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# CO BIK LBA & Bacteriophage Project

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CO BIK Conference 2011, Ljubljana



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## Who are we?

- LBA – Laboratory for Bio-analytics
- Partners:
  -  NACIONALNI INŠTITUT ZA BIOLOGIJO
  - b
- Projects:
  - BioDownstream Technologies Course
  - Chromatographic materials
  - **Bacteriophages**



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## How Did We Start?

- Combining knowledge and experience of both partners and start a new field of research with a goal to develop new biotech products.
- Identification of possible field of activity:
  - Broad screening and comparison
  - Markets screening
  - Availability of resources
  - **Probability of success**

Bacteriophage applications in medicine and biotech production

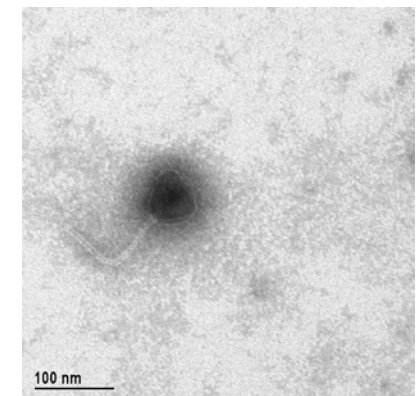
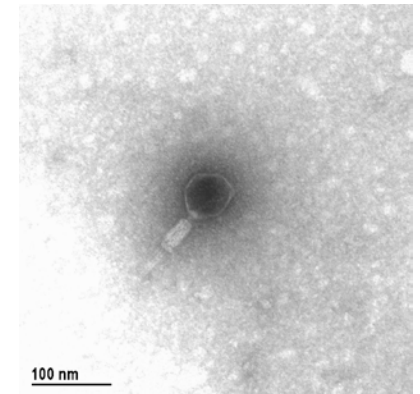


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# Bacteriophages

- Viruses that infect bacteria
- Isolated in 1917 and soon used to successfully treat bacterial diseases
- Properties & advantages
  - Specificity
  - Low environmental impact
  - Auto-dosing
  - Low inherent toxicity
  - Lack of cross-resistance with antibiotics
  - Formulation and application versatility,
  - Safety for humans, plants and animals





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# Bacteriophages as Alternative to Antibiotics

- Antibiotics are highly effective against bacteria but excessive use of antibiotics in past decades increased incidence of antibiotic resistant pathogenic bacteria, therefore...
- ...Infections that were once treatable have become more difficult to treat
- **Limitation** of antibiotic use (rational use) and **prohibition** of antibiotics in food chain
- Need for an alternative: **Bacteriophages**



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# Bacteriophage Project Goals

- Bacteriophage based products to:
  - Prevent bacterial contamination in food chain
  - Treat bacterial infections in humans, animals, and plants
  - Detect and identify bacteria
- Provide the market with antibiotic alternatives on different fields of:
  - Food industry
  - Plant production
  - Human and Veterinary Medicine



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## Market

- Only few bacteriophage products is available on the market:
  - ListShield™: Intralytics
  - EcoShield™: Intralytics
  - SalmoShield™: Intralytics
  - Listex™: Microcos Food Safety, USDA approval, GRAS;
  - AgriPhage: Omnilytics, EPA approval
  - Phage against *Salmonella* (PLSV-1™) and *Clostridium perfringens* (INT-401™) in poultry licensed products: Intralytics;
  - BioPhage-PA: Biocontrol (UK) , Clinical Phase 2 finished
  - Custom designed phage therapies in Poland, Georgia, Russia



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# Market

- Does market of bacteriophage products exists?
- Can we (co)-create the market? **Yes, we can!**





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## How Did We Start and Where We Are?

- Idea: to use bacteriophages!
- Which bacteria should we target?
  - Impact (pathogenicity)
  - Level of existing knowledge
  - How many competitors we have?
- Decision on 1st target bacteria
- Bacteriophage isolation
- Decision on 2nd target bacteria
- Characterisation with host range
- Proof of principle

April 2010

May 2010

July 2010

August 2010

April 2011

April 2011

Spring-Summer 2012



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## Where are We Going?

- Proof of principle
- Product definition and marketing strategy
- 1st products

Autum 2012

Autum 2012

2015

- Constant search for additional resources

**Biotech products needs long time to market and high investment!**



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## Summary

- We are developing bacteriophage based products – alternative or supplements to antibiotics
- Only few products on the market and with the proper selection of the target we will have one of the first bacteriophage products on the market



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# Why to Invest in Bacteriophage Project?

- To provide desired level of safety we need to control bacteria in certain environments. Antibiotics have some limitations and alternatives are needed. Bacteriophages are **THE BEST** alternative!
- Bacteriophage applications are 10-20 x **CHEAPER** than antibiotics!
- **LBA TEAM**: experienced, motivated, focused, stubborn and supported by COBIK!



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Questions ?

**THANK YOU**

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