



Supporting a future with safe, nutritious, and sustainable seafood

SEAFOOD^{TOMORROW} Final Event, 15.04.2021

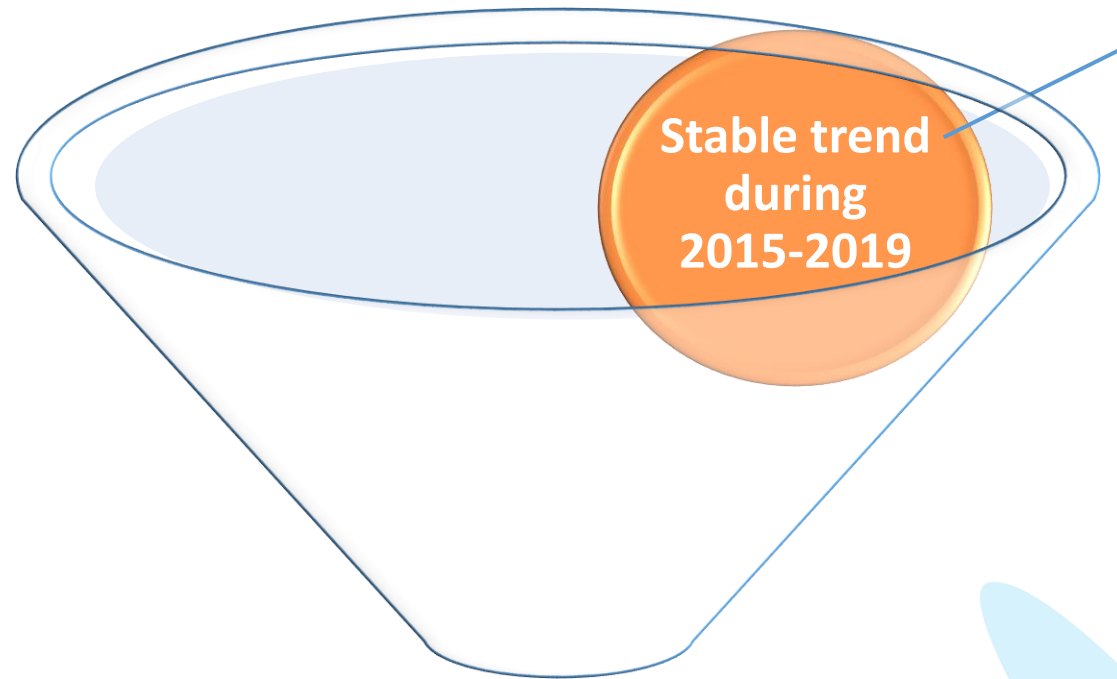
Listeria-specific bacteriophages for safer ready-to-eat seafood

Amaia Lasagabaster (AZTI)

