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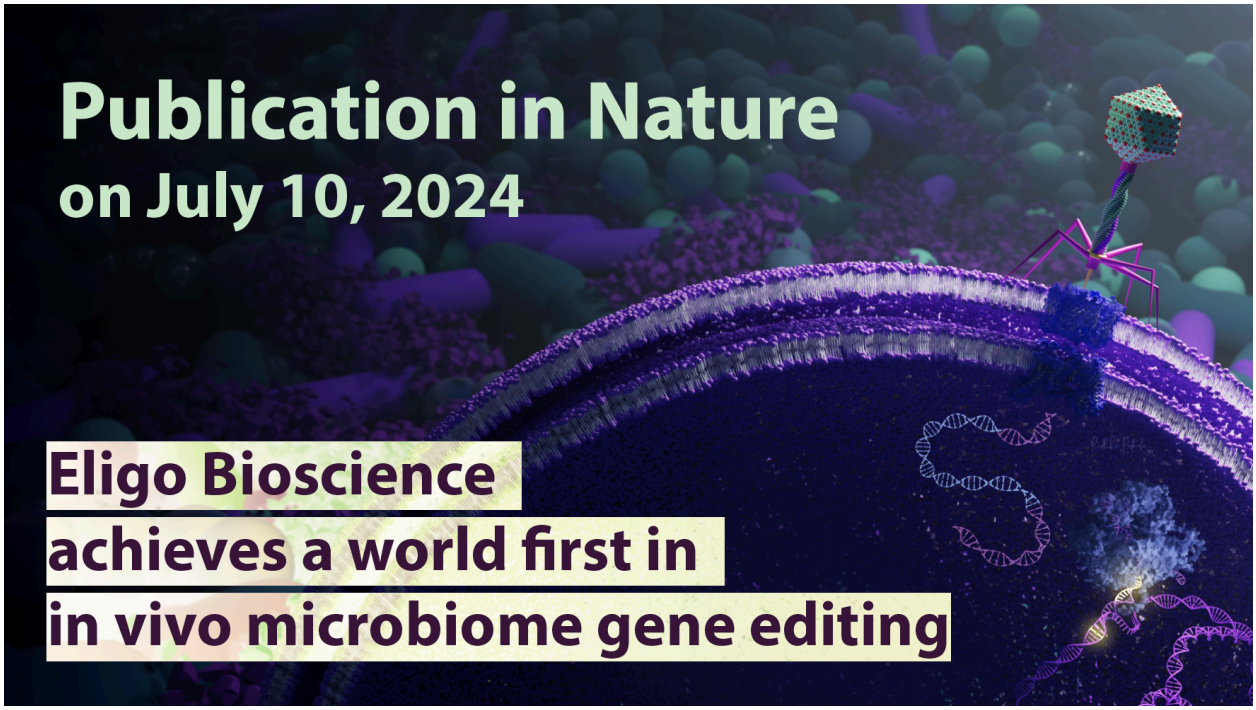


Eligo Bioscience's Major Advance in Microbial Gene Editing Published in Nature

Paris, July 10, 2024 — In a groundbreaking development, Eligo Bioscience has made in vivo bacterial genome editing a reality. In work published in the journal Nature, Eligo demonstrates, for the first time, the ability to precisely and efficiently edit the genome of bacteria directly in the gut. Achieving gene editing with nearly 100% efficiency and without disturbing the surrounding microbial communities is a major milestone in microbial gene therapy, paving the way for the development of new treatments for microbiome-associated diseases.

A novel chapter for gene editing: from human genes to bacterial genes

Since the advent of gene therapies in the 1970s, culminating in the recent approval of the first CRISPR-based drugs, researchers have made significant strides in delivering DNA to various cell types and organs to correct genetic defects. Until now, however, a large proportion of the genes carried by humans remained completely out of reach: the microbiome.

The microbiome, composed of billions of commensal bacteria, is essential to our health and the proper functioning of our immune system. However, we are discovering a growing number of bacterial genes implicated in chronic and serious diseases: from bacterial peptides that can trigger autoimmune diseases to bacterial virulence factors that contribute to inflammatory diseases, tumor formation, neurodegenerative diseases. As it becomes clearer that conventional therapeutics affecting microbiome composition can cause serious adverse events and side effects, it is critical to develop approaches to edit the microbiome in a targeted way.

