

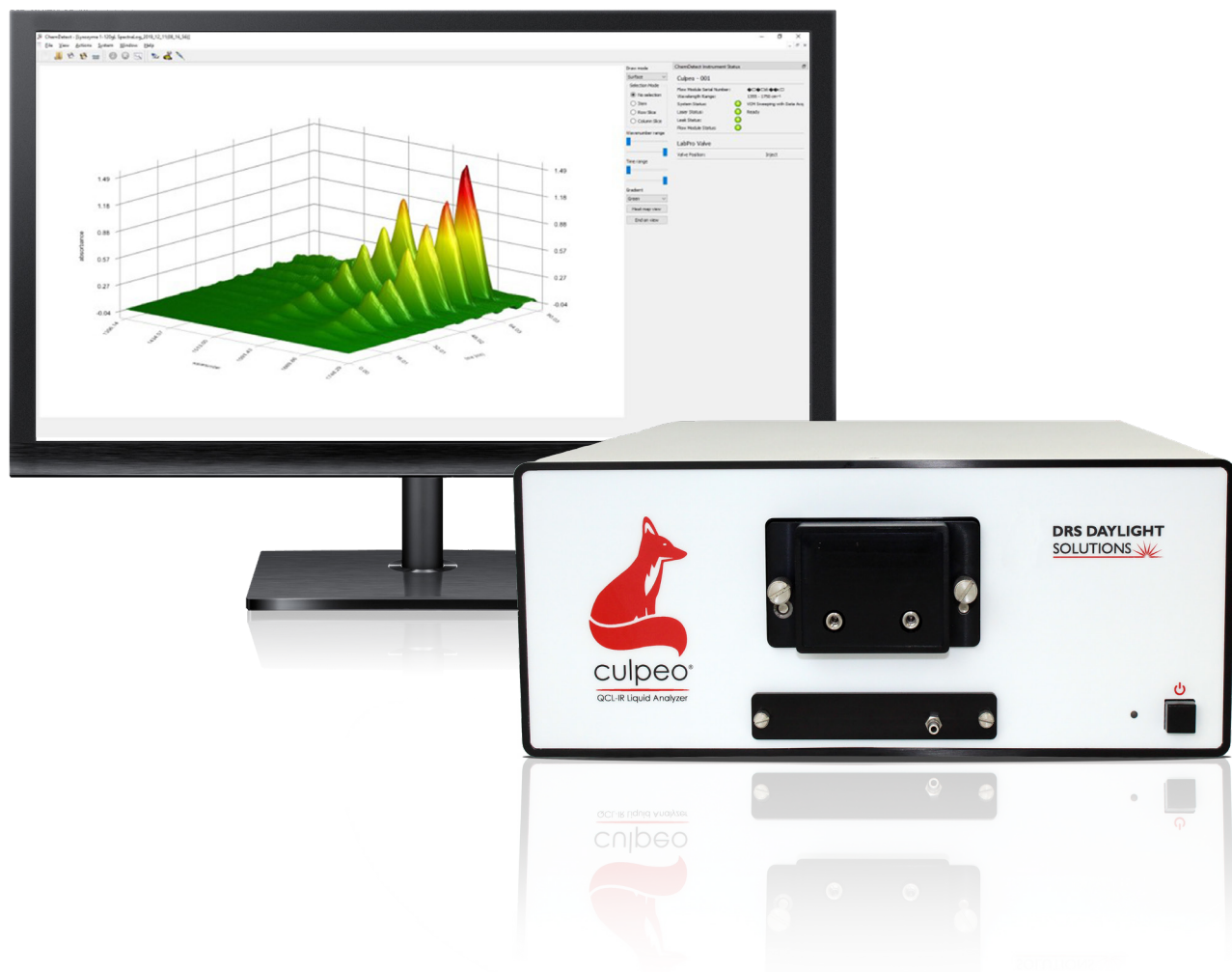
culpeo[®]