Listeria monocytogenes: responsible for listeriosis



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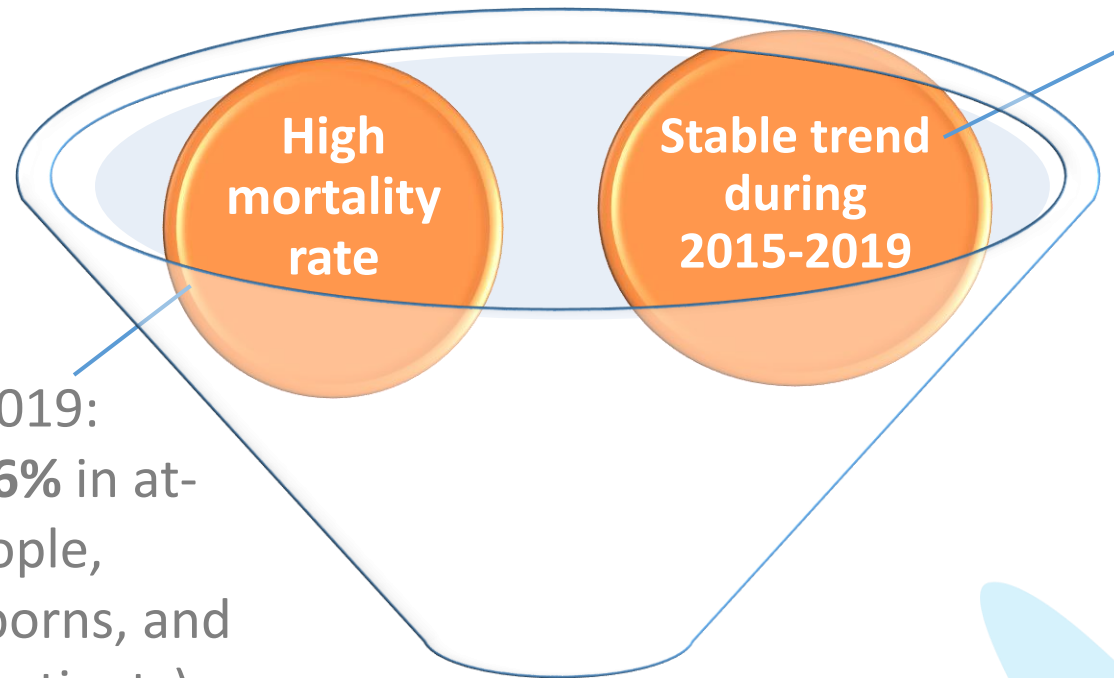


2,621 cases of listeriosis
confirmed in 2019.



