

LYSENTRA BIOSCIENCES

SCIENTIFIC DISCOVERY AND BIOLOGICAL INNOVATION TO CREATE GLOBAL SOLUTIONS.

The Problem: Bacterial Threats Are Growing Faster Than Current Solutions

Healthcare

More than 2.8 million antibiotic-resistant infections occur annually in the U.S. alone
Over 35,000 deaths annually from resistant infections in the United States.

Agriculture

Bacterial plant diseases destroy up to 15–30% of global crop production annually
Crop losses caused by bacterial pathogens cost billions of dollars globally each year.

Food Safety

Foodborne bacterial pathogens such as *Salmonella enterica*, *Escherichia coli*, and *Listeria monocytogenes* cause millions of illnesses annually worldwide. In the U.S., foodborne illness affects approximately 48 million people every year.

Industrial & Environmental

Bacterial biofilms cost industries billions annually through:

- equipment contamination
- pipeline fouling
- manufacturing disruption
- water treatment inefficiencies

Bacteria impact nearly every major industry and current antimicrobial solutions are increasingly failing.

Industry Gap: Bacteriophage Innovation Is Limited

While bacteriophages are a promising alternative to antibiotics, much of the industry remains focused on therapeutic development rather than discovery.

Fragmented discovery efforts limit the rapid identification of novel phages needed to combat evolving bacterial threats across healthcare, agriculture, food safety, and industrial applications.



Why existing solutions fail

- Antibiotics are losing effectiveness
- Drug-resistant bacteria are evolving faster than new treatments are being developed.
- Phage discovery remains fragmented and underdeveloped

Solution

Lysentra Biosciences is building a proprietary bacteriophage discovery platform designed to identify, characterize, and develop novel bacteriophages capable of addressing critical bacterial challenges where traditional antibacterial technologies continue to fail.

- Discover and propagate bacteriophages
- Screen against priority bacterial targets
- Characterize host range and biological performance
- Develop commercial applications across healthcare, food safety, and industrial sectors

Why Bacteriophages?

Bacteriophages are viruses that selectively infect and kill bacteria. Unlike conventional antibiotics, phages can self-replicate, adapt alongside bacterial evolution, and maintain precision targeting without damaging beneficial bacteria.

- Rapidly eliminates harmful bacteria
- Targets harmful bacteria without disrupting beneficial microbes
- Naturally multiplies while fighting infection
- Adapts as bacteria evolve resistance



Lysentra generates revenue through multiple commercial pathways built around proprietary bacteriophage discovery and development.

Phage Licensing

License novel proprietary bacteriophages to biotech, pharmaceutical, and research organizations.

Custom Discovery Services

Discover and develop bacteriophages tailored to customer-specific bacterial targets.

