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# SELF-SELECTING SYSTEMS FOR MICROBIOME EDITING

Tech ID: 33725 / UC Case 2025-026-0

#### PATENT STATUS

Patent Pending

## **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
  - >> Therapeutics
- » Research Tools
  - » Nucleic Acids/DNA/RNA
  - >> Vectors

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