EFSA and ECDC, 2021

Listeria monocytogenes: responsible for listeriosis

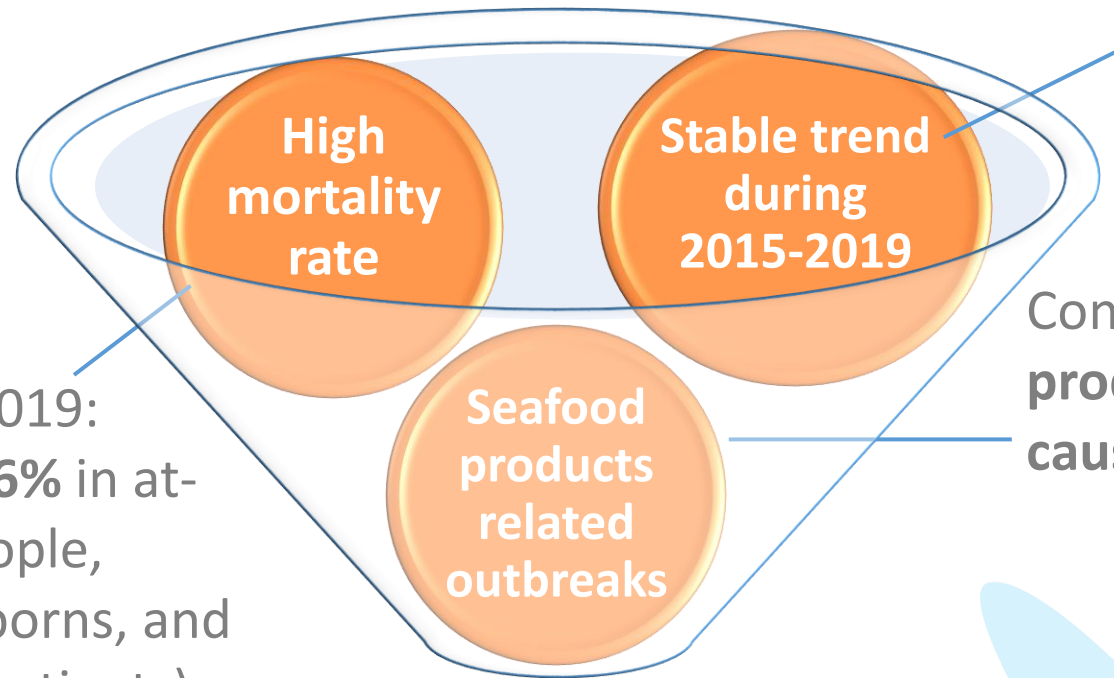


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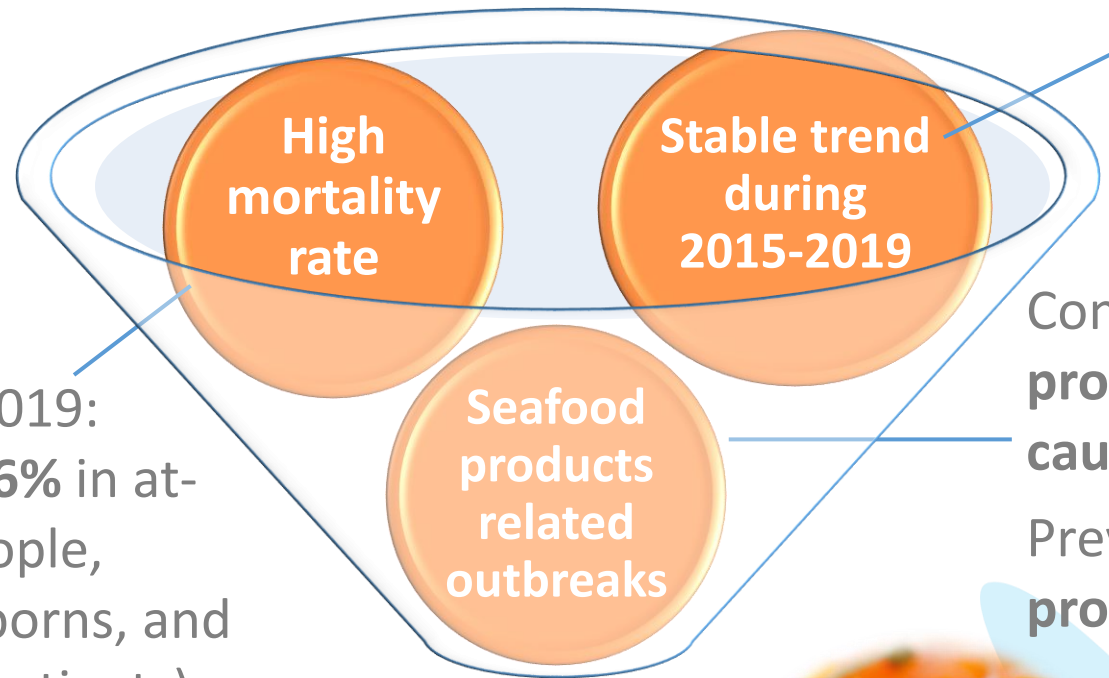
