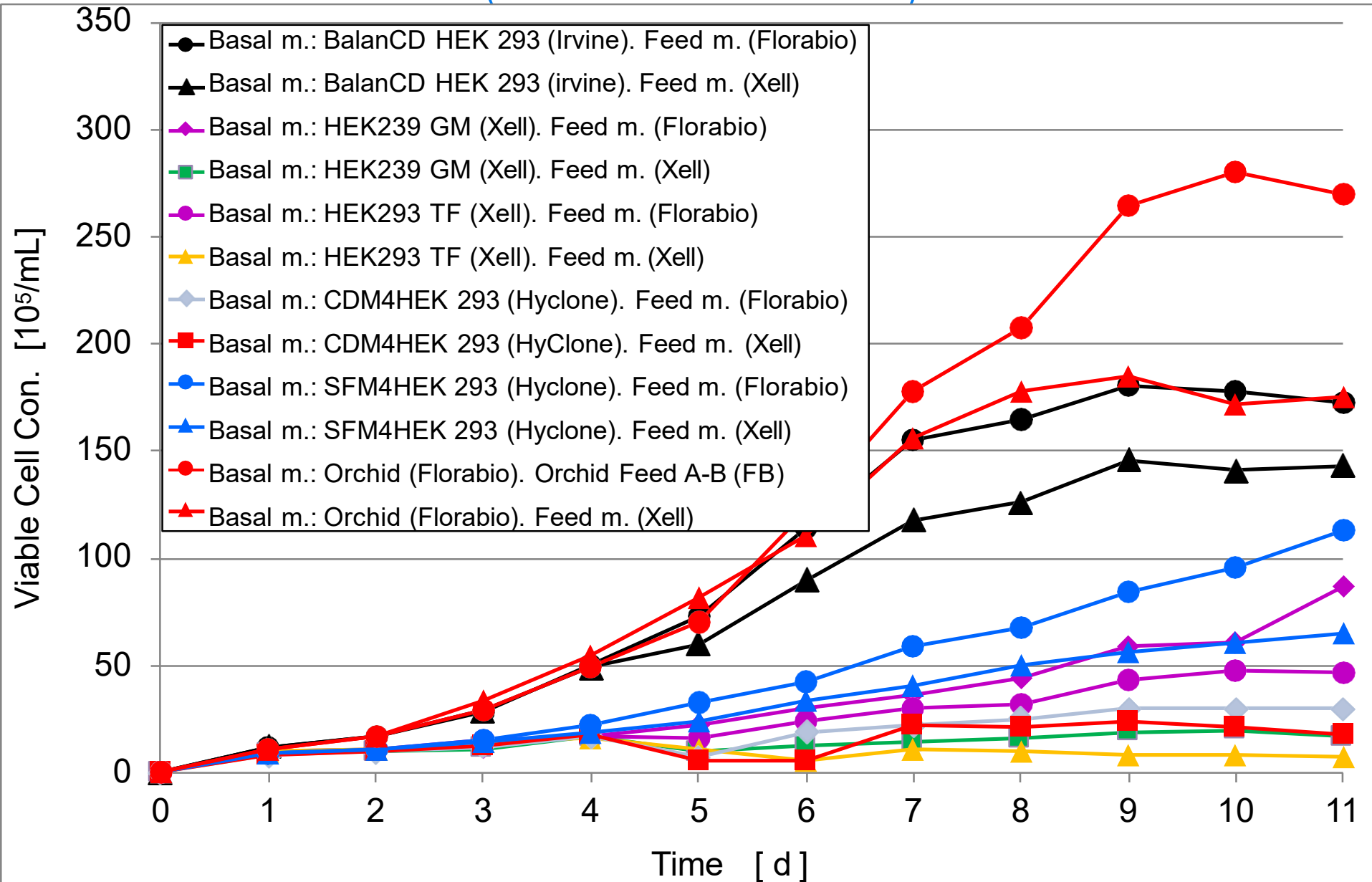
Cell Culture media for  
HEK293 cells

# ORCHID Production Medium

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## flora bio™





# IVY - Transient Transfection System

# TRANSIENT EXPRESSION PLATFORM

## **Cell line**

HEK293 cell line obtained from Public Health of England (cat. nr. 05011003). Cell line adapted to serum free suspension growth conditions. All steps documented, large cell bank prepared in serum free medium.

## **Stock culture and cell bank**

A procedure established for routine stock culture and serum free cell bank preparation.

## **Culture media**

Cell culture media and feeds are developed for stock cultivation and production in bioreactor. All media are animal component free, hydrolysate free.

