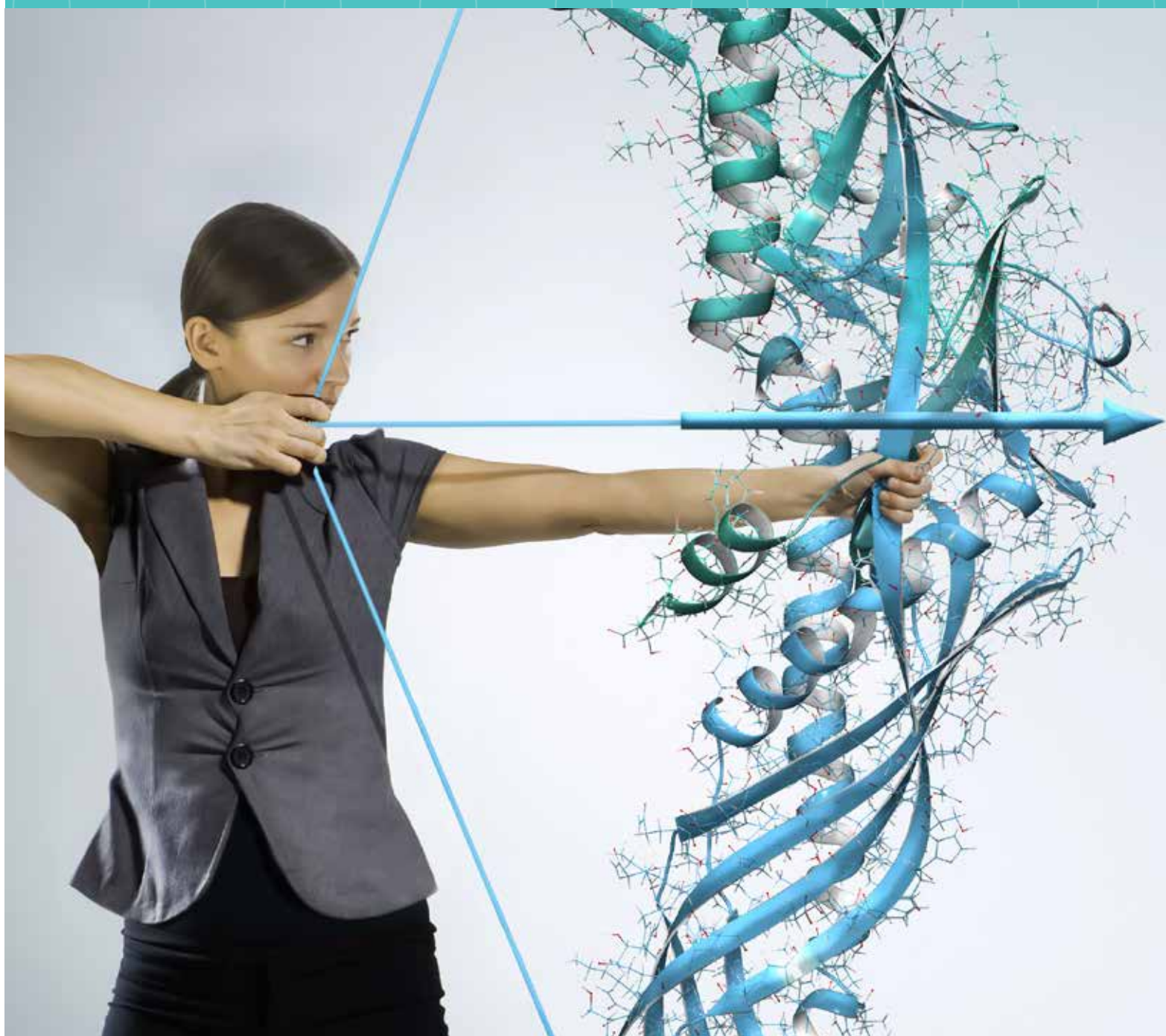


Release the power of precise proteomics

Targeting biomarkers with the most potential



Precision Biomarker Laboratories

At Precision Biomarker Labs, we combine innovative proteomics with renowned clinical expertise to find the right targets and reveal underlying mechanisms. Our experts enable precise biomarker-based phenotyping by developing novel proteomic assays that are validated with real-world data from the Cedars-Sinai Health System. We work closely with you, combining our unique expertise and capabilities to advance your specific goals.



