

# The current state of AMR research activities including Alternative to antimicrobials (ATA) and collaboration opportunities in VIETNAM

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## Background on AMR research in the Vietnam

- What is the current status of AMR research in Vietnam?
- -National Action Plan on Antimicrobial Resistance Prevention and Control in the Agricultural Sector for the 2021-2025 Period (Decision No. 3609/QD-BNN-TY dated August 23, 2021, of the Ministry of Agriculture and Rural Development)
- -Framework for scientific research tasks on the use of antibiotics, antibiotic resistance, and alternatives to antibiotics in livestock and aquaculture in the period 2024-2030 (Decision No. 3492/QD-BNN-TY dated August 17, 2023)
- Various studies on the molecular epidemiology, pathogenicity, and transmission of antibiotic-resistant bacteria isolated from animals, foods of animal origin, and farm environments.
- Who are the key stakeholders on the AMR research? (e.g. Government, Academic, Private sector):
- Academic sector: Vietnam National University of Agriculture (VNUA), National Institute of Veterinary Research

## ATA Research Focus

- What is the state of research on ATA in your country? e.g., vaccines, phage therapy, antimicrobial peptides
- - In the framework for scientific research tasks, phage therapy was selected as a priority for researching an alternative to antibiotics in livestock in the period 2024-2030
- - Current researches focus on evaluating the efficacy of bacteriophages, engineered phages, phage enzymes (endolysin), and phages combined with antibiotics/bacteriocins/herbals in the prevention and treatment of animal diseases
- What are the regulatory or practical barriers to developing ATA-based treatments in Vietnam?
  - Lack of established regulatory pathways for phage therapy in Vietnam
  - High research and development costs for phage therapy

## Challenges related to AMR/ATA research

- **Challenge 1:** The isolation, characterization, and production of phages at a large scale can be time-consuming and expensive
- **Challenge 2:** It requires collaboration across disciplines (microbiology, biotechnology) to produce effective phage therapy to control animal diseases
- **Challenge 3:** Determine the effective delivery methods of phage preparations
- **Challenge 4:** Lack of data to prove the efficacy and safety of phage therapy in vivo

## Solutions

- **Solution 1:** Continue optimizing the procedures for the development of bacteriophage preparations (phages, engineered phages, phage enzymes, combinations of phage with other antibacterial agents)
- **Solution 2:** Promoting multi-sectoral collaboration to develop effective phage therapy against animal diseases
- **Solution 3:** Continue studying the delivery methods of phage preparations
- **Solution 4:** Conduct clinical trials at a large scale to demonstrate the efficacy and safety of phage therapy

## Collaboration opportunities

**Do you have any requests for collaboration with or support from other countries on specific topics?:** Request for collaboration with or support (technologies, financial support) from other countries (Japan, US, EU...) on research and development of phage therapy in the prevention and treatment of animal disease