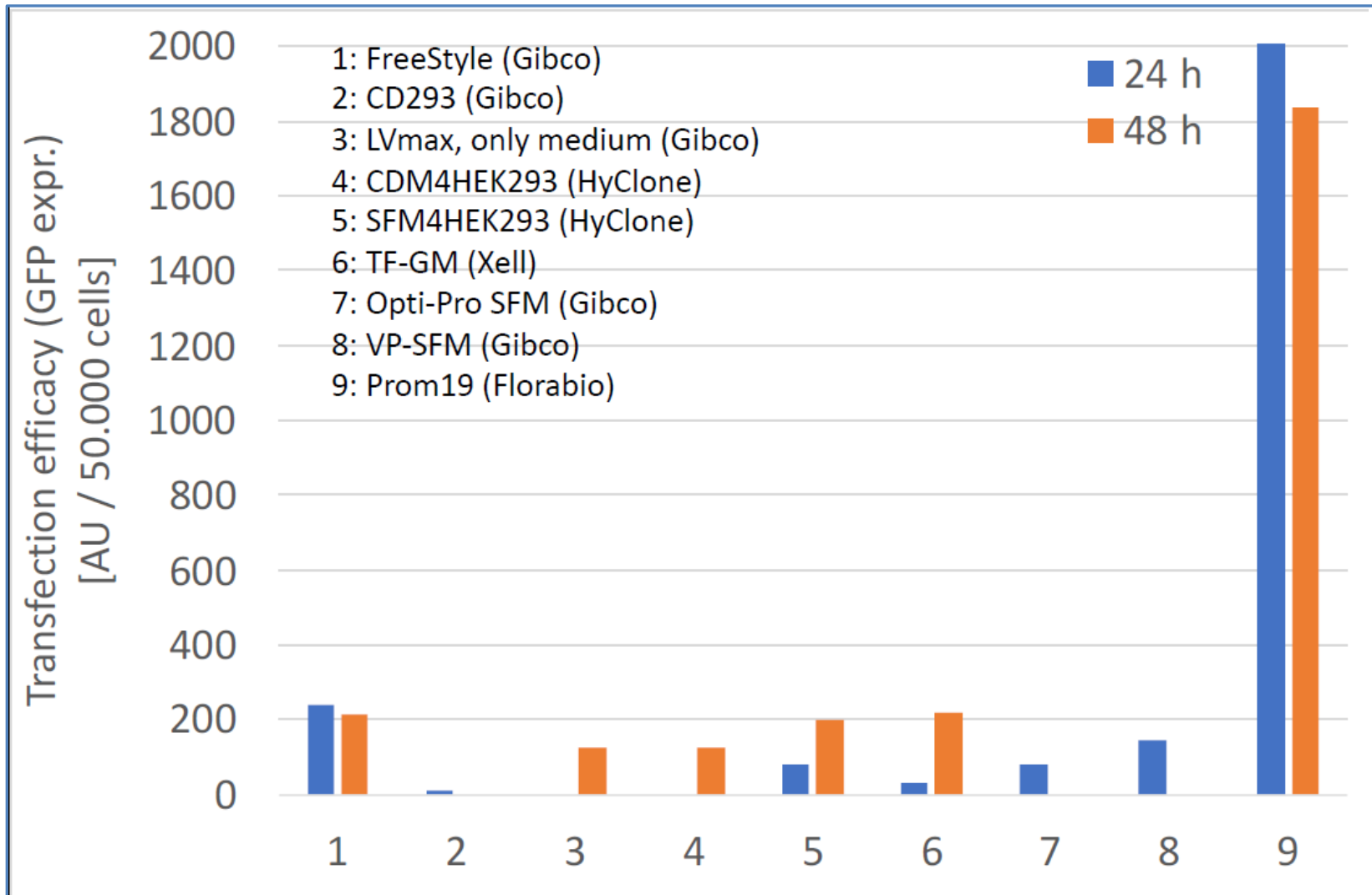
## **Transfection**

Polyethylenimine (PEI) is used as transfection agent. A complex formation medium is developed for high transfection efficacy. Reagents are animal component free.

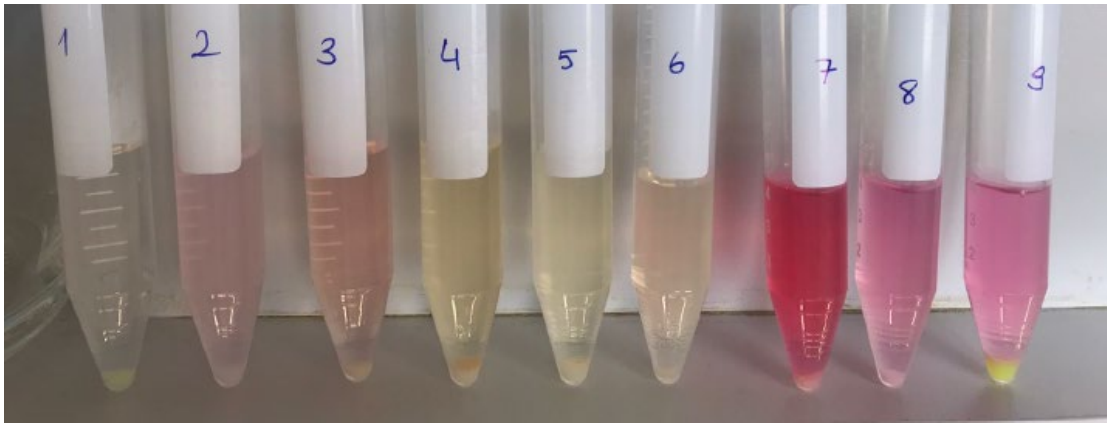
## **Standard Operating Procedures (SOP)**

Steps starting with cell thaw and ending with bioreactor harvest are described in SOPs, simplifying the application.

## COMPARISON COMMERCIAL MEDIA



# GFP EXPRESSION VISIBLE WITH EYES



- 1: FreeStyle (Gibco)
- 2: CD293 (Gibco)
- 3: LVmax, only medium (Gibco)
- 4: CDM4HEK293 (HyClone)
- 5: SFM4HEK293 (HyClone)

- 6: TF-GM (Xell)
- 7: Opti-Pro SFM (Gibco)
- 8: VP-SFM (Gibco)
- 9: IVY (Florabio)

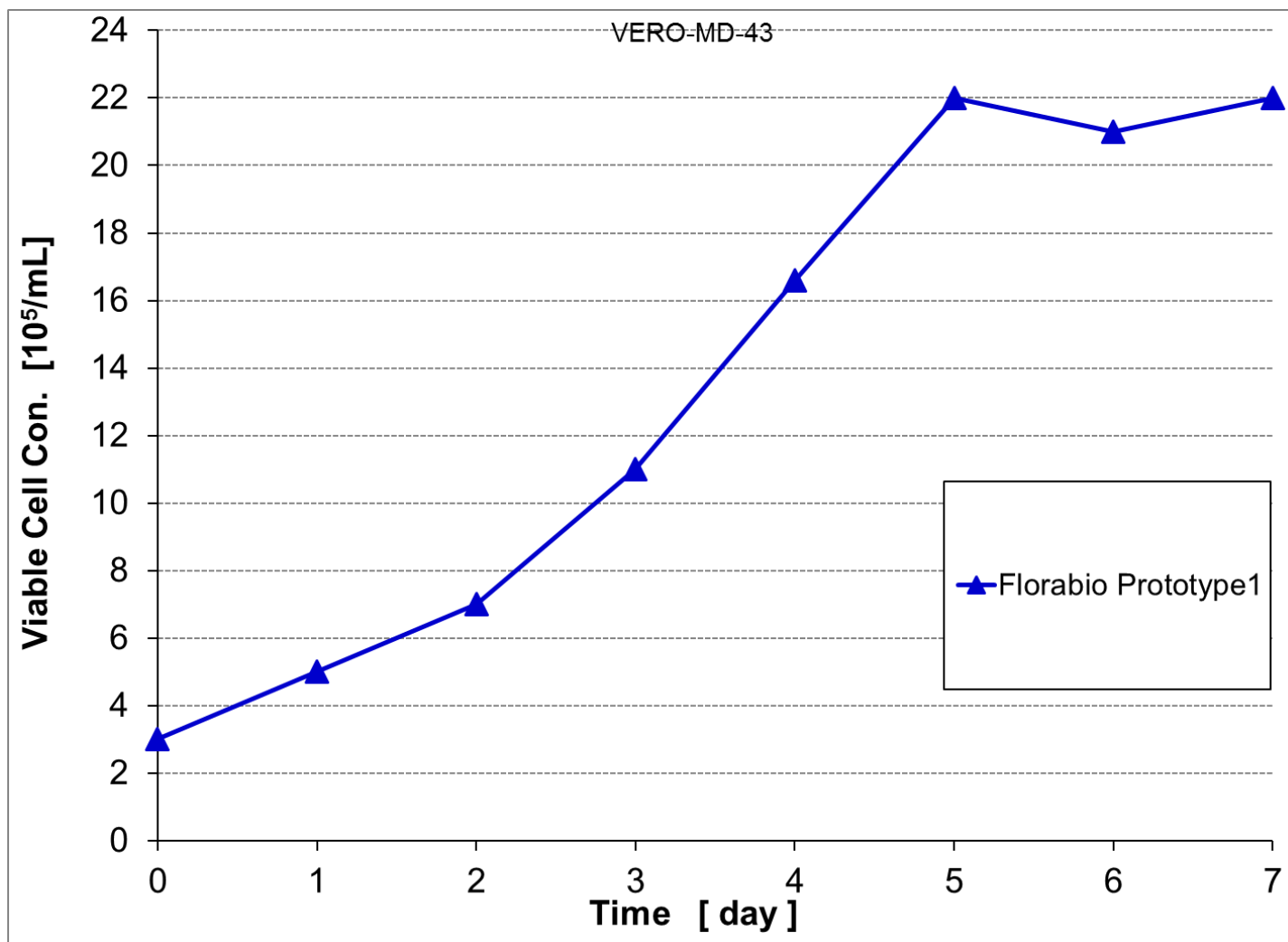


Expi293 (Gibco) vs IVY (Florabio)



