Lxbio Pharmaceuticals is an innovative biotechnology company and a global leader in bacteriophage technology and antibody discovery for oncology and ophthalmology.

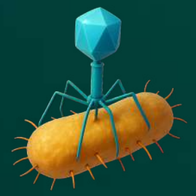
Leveraging its own CRO specialized in antibody and CAR-T cell discovery and production, Lxbio provides both external services and drives its internal R&D programs. Its therapeutic focus spans ophthalmology, oncology, and dermatology, supported by a robust and innovative pipeline.

Key programs include TP-102, the first bacteriophage-based therapy for diabetic foot infection (Phase 2b clinical trials), the first antibody-loaded nanoparticles in eyedrops and the first bacteriophage-based eyedrops for blepharitis in ophthalmology, and bacteriophage-corticosteroid combination for atopic dermatitis in dermatology.

Furthermore, Lxbio is advancing a proprietary phage delivery platform for oncology antibodies, reinforcing its leadership in next-generation biologics and precision medicine.

Lxbio Pharmaceuticals

Technology Platforms



BacterioPhage
for AMR Therapeutics

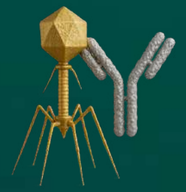
Bacteriophage therapeutics provide a targeted approach against antimicrobial resistance, precisely eliminating pathogens.

Promising alternative for infectiology, including diabetic foot, pulmonary, ocular, and other hard-to-treat infections.

Anti-VEGF
in Nanoparticles

Eydrops Anti-VEGF encapsulated in nanoparticles enables targeted, sustained drug delivery for treating retinal diseases.

Nanoparticles enable precise ocular drug delivery, enhancing therapeutic efficacy while minimizing side effects in eye disease treatment.



Oncology Phage
Antibody Delivery

Phage-Antibody Conjugate represents a next-generation targeted oncology platform with applications in both human and veterinary oncology.

Engineered M13 bacteriophages as a biocompatible and customizable drug delivery vehicle.

Biologics R&D
and Production Unit

Antibody and CAR-T cell R&D services span discovery to preclinical optimization, accelerating immunotherapy development.

Small-scale clinical-grade production supports translational research and early-phase trials.

LX bio Pharmaceuticals

Innovative Pipeline

We are advancing first-in-class biologics, integrating bacteriophage therapies for infectious and inflammatory diseases, nanoparticle-encapsulated antibodies for improved ocular bioavailability, and novel phage delivery platforms to revolutionize targeted oncology antibody and other therapies.

Product	Indication	**Product**
Topical Bacteriophages cocktail Diabetes	Diabetic foot infection	**TP102**
Anti-VEGF encapsulated in nanoparticles eyedrops	Macular degeneration & Diabetic retinopathy	**LXOP02**
Eyedrops gel Bacteriophages	Blepharitis & ocular infection	**LXOP01**
Phage-based Delivery Systems	Several therapeutical targets	**LXON01**

LX bio Pharmaceuticals

TP-102

The Potential to Transform the Care Of Diabetic Foot Infections

Precision against pathogens. Healing beyond antibiotics.

TP-102 is a Breakthrough Bacteriophage Therapy for Diabetic Foot Ulcers

TP-102 is the first topical bacteriophage cocktail specifically developed to treat diabetic foot ulcers and chronic wound infections. Composed of five lytic bacteriophages, TP-102 offers a targeted, microbiome-sparing approach to eradicate multidrug-resistant pathogens, a growing concern in the management of chronic wounds.

Developed by a Portuguese biopharmaceutical company, TP-102 has demonstrated excellent safety and efficacy in clinical trials, promoting accelerated healing and bacterial clearance with no systemic adverse effects.

TP-102 has received FDA fast track and is expected to complete phase 2b by the end of November 2025.

This innovative platform has the potential to redefine the standard of care for diabetic foot infections, offering a next-generation solution where traditional antibiotics often fail.

LX bio Pharmaceuticals

R&D Stage

Finishing Phase 2b

Human Clinical Trials

TP-102 The Product

TP-102 is being developed for topical treatment of patients with wound infections including chronic ulcers.

Targeted Antimicrobial Solution Against AMR Pathogens

Designed to combat multidrug-resistant bacteria. TP-102 phage cocktail offers precision killing where antibiotics fail, addressing a critical unmet need in the era of antimicrobial resistance.

Topical, Non-Systemic Delivery with Rapid Local Action

Formulated for direct application to infected wounds, ensuring localized bacterial clearance, reduced systemic exposure, and a faster therapeutic response in the infected tissue microenvironment.

Breakthrough Safety Profile

Comprised of naturally occurring, lytic-only bacteriophages with no transduction or lysogeny risk, and with no observed systemic toxicity or adverse events demonstrated in the completed REVERSE trial (TP-102).

Demonstrated Efficacy in REVERSE Clinical Trial

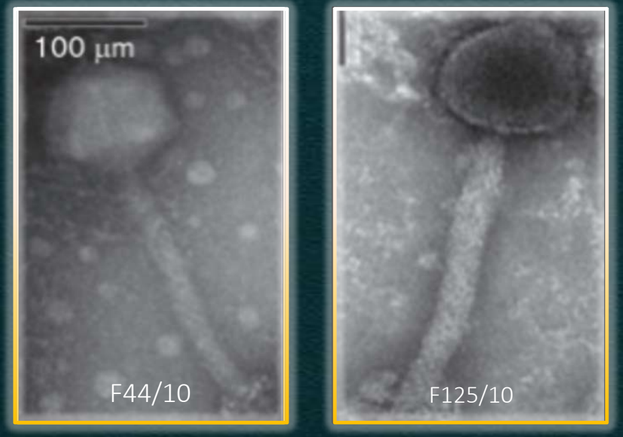
Statistically significant reduction in bacterial load and wound size progression in DFI patients with resistant infections.

First-in-Class Phage-Based Innovation for DFI

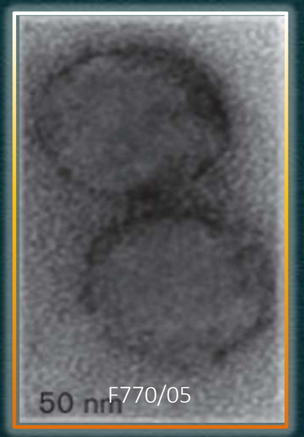
TP-102 is the first validated topical phage cocktail to complete a clinical trial for diabetic foot infections, creating strong IP positioning, early-mover advantage, and opportunities for regulatory fast-track and hospital formulary inclusion.

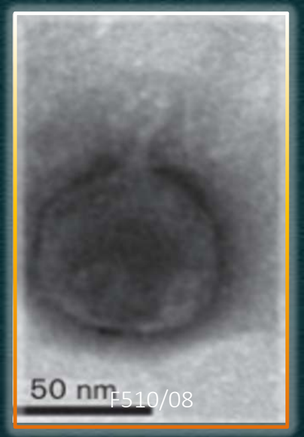
TP-102 is an innovative bacteriophage cocktail comprised of 5 lytic bacteriophages against:

Staphylococcus aureus

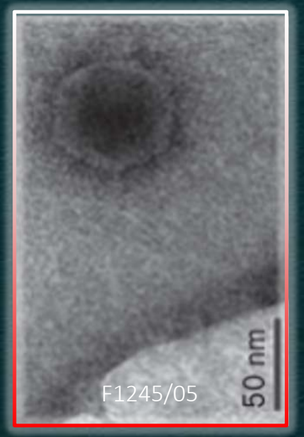


Pseudomonas aeruginosa





Acinetobacter baumannii



Real images of TP-102 bacteriophages cocktail comprised of 5 lytic

LXbio Pharmaceuticals

TP-102

TP-102 is an innovative bacteriophage cocktail comprised of 5 lytic bacteriophages against:
Staphylococcus aureus* | *Pseudomonas aeruginosa* | *Acinetobacter baumannii

Against AMR Pathogens

Topical with Rapid Local Action

First-in-Class Phage-Based

FDA

Fast Track Designation Granted to TP-102

PHASE I/IIa REVERSE study
COMPLETED

NO TREATMENT RELATED ADVERSE EVENTS ASSOCIATED TO TP-102 REPORTED DURING THE TRIAL.
TP-102 CAN BE EFFECTIVE IN REDUCTION OF DIABETIC FOOT ULCERS VOLUME.

PHASE IIb REVERSE 2 study
COMPLETED

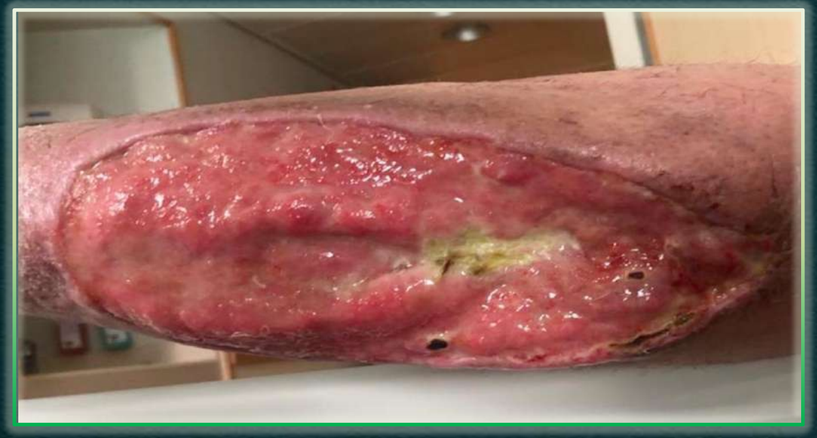
Clinical study CLOSED with 76 patient in 2 countries: USA and India

PHASE III
REVERSE 3 study

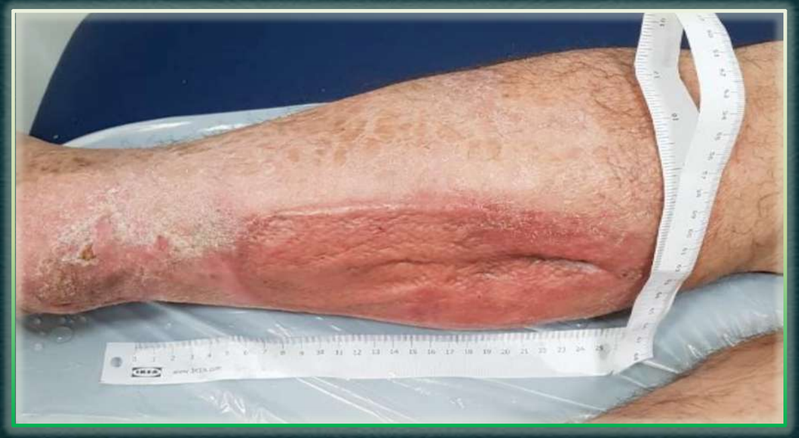
estimated to start in
Q1 2026

TP-102 Clinical Case Compassionate Use

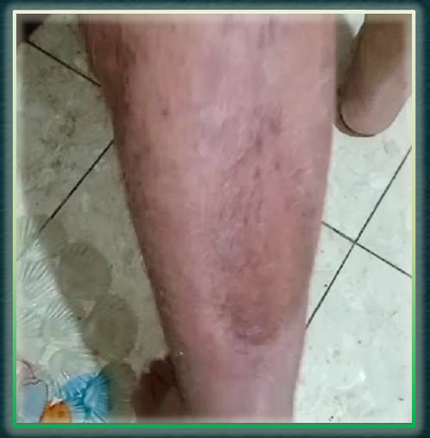
This report describes an application of phage therapy (TP-102) for diabetic foot ulcers in a compassionate use and offers data of efficacy and tolerability



START
Phage therapy

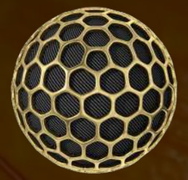


2 Months
post phage therapy



6 Months
post phage therapy
recovered

For more information: https://www.linkedin.com/company/technophage-sa/posts/?feedView=all



LXOP02

Anti-VEGF Lipid-based Nanoparticles in an Eyedrops Formulation

From Needle to Drops

A Safer Future for Retinal Care

We are developing the first-ever **anti-VEGF eye drop formulation** designed specifically for the treatment of diabetic retinopathy. This innovative solution encapsulates the anti-VEGF agent within lipid-based nanoparticles, enabling effective topical delivery to the retina, a significant advancement over current invasive intravitreal injection therapies. By combining nanotechnology with a non-invasive administration route, this product aims to improve patient compliance, reduce treatment-associated risks, and expand access to care for millions affected by diabetic retinal diseases.