QCL-IR Liquid Analyzer

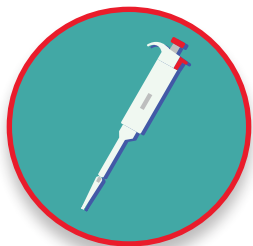


MEET CULPEO®

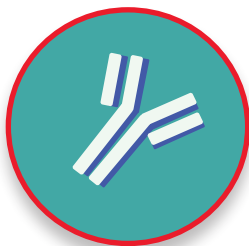
The QCL-IR Liquid Analyzer that's as smart as a fox



*Culpeo® provides rapid, direct quantitation of analytes
with simultaneous characterization of higher-order structures*



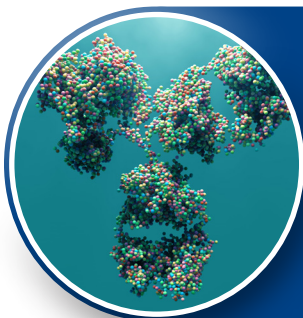
Flexible Sample Volumes



Sensitive



Quantitative Data



PROTEIN CHARACTERIZATION

Culpeo® enables sensitive measurements of multiple key attributes of proteins by probing the amide bonding environment to reveal subtle changes in secondary structure and degree of conjugation with other chemical moieties



LIQUID CHROMATOGRAPHY

Culpeo® works seamlessly with a broad array of commercially available liquid chromatography systems, enabling time-resolved spectroscopic measurements of both fractionated and non-fractionated fluids



BIOPROCESS ANALYTICS

Culpeo® can be used to monitor multiple metabolite and waste products simultaneously in a bioreactor vessel



REACTION MONITORING

Culpeo® can be used to monitor the presence and concentration of single or multiple analytes during aqueous/non-aqueous critical processing or filtration steps at up to 10 Hz update rates and at concentrations below 0.1%

THE MID-IR ADVANTAGE

Mid-IR absorption spectroscopy in the molecular “fingerprint” region is already a widely accepted analytical technique by the pharmaceutical industry and its associated regulatory bodies because of its well-known advantages over other analytical methods such as near-IR, UV-Vis, Raman, RI and NMR.

FT-IR instruments, until recently the workhorse tool for mid-IR analysis, have been unable to address the real-time and in-line analytical needs of modern Liquid Chromatography and PAT workflows due to its low spectral brightness source. DRS Daylight’s Culpeo® QCL-IR liquid analyzer platform is disrupting this paradigm through use of its proprietary high spectral brightness QCL source technology.

SELECTIVE

Molecular fingerprint enables chemical ID of single and multiple analytes as well as probing higher-order structures

QUANTITATIVE

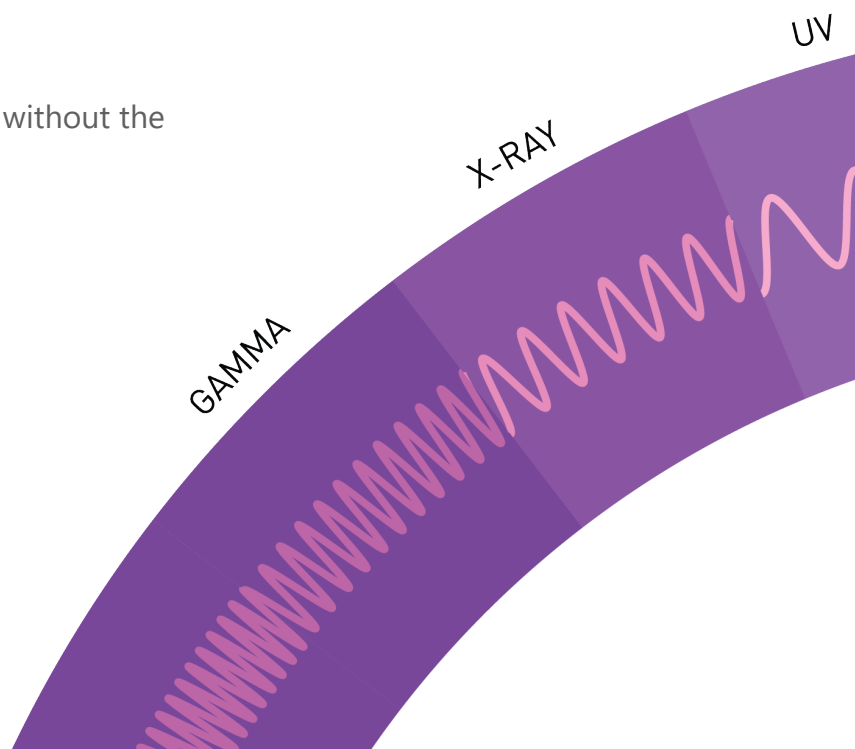
Simple application of Beer-Lambert Law using transmission-based measurements

