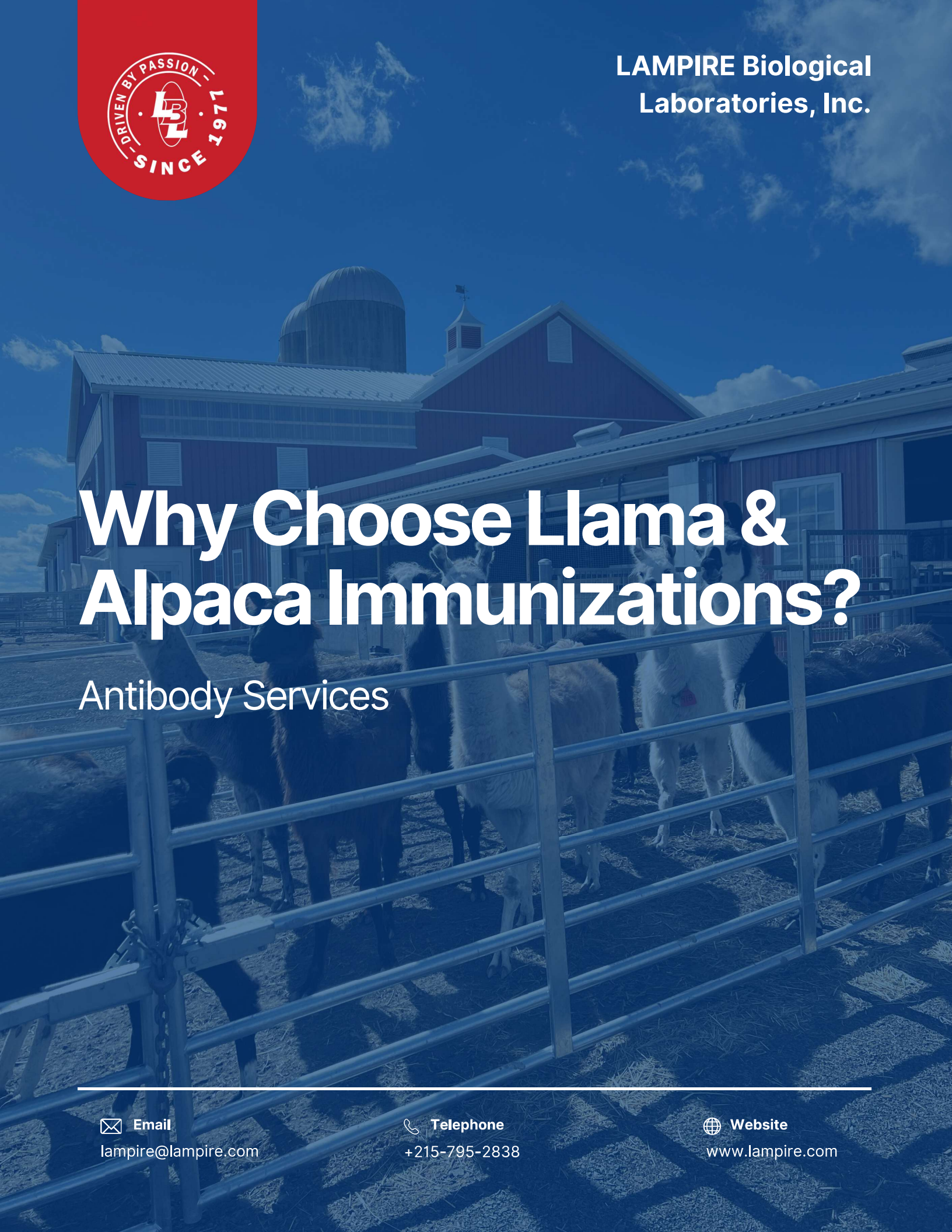
LAMPIRE Biological Laboratories, Inc.

Why Choose Llama & Alpaca Immunizations?

Antibody Services



Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

Why Choose Llama & Alpaca Immunizations Over Engineered Mice or Synthetic vHH Libraries?

Overview

LAMPIRE leverages the unique immune systems of llamas and alpacas to generate high-affinity single-domain antibodies (vHHs) with exceptional diversity and developability. Unlike traditional sdAb mice, these animals allow repeated, non-terminal sampling of PBMCs, enabling observation of affinity maturation events and re-dedication of strong responders to multiple projects. Their distinctive adaptive immune features drive robust antibody diversity with favorable manufacturability and clinical potential.

Why Choose Us?

- Non-terminal sampling for repeated PBMC collection
- Unique immune responses for high diversity antibodies
- Capable of targeting complex & difficult antigens
- Naturally high human-ness of vHHs
- Endless sequence diversity and novelty
- No licensing fees or royalties

Capabilities

Unique Immune Features

Llamas and alpacas possess distinct immune adaptations that set them apart from other species. They naturally generate vHH antibodies with high affinity and specificity, and their adaptive immune system includes features such as somatic hypermutation in Gamma-Delta T-cell receptors, which drive robust antibody diversity. This enables the production of antibodies with favorable developability and manufacturability (CMC) profiles, ideal for therapeutic and research applications.

Versatility and Ownership

These animals can generate antibodies against a broad range of antigens, including proteins, peptides, DNA, mRNA-LNPs, chimeric constructs, cells, VLPs, exosomes, and membrane proteins. Unlike synthetic or semi-synthetic libraries, vHH sequences from llamas and alpacas offer nearly endless novelty. All antibodies derived from LAMPIRE animals are fully owned by the client, with no licensing fees, milestone payments, or royalties, ensuring complete freedom and confidentiality.

Applications

Antibody discovery, therapeutic development, and research against challenging targets such as GPCRs, ion channels, and complex antigens. Llama & alpaca vHHs provide robust, reproducible performance with strong clinical and commercial potential.

Email
lampire@lampire.com

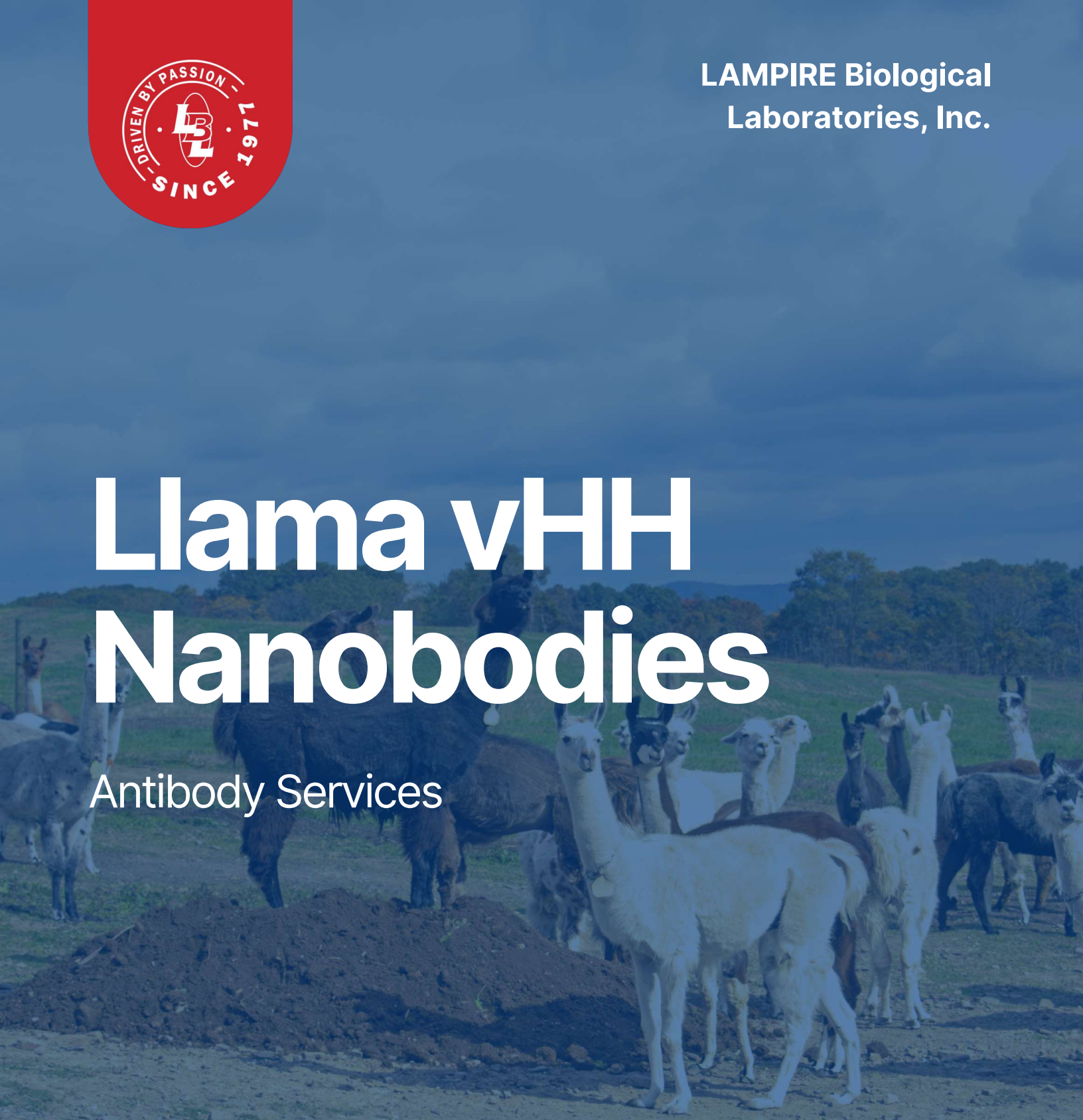
Telephone
+215-795-2838

Website
www.lampire.com

LAMPIRE Biological Laboratories, Inc.

Llama vHH Nanobodies

Antibody Services



Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

Llama vHH Nanobodies

Overview

LAMPIRE's Llama vHH platform enables rapid discovery of single-domain antibodies (nanobodies) using proprietary single B cell sorting of antigen-positive llama and alpaca B cells. By combining camelid immunization expertise with advanced B cell technologies, we provide a streamlined path to highly specific and stable vHH binders for research, diagnostic, and therapeutic applications.

The sequence-forward vHH discovery approach delivers epitope-diverse nanobody candidates with strong biophysical properties while eliminating the bias of library-based methods. Multiple immunization sampling timepoints drive deeper affinity maturation, and direct sequence recovery ensures full transparency and client ownership of all IP for rapid downstream development.

Why Choose Us?

- Rapid vHH discovery using proprietary single B cell sorting technology
- Full capture of native immune repertoire and clonotype diversity
- Faster timelines by eliminating traditional library generation and panning
- In silico developability, human-ness, and immunogenicity assessments
- Optional humanization and sequence optimization for therapeutic development
- US based, AAALAC accredited facilities with quality oversight

Capabilities

- Camelid immunization and antigen-specific B cell isolation
- Single B cell sorting from immunized llama and alpaca PBMCs
- Rapid vHH sequence recovery and binder identification
- Analysis of clonotype diversity and epitope relationships
- In silico developability and immunogenicity evaluation
- Sequence optimization and humanization support
- Scientific guidance from discovery through candidate advancement

Benefits

Rapid Binder Discovery

Single B cell sorting enables fast sequence recovery from antigen-specific B cells without traditional library construction.

Native Immune Diversity

Captures the full antibody repertoire generated during immunization, improving diversity and lead selection.

Efficient Screening Workflow

Removes duplicate clones early and eliminates display library generation to accelerate discovery.

Supporting Therapeutic Development

In silico assessments and optional humanization help prepare nanobody candidates for downstream development.

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

LAMPIRE Biological Laboratories, Inc.

Bovine Ultra-Long CDR3 Picobodies

Antibody Services

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

Bovine Ultra-Long CDR3 Picobodies

Overview

LAMPIRE's Bovine Ultra Long CDR3 Picobody platform enables discovery of uniquely structured binding domains through single B cell sorting and directed sequencing of ultralong CDR3 regions found only in bovine antibodies. These compact, disulfide stabilized knob domains are supported by flexible stalk regions, enabling precise engagement of complex antigen surfaces and access to epitopes often unreachable with conventional antibody formats.

Picobodies are exceptionally small, typically three to five kilodaltons, yet highly stable and well defined. Direct sequence recovery preserves bovine immune diversity while eliminating library bias. All sequences are delivered with full client IP ownership, and picobody derived candidates can be engineered into advanced recombinant formats, including knobbody and bispecific designs.

Why Choose Us?

- Access to a rare and highly differentiated bovine antibody repertoire
- Direct sequence recovery with full transparency and client owned IP
- Sequence forward discovery without library generation or panning bias
- Experience translating novel binding domains into advanced recombinant formats
- US based, AAALAC accredited facilities with quality oversight

Capabilities

- Bovine immunization using diverse antigen formats including proteins, cells, peptides, DNA, mRNA LNPs, and VLPs
- Single B cell sorting to isolate antigen specific B cells
- Directed sequencing and NGS based recovery of ultralong CDR3 domains
- Recombinant expression options with optional purified antibody delivery
- Optional screening including ELISA, cell based binding, kinetics, and epitope binning

Benefits

Expanded Epitope Access

Ultralong CDR3 knob domains enable engagement of complex or recessed antigen surfaces that are often inaccessible to conventional antibody formats.

Compact Domains with Engineering Flexibility

Picobodies are exceptionally small yet stable, supporting flexible engineering into advanced recombinant formats such as knobbody and bispecific designs.

Confident Selection

Optional binding and characterization workflows support early evaluation of specificity and differentiation to guide downstream decisions.

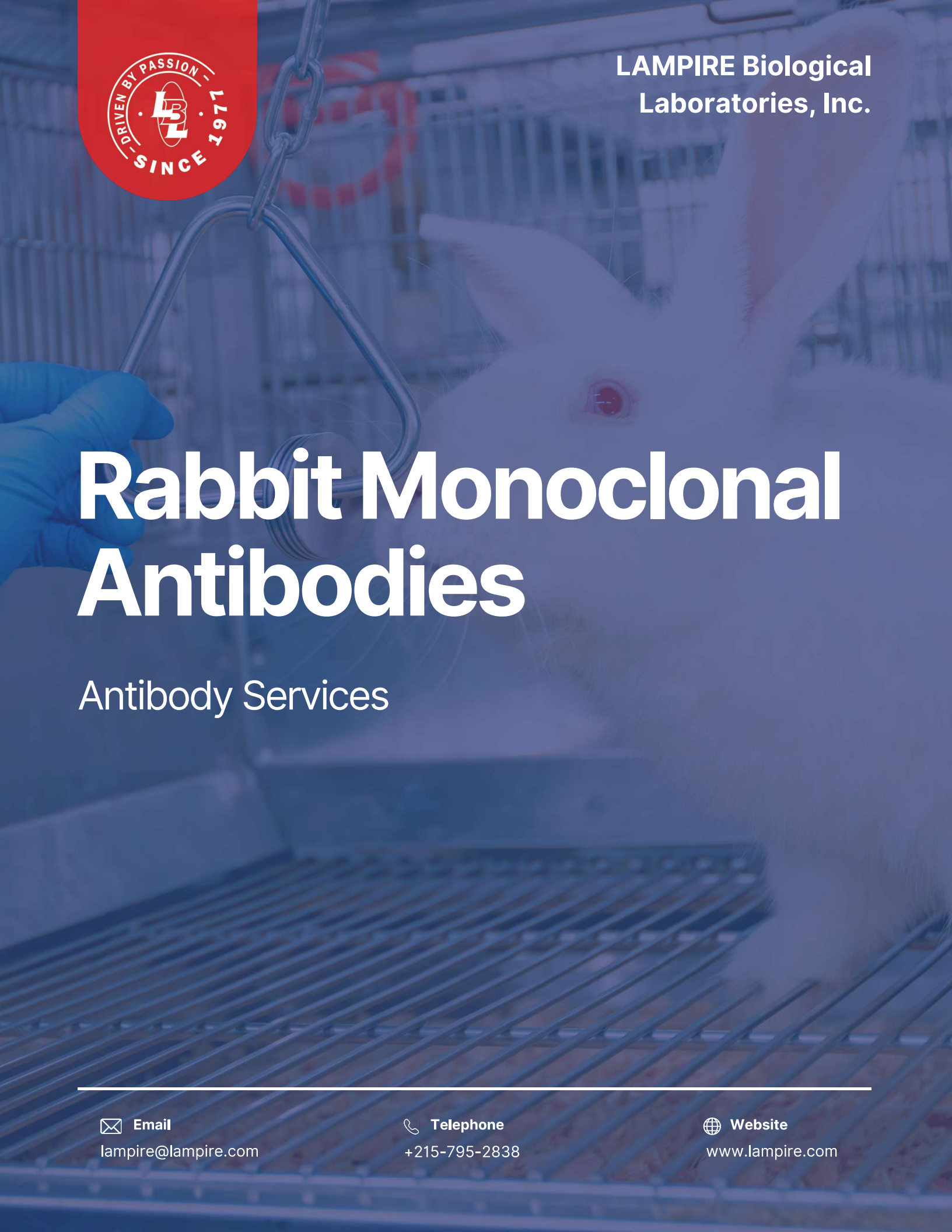
Transparency and Control

Direct sequence recovery with full client IP ownership ensures clear handoff into engineering and development.

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com



LAMPIRE Biological Laboratories, Inc.

Rabbit Monoclonal Antibodies

Antibody Services

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

Rabbit Monoclonal Antibodies

Overview

LAMPIRE's Rabbit Monoclonal platform delivers high specificity antibodies with reduced off target effects by leveraging the natural strengths of the rabbit immune system. Rabbit antibodies consistently exhibit higher affinity and broader epitope recognition than traditional murine models, making them well suited for challenging targets and sensitive assay applications.

Using an integrated single B cell workflow, LAMPIRE supports rabbit monoclonal discovery from immunization through recombinant expression. Antigen specific B cell isolation and direct sequence recovery enable a transparent, sequence forward approach, with all validated sequences delivered to the client with full IP ownership and flexibility for downstream development.

Why Choose Us?

- High affinity rabbit antibodies with broad epitope recognition and reduced off target effects
- Antigen specific B cell isolation using precision FACS analysis
- Direct recovery of paired VH and VK sequences with full client IP ownership
- End to end workflow from immunization through recombinant expression
- US based, AAALAC accredited facilities with quality oversight

Capabilities

- Custom rabbit immunization campaigns tailored to antigen type and project goals
- Support for diverse antigen formats including proteins, peptides, soluble membrane proteins, nanodiscs, and VLPs
- Antigen specific B cell isolation from PBMCs and splenocytes
- Next generation sequencing based recovery of paired VH and VK sequences
- Transient CHO expression with scalable yields from microgram to gram quantities
- Primary binding confirmation using ELISA with positive and negative controls

Benefits

Higher Affinity Performance

Ultralong CDR3 knob domains enable engagement of complex or recessed antigen surfaces that are often inaccessible to conventional antibody formats.

Effective Against Difficult Targets

The rabbit immune response is well suited for small, conserved, or low immunogenic epitopes that can be challenging for other hosts.

Sequence Forward Transparency

Direct recovery of paired VH and VK sequences provides full visibility and long term value through client owned IP.

Flexible Recombinant Options

Recovered antibodies can be expressed in multiple recombinant formats with scalable production to support screening and development.

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

LAMPIRE Biological Laboratories, Inc.

Advanced Monoclonal Screening

Antibody Services

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com

Advanced Monoclonal Screening

Overview

LAMPIRE's Advanced Monoclonal Screening platform provides a comprehensive solution for antibody characterization, supporting rapid identification of high quality monoclonal candidates. By integrating advanced instrumentation with customizable assay design, we generate actionable data to guide antibody selection and downstream development.

Platform Advantages

Our screening approach evaluates antibodies across binding affinity, kinetics, epitope mapping, and functional performance. This multi dimensional analysis provides a deeper understanding of antibody behavior, enabling confident lead selection and reducing risk during downstream development.

Why Choose Us?

- Trusted experts in advanced antibody screening
- Strategic focus on efficiency: evaluating selected clones without building massive libraries
- Proven ability to translate screening data into downstream efficacy and functional insights.
- Flexible and tailored approach to meet specific program goals
- Collaborative scientific support that helps clients make faster, smarter decisions

Capabilities

Target Binding & Functional Analysis

Evaluate antibody binding to target overexpressing cells compared to appropriate controls, generating precise comparisons of EC50 measurements to support confident lead selection. On cell studies confirm target binding, internalization, and functional activity through customized assay designs. These studies help identify antibodies with the strongest biological relevance and reveal early indicators of functional performance during discovery programs.

Kinetic Characterization

Determine KD values and rank high affinity binders through off rate analysis or full kinetic measurements. Using industry standard SPR and BLI instrumentation, including Biacore SPR T200 and Octet systems, LAMPIRE generates reproducible kinetic datasets that characterize association and dissociation behavior. These insights help prioritize antibodies with optimal binding properties for downstream development.

Epitope Binning & Differentiation

Perform bi directional matrix competition assays to identify antibody competition groups and non competing binding pairs. Epitope mapping strategies using known or published antibodies help refine development strategy and improve understanding of target engagement.

Email
lampire@lampire.com

Telephone
+215-795-2838

Website
www.lampire.com