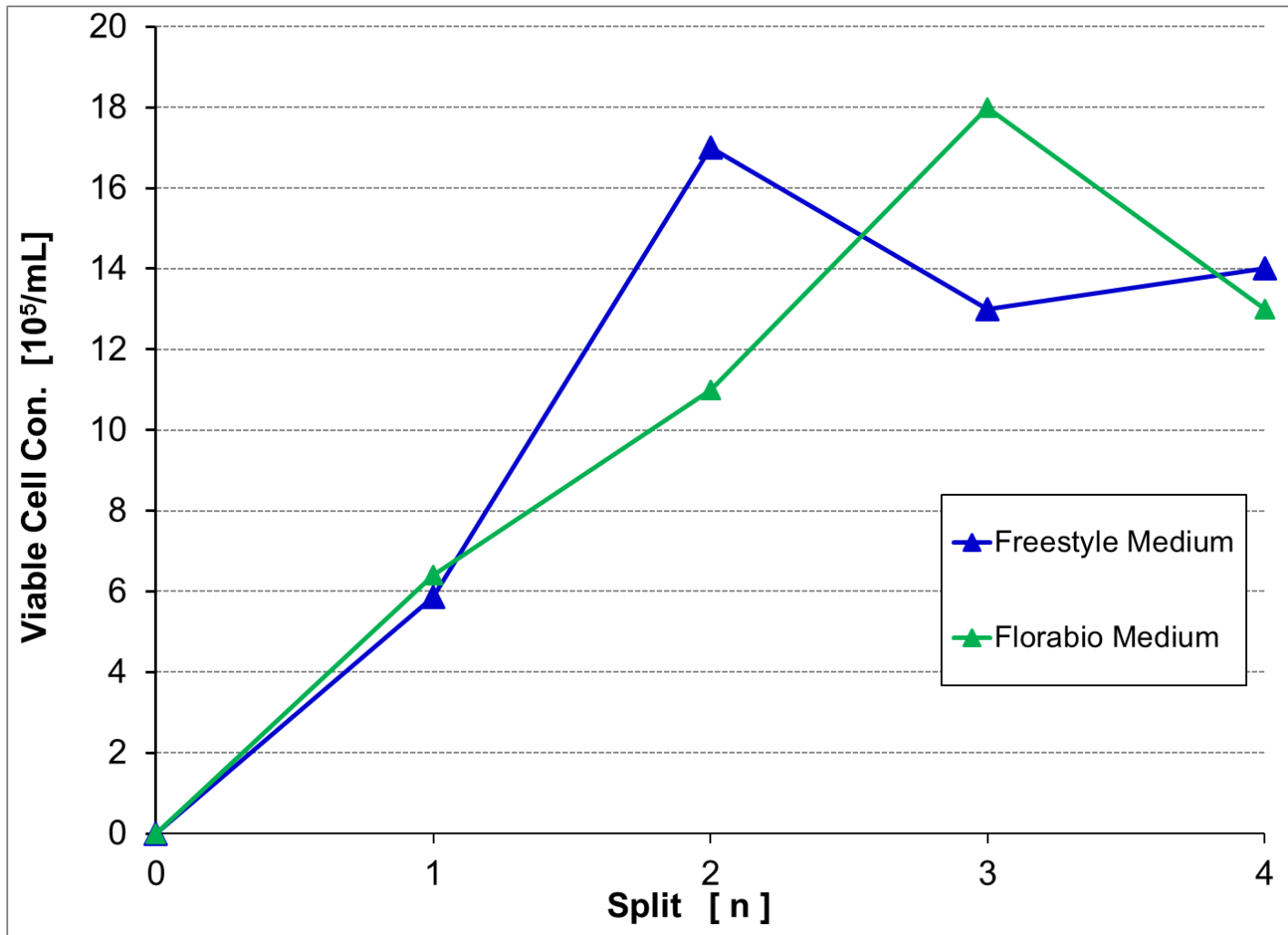
IMMORTELLE  
Cell Culture media for  
Suspension VERO cells

# Batch Process Performance of Anemone CD with suspension VERO Cells



\*Batch experiment is performed in w petri dish w/ 10 mL working volume. Inoculation cell concentration is  $3 \times 10^5/\text{mL}$ .

