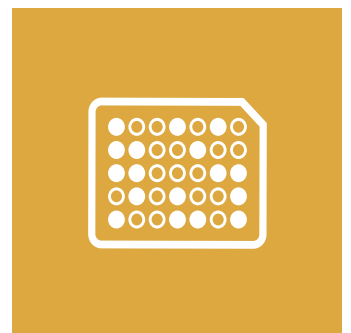
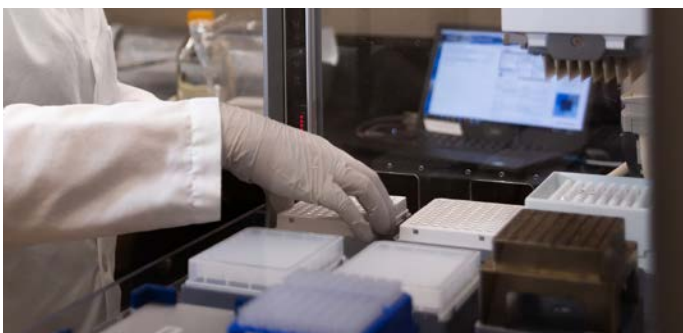
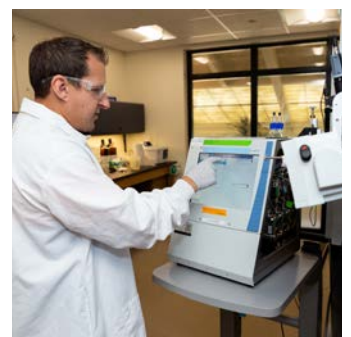
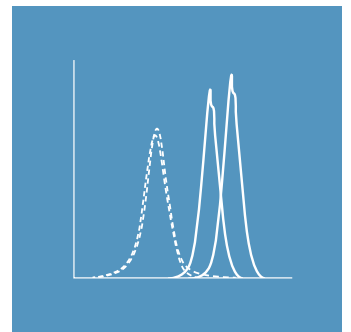
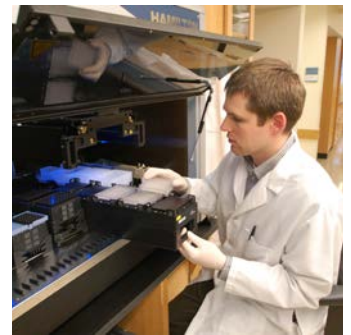


# Customized Products and Services

Unique Solutions for Drug Discovery and Development





# Solutions for Your Unique Challenges

Today's drug development teams need solutions that push discovery, de-risk development, and trim timelines. But each project comes with a unique set of challenges. Cell Signaling Technology (CST) is a company founded and led by active research scientists, so our approach to helping you solve those challenges is different. We dig in and tackle them the way you would, designing unique solutions — from time-saving antibody conjugations to proteomic screens for new biomarkers — to make sure you're successful at every stage of discovery and development.

## Accelerate



- **Solutions that hit your goals** — We start by understanding your goals, then develop strategies and solutions to get you there.
- **Start experiments sooner** — 95% of CST® products are made in-house, so we can deliver customized products quickly.
- **Stay focused on core science** — CST custom solutions and services take the research, testing, and validation off your plate.

## De-Risk



- **No late-stage surprises** — Ironclad product quality and customization expertise ensures you generate consistent results throughout development.
- **Results you can trust** — Custom CST antibody formulations work in your assays, provide unambiguous results, and let you make confident decisions.
- **Guaranteed supply continuity** — Full control of our production pipeline gives CST complete traceability and supply chain control.

## Customized Solutions for Drug Discovery and Development



Target ID and  
Validation



Screening and  
Lead Optimization



Preclinical Safety  
and Validation

### Proteomics Analytical Services

Identify and validate drug targets, uncover biomarkers, determine off target effects, and drug mechanism of action.

### Early Access to the CST R&D Pipeline

Speed up your development programs with early access to CST® antibodies and other products before they're commercially available.

### Custom Antibody Conjugation/Labeling Service\*

Validated and optimized custom antibody conjugates that deliver superior performance over do-it-yourself conjugation.

### Custom ELISA Kits and Antibody Pairs\*

ELISA products customized for your specific project requirements.

### Customized and Carrier-Free Formulations\*

Recombinant antibody formulations tailored for your assay and platform needs.

### Long Term Supply, Lot Reservation, and Bulk Orders

Tailor your lot reservations, long-term supply, and scheduled shipments so you have product when you need it. Flexible production lets us scale to meet your small or large-scale product needs.

### Scientific and Application Support for the Duration of Your Project

On-call expertise for biological mechanisms, proteomics, applications, and assay development.

\* Certificates of Analysis can be provided for customized and carrier-free formulated antibodies, custom ELISA kits and matched antibody pairs, and custom antibody conjugates.



# Custom Antibody Conjugation/Labeling Service

CST has 1,500+ ready-to-ship antibody conjugates for flow cytometry, immunofluorescence, high-content screening, and other immunoassays. Our direct conjugation experts can also build specific antibody-label combinations so you can sidestep the time sink and pitfalls that come with do-it-yourself kits.

## Validated

Conjugated antibodies are analyzed using size exclusion chromatography to verify their physical integrity and ensure preparations are free of contaminants, such as antibody aggregates or fragments, that may interfere with your experiments. Testing in key applications using biologically relevant cell systems and controls is also available.

## Optimized

Stringent purification to remove free dye/label and antibody, optimization of bio-conjugation chemistries, and identification of optimal degree of labeling ensures the best signal-to-noise ratio and the highest-quality product.

## Order Guarantee

Antibody loss occurs during every conjugation and cleanup process. We account for varying labeling efficiencies, absorb the cost of any excess antibody required to manufacture your conjugate, and ensure you receive exactly the amount of antibody you requested.

## Flexible

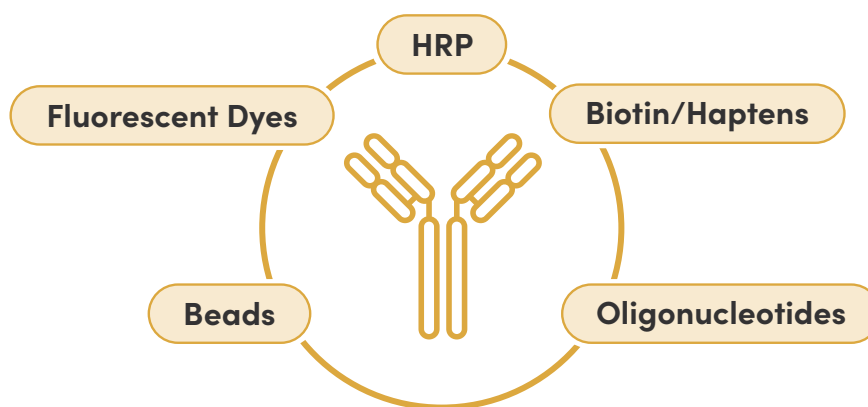
Multiple tiered options are available to match your needs and budget — from basic antibody conjugation to full validation and stability testing.

## Support

Extensive technical support and consultation are provided by the same scientists who produce and validate our commercially available antibodies.

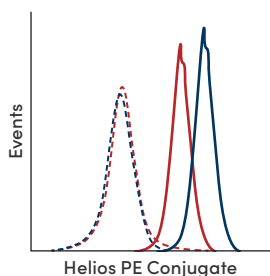
Basic conjugations typically ship within 10 days, complex conjugations may take 3–4 weeks.

## Choose from a Broad Conjugation Offering



Additional Labels Available

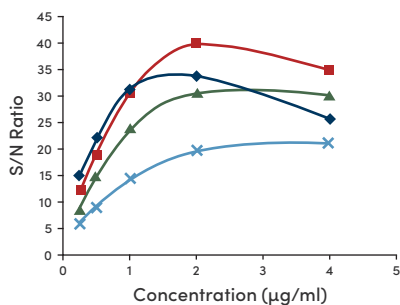
## Superior Performance Over Do-it-Yourself (DIY) Conjugation



	Signal-to-Noise
— CST Custom Conjugation	59.2
— DIY Conjugation Kit	17.6

**DIY kit vs. CST custom conjugation:** Comparison of PE conjugation of Helios (D8W4X) Rabbit mAb by flow cytometry using CST custom conjugation method (blue) or another company's DIY conjugation kit (red), on both RL-7 (dashed lines), a low-expressing cell line, and Jurkat (solid lines), a high-expressing cell line. The calculated signal-to-noise ratio is also shown. Custom conjugation avoids DIY conjugation inefficiencies such as suboptimal labeling, interference with specificity, and/or destabilization/degradation that negatively affect antibody performance and decrease yields.

