New strategy improves efficiency of CRISPR-Cas9 genome editing

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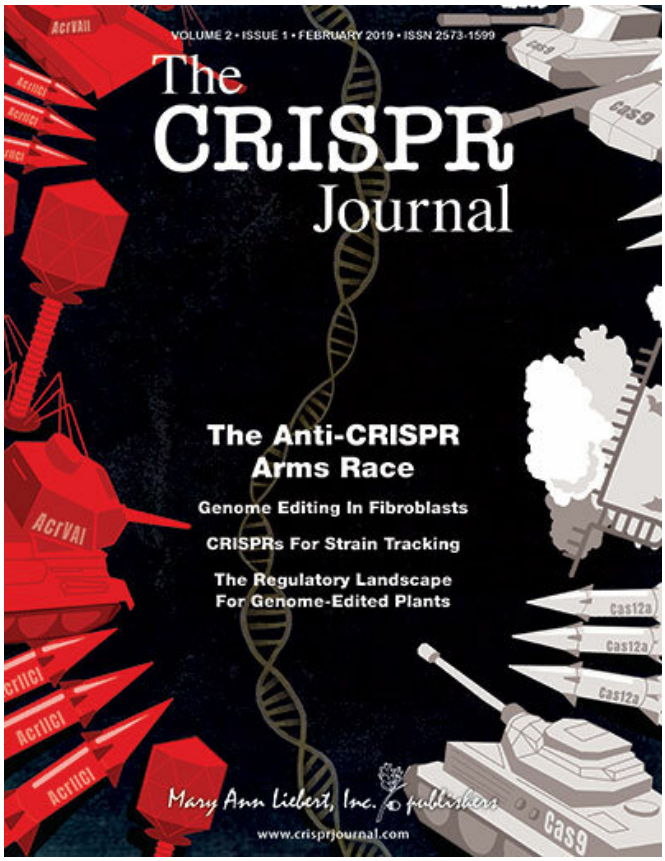

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The efficiency of CRISPR genome editing tools targeted to the site of interest by Cas9 nucleases varies considerably and a new CMP-fusion strategy, called CRISPR-chrom, enhances the activity up to several-fold. CRISPR-chrom works by fusing a Cas9 to chromatin-modulating peptides (CMPs), as described in an article published in *The CRISPR Journal*.

In the article entitled "Improving CRISPR-Cas9 Genome Editing Efficiency by Fusion with Chromatin-Modulating Peptides," Fuqiang Chen and a team of researchers from MilliporeSigma (St. Louis, MO) report on the methods they used to modify Cas9 with peptides known to interact naturally with chromatin, the DNA/RNA/protein complex that comprises chromosomes. The researchers demonstrate a substantial increase in CRISPR-Cas9 activity with the CRISPR-chrom strategy, especially on previously difficult to target sites. They also reported no notable increase in off-target effects. The authors also provided proof of concept for this approach using Cas9 proteins orthogonal to the popular SpyCas9, further expanding the CRISPR toolkit and opening new opportunities for multiplexing as well.

"This is a noteworthy technical improvement for an enhanced CRISPR toolbox," says Rodolphe Barrangou, Ph.D., Editor-in-Chief of *The CRISPR Journal*. "This approach enhances the editing outcome at refractory sites, and CRISPR-chrom in combination with enhanced guide scaffolds increase our ability to flexibly target the genome."

More information: Xiao Ding et al, Improving CRISPR-Cas9 Genome Editing Efficiency by Fusion with Chromatin-Modulating Peptides, *The CRISPR Journal* (2019). DOI: 10.1089/CRISPR.2018.0036

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