# Comparison data with other serum free HEK293 mediums

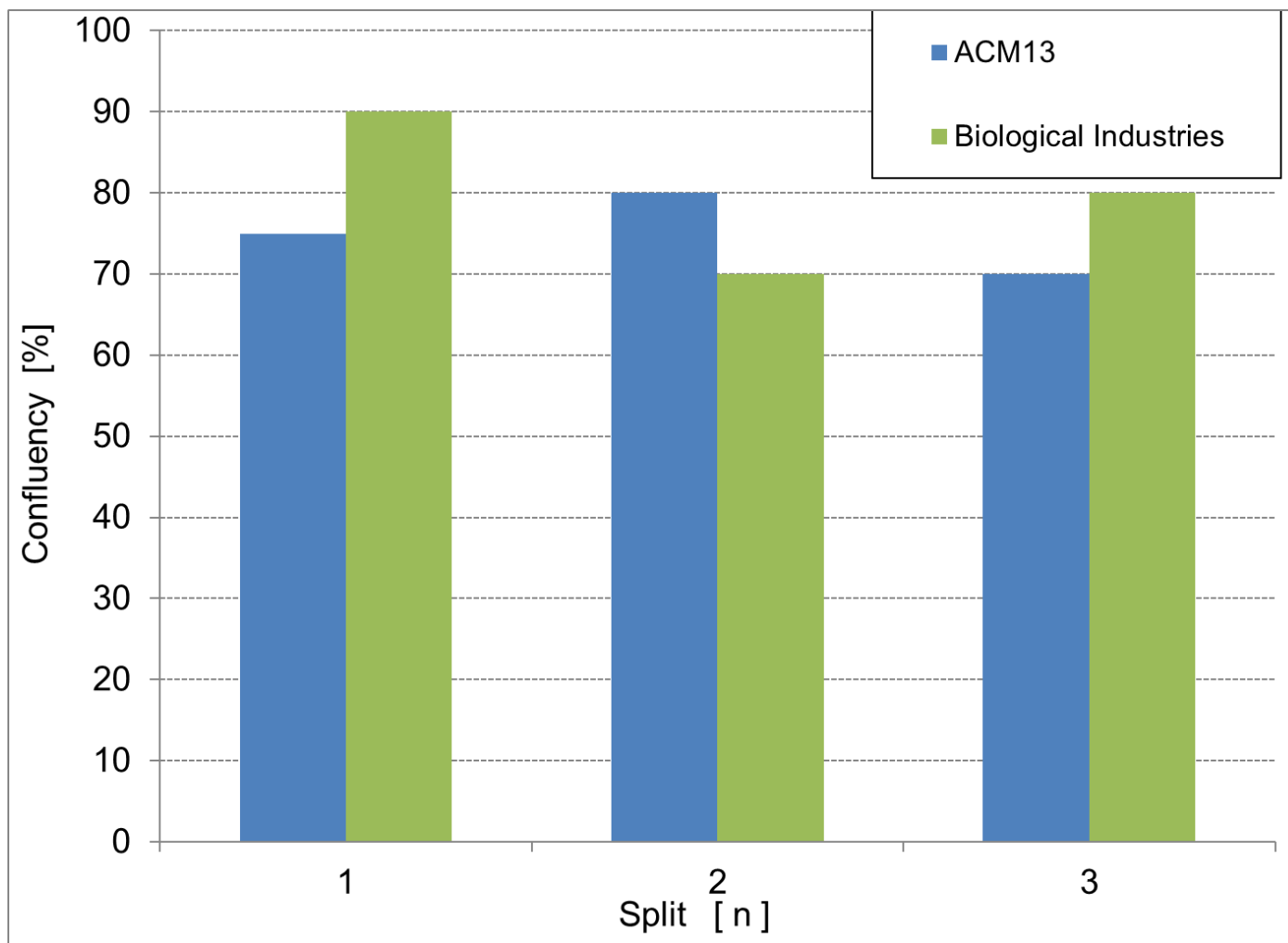




LOTUS  
Cell Culture media for  
Adherent VERO cells

# Batch Experiment Results of Anemone CD ACM

(Adherent "FlorabioVero" cells are used)



