

# BOOST YOUR BIOPROCESS

CELL CULTURE MEDIA ANALYSIS  
IN MINUTES, NOT WEEKS



CELL CULTURE MEDIA ANALYZER

# CELL CULTURE MEDIA ANALYSIS MATTERS

## MEET THE REBEL



In upstream bioprocessing, cell culture media development is a key area of focus, and monitoring of the media all the way through manufacturing is critical. Understanding the relationship between cell culture media components and the cells they support can ultimately impact the process Key Performance Indicators (KPIs) and Critical Quality Attributes (CQAs).

Analysis of key media components such as amino acids, vitamins, and the metabolites produced as a result of cell growth is beneficial at all stages of process development, including

cell line development, media QC, and media development. This information provides insight not just on media composition and performance, but also on clone selection, feed strategy, optimal harvest time, product quality, and more. The need for more process intensification and process modeling requires frequent real time data that can easily be used for deeper monitoring and control.

Ultimately, having greater insight offers more opportunities to positively impact CQAs and KPIs to create products faster, more cost effectively, and with greater therapeutic success.

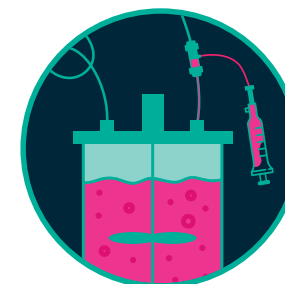
The REBEL is a novel, dedicated cell culture media analyzer designed for rapid, easy, and efficient amino acid and nutrient analysis. Combining award winning design with 908 Devices proven capillary electrophoresis and high-pressure mass spectrometry technologies, the REBEL provides process development scientists access to critical data at-line, any time.

## GETTING RESULTS ISN'T ALWAYS EASY

Process development groups don't always have the analytical tools or resources to gain in-depth process understanding. Sending samples to on-site or off-site core labs can take days to weeks and can be costly.



## ANALYSIS IN 4 EASY STEPS



**PULL A SAMPLE**  
Pull a sample from your bioreactor, shake flask, or well plate. The REBEL only needs 10µL.



**SPIN & DILUTE**  
Spin out your cells and dilute. That's as complicated as it gets.



**LOAD YOUR SAMPLES**  
Load your samples, reagents, and calibrants.



**GENERATE RESULTS**  
Hit start, get results. Results can quickly be reviewed in a simple report.

# REBEL BENEFITS



### EASY TO OPERATE

Designed for simplicity.



### MINIMAL SAMPLE PREPARATION

Pull a sample from your bioreactor, shake flask or well plate, then spin out your cells and dilute.



### NO MORE WAITING FOR RESULTS

Fully processed at-line report for 30+ components in under 10 minutes.



### DATA INTEGRATION

For easy data alignment and interpretation with third-party platforms.

## A COMPREHENSIVE PANEL TO MEET YOUR NEEDS

THE REBEL SCREENS FOR OVER 30 ANALYTES IN EVERY RUN, ALL IN UNDER 10 MINUTES

<b>AMINO ACIDS</b>	▸ Alanine	▸ Aspartic Acid	▸ Histidine	▸ Phenylalanine	▸ Tyrosine
	▸ Alanyl-Glutamine	▸ Cystine	▸ Isoleucine	▸ Proline	▸ Valine
	▸ Arginine	▸ Glutamic Acid	▸ Leucine	▸ Serine	
	▸ Asparagine	▸ Glutamine	▸ Lysine	▸ Threonine	
	▸ Glycine	▸ Methionine	▸ Tryptophan		
<b>VITAMINS</b>	▸ Choline	▸ Pyridoxal	▸ Thiamine		
	▸ Nicotinamide	▸ Pyridoxine			
<b>AMINES</b>	▸ β-Alanine	▸ GABA	▸ Methyl-Histidine		
	▸ Citrulline	▸ Hydroxyproline	▸ Sarcosine		

## KNOW WHAT'S IN YOUR MEDIA

Understanding which key nutrients are present in your cell culture media is critical to media screening and optimization efforts. In this experiment, nine commercial CHO media were measured using the REBEL in a media screening evaluation (Figure 1). The amino acid profile reveals high diversity in nutrient composition across the media panel. With the REBEL you can measure key nutrients such as amino acids in both fresh and spent media at-line in real time to gain deeper insight into your process and obtain high titer faster.

### CHO MEDIA SCREENING

Analyzed using a simple 100x dilution with 20 replicates.