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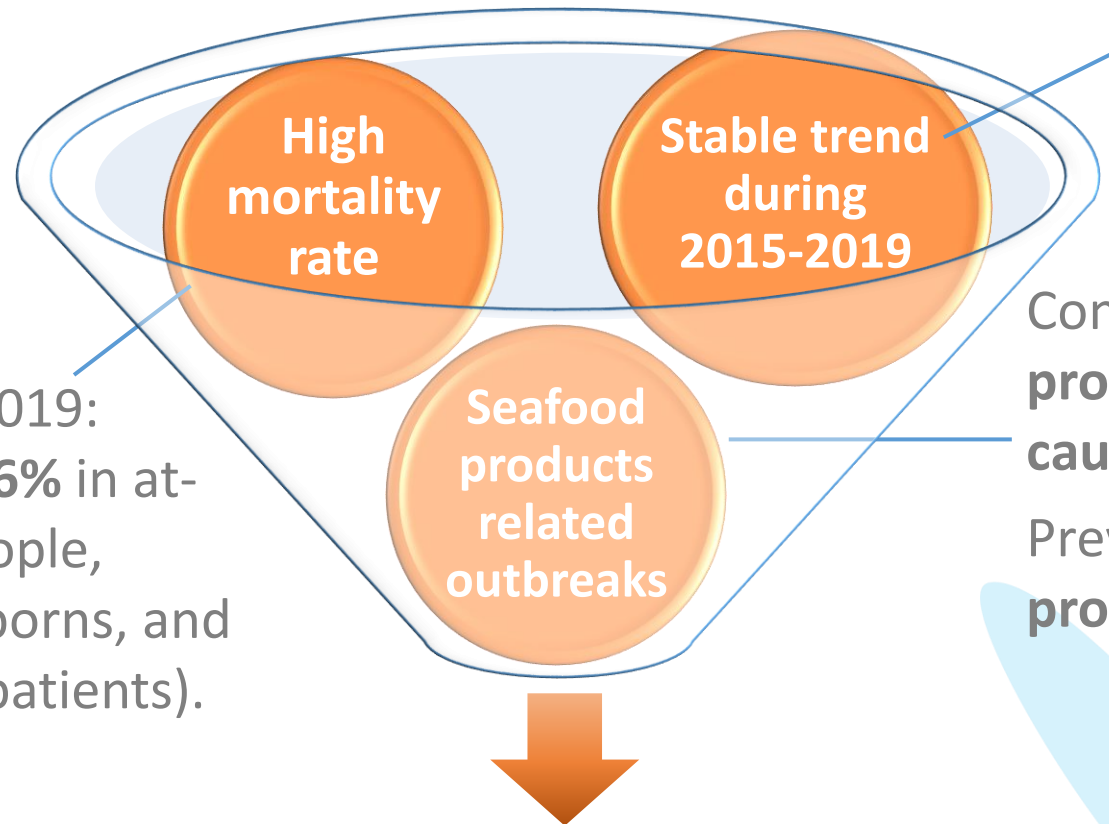
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Prevalence of *Lm* in **fresh, minimally processed and ready-to-eat** seafood.