**\*\*Adherent culture test results**

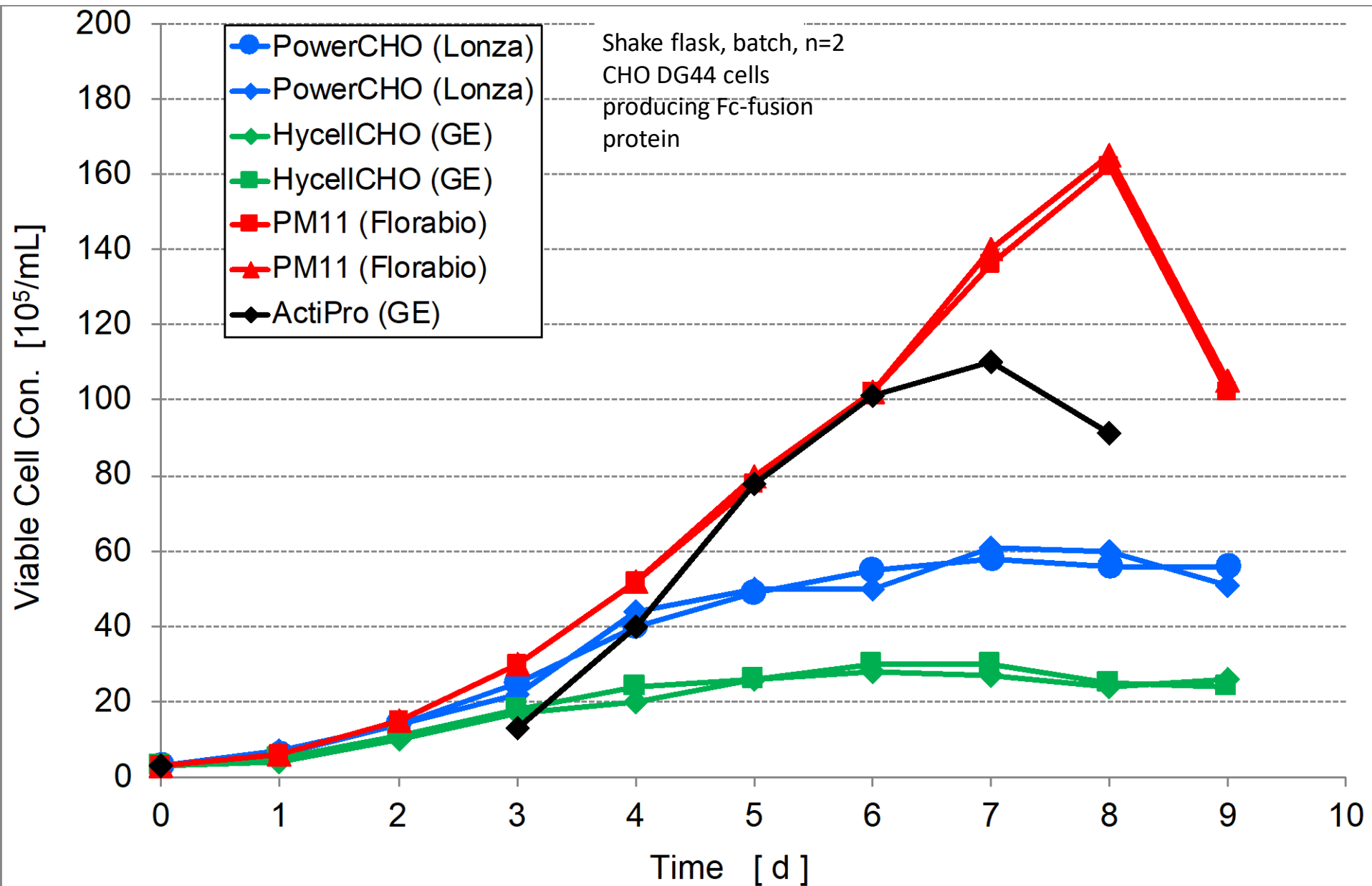


# JASMINE

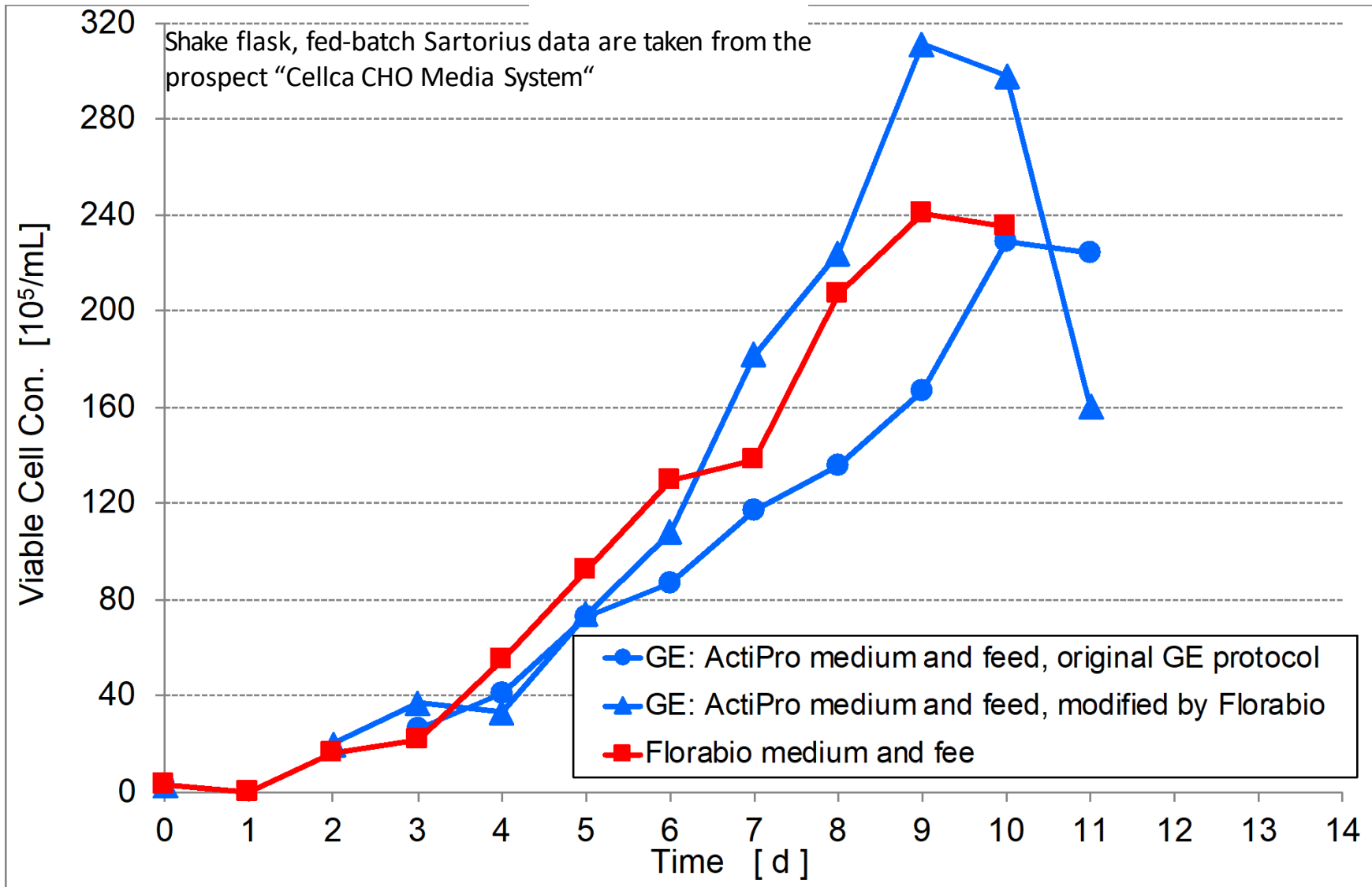
## Cell Culture Media System for CHO DG44 Cell Line

# JASMINE Production Medium

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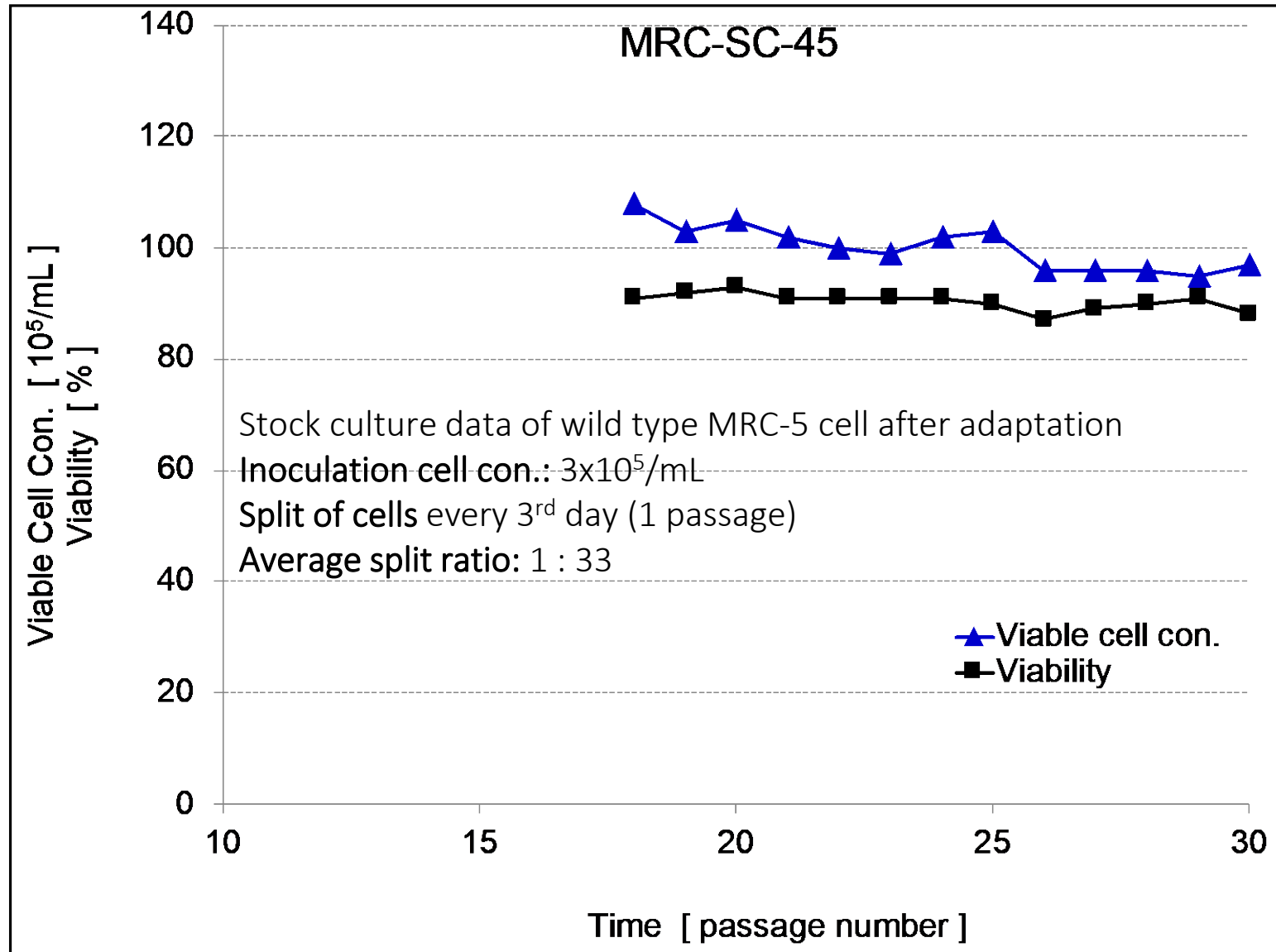
# JASMINE Media System (Production and Feed Media)