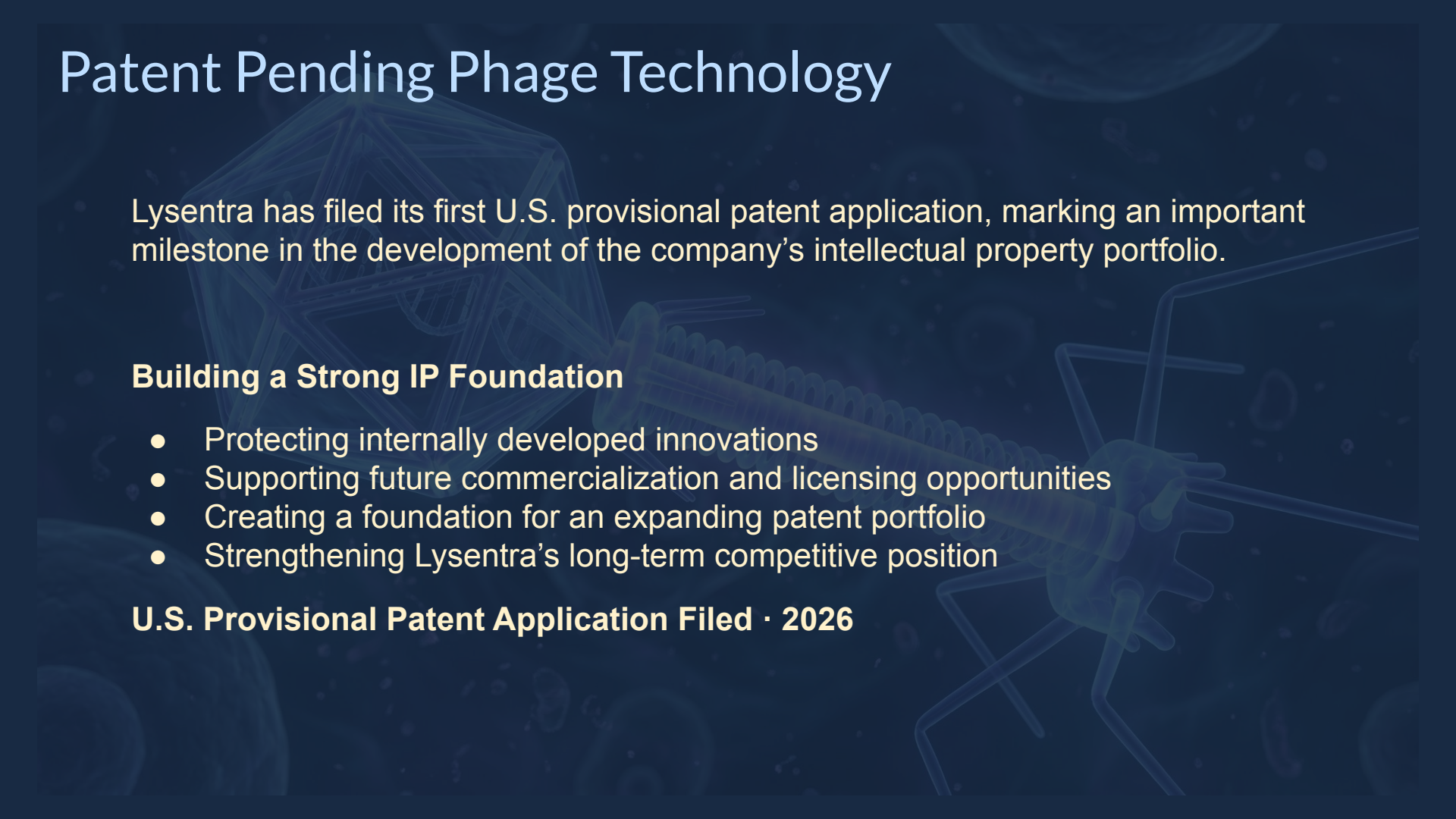
Research Partnerships

Partner with organizations seeking innovative bacterial detection and control solutions.

Commercial Applications

Develop bacteriophage technologies for healthcare, food safety, and industrial microbial control.

Patent Pending Phage Technology

The background of the slide features a dark blue field with faint, stylized illustrations of phages and a DNA double helix. A large, complex phage structure is visible in the upper left, while a more detailed phage with a long tail and tail fibers is positioned in the lower right. A DNA helix is also depicted in the center-left area.

Lysentra has filed its first U.S. provisional patent application, marking an important milestone in the development of the company's intellectual property portfolio.

Building a Strong IP Foundation

- Protecting internally developed innovations
- Supporting future commercialization and licensing opportunities
- Creating a foundation for an expanding patent portfolio
- Strengthening Lysentra's long-term competitive position

U.S. Provisional Patent Application Filed · 2026

Massive Market Opportunity

A scalable platform positioned across multiple high-growth bacterial control markets.

Market	Opportunity
Healthcare / AMR	Global antibiotic resistance crisis affecting millions annually
Biotech & Therapeutics	Rapidly expanding bacteriophage therapeutics market
Food Safety	Growing demand for pathogen detection and contamination prevention
Industrial Applications	Large-scale need for microbial control in manufacturing environments

One platform technology addressing multiple high-growth global markets

Competitive Advantage

Unlike companies focused on single product therapeutics, Lysentra is building a scalable bacteriophage discovery platform capable of generating proprietary biological assets for multiple high value commercial markets.

- Continuous phage discovery and development
- Proprietary biological asset generation
- Multiple revenue streams across industries
- Long-term defensible intellectual property opportunities

Founder Led Scientific Expertise

Lysentra was created from firsthand scientific experience and deep technical expertise developed through years of directly executing the research that drives its core platform.

T'Yanna Singleton is a scientist and entrepreneur with years of professional experience in microbiology, bacteriophage research, and biotechnology development. Her expertise in scientific product development and direct experience working with bacteriophages forms the technical foundation of Lysentra, while formal training in business essentials has strengthened her understanding of strategy, operations, and the fundamentals required to build and scale a successful biotechnology company.



Scott Steinagel serves as Scientific Advisor to Lysentra Biosciences. As a scientist and Director of Microbiology at a Fortune 500 specialty chemical company, he brings decades of expertise in microbiology, scientific leadership, product development, and commercialization, providing strategic guidance as Lysentra builds and scales its bacteriophage discovery platform.

