Abstract

CRISPR-Cas systems have rapidly been developed into democratized technologies for specific genomic editing. The ability to easily disrupt sequences is revolutionizing research by enabling genetics in previously intractable contexts. The ability to replace one sequence with another also holds promise to treat genetic disorders. At heart, all forms of genome editing rely on the targeted cell to repair Cas-induced DNA damage. But the mechanisms by which cells make DNA repair decisions after such damage are unclear. This is particularly true for sequence replacement and in quiescent cells such as adult stem cells. The Corn lab works on understanding the mechanