bluephage®

The quickest, most accurate and easy-to-use viral indicator tests available for **microbial water quality assessment**

Bluephage's ground-breaking **viral indicator tests** based on somatic and F-specific coliphages will change water quality testing as we know it today!

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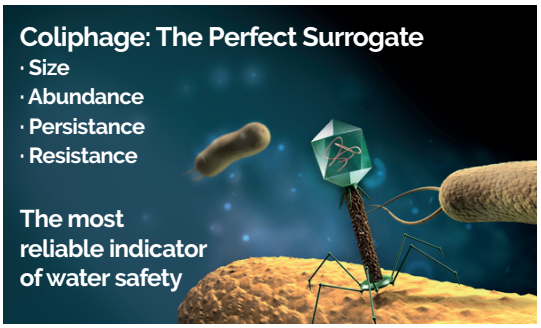
A NEW APPROACH FOR WATER TESTING



Going viral with bacteriophages!

Coliphages as faecal indicators mimic enteric viruses better than any other group of viral indicators. As a surrogate, coliphages present typically in much higher concentrations making them easier to enumerate. Coliphages also persist and disperse in the water environment and resist wastewater treatment better than most bacterial indicators, particularly *E.coli* and Enterococci.

Their size, 50 times smaller than bacteria abundance and persistence in nature combined with resistance to treatment processes allow coliphage to serve as the ideal proxy indicator of viral contamination in water.

Why Now?

Water safety, scarcity and scientific breakthroughs in coliphage are driving health authorities actions.

New regulations across the globe now include the use of coliphages as indicators of water quality. Regulations are already in effect in Australia, Canada, Colombia, USA and France. The next European Drinking Water Directive, which is about to be approved, includes coliphages as a standard microbiological water quality parameter. EPA of US has working in a new regulation related to Recreationl Water Quality Criteria (RWQC) that includes bacteriophages.

Innovation Drivers

- Rising health threats in water
- Increasing public awareness
- Changing regulatory landscape

Testing for coliphages will become a new parameter for routine water evaluation.

Are you Ready to meet the new standard?

Laboratory | Industrial | Agriculture | Environmental | Government

Recreational Water | Drinking Water | Wastewater & Reclaimed Water
Groundwater | Farm & Well Water | Food & Beverage | Biosolids

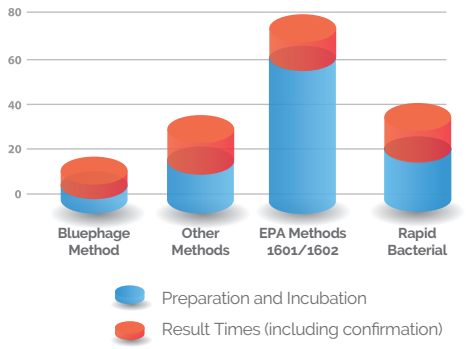
The Lab Kit

Get your lab ready and up-to-speed on testing for coliphages using Bluephage's microbiological reference materials and methods in a ready to go lab kit.

Product Pipeline

Kits using Standard EPA and ISO methods:

- Kits designed depending on knowledge of the (basic, advanced or complete kit)
- Kits designed depending on application:
  - Drinking water kit (quantification in 100 mL)
  - Raw and treated wastewater, Surface water, recreational water, shellfish extracts, sediments and sludge extracts where necessary after dilution (1 mL)



Biological Materials for coliphages' analysis: Host Strain working culture

- *E.coli* HS
- *E.coli* WG5
- *E.coli* CN13
- phage ϕX174
- phage MS2
- *Salmonella typhimurium* WG49

Rapid methods kits: using a colorimetric patented method

- Analysis of somatic coliphages in 4 hours
- *Analysis of F-specific coliphages in 4 hours (available 2020)*
- *Analysis of both somàtic and F-specific coliphages in 4 hours*

NOW AVAILABLE

Rapid Method Features

Quick Results	High Sensitivity	Equivalence	Easy-to-Use	Test Results	Storage and Expiration
- Quick results <6.5 hours -6 step protocol	High sensitivity detection -› 1 pfu / 100 mL	Equivalent results to EPA and ISO standard methods	Only basic laboratory equipment	- Presence /Absence - Quantification Colorimetric	Host strain and positive control storage at -20C and rest of the product at room temperature. Expiration kit: over 6 months

Services

Bluephage offers consulting and research services to companies requiring custom guidance across the microbial water quality assessment.

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Leveraging **35+ years** of microbiology expertise to revolutionize water testing technology

About Bluephage

BLUEPHAGE S.L. is a biotechnology company specializing in environmental testing solutions and launched as a spin-off company in 2016 from the University of Barcelona, Spain. Using a patent-protected accelerated coliphage indicator test, our microbiological water quality testing products detect bacteriophages as indicators of viruses that cause serious waterborne diseases. Our product pipeline will offer the fastest and easiest to use bacteriophage detection methods currently available on the market for environmental testing of water.

BLUEPHAGE's team of world-renowned experts in basic and applied microbiology and virology in water testing methods tap into 35+ years of knowledge and know-how developed at the University of Barcelona within the MARS research group (Water Microbiology Related to Health).

Bluephage is currently seeking strategic partners and investors.
To learn more about our products and request information, please contact:

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Safe water for a better world

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Why viral indicators?

Historically water quality control has been mainly done through bacterial indicators. Currently, coliphages have emerged as viral indicators to improve quality control of water, biosolids and food. Coliphages are a subset of bacteriophages (virus) that infect *Escherichia coli*. The presence of coliphages in a water sample usually indicates pollution by human or animal faeces or by wastewater. Despite being found in a similar frequency in the environment, coliphages persist normally longer than bacteria and provide information about viral pathogens, which are not properly represented by studying only bacterial indicators.

Coliphages: The perfect microbiological indicator

Description	Advantages
-50 times smaller than bacteria	-Improving validation and applicability of filter treatment process
-More resistant to treatments than bacteria	-Their resistance in water and food resembles that of human enteric viruses
-More persistent in the environment than bacteria	-There are no injured or stressed forms as it occurs for bacterial indicators which is limiting risk assessment
-Multiply at higher rate than bacteria	-High values for detection purposes, and improving the monitoring and quality control process
-Coliphages are a group of bacteriophages which are the most abundant organisms in the biosphere	-Appropriate for monitoring and survey of pathogenic human and animal viruses

Practical aspects

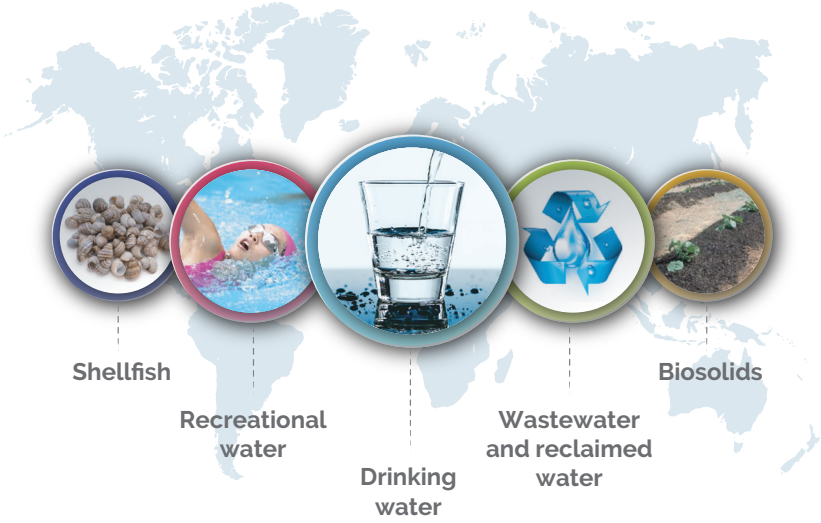
• Coliphages testing is a rapid and simple method for pathogenic pollution detection.

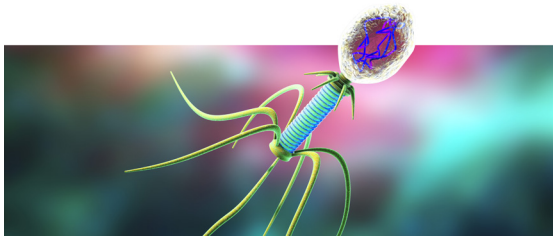
• Coliphages infect bacteria but are harmless to humans.

• Water samples stored at 4°C can be kept longer for coliphage's analysis (24 – 48h) than for bacterial indicators' analysis (maximum 6h).

• Coliphages analysis provide infectivity information while DNA-based molecular techniques based do not provide.

Main applications of coliphages





Emerging Indicator

Coliphage testing as viral indicator has been included by the US-EPA and the WHO for direct potable reuse water and for EU for reuse water and drinking water. Likewise, other countries like Colombia, Canada or Australia also have regulations including the use of coliphages.

More scientific info: www.coliphages.com

Products info: www.bluephage.com