LX bio Pharmaceuticals

R&D Stage

Finishing *In vitro*

Preclinical Trials

LXOP02 The Opportunity

Anti-VEGF Lipid-based Nanoparticles in an Eyedrops Formulation

1. Reduction in the molecular size of the antibody
2. Create and engineering a new antibody binder
3. Insert the antibody fragment in lipid-based nanoparticles
4. Formulation: ophthalmic solution as eye drops
5. Reproduce and scale for industrial GMP production

A paradigm shift in intravitreal treatment strategies is emerging with the integration of biannual injections supported by adjunctive monthly ophthalmic eye drops

This approach reduces the conventional burden of 4 annual intraocular injections without compromising therapeutic efficacy

For patients, this regimen offers significant advantages: reduced procedural discomfort, lower risk of injection-related complications (e.g., endophthalmitis, retinal detachment), and improved adherence and quality of life through non-invasive monthly maintenance

For ophthalmologists, this strategy streamlines clinical workflows, decreases chair time per patient, and enhances capacity for patient throughput, all while maintaining tight disease control via a hybrid therapeutic protocol

More linear control of anti-VEGF

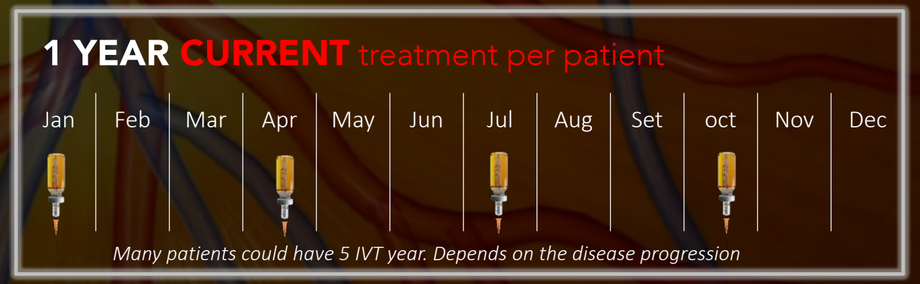
35% value save for HC systems/patients

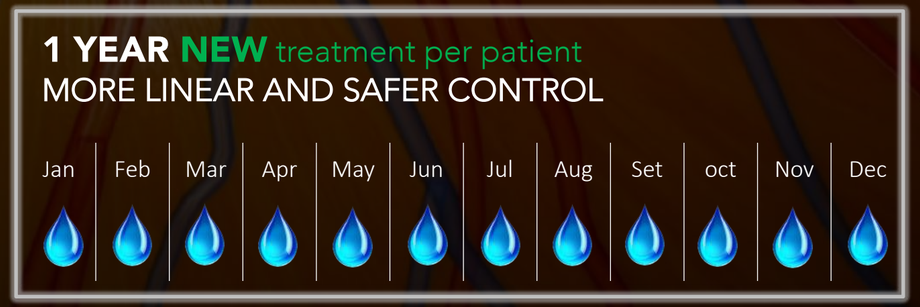
ADVANTAGES

1. Reduction of invasive complications (Clinical)
2. Greater patient comfort and adherence
3. Ease and autonomy for the doctor
4. Lower cost for the health system
5. Better long-term treatment management

Optimizing Intravitreal Therapy

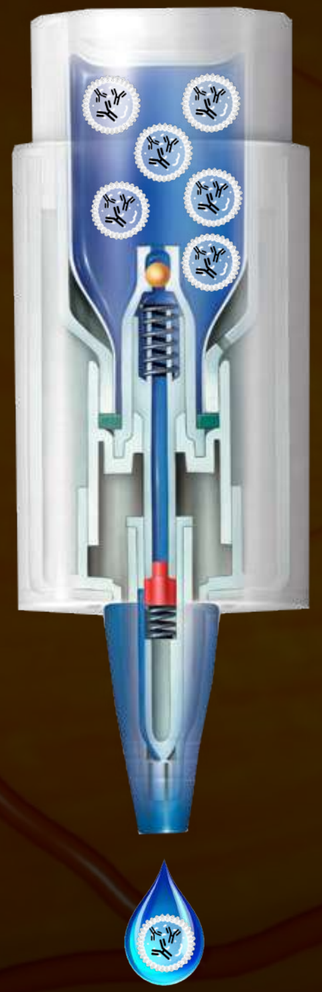
From 4 to 6 annual injections to a biannual regimen supplemented by topical control. This model exemplifies a precision medicine approach that balances efficacy, safety, and patient-centric care