SENSITIVE

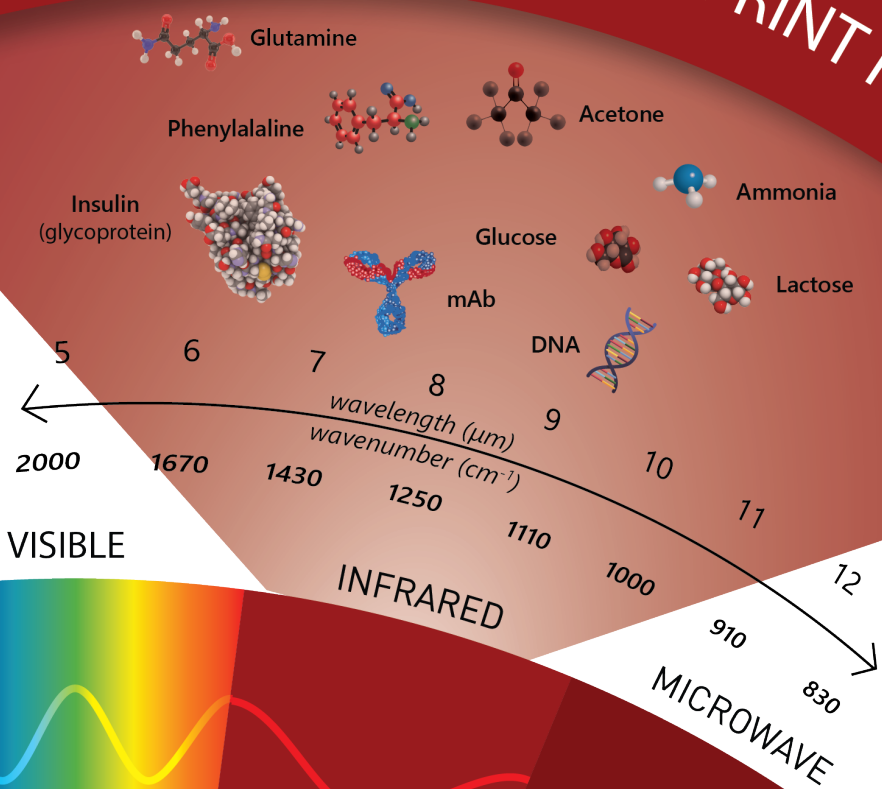
Large IR vibrational absorption cross-sections

NON-DESTRUCTIVE

Direct measurements of molecules of interest without the need for labels, tags, or dyes



MID-INFRARED FINGERPRINT REGION



VISIBLE

INFRARED

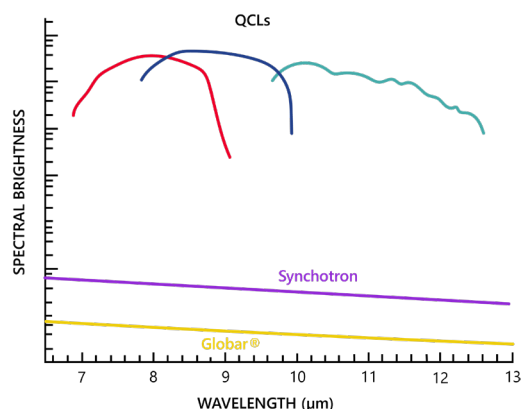
MICROWAVE

RADIO

THE CULPEO® ADVANTAGE

Purpose-built platform designed to accelerate protein characterization

1 The Power of QCL-IR



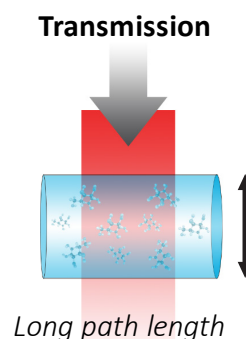
Direct Quantitation is made possible by broad dynamic range and sampling linearity