FlorabioMRC5 Cell Line

# Stock Culture performance

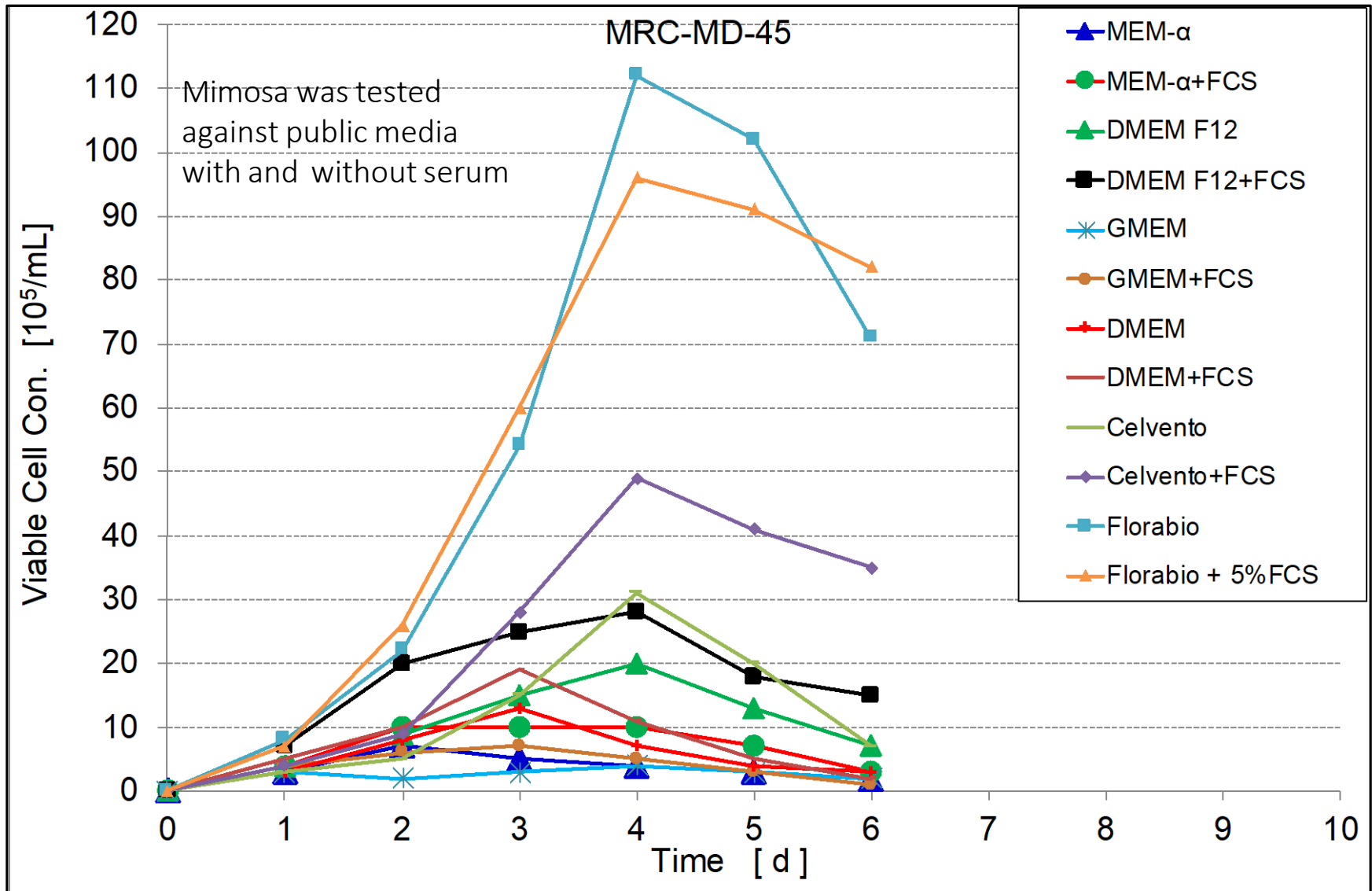




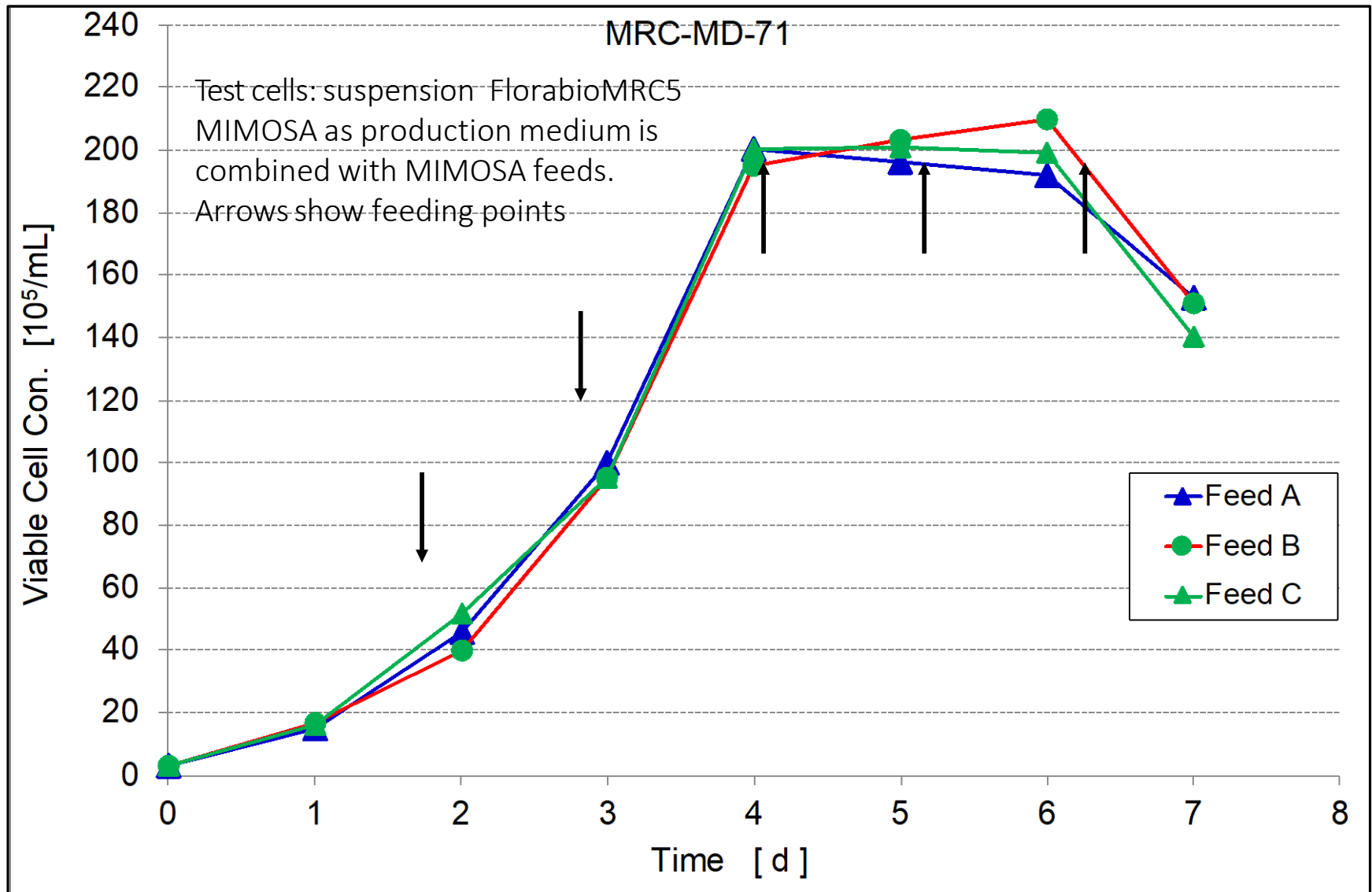