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**Need to improve the control of
Listeria monocytogenes in seafood**

EFSA and ECDC, 2021

The challenge:

Listeria monocytogenes control



**Seafood Industry
Public Health**



The challenge:

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Seafood Industry
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ready-to-eat seafood

consumed without further treatment or cooking

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Guidance

Regulation

Regulation (EC)
No 2073/2005
of microbiological criteria
for food stuffs, including food
safety criteria for *Lm*



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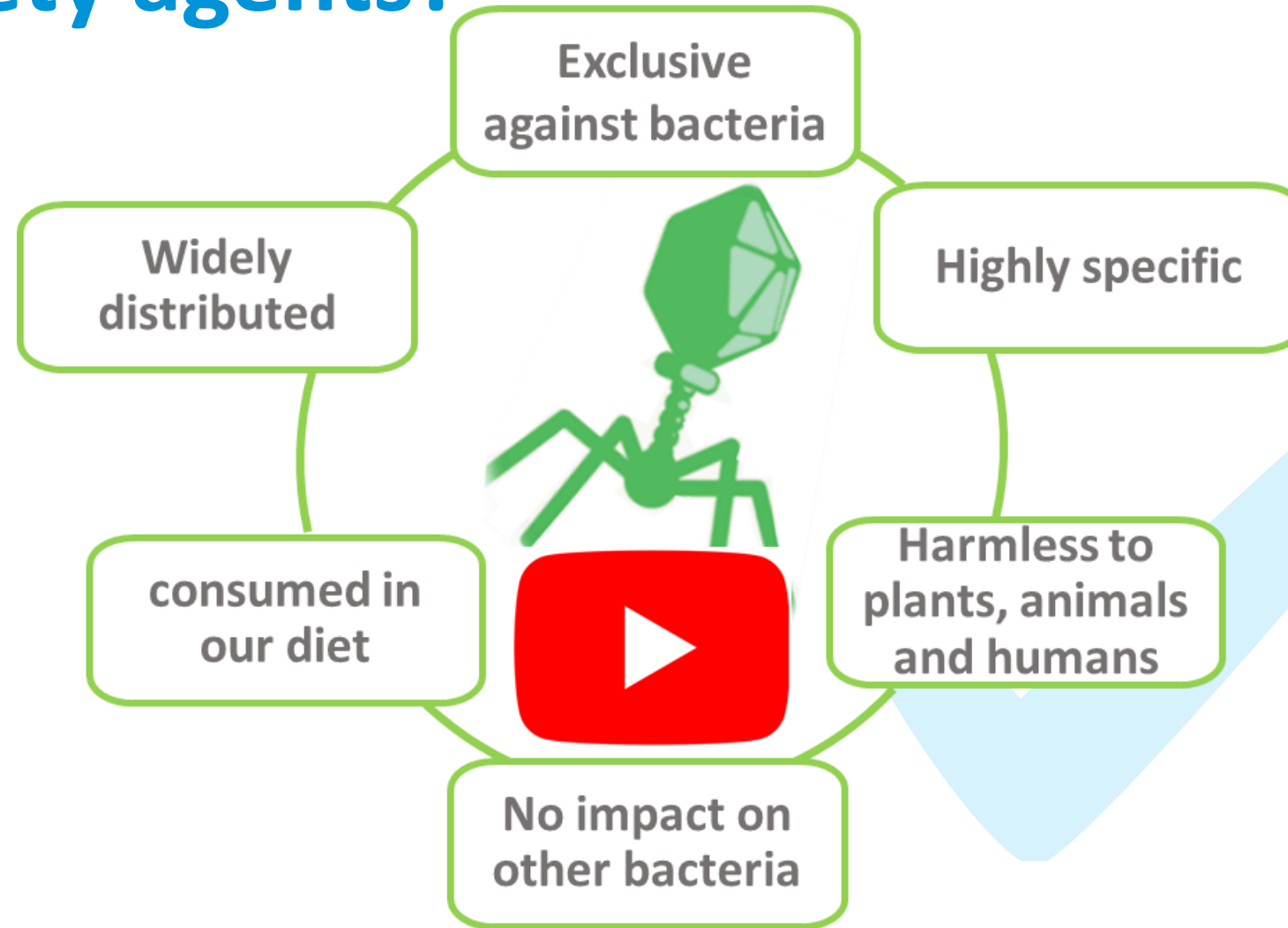
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**Innovative
Solutions**

**Food Safety
Control Strategies**



Why bacteriophages as food safety agents?



Task 2.3 Strategies to remove contaminants from seafood



Objective

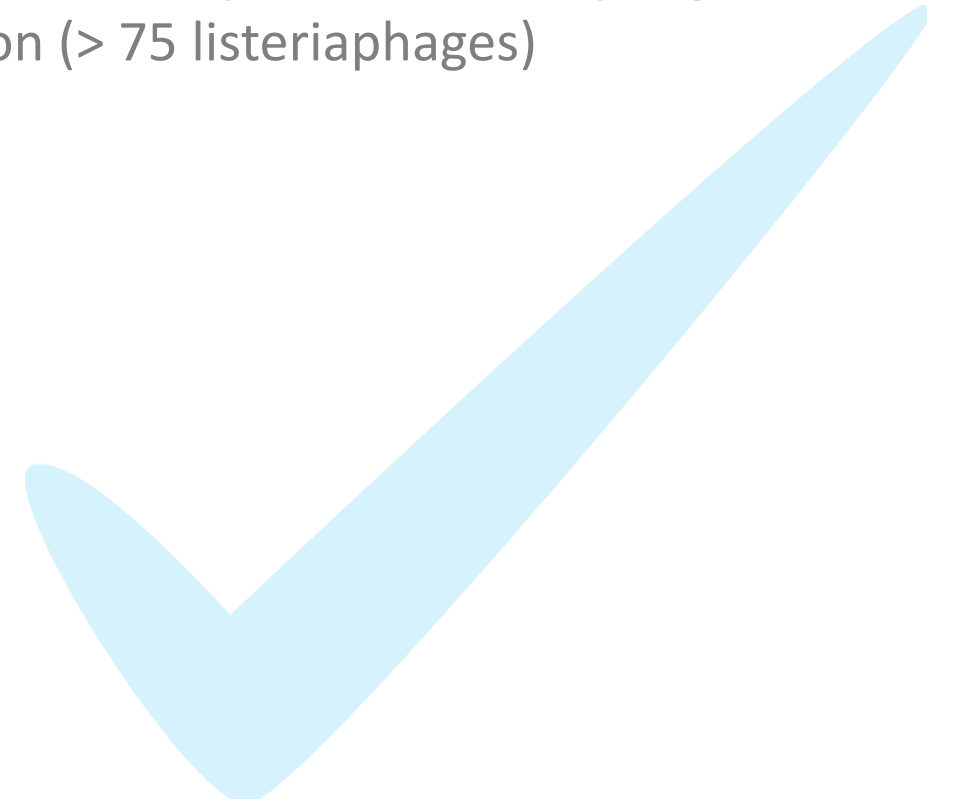
To develop a **bacteriophage-based solution** to control *L. monocytogenes* in seafood products