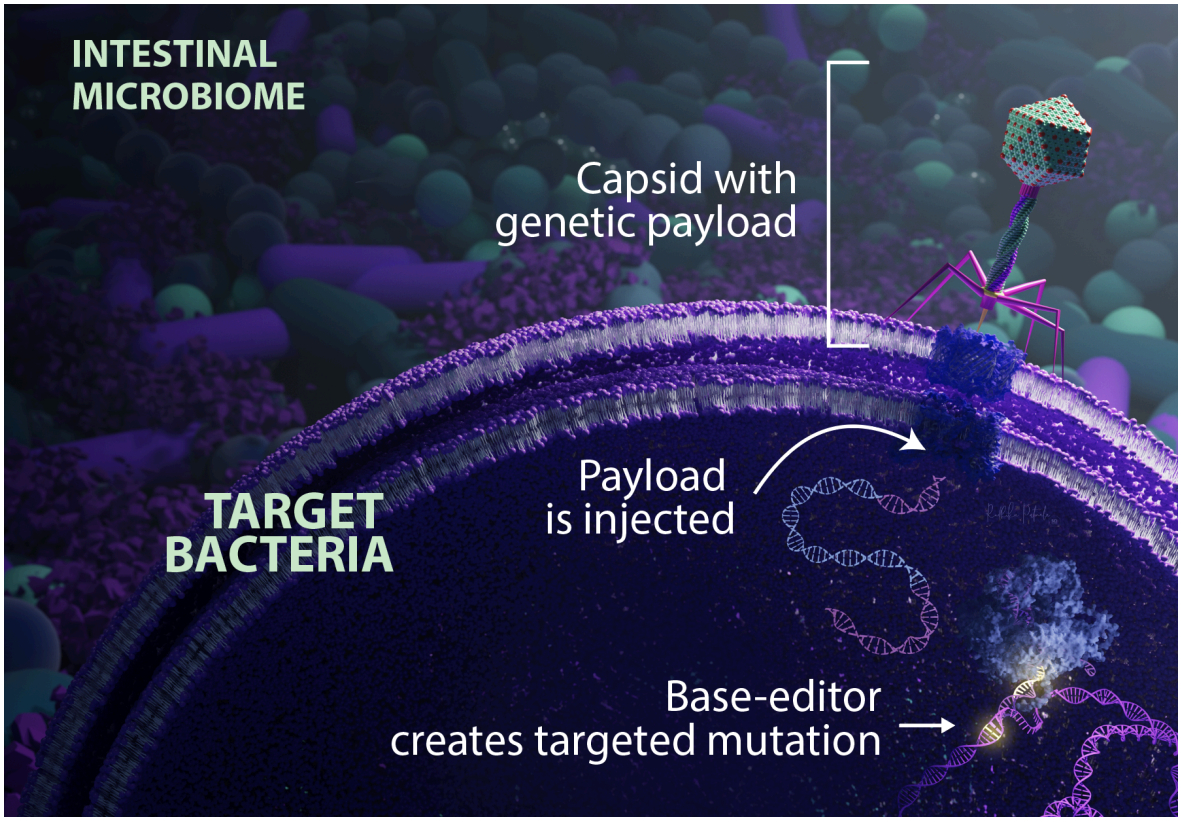
"What Eligo Bioscience has achieved shows that it's now possible to make specific changes to the DNA of bacteria in the gut, similar to how scientists have been editing human genes to

investigate or treat genetic disorders," said David Bikard, co-founder of Eligo Bioscience and researcher at the Institut Pasteur in Paris.

A precise and efficient method

Achieving efficient in vivo gene editing of bacteria requires both an effective delivery method and a robust editing system.

In a 'tour de force,' Eligo demonstrated the ability to engineer, produce, and purify a bacteriophage-derived capsid containing a synthetic DNA payload encoding a base-editor system. After oral administration to mice, the capsid delivered the payload with extreme efficiency and precision to target bacterial populations residing among the hundreds of bacterial species in the mouse gut. Remarkably, the system could precisely inactivate antibiotic resistance genes or virulence factors by creating single-base pair mutations in the corresponding genes. When targeting *E. coli* strains colonizing the mouse gut, the technology modified the target gene in over 90% of the bacteria, reaching up to 99.7% in some cases. These modifications remained stable for at least 42 days.



Jesus Fernandez, Eligo VP of Technology and a senior author of the study, highlights how "*this achievement is the culmination of eight years of work by the team at Eligo Bioscience and represents a paradigm shift in microbiome research. This leap forward provides Eligo with a unique edge to develop microbial genetic medicines, and also to find novel therapeutic targets with a novel tool to interrogate the role and function of bacterial genes in health and disease."*

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Looking Ahead

Eligo Bioscience is already using this novel and patented approach to create new treatments for various conditions that affect millions of people worldwide. *"This technology enhances Eligo's pioneering arsenal of in-vivo editing tools, and can be applied to various bacteria and genes, opening the door to treatments for a wide range of health issues"*, said Xavier Duportet, CEO and co-founder of Eligo. *'It therefore broadens the landscape of addressable therapeutic targets in the gene editing field'*.

Read the paper in Nature here**.**

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About Eligo Bioscience

Eligo Bioscience is the world leader in microbiome in-vivo gene editing and is advancing a highly differentiated pipeline of precision medicines to address unmet medical needs driven by the expression of deleterious bacterial genes in immuno-inflammation, oncology, and infectious diseases.
Eligo's first drug candidates advancing to the clinic are based on the delivery of CRISPR-Cas systems to kill bacteria based on their genetic signature. One of these programs targets pro-inflammatory genes in skin bacteria driving moderate-to-severe acne pathology in dozens of millions of patients around the world. This lead program is expected to enter clinical trials in patients in 2025.

Eligo was named a Technology Pioneer by the World Economic Forum and has raised over €50M from top-tier investors including Sanofi Ventures, Khosla Ventures, BPIFrance, and Seventure Partners.
Eligo was founded by Luciano Marraffini (Professor at The Rockefeller University and cofounder of Intellia Therapeutics, Timothy Lu (Professor at MIT, and CEO at Senti Biosciences), Dr. David Bikard (Professor at Institut Pasteur) and Dr. Xavier Duportet (MIT TR35, Young Global Leader, and Termeer Fellow).

For more information about Eligo Bioscience and our latest research, please visit Eligo's website: https://eligo.bio/

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