A decade of CRISPR: opportunities of genome editing

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Fundamental research to understand how bacteria fight viral infections uncovered the function of CRISPR-Cas programmable proteins that detect and cut specific DNA or RNA sequences. I will describe our research showing how CRISPR-Cas9, an RNA-guided protein, is the foundation of widely accessible technology for genome editing. Current research focuses on exploring the biochemical basis for genome editing and developing effective applications in medicine and agriculture. Recent results show how CRISPR-Cas9 "reads" the genome to find target sequences quickly and accurately. These findings are the foundation of strategies to use CRISPR-based genome editing in new ways, including to study the biology of microbial communities such as the human gut microbiome.