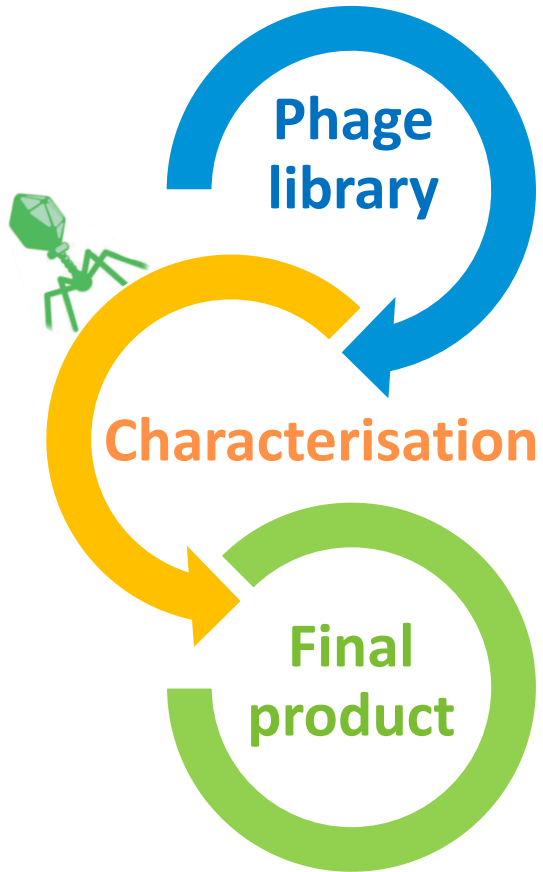
Listeria-specific bacteriophages for safer seafood