High spectral brightness QCL-IR source enables accurate, high-resolution measurements over a wide-dynamic range even in spectral regions where water absorption is strong

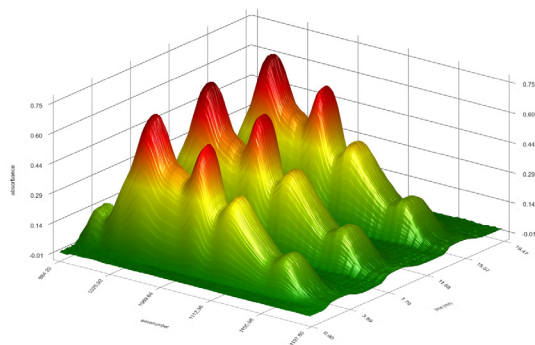
2 Real-Time, Transmission Flow Analysis

Real-time, transmission flow analysis enables non-destructive concentration measurements of samples, allowing users to integrate orthogonal characterization methods

Flow cell design of Culpeo allows longer path lengths for accurate measurements of low concentration samples with greater sensitivity than traditional in-line technologies



3 Multi-Parametric Data Analysis



Structural Analysis

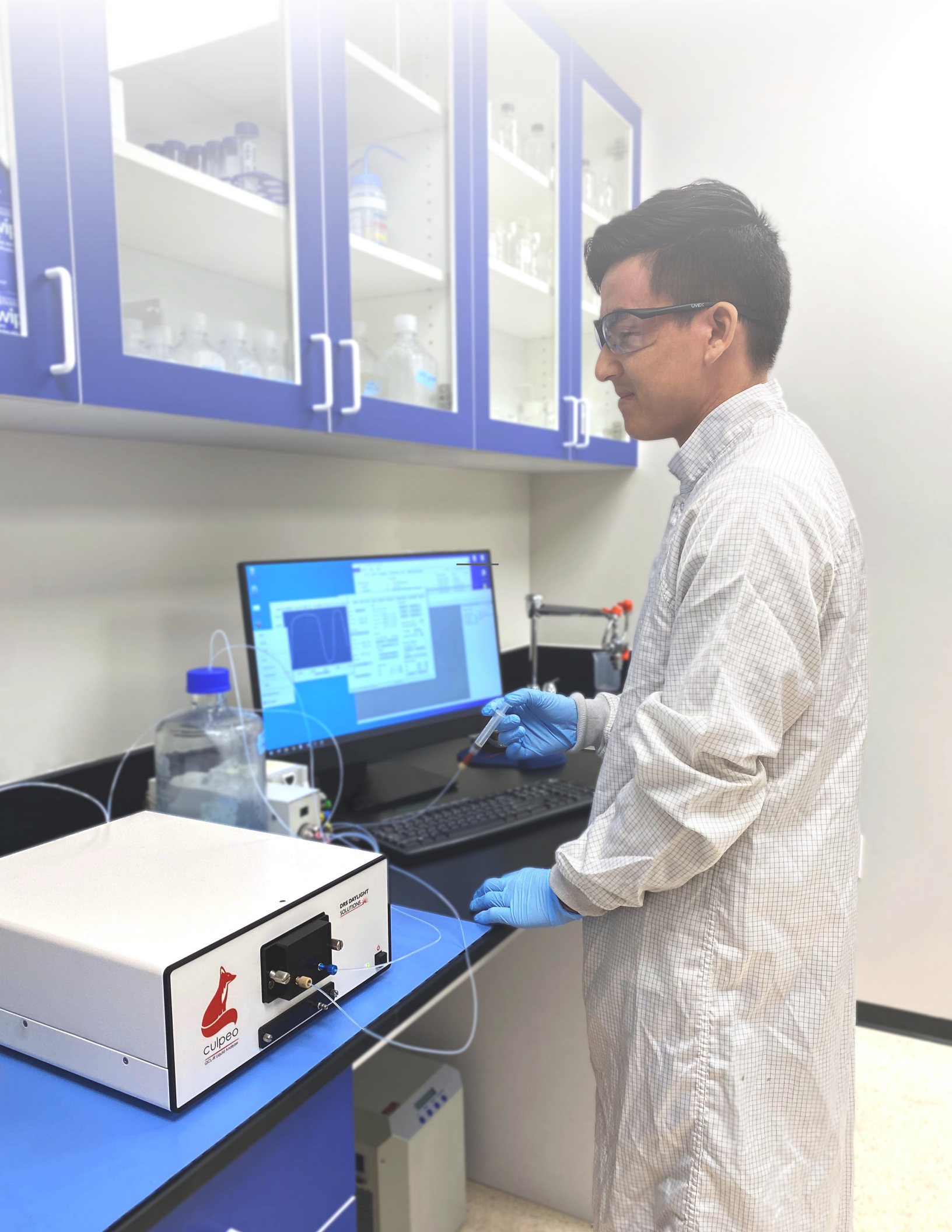
Stereochemistry & Global Secondary Structure