## Optimization of Degree of Labeling (DOL) Ensures Specific Signal Intensity



- ◆ DOL 2.34
- DOL 4.28
- ▲ DOL 5.51
- × DOL 7.27

**DOL service option for fluorophores:** Conjugation to certain fluorescent dyes (Alexa Fluor® and Pacific Blue™) is optimized by DOL testing to identify the optimal antibody:dye molecular ratio, resulting in conjugates with maximum specific signal intensity. In the data shown, the DOL of 4.28 provides the most optimal signal-to-noise compared to higher DOLs.



# Proteomics Analytical Services

Proteomics can help early discovery teams identify and validate drug targets, uncover the right biomarkers for pharmacology groups, and determine off-target effects and the mechanism of action during the development process. Not a proteomics expert? You don't have to be. As an innovator in proteomics discovery for over 20 years and inventor of PTMScan® Technology, CST has the deep scientific expertise to take on your most complex proteomics projects.

## Consultative Approach

To make sure results are meaningful and move your discovery forward, our scientists work with you to understand your goals and provide guidance on service options and experimental design.

## On-Time Answers

Our fast, reliable timelines\* for proteomics results give you the actionable information needed to make critical decisions quickly and keep projects on track.

## Actionable Data and Analysis

Complex bioinformatic results are combined with expert analysis to deliver information-rich, easy to understand reports. So there's no guesswork and you can confidently move on to next steps.

## Comprehensive Coverage

CST provides services that cover the 20 most critical types of post-translational modifications (PTMs), with more in the pipeline.

\* Specific project timelines will vary depending on the complexity and size of the service.

## Demystifying Proteomics

A limited number of genes can generate a tremendous level of complexity at the protein level due to processes such as alternative splicing and post-translational modification.

PTMs are essential for many cellular functions like protein activity, subcellular localization, degradation, and protein-protein interactions.

Proteomic methods that profile PTMs provide insight into both normal and disease-based biology otherwise not feasible at the genetic level.



## Our Tailored Approach Starts with Your Needs

Even the smallest projects can generate big data in proteomics discovery. That's why CST experts oversee your project from initial planning, determining sample requirements and experimental design, to interpretation of results. We're invested in making sure you find that next big discovery.



### 1. Initial Consultation

Our scientists meet with you to understand your discovery needs and determine which services will work best.



### 2. Sample Preparation

You prepare samples using protocols provided by CST and ship to our lab.



### 3. Sample Processing

CST performs all experimental steps including lysis, digestion, PTM enrichment and Mass Spectrometry (MS) analysis.



### 4. Data Delivery

We generate a comprehensive, easy to understand data package.



# Proteomics Discovery: Understand the Identity and Role of Post-translational Modifications in your Samples

## PTMScan® Discovery Proteomics Services

PTMScan Discovery Proteomics Services can help identify and quantify thousands of even low abundance post-translational modification (PTM) sites in your sample, including:

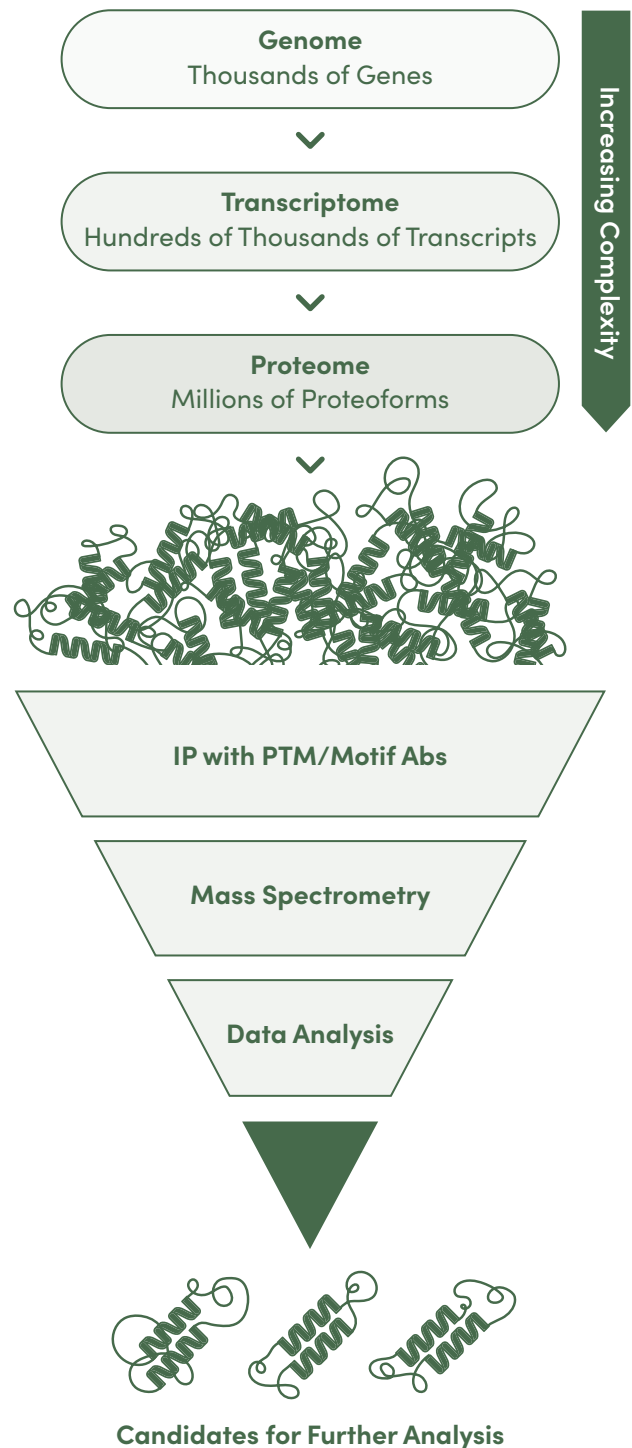
- **Phosphorylation**
- **Ubiquitination**
- **Acetylation**
- **Methylation**
- **SUMOylation**
- **Serine/Threonine phosphorylation**
- **Tyrosine phosphorylation**

## IMAC Service

Immobilized Metal Affinity Chromatography (IMAC) is another strategy for enriching phosphorylated peptides before liquid chromatography tandem mass spectrometry (LC-MS/MS) analysis, and is a highly complementary technique to the antibody-based enrichment recommended for optimal coverage of the phosphoproteome. The service quantitates Ser/Thr phosphorylation using IMAC enrichment and analysis, identifying thousands to tens of thousands of sites with minimal protein sample (<500 µg).

## PTMScan Multi-Pathway Service

The PTMScan Multi-Pathway Service enables the identification and quantification of hundreds to thousands of critical signaling nodes across various pathways involved in cancer biology, immune cell signaling, metabolic disease, and more. CST scientists utilize multiplexed cocktails of site- and protein-specific antibodies with LC-MS/MS to cover all of these signaling nodes in a single run.





# Total Proteomics: Quantitate and Compare Protein Expression Across Samples

## TMT Total Proteome Profiling Services

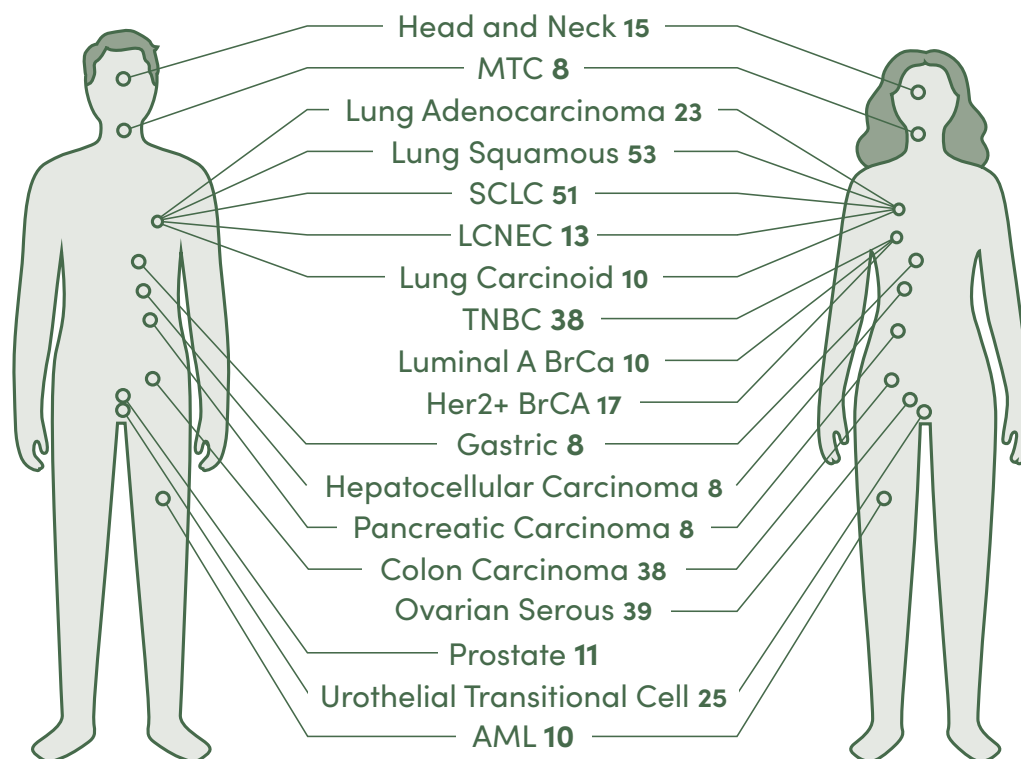
Total Proteome Profiling Services provide global profiling of protein abundance in cells and tissues using multiplexed sample labeling with Tandem Mass Tags (TMT) and LC-MS/MS\*. Together these technologies deliver high-quality quantitative data on thousands of proteins, and enable greater depth of coverage in your proteomics-driven discovery, biomarker analysis, and mechanism-of-action studies.