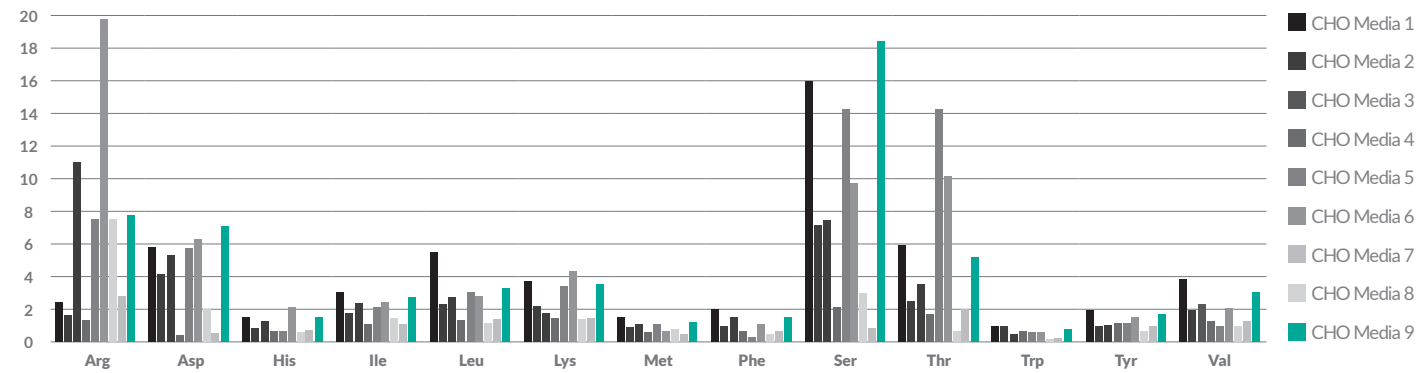


Figure 1. Diversity of nutrient composition in a panel of chemically defined CHO media.

REBEL measures over 30 analytes including all amino acids, certain vitamins, and bio-amines. Plotted here are a subset of amino acids including all essential ones and others in 9 different CHO media. This comparison shows that the concentration of several amino acids such as serine and arginine, two potentially important amino acids for cell growth and protein production, varies widely between the media tested here while other amino acids are more consistent between media.

## COMPACT WITHOUT COMPROMISE

The REBEL delivers high method accuracy and reproducibility, ensuring confidence in results. In a spiking experiment, 17 analytes with known concentrations were added into a chemically defined medium and measured using the REBEL. Values obtained with REBEL showed high accuracy (values were within +/- 20% of expected values) and high analytical precision (%RSDs were between 7 to 16%) as demonstrated in Figure 2.

### AMINO ACID RECOVERY IN CHO MEDIUM

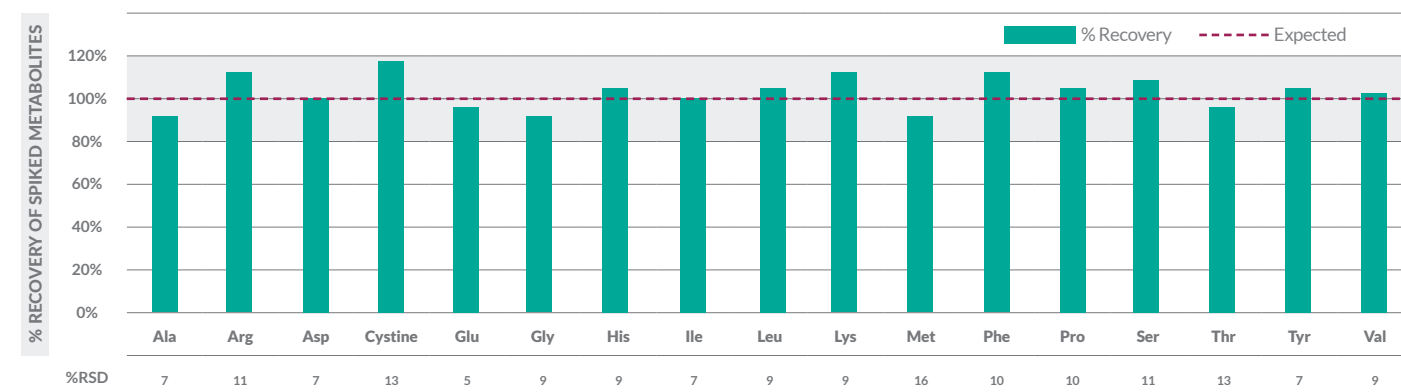


Figure 2. Recovery of analyte concentration using the REBEL analyzer. 17 analytes (Sigma AAS18 amino acid standard) were spiked at 1mM and cystine at 0.5mM, into a commercial chemically defined medium in triplicate and measured four times on the REBEL (total of 12 replicates). All analytes were between 93-118% of expected values.

## HOW WILL YOU USE

# REBEL?

MONITOR AMINO ACIDS AND VITAMINS THROUGHOUT YOUR BIOREACTOR TIME COURSE. REFINE FEEDING STRATEGIES ON THE FLY. CORRELATE MEDIA SELECTION TO PRODUCT QUALITY AND YIELD.

### BIOLOGICS

Rapid spent media analysis serves up actionable intelligence for enhancing cell productivity and desired CQAs of your biotherapeutic and vaccines.

### CELL & GENE THERAPY

Cut development times for critical individualized therapeutics with accurate nutrient profiles, even with FBS in the mix.

### INDUSTRIAL BIO

From cellular agriculture to chemicals and materials - understand growth media components at any scale.

### VIRAL VECTOR PRODUCTION

Flexibility to screen and optimize media for HEK293 or insect cells to boost viral vector titers and improve transduction.

### FERMENTATION

At-line bacterial medium analysis that handles your supplements with ease.

- ✓ Media QC
- ✓ Media Screening & Optimization
- ✓ Spent Medium Analysis
- ✓ Process Scale Up
- ✓ Bioreactor Optimization
- ✓ PAT



**TAKE CONTROL OF CELL MEDIA ANALYSIS**  
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