Time-Resolved Measurements

Bioreactor monitoring, Efficiency of Bioconjugation Reactions, & Reaction Kinetics

Data Management

Culpeo's OPC-UA interface allows direct export of raw spectral and metadata to industry accepted data processing platforms used in GxP environments



APPLICATIONS

Bioprocess Analytics

A Versatile Platform from Upstream to Downstream Analysis of Biotherapeutics

CULPEO IN YOUR WORKFLOW



At-line, In-line,
and Off-line modes



Plate
culture
frozen at
-80°C

Shake
flask

Pre-seed
fermentor



Process
Development



Analytical
Development

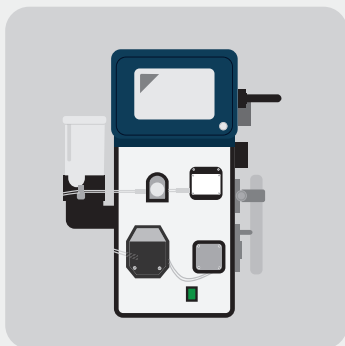


Method Transfer

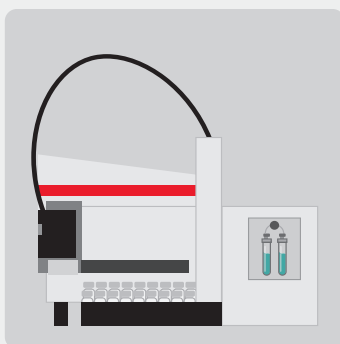
UPSTREAM

CULPEO COMPATIBLE MODALITIES

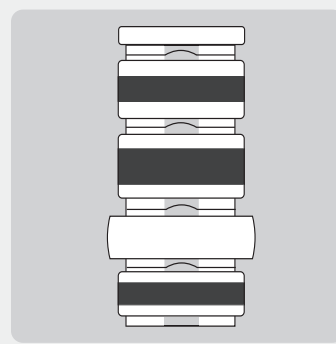
TFF



Auto Sampler

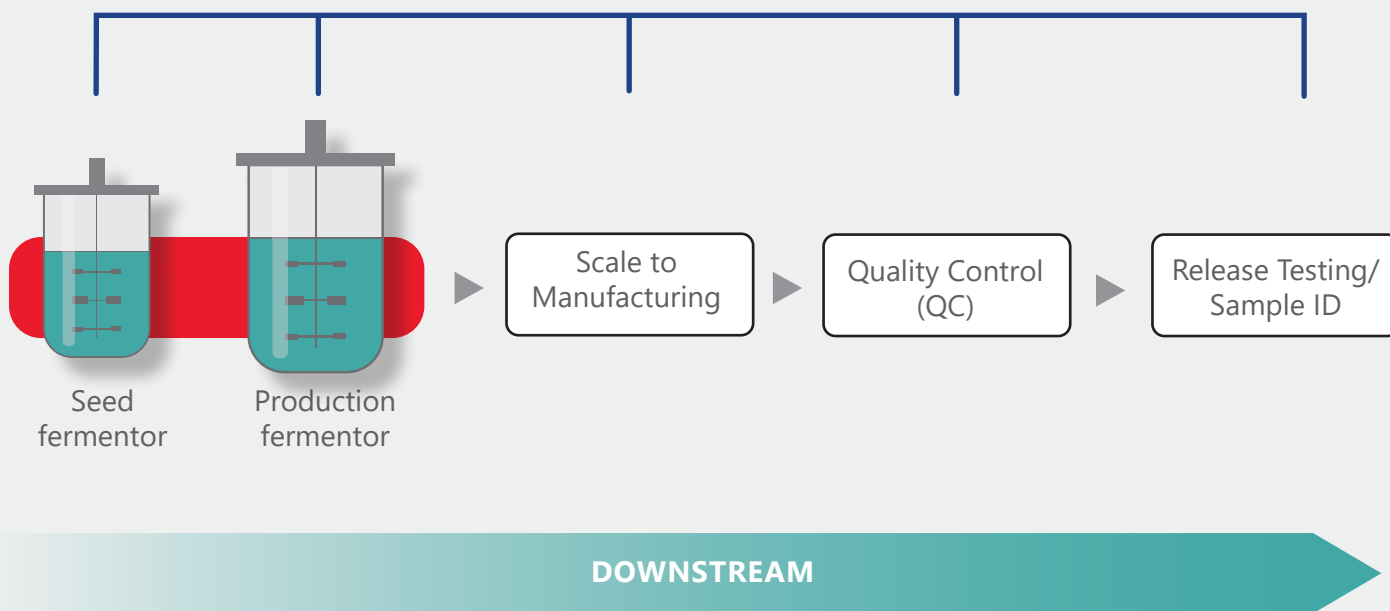


HPLC

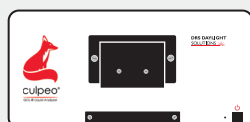




At-line, In-line,
and Off-line modes



DATA OUTPUT



Measure
Protein Titer
Feedstock
Waste
Stability

Direct Measurements using transmission spectroscopy provides real-time, raw data output in a number of industry accepted formats (*.CSV, *.SPC)