# MIMOSA

## Cell Culture Media System for MRC-5 Cell Line

# MIMOSA -Production medium



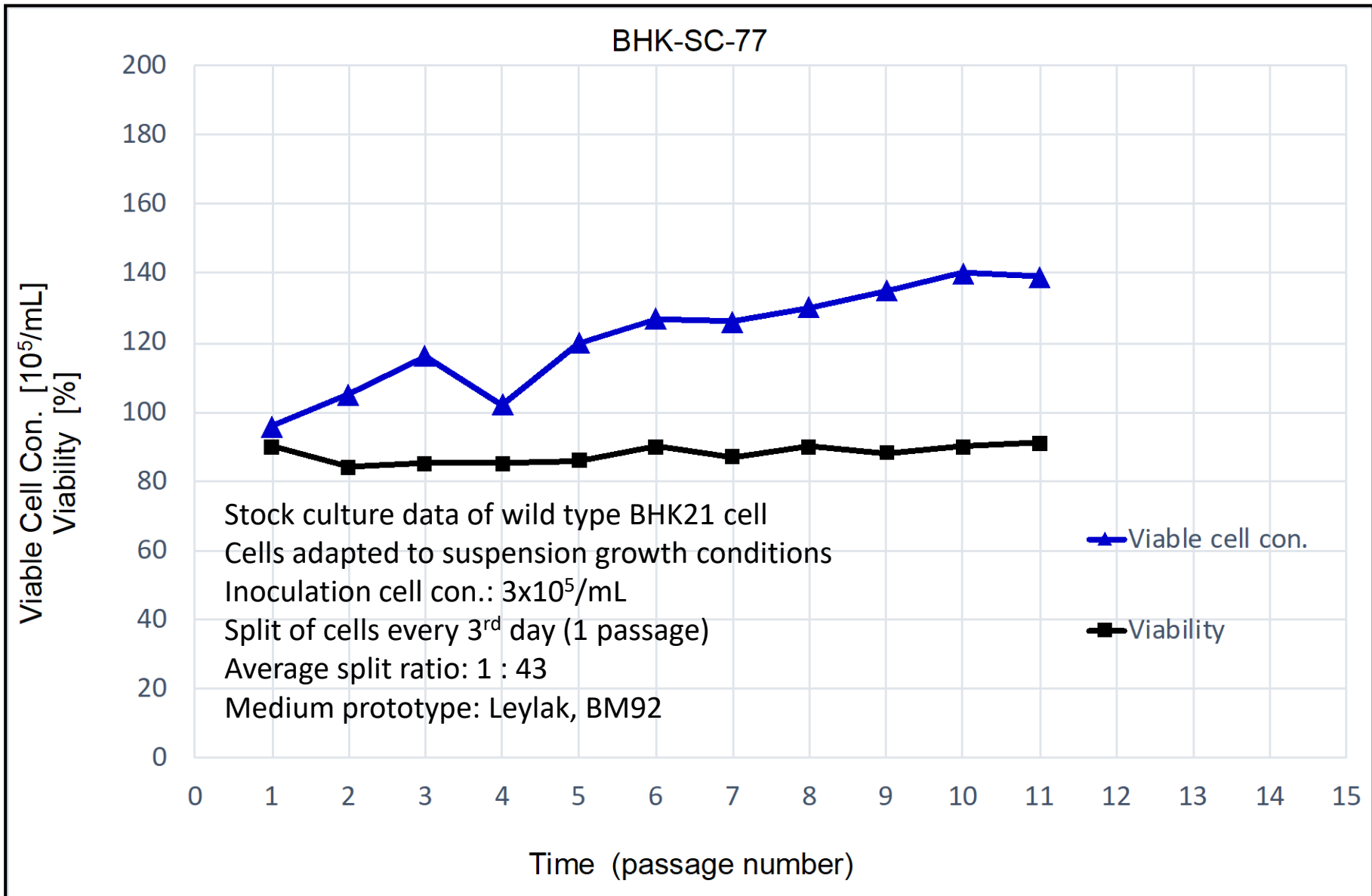
# MIMOSA media system (Production and Feed)