Source	Total Proteins	Cell Surface Proteins
Literature	11,000	1,300
CST	11,000	2,600

## Membrane-Enriched Total Proteome Service

Much current research focuses on membrane/cell surface proteins, but traditional total proteome analysis identifies a relatively small number of these proteins due to competition from all other intracellular proteins in the samples. Proprietary methods developed by CST double the number of membrane proteins identified and quantified in a total proteome study, allowing for a more complete view of proteins on the cell surface.

We also offer access to an internally-generated, membrane-enriched total proteome dataset with over 350 tumor samples from a variety of indications, and over 80 normal tissue samples.



Membrane-Enriched Total Proteome Service broadly surveys tumor specimens, identifying and quantifying twice as many cell surface proteins.

\* CST is an officially licensed provider of TMT services. Available for customers based in the US, UK and EU only.



# Lot Reservations and Bulk Orders

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Choosing the right assay components is critical to experimental design, so they need to remain available for the life of your project. To eliminate potential supply issues in advance, CST offers single-lot reservations and bulk quantities of our antibodies, buffers, ELISA kits, and other support products to keep your timelines on track.

- Reserve the same antibody and lot for the full duration of your project.
- To ensure lot-to-lot and assay-to-assay consistency in your hands, CST antibodies undergo customized, application-specific validation testing.
- Full control of our manufacturing process lets us scale production as needed and deliver large quantities of our products quickly.
- Bulk orders can be pre-aliquoted to save you time, and packaged to compliment your project workflows.
- Streamline your ordering process by setting up automatic shipments at regularly scheduled intervals.
- Antibody orders are typically ready to ship in 2-3 business days, ELISA kits in 2-3 weeks.





# Customized and Carrier-Free Formulations

When you need a specific antibody formulation, CST can build customized and carrier-free formulations for you. Over 99.5% of our recombinant monoclonal antibodies are developed in-house, giving us greater flexibility to quickly tailor formulations to meet your specifications.

- We work with you to first understand your research needs, then customize the formulation for your assay and platform requirements.
- Antibodies can be formulated at higher concentrations, and modified into other buffers.\*
- Custom formulations are ready to ship in 2-3 business days.

## Carrier-Free Custom Formulations

Don't see the carrier-free antibody you need in our expanding, ready-to-ship portfolio? More than 90% of our antibodies can be custom-formulated into BSA-, glycerol-, and azide-free formulations in PBS – and they're conjugation-ready. CST® carrier-free antibodies are validated in relevant applications for specificity and reproducibility, can be formulated at >1 mg/ml, and are ready to ship in 1-2 business days.

They're ideal for applications that require customized antibodies such as:

- Oligonucleotide or fluorophore labeling for mIHC and spatial biology applications
- Biotin, metal, and bead labeling for high-throughput, antibody-pair based immunoassays like AlphaLISA, HTRF, and MSD technologies
- MaxPar metal labeling for CyTOF mass cytometry, Imaging Mass Cytometry (IMC), and MIBI
- Fluorochrome labeling for flow cytometry, immunofluorescence, and high-content screening applications
- *In vivo* and functional assays

\* Minimums apply.