**Accelerate target discovery
and biomarker validation**



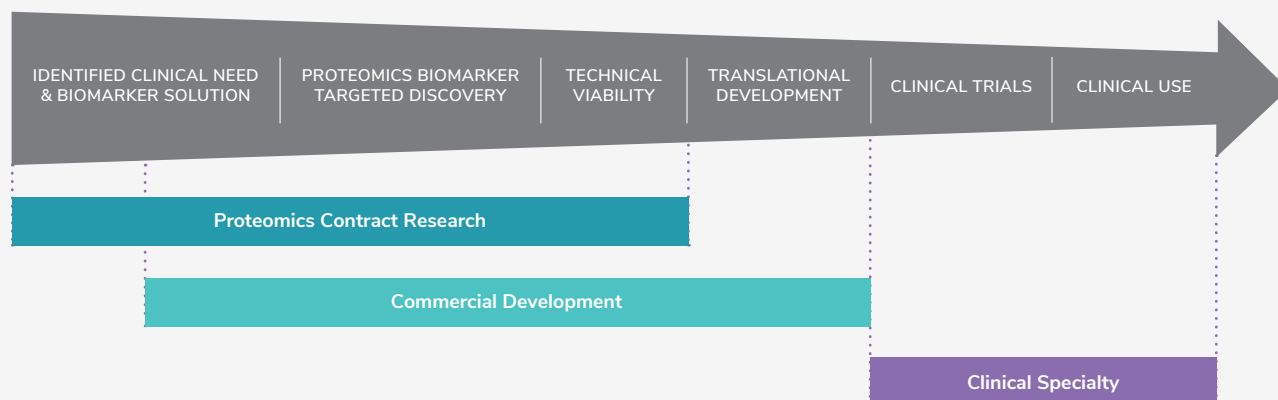
**Expedite development
decisions**



**Cater to your
commercialization goals**

Our capabilities

Our individual services or integrated solutions are customized across biomarker discovery, validation, and clinical testing to maximize your success.



Proteomics Contract Research

- Discovery and early research support
- Ready-to-go, targeted assays
- Protein biomarkers of biological and clinical relevance
- Leading mass spectrometry technology and expertise

Commercial Development

- Advanced analytical methods for clinical and commercial deployment
- Access to Cedars-Sinai clinical expertise and cohorts
- Bioinformatic and data analytic framework for clinical investigation

Clinical Specialty

- Completes translation to clinical application
- Develops assays with defined clinical validity
- Supports validated assays from external sources (e.g. niche products, support for clinical result interpretation)

The approach that gives you an advantage

PBL uses mass spectrometry (MS) to develop accurate and reproducible assays that enhance mechanistic understanding. MS can quantify a large number of diverse analytes, including proteins and metabolites, and resolve closely related proteins, proteolytic fragments, and post-translational modifications. Through automation of sample prep and bioinformatics, MS enables the development of robust analytical pipelines.

Combining our IP-protected methods with other advanced processes, we provide physiologically relevant assays and expert data interpretation including:

- Protein multiplexing for in-depth understanding of specific biological processes
- Protein assays that ensure quantitative precision (total imprecision of <5%)
- Proprietary tools that pinpoint results but ensure access to complex raw data

Featured targeted MS assays



Holistic

Health Surveillance Protein Panel

- Provides a holistic view of health and wellness
- Measures inflammation, immunity, multiple organ function, or health status after surgery
- Tracks therapeutic response



← monitoring time →

Disease-specific

COVID-19 Acute Phase Assay

- Predicts likelihood of rapid recovery from SARS CoV-2 infection
- Distinguishes health events from onset through resolution



Cellular

Mitochondrial Protein Multiplex (Mitoplex) Assay

- Provides insights into metabolomics and regulation of ATP production
- Quantifies proteins in mitochondrial function and cell or tissue metabolism

Other assays

Our offering includes a variety of other assays to quantify proteins and metabolites for target discovery and development.

Plasma and dried blood assays:

- Discovery + multiplex targeted proteomic assays
- Pathway-specific plasma panels
- Expanded lipid panel

Tissue and cell assays offered:

- *De novo* proteome discovery
- Modified proteins
- Functional assays

Learn more at cedars-sinai.org/pbl

Clinical support you can rely on. From a name you can trust.

The Cedars-Sinai Medical Center is consistently rated one of America's Best Hospitals by U.S. News & World Reports and is widely known as a leader in clinical care and research. As part of Cedars-Sinai, PBL has the technical, scientific, and clinical infrastructure to support investigations across a wide range of therapeutic areas.



Extensive clinical infrastructure

Cedars-Sinai is one of the largest nonprofit academic medical centers in the US, enabling PBL to access clinical experts who serve the healthcare needs of one of the most diverse regions in the US. By the numbers, the Cedars-Sinai Health System encompasses:

- 4 hospitals
- 23,000+ employees
- 50,000+ admissions per year
- 6,000+ live births per year
- 32,000+ surgeries per year, in 42 operating rooms
- 1,600+ heart transplants—the largest program in the U.S.
- 2,145 active research projects
- 573 active clinical trials

Comprehensive biobank access

Almost 600 clinical research projects—covering the entire spectrum of disease investigation—are actively underway within the Cedars-Sinai Health System. Tissue and biofluids related to Cancer, COPD, COVID-19, Heart, Lung, Neurology and many others are available from the Cedars-Sinai biobank. Available biospecimen collections include:

IRB-approved clinical trial samples

- De-identified or coded specimens for variety of tissue types collected as part of an IRB approved clinical protocol.

Existing remnant samples

- Access to leftover biospecimens collected with patient consent from samples obtained for clinical or diagnostic purposes.

On-demand remnant samples

- Ability to use AI-products to query Epic and proactively source remnant samples from the relevant patient population to inform reference ranges or support validation.

Results that impact the real world

PBL has offered impactful and novel solutions to the challenges involved in developing targeted MS protein and peptide assays to meet diagnostic and drug development needs.



Precise identification of drug targets for cardioprotection

The protein kinase G pathway and elevated levels of cGMP in cardioprotection is well studied and several drugs are being developed to modulate this pathway. Sildenafil, a drug that inhibits the PDE5A protein, resulted in elevated levels of cGMP and was able to suppress cardiac hypertrophy and heart failure in small animals but failed in human trials.¹

Our solution:

- In translational drug investigations, we leveraged proteomics to understand cGMP modulation and pathway interactions, revealing a novel role for PDE9A in stress-induced heart disease.²
- Currently, there are several ongoing clinical trials validating PDE9A inhibitors in cardioprotection.



Uncovering novel biomarkers for traumatic brain injury (TBI):

Every year at least 1.7 million people sustain TBI in the US.³ To address this critical issue, we utilized Deep Plasma Proteomics to analyze and identify brain-enriched proteins that leaked even in very mild subclinical brain injury.

Our solution:

- We uncovered novel proteomic biomarkers that were incorporated into a computerized neurological assessment to predict the outcome of a concussion.
- The BRAINBox TBI multimodal test that licensed these biomarkers was granted Breakthrough Device Designation by the FDA and is currently undertaking an 18-site FDA clinical trial.⁴

Working to maximize your success

PBL works with you individually so we can efficiently recognize, customize, and meet your specific needs.