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 - ✓ Efficacy
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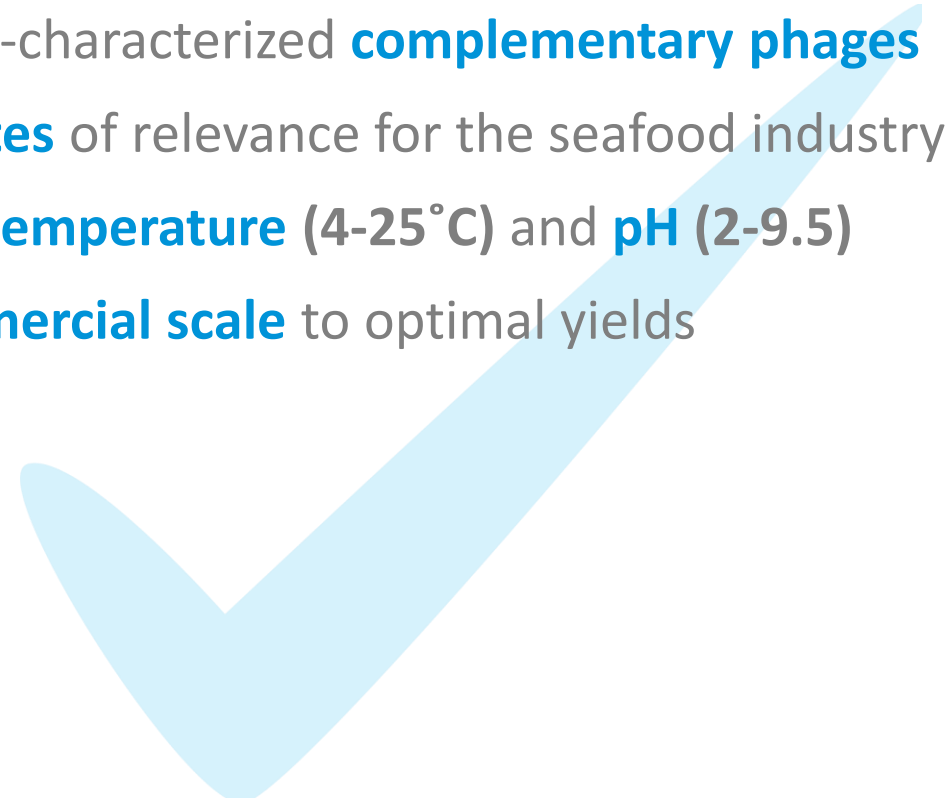
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- Selection of most effective **listeriaphage cocktail**
- **Production** at industrial scale
- Validation in **raw and ready-to-eat seafood**



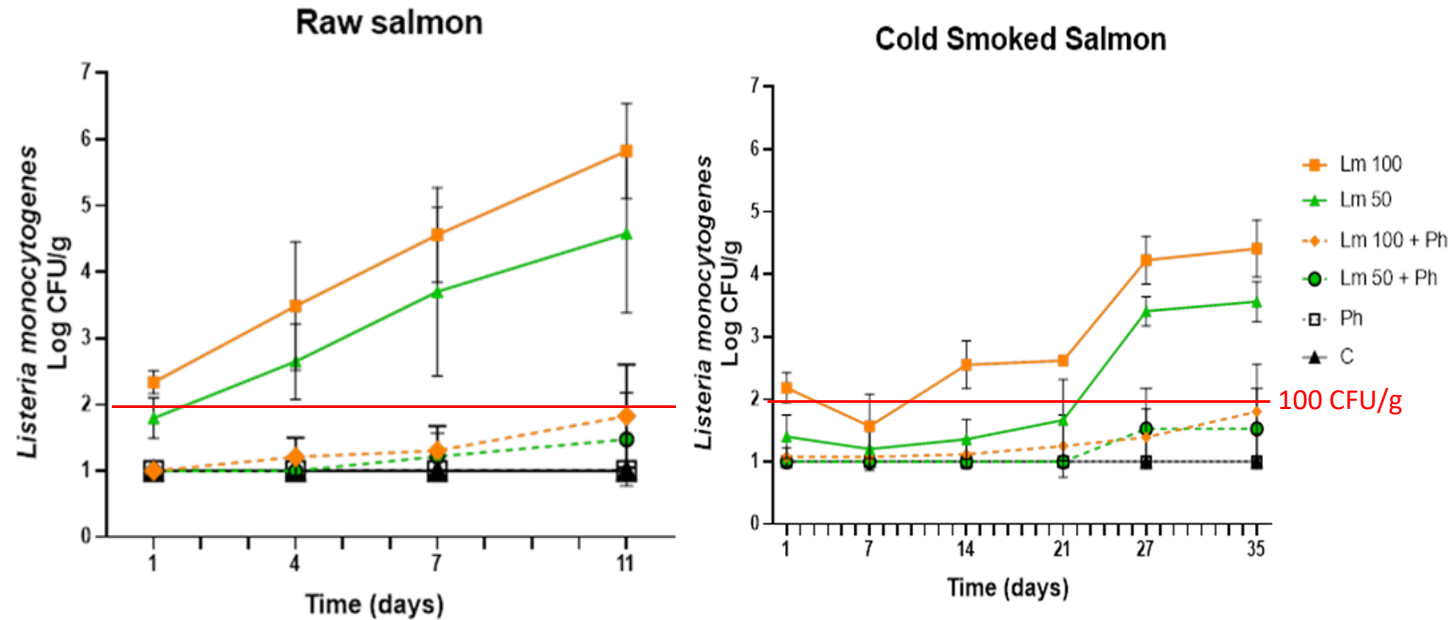
Listeria-specific bacteriophages for safer seafood



