

SELF-SELECTING SYSTEMS FOR MICROBIOME EDITING

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PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2026/090424.	04/20/2026	2025-026

BRIEF DESCRIPTION

The invention is a self-selection DNA editing system for modifying microbial communities. It consists of a gene editing tool and a donor DNA with a bacteriocin unit. This unit is integrated into the target cell's genome, providing a survival advantage and ensuring that only the successfully modified cells proliferate. This allows for precise, targeted editing of microbial populations in various settings, including *in vitro* and *in vivo* environments.

SUGGESTED USES

- Modifying a microbial community for therapeutic purposes, such as altering the human gut microbiome to treat disease.
- Editing prokaryotic cells in an industrial setting to enhance fermentation or other biological processes.
- Developing research tools for the study of microbial genetics and community dynamics.
- Creating self-selecting genetic circuits for environmental remediation, such as engineering bacteria to degrade pollutants.

ADVANTAGES

- Precision: The use of bacteriocin-based selection ensures that only the successfully modified cells survive and proliferate, making the process highly specific and efficient.
- Targeted Editing: The system allows for the precise modification of specific microbial species within a complex, mixed community.
- Enhanced Viability: The self-selection mechanism provides a significant survival advantage, leading to higher yields of the desired edited cells.
- Versatility: The system is adaptable for use in a variety of settings, including both *in vitro* (culture) and *in vivo* (natural environment) applications.

RELATED MATERIALS

CONTACT

Craig K. Kennedy
craig.kennedy@berkeley.edu
tel: .



INVENTORS

» Cress, Brady Fletcher

OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
 - » Genomics
 - » Health
- » **Environment**
 - » Remediation
- » **Medical**
 - » Gene Therapy
 - » Research Tools
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 - » Nucleic Acids/DNA/RNA
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