Flexible

Integrated as well as individual services



Customized

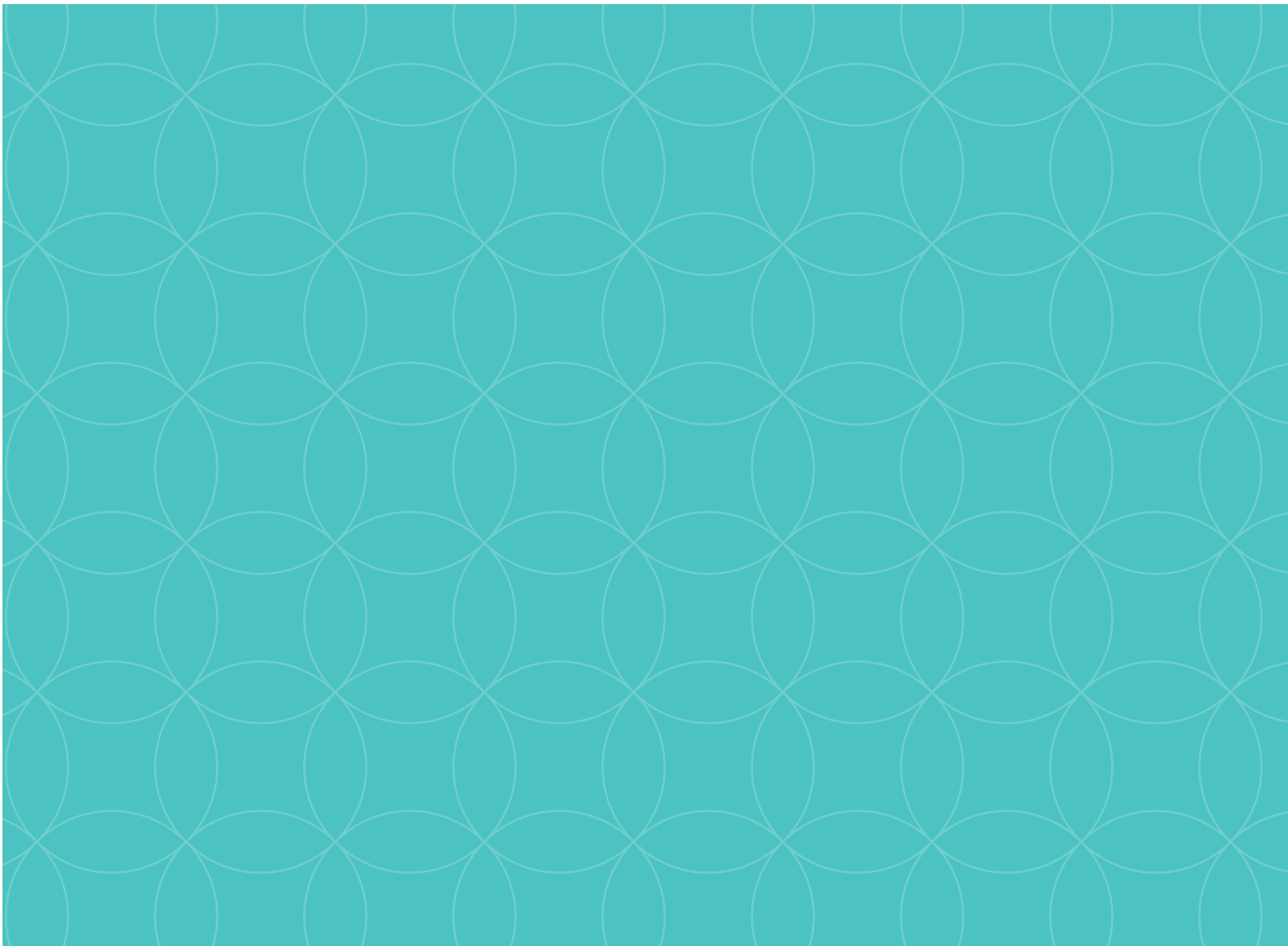
Designed to your specific needs



Fee-for-service

Available to contract on a fee-for-service basis

To learn more about how we can move your project forward, visit www.cedars-sinai.org/pbl.



References

1. Takimoto E, Champion HC, Li M, et al. Chronic inhibition of cyclic GMP phosphodiesterase 5A prevents and reverses cardiac hypertrophy. *Nat Med.* 2005;11(2):214-222. doi:10.1038/nm1175.
2. Lee DI, Zhu G, Sasaki T, et al. Phosphodiesterase 9A controls nitric-oxide-independent cGMP and hypertrophic heart disease. *Nature.* 2015;519(7544):472-476. doi:10.1038/nature14332.
3. Texas Brain Injury Alliance [Internet]. Austin (TX): Texas Brain Injury Alliance. Brain Injury Statistics; [cited 2020 June 1]. Available from: <http://www.texasbia.org/about-brain-injury/brain-injury-statistics/>
4. BRAINBox Solutions [Internet]. Richmond (VA): BRAINBox Solutions. Immunarray Spins Off Brainbox Solutions To Develop Traumatic Brain Injury Tests; [cited 2020 June 1]. Available from: <https://brainboxinc.com/immunarray-spins-off-brainbox-solutions-to-develop-traumatic-brain-injury-tests/>



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