FlorabioBHK21 Cell Line

# Stock Culture performance

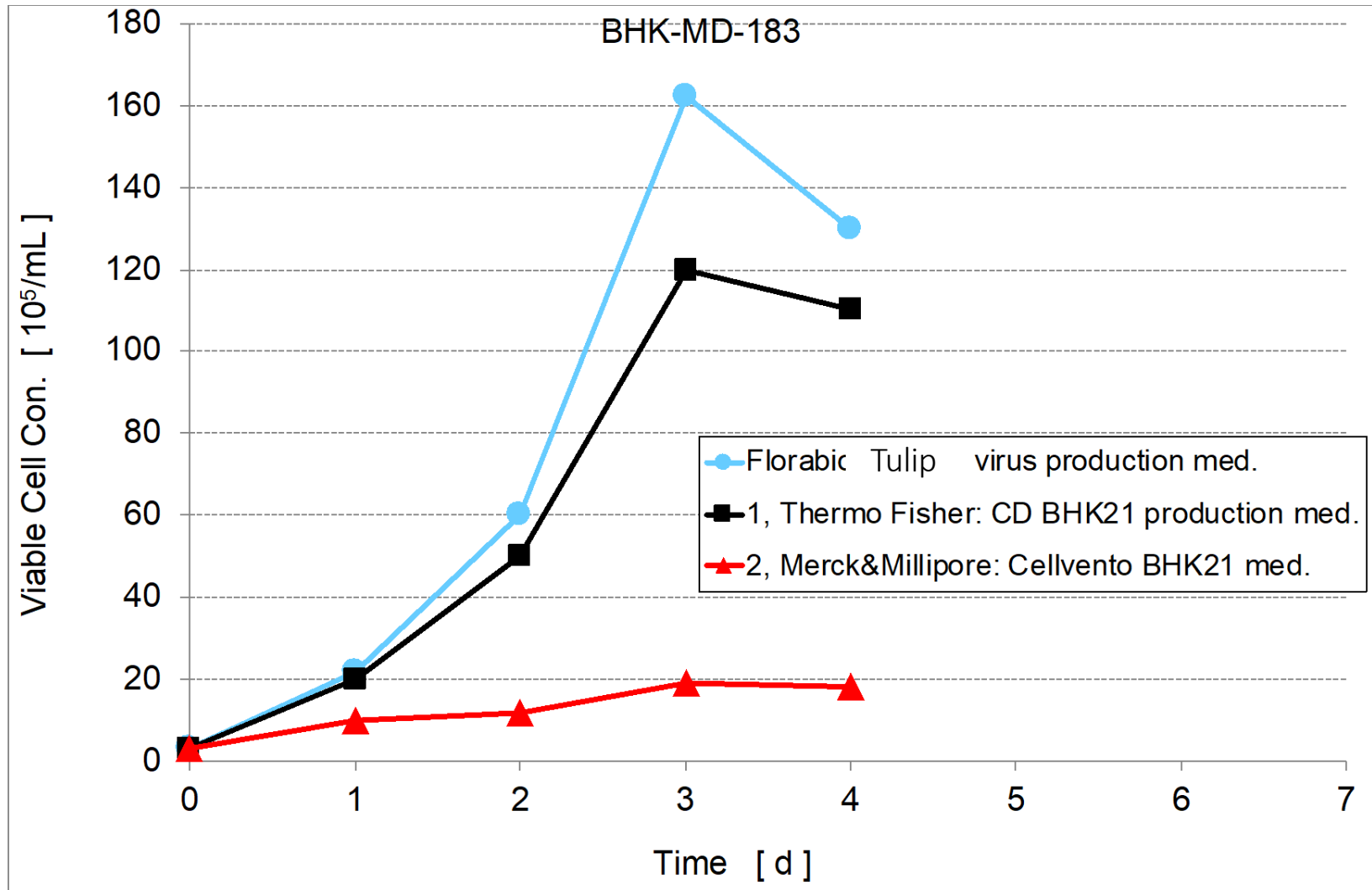




# TULIP

## Cell Culture Media System for BHK21 Cell Line

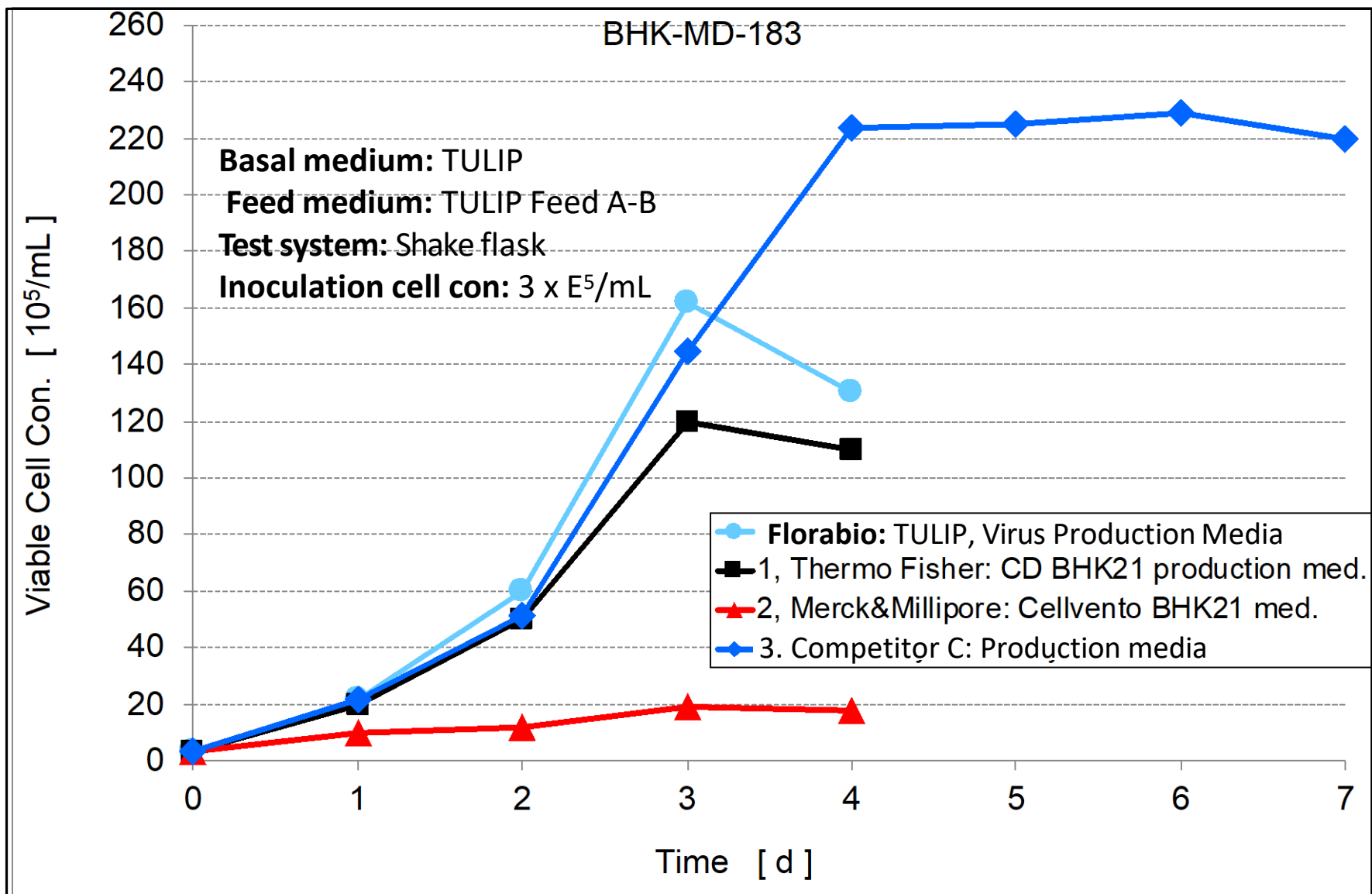
# TULIP Production Media



1: Competitor A, «Data taken from their prospect»

2: Competitor B - only alternative in market until 2018.

# TULIP Media System (Production and Feed)



# ALL FLORABIO MEDIAS QUALITY

All Florabio's media are free of

- Animal component
- Serum
- Protein
- Peptone
- Peptide
- Growth factor

Consist of 100% single chemicals

# CONTENT

- Company
- Technology
- Products
- Services



# SERVICES

- Cell line development
- Media Development for customer specific cell line
- Process and Titer optimization
- Upstream and Downstream process development
- Improving protein glycosylation
- Vaccine Process Development
- Training

# CONTENT

- Company
- Technology
- Products
- Services
  - Training



# florabio ACADEMy

- Training in biopharmaceutical production in theory and in practical work in Florabio's laboratories. Client sends its employees to Florabio. Florabio trains them in theory and at the same time in practical work
- Modular training program
- 11 international trainers who brought multiple biopharmaceutical products into the market

# FloraBio ACADEMy Training Program

**Detailed analysis** of your specific learning needs are made and aligned with your strategic goals to ensure a high impact on the business .

**Personnel new to biomanufacturing** and process development will acquire the knowledge needed to assure successful performance in day-to-day operations.

**Scientists and managers** will find support and insights on how to acquire and manage process knowledge as well as managerial aspects of running an efficient “BioBusiness”.

**Customized courses** are created by selecting topics from the standard courses and/or new material to be created specifically for the needs of your company.

# FloraBio ACADEMy: Standard Courses

Learning Topic	Target Audience
<b>BioBusiness - the Biopharmaceutical Market</b> <ol style="list-style-type: none"><li>1. The Biopharmaceutical Market</li><li>2. Antibody-based Therapeutics</li><li>3. Biosimilars</li><li>4. Contract Manufacturing</li></ol>	Upper + Middle Management
<b>Operations - Development &amp; Manufacturing</b> <ol style="list-style-type: none"><li>1. Protein Chemistry</li><li>2. Separations Science</li><li>3. Process Development -Fundamentals</li><li>4. Manufacturing Sciences</li></ol>	Technical Staff + Scientific Middle Management
<b>Operations - Advanced</b> <ol style="list-style-type: none"><li>1. Process Development -Advanced</li><li>2. Process Engineering</li><li>3. BioAnalytics</li><li>4. Regulatory Compliance</li><li>5. Virus Safety</li></ol>	Process Engineers + Advanced Technicians



Thank you for your attention....