LXOP02 The Product

Anti-VEGF Lipid-based Nanoparticles in an Eyedrops Formulation



Nano-encapsulation of Anti-VEGF Fragment

The formulation incorporates recombinant anti-VEGF antibody fragment within lipid-based nanoparticles (LNPs), enhancing molecular stability and protecting the biologic from enzymatic degradation upon topical administration

Lipid-Based Nanoparticle Carrier System

The LNPs are composed of biocompatible lipids optimized for ocular permeability and mucoadhesion, promoting efficient transcorneal and transscleral penetration toward posterior segment targets

Topical Ophthalmic Delivery Platform

Designed as a sterile, aqueous eye drop, the formulation enables non-invasive administration of anti-VEGF therapy to the retina, aiming to reduce the need for frequent intravitreal injections in conditions such as nwAMD, DME, and RVO

Sustained Release and Bioavailability Enhancement

The nanoparticle matrix allows for controlled release kinetics and prolonged ocular residence time, improving bioavailability and therapeutic exposure within intraocular tissues over extended period

Preservative-Free Multidose Container System

The solution is filled in a preservative-free, multidose delivery container that utilizes a sterile barrier mechanism, minimizing ocular surface toxicity and enabling safe, long-term self-administration by patients

LX bio Pharmaceuticals

LXOP01

The world's first bacteriophage-based eye drop.
Target infection. Preserve vision. Restore comfort

This innovative formulation harnesses the natural antibacterial properties of lytic bacteriophages to selectively target and eliminate drug-resistant Staphylococcus and Pseudomonas species, a cause of Blepharitis and chronic eyelid inflammation.

Unlike traditional antibiotics, phages do not disrupt the healthy ocular microbiome and do not contribute to antibiotic resistance. Developed using advanced stabilization and delivery technologies, the product ensures effective penetration of biofilms and sustained antimicrobial activity.

R&D Stage

Finishing *prof of concept*

Start Preclinical Trials

LXOP01 The Product

The world's first bacteriophage-based eye drop.

Product Overview

LX24OP01 is the first therapeutic product specifically developed for blepharitis using a bacteriophage cocktail. Formulated as a gel-based eye drop, ensuring enhanced ocular surface adherence and prolonged bioavailability.

Mechanism of Action

Comprises a proprietary cocktail of 4 lytic bacteriophages

Highly specific and potent lytic activity against Staphylococcus aureus and Pseudomonas aeruginosa

Selective bactericidal action minimizes disruption to the ocular microbiota

Target Pathogens

Staphylococcus aureus: Predominant Gram-positive pathogen in blepharitis, often associated with inflammation and eyelid margin colonization

Pseudomonas aeruginosa: Opportunistic Gram-negative bacterium contributing to chronic cases and antibiotic-resistant infections

Innovation and Advantages

First-in-class phage gel eye drop developed for direct ocular application in blepharitis.

Phages replicate at the site of infection, amplifying their therapeutic effect

Non-antibiotic strategy reduces the risk of AMR development

Offers an alternative for patients with antibiotic-refractory blepharitis or those prone to recurrent infections

Antibiotic Resistance Context

Rising resistance in S. aureus (e.g., MRSA) and P. aeruginosa limits the efficacy of conventional topical antibiotics

LX24OP01 circumvents this issue by using phages that target resistant bacterial strains without inducing cross-resistance

Formulation Benefits

Gel-based vehicle ensures sustained release and prolonged contact time on the eyelid margin

Enhanced ocular retention *vs* traditional liquid drops, leading to improved patient compliance and efficacy

Clinical Relevance

Designed for topical, non-invasive, and localized therapy of anterior and posterior blepharitis

Potential to become a paradigm shift in ocular infection management, especially in the era of antimicrobial resistance

Corneal Infection Therapy with Topical Bacteriophage

Studies show evidence of effectiveness and safety of phages in S. Aureus-induced ocular infections.

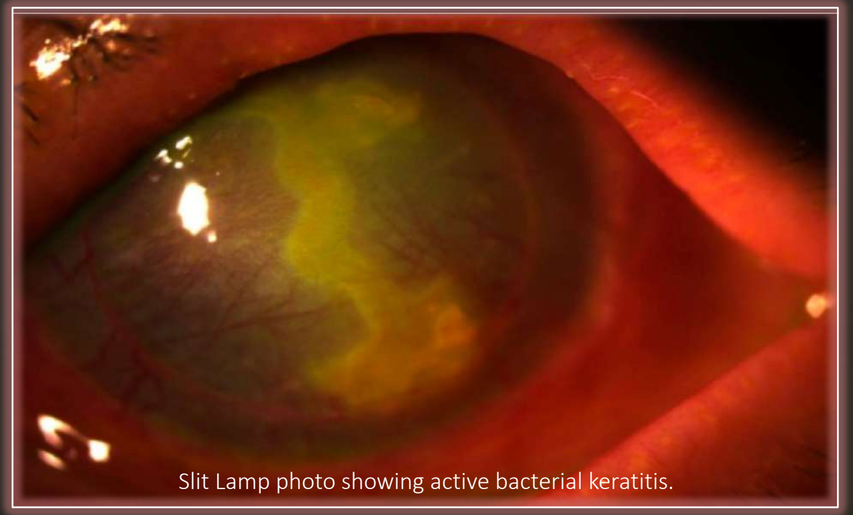
Staphylococcus aureus is a primary pathogen in bacterial keratitis, a condition that can cause permanent visual impairment

Report case of a 65-year-old woman
Penetrating keratoplasty in the left eye for the post infectious corneal
Started on broad-spectrum topical antibiotics has failed
Microbial cultures were positive for VRSA.
Persistent vancomycin-intermediate S. aureus (VISA) infection for 11 years

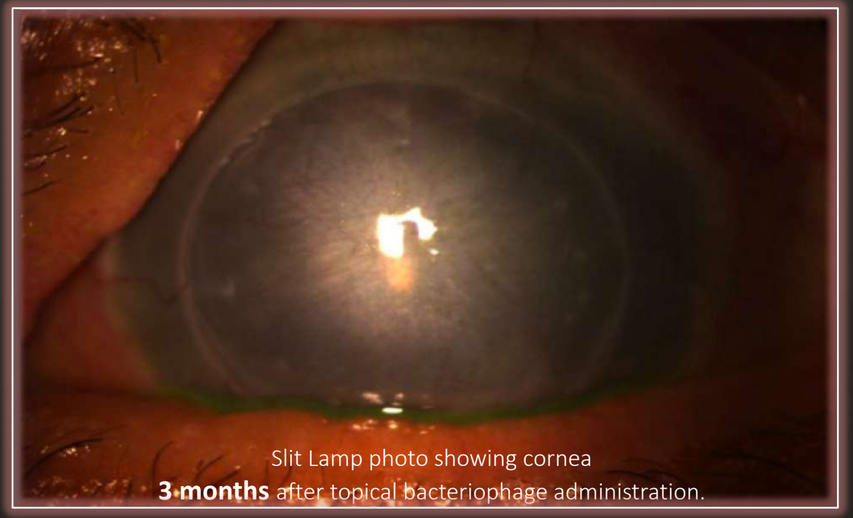
Patient then decided to undergo Phage therapy
Using the S. aureus bacteriophage (SATA-8505) for 4 weeks.

After 3 months, normal ocular and nasal cultures were verified,
indicating eradication of the infection.

This case suggests the therapeutic potential of phages in ocular disease, particularly in antibiotic-resistant cases.



Slit Lamp photo showing active bacterial keratitis.



Slit Lamp photo showing cornea
3 months after topical bacteriophage administration.

Ali Fadlallah et al (2015). Corneal Infection Therapy with Topical Bacteriophage Administration. The Open Ophthalmology Journal,, 9, 167-168. doi: 10.2174/1874364101509010167

Phage-Ab
Oncology

The LXON01, is a novel design Phage-powered modular therapeutic platform that represents a next-generation targeted oncology platform with applications in both human and veterinary oncology.

By combining tumour-specific antibody targeting with phage-based delivery, it achieves high tumour selectivity, enhanced intracellular drug accumulation, and superior therapeutic efficacy, while significantly reducing systemic toxicity.

The modular nature of this phage platform allows expansion to multiple tumour-associated antigens and diverse cytotoxic or immunomodulatory payloads, enabling a versatile pipeline for solid and hematologic malignancies.

R&D Stage

Finishing *proof of concept*

Start Preclinical Trials

LX bio
Pharmaceuticals

Phage-Ab Oncology

LXON01

Innovative Platform for Oncology Drug Delivery

Phage-Based Delivery System

Utilizes engineered M13 bacteriophages as a biocompatible and customizable drug delivery vehicle.
High payload capacity for cytotoxic agents or immune-modulatory molecules.

Antibody-Phage Conjugation

Antibody conjugated to M13 phage surface proteins for targeted delivery.
Stable and site-specific linkage ensures preservation of antibody affinity and phage integrity.

Tumor Target Selectivity

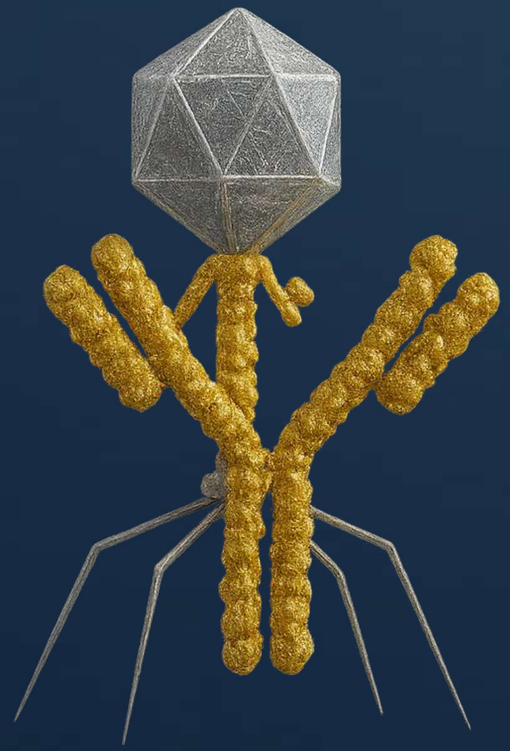
Antibody ensures highly selective binding to expressing tumour cells.
M13 phage surface modifications further enhance tumour microenvironment tropism.

Target Efficacy

Combines ADC cytotoxic potency with phage-mediated multivalency, increasing internalization and drug accumulation in tumour cells.
Potential for immune activation via phage components, synergizing with tumour cell killing.

Reduced Systemic Toxicity

Targeted delivery minimizes off-target effects and improves therapeutic index compared to conventional ADCs.
Phage platform exhibits low immunogenicity and favourable safety profile in preclinical models.



LX bio Pharmaceuticals

LXON01

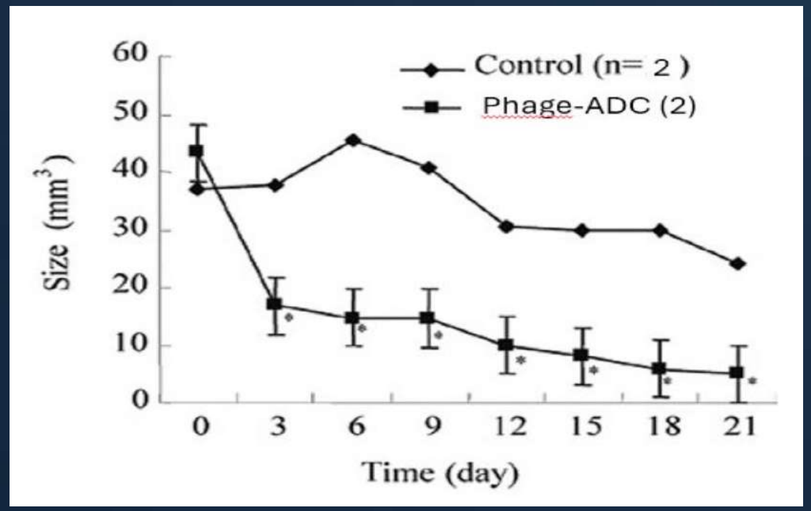
Innovative Platform for Oncology Drug Delivery

Preliminary results in vivo of LX25300M01 Phage-ADC

Model & Study Design

Tumour induced in mouse models (HER2-positive).