- ✓ **Listeriophage cocktail** containing 5 well-characterized **complementary phages**
- ✓ Effective against **> 90% of *Listeria* isolates** of relevance for the seafood industry
- ✓ **Stable** under application conditions of **temperature (4-25°C)** and **pH (2-9.5)**
- ✓ Able to be **produced at industrial commercial scale** to optimal yields
- ✓ Shelf life of **6 months**



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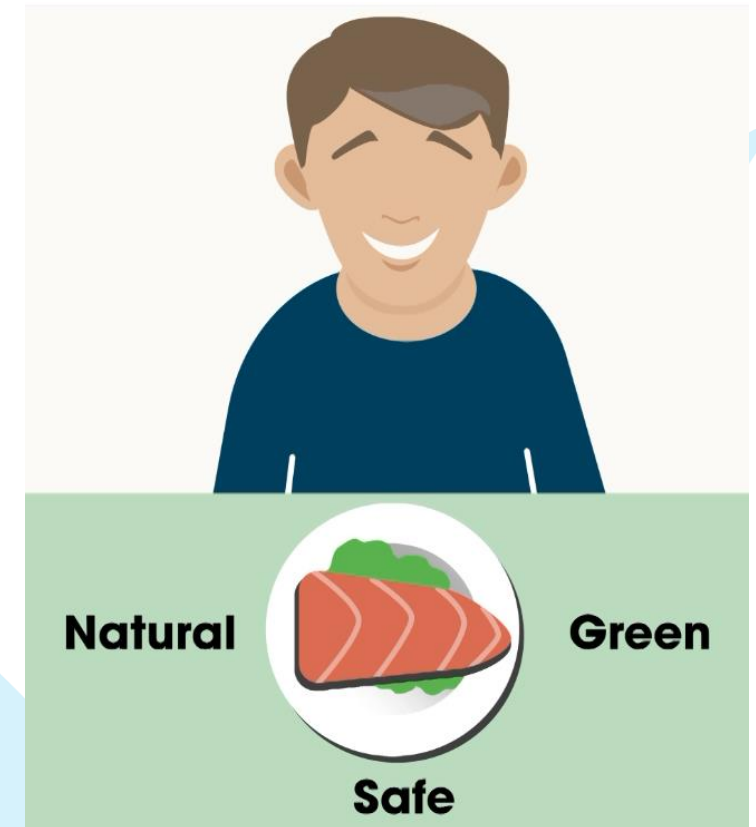


- ✓ Able to **reduce** initial *L.monocytogenes* **load** and keep it **below the legal limit** of 100 CFU/g at the end of the shelf-life of both raw salmon and cold smoked salmon.

Conclusions



- ✓ Biological properties of lytic bacteriophages, as well as the new data on the effectiveness of *Listeria*-specific bacteriophages on seafood products, make **bacteriophage biocontrol** a promising strategy for **seafood safety applications**.
- ✓ Use of ***Listeria* bacteriophages** could contribute as an **additional innovative solution** in a multi-hurdle approach to control the prevalence of *L. monocytogenes* in seafood products.





Thank You

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