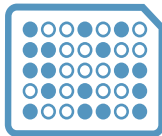


# Antibodies that Work on Your Platform\*

Application**	Example Platforms	CST Custom Offerings
High-throughput ELISA/Immunoassay	AlphaLISA, AlphaScreen MSD Luminex xMAP HTRF, LANCE, TR-FRET Quanterix Simoa	Carrier-Free (BSA and Azide-Free) Formulated Antibodies Matched Antibody Pairs Optimized Concentration
Spatial Biology	Leica Cell DIVE Akoya Phenocycler (CODEX) NanoString GeoMx, CosMx Standard BioTools Hyperion Lunaphore COMET 10x Genomics Visium Ultivue InSituPlex Vizgen MERSCOPE	Carrier-Free (BSA and Azide-Free) Formulated Antibodies
Automated IHC	Roche Ventana Leica Biosystems BOND Agilent Dako	Optimized Concentration
Flow Cytometry	Standard BioTools Helios, CyTOF Plus Flow Cytometry Platforms	Carrier-Free (BSA and Azide-Free) Formulated Antibodies

\* Recombinant monoclonal antibodies are tested and rigorously validated across multiple applications to ensure specificity.

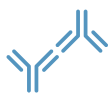
\*\* CST also provides products to support other applications.



# Custom ELISA Kits and Antibody Pairs

CST has a wide range of ELISA kits and matched antibody pairs to choose from, but can also custom-build ELISA products to match your specific project requirements. You can reserve lots in advance, or set up regular deliveries for all our custom ELISA products.

## Custom-Matched Antibody Pairs



- Order the validated pairs from our sandwich ELISA kits separately for use with higher-throughput immunoassays.
- Pair antibodies are carrier-free formulated, at high concentrations, and conjugation-ready for your assay and platform.

## Kit Customization



- Standard colorimetric ELISA kits can be modified for chemiluminescent platforms and use with low-volume microplates for assays where greater sensitivity, wider dynamic range, or smaller sample volumes are needed.
- Miniaturize 96-well format ELISA kits to 384-well plate format to minimize sample and buffer usage and maximize data points per experiment.

## Bulk Orders, Lot Reservations and Custom Packaging



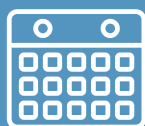
- Reserve the same ELISA kit or antibody pair lot for the full duration of your project, or have a lot custom-made for you.
- Customize reagent volumes from our catalog ELISA kits to match requirements for your high-throughput assays.
- Group multiples of kits to reduce packaging and plastic and save storage space in the lab.

## Early Access



- Jumpstart your program with access to newly identified pairs or kits in the development pipeline prior to their release.

Custom-matched pairs ship in 2-3 business days, customized kits and bulk kit packaging ship in 2-3 weeks.



# Products and Services Turnaround Times

Product or Service	Typical Lead/Project Time*
Custom Antibody Conjugation	Basic conjugations: 10-12 days Complex conjugations: 3-4 weeks
Proteomics Analytical Services	Project timelines vary depending on the complexity and size of the service.
Bulk Orders	Antibodies: 2-3 days ELISA kits: 2-3 weeks
Custom Formulations	2-3 days
Carrier-Free Formulations	1-2 days
Custom ELISA Kits and Antibody Pairs	Custom-matched pairs: 2-3 days Kit customization: 2-3 weeks Custom bulk kit packaging: 2-3 weeks

\* Lead/project times do not include shipping. Additional time required for delivery varies based on your location.



## Doing good science is important. So is just doing good.

Cell Signaling Technology (CST) is a *different* kind of Life Sciences company—one founded, owned, and led by active research scientists, with the highest standards of product and service quality, technological innovation, and scientific rigor for over 20 years. We consistently provide fellow scientists around the globe with best-in-class products and services to fuel their quests for discovery.

Helping researchers find new solutions is our main mission every day—but it's not our only mission. We're also dedicated to helping identify solutions to other problems facing our world. We believe that all businesses must be responsible and work in partnership with local communities, while seeking to minimize their environmental impact. That's why we joined 1% for the Planet as its first Life Sciences member, and have committed to achieving net-zero emissions by 2029.

At CST, we believe in the power and promise of science to solve the challenges we face as a global community. We're a company of caring people driven by a devotion to facilitating good science—a company committed to doing the right thing for our Customers, our communities, and our planet.

Local Sales Representative

**cellsignal.com**

### CST Antibody Performance Guarantee:

CST antibodies are guaranteed to work—first time, every time  
To learn more, please visit: [cellsignal.com/abguarantee](https://cellsignal.com/abguarantee)

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