AI-Based Microbiome Engineering for Next-Generation Phage Therapy

Balázs Ligeti

Neural Bioinformatics Research Group

Pázmány Péter Catholic University

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OUR VISION / WHO WE ARE?

The problem: antibiotic resistance
Our approach: using AI-driven microbiome engineering to design targeted, next-gen phage therapies
Innovation: using genomic language models and network analysis to predict phage-host interactions and microbiome shifts

FUTURE HORIZON EUROPE RESEARCH DIRECTIONS

- Main goal: *develop AI-powered tools to optimize* ***phage therapy,*** *reducing R&D time and costs.*
- **Key objectives**
  - Predict phage-host interactions with high accuracy
  - Model microbiome community changes and dynamics
  - Accelerate the development of personalized, effective phage therapies
- **Impact**: enhancing EU health initiatives by combating antibiotic-resistant infections

PARTNERING OPPORTUNITIES

- **Who we seek?**
  - **Clinical researchers & clinics**: Providing patient samples for validation
  - **Biotech SMEs**: Scaling predictive models into real-world applications
- **Why collaborate?**
  - Cutting-edge AI-driven solutions
  - Strong expertise in genomics and machine learning

WHAT WE OFFER?

- **Cutting-edge Genomic Language Models:**

Our genomic language model family consistently ranks among the top performers, as shown by independent benchmarks (ProkBERT).

- **Large-scale data management:**

We have extensive experience in managing and analyzing petabyte-scale bioinformatics datasets.

- **Biological networks insight:**

We possess deep expertise in understanding and modeling complex biological networks.

- **Advanced deep learning applications:**

We apply state-of-the-art genomic language models and deep learning techniques for microbiome analysis.

- **Proven innovation:**

Our track record includes successful projects in national (OTKA) and international (EUREKA) genomics initiatives.

- **Collaborative excellence:**

We maintain strong partnerships with clinical labs and manage robust high-performance computing (HPC) resources.

CONTACT

- **Why Partner with Us?**
  - Established track record in AI-driven microbiome research;
  - Advanced technological solutions that align with EU priorities;
  - Unique combination of machine learning and phage therapy expertise.

Balázs Ligeti, PhD, associate professor
Neural Bioinformatics Research Group
Pázmány Péter Catholic University,
Faculty of Information Technology and Bionics
e-mail: ligeti.balazs@itk.ppke.hu