Small batch of M13 Phage-Anti-HER2 ADC administered systemically.



Efficacy

Significant tumor growth inhibition observed.

Tumor volume reduction within 20 days compared to control group.

Suggests strong targeted anti-tumour activity and proof of concept for therapeutic potential.

Safety

No major adverse effects or systemic toxicity observed in treated animals.

Stable weight and normal behavioural parameters indicate good tolerability.

LXbio
antibody discovery

R&D UNIT

Antibody discovery and production,
and CAR-T cell Technologies.

YOUR IDEA,
YOUR PROJECT,
OUR MISSION

1. End-to-End Antibody Engineering Platform

Comprehensive services covering the full antibody development cycle from target identification and antibody discovery (phage display and single B-cell) to humanization, affinity maturation, and Fc engineering, all under one roof.

2. Next-Generation Cell Line Technologies

Use of s*tate-of-the-art* expression-based platforms for high-yield, stable production of monoclonal, bispecific, and fragment antibodies optimized for R&D and preclinical.

3. Integrated CAR-T Discovery & Functional Screening

Advanced CAR design and validation workflows including screening, signalling domain optimization, and *in vitro* cytotoxicity assays, enabling rapid generation of functionally validated CAR-T constructs tailored for specific indications.

4. Flexible R&D-Grade Production Capabilities

Agile production for small antibody and CAR-T batches, enabling rapid prototyping and customized reagent generation to support biotech, academic, and translational R&D.

5. Scientific Expertise + Partnership Mindset

A team of multidisciplinary scientists with deep immunology, oncology, and cell therapy expertise, offering collaborative project design, data-driven decision support, and seamless integration with client pipelines from startup biotechs to large pharma.

Efficient and Scalable Solutions

Our advanced platforms, including B cell technology, foster faster results without compromising quality.

Proven Track Record

With a history of successful projects and strong client relationships, we bring credibility and trust to your ecosystem.

Cost Effectiveness

Centralizing services can simplify administrative processes, such as legal agreements, and material transfers.

Tailored Excellence Across Projects

We provide tailor-made solutions that align with the unique goals of each company.

Synergistic Ecosystem Building

We can develop a deeper understanding of your research focus and provide tailored solutions for multiple companies.

LXbio
antibody discovery

Conclusion

1
Leadership in Bacteriophage Therapeutics for AMR

Lxbio is advancing bacteriophage-based treatments for diabetic foot infection, blepharitis, offering targeted, microbiome-sparing solutions to combat antimicrobial resistance (AMR).

These programs address high-burden indications with limited effective therapies and are positioned for first-in-class differentiation.

2
First-Ever Phage-Based Ophthalmic Eye Drop

Lxbio is developing the world's first bacteriophage eye drop, a disruptive, non-invasive formulation for ocular infections.

This innovation opens a novel therapeutic modality in ophthalmology, addressing unmet needs in microbial keratitis and chronic blepharitis with precision-targeted, preservative-free therapy.

3
Breakthrough Anti-VEGF Nanoparticle Eye Drop

The company is the first to encapsulate anti-VEGF fragments in nanoparticles for topical ocular delivery.

This eye drop formulation is designed for diabetic retinopathy and AMD, replacing invasive intravitreal injections and improving compliance, access, and safety.

4
Next-Generation Oncology Platform: Phage-Ab Conjugates

Lxbio's Phage-Antibody Conjugate technology is a cutting-edge platform for tumor-targeted biologics delivery.

With broad applicability in both human and veterinary oncology, it combines the specificity of phages with the potency of antibodies, enabling modular, scalable oncology solutions.

5
Integrated CRO-Biotech Model with Biologics Expertise

Lxbio operates a fully integrated CRO and biotech platform offering discovery, engineering, and preclinical production of antibodies and CAR-T cells.

This dual capability accelerates internal pipeline development and generates revenue via contract research partnerships, de-risking the investment opportunity.

CONTACT US

info@lxbio.pt

www.lxbio.pt | www.lxbioab.com

LXbio Pharmaceuticals