

# Researchers create new tool for controlling genes in methanogens

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University of Arkansas researchers have developed an efficient tool for controlling genes in methanogens, a finding that could advance research in fields as diverse as climate change and biofuel production.

The tool, a variation of the CRISPR-Cas9 system, was used to repress targeted [gene functions](#) in methanogens without altering any DNA in the

gene, said Ahmed Dhamad, a postdoctoral researcher in the Department of Biological Sciences and first author of the study published in *Applied and Environmental Microbiology*.

"We blocked the gene without changing anything in it," Dhamad said.

CRISPR-Cas9 is a widely used gene-editing tool that uses a protein—Cas9—to cut and manipulate DNA. Dhamad's tool used a dead version of the protein, called dCas9, to achieve their results.

It is the first [tool](#) available to quickly and efficiently block the expression of multiple [genes](#) in methanogens, organisms that are of interest to scientists because they produce methane, a powerful greenhouse gas and also a potential source of biofuel.

"This is going to open the door for many people who work on methanogens," said Dhamad. "Before, the tools that were available were very slow, took a lot of labor and cost, and were not efficient."

**More information:** Ahmed E. Dhamad et al. A CRISPRi-dCas9 system for archaea and its use to examine gene function during nitrogen fixation by *Methanosarcina acetivorans*., *Applied and Environmental Microbiology* (2020). [DOI: 10.1128/AEM.01402-20](https://doi.org/10.1128/AEM.01402-20)

Provided by University of Arkansas

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