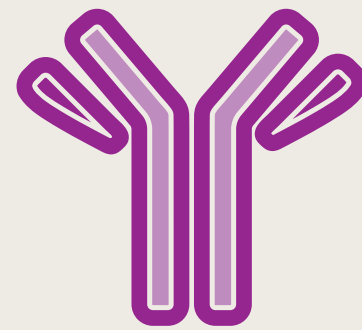


# CHEMICALLY DEFINED PEPTIDES IN BIOPHARMA CELL CULTURE

Optimized cellular nutrition for greater performance

Animal cell culture enables the production of biotherapeutics to prevent, treat and cure disease

## THERAPEUTIC PROTEINS



## VACCINES & GENE THERAPIES



## CELL BASED THERAPIES



Optimized nutrient supply is key to successful cell culture and efficient production of high-quality biotherapeutics

## THE CELL CULTURE CHALLENGE

### KEY AMINO ACIDS HAVE LIMITATIONS

As building blocks of proteins, amino acids are essential culture media ingredients. But their low stability (L-glutamine) and solubility (L-tyrosine and L-cystine) limit bioprocess productivity.

### CURRENT MITIGATION STRATEGIES MISS THE MARK

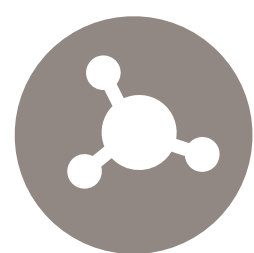
- Freshly prepared solutions
- Extreme pH to improve solubility
- Process with several feeds
- Increased costs
- Increased risks
- Higher process complexity

Solution to the stability and solubility challenges: the cQrex® peptides

## cQrex® PEPTIDES

Spice up your media formulation with the cQrex® peptides: non-animal-derived and chemically defined ingredients for optimized nutrition in biopharma cell culture.

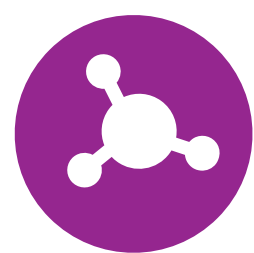
Target amino acid



Insoluble or unstable

L-Cystine  
L-Tyrosine  
L-Glutamine

Carrier amino acid

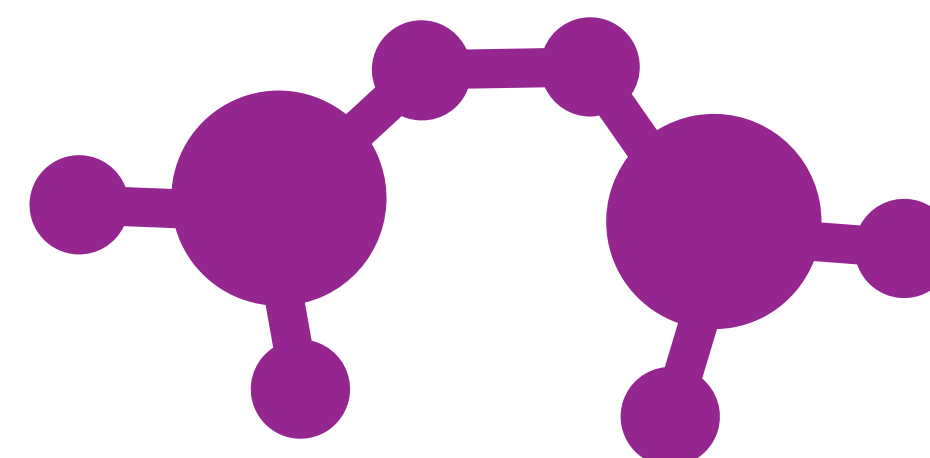


Soluble and stable

L-Alanine  
L-Glycine

PEPTIDE

SYNTHESIS



PEPTIDE

CELLULAR

UPTAKE

Cell



### GLUTAMINE PEPTIDES

cQrex® AQ L-Alanyl-L-Glutamine  
cQrex® GQ Glycyl-L-Glutamine

### TYROSINE PEPTIDES

cQrex® AY L-Alanyl-L-Glutamine  
cQrex® GY Glycyl-L-Tyrosine

### CYSTINE PEPTIDE

cQrex® AC N,N'-di-L-Alanyl-L-Cystine



### PROCESS INTENSIFICATION

- Higher concentration of ingredients
- Smaller media/feed volumes



### INCREASED PRODUCTIVITY

- Reduced by-product accumulation
- Bioreactor used at its full capacity



### PROCESS SIMPLIFICATION

- Feed with neutral pH
- Reduced number of feeds

cQrex®