APPLICATIONS

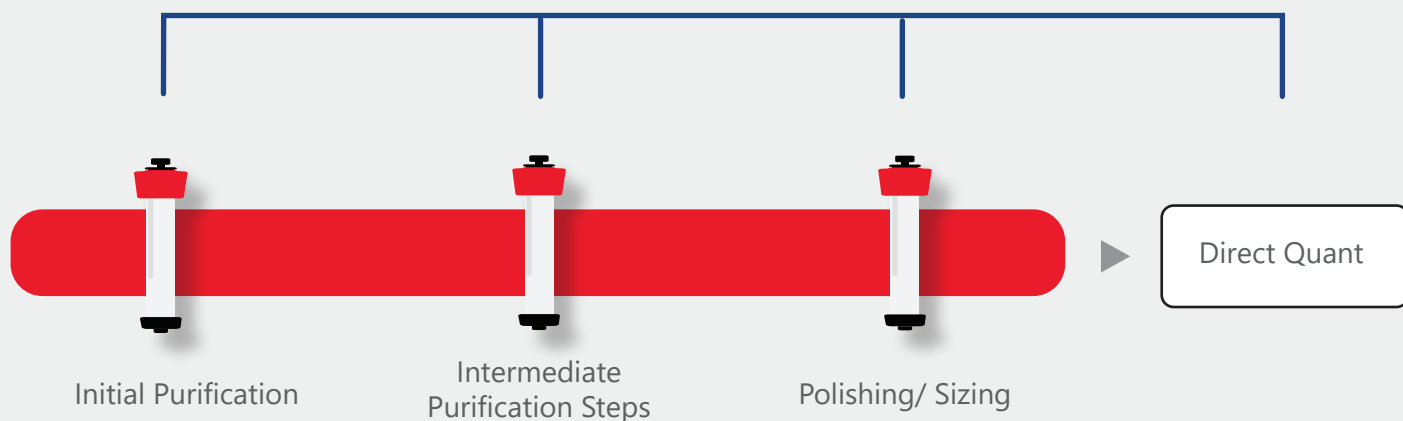
Purification

Recombinant Protein Purification Workflow in the Early Discovery and R&D Areas

CULPEO IN YOUR WORKFLOW

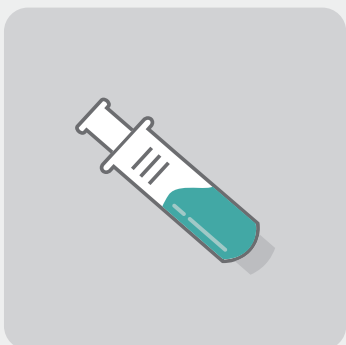


At-line and In-line Modes

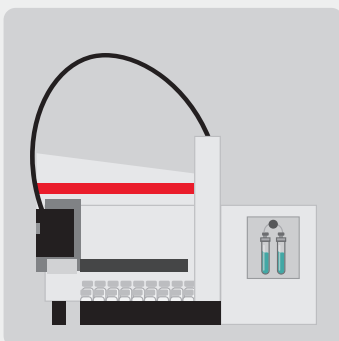


CULPEO COMPATIBLE MODALITIES

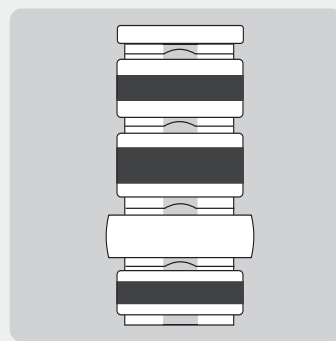
Flow Injection



Auto Sampler

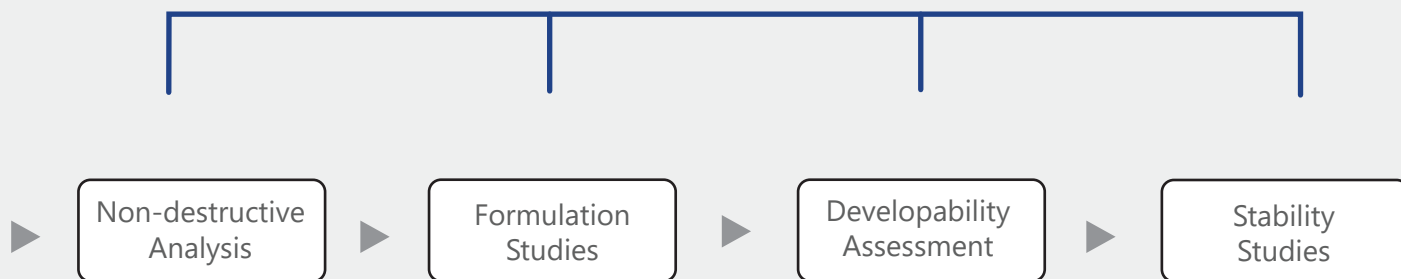


Liquid Chromatography

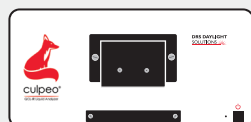




At-line and In-line Modes



DATA OUTPUT



Measure

Stability
Aggregation State
Localized Structure
Reaction Monitoring
Concentration in Stereochemistry

Direct Measurements using transmission spectroscopy provides real-time, raw data output in a number of industry accepted formats (*.CSV, *.SPC)

LET'S TALK

Are you ready to get the most data from your sample? Contact our expert team of application scientists to learn more about how Culpeo can accelerate protein characterization with rapid, direct measurements from QCL-IR.



Scan the QR
code with your
mobile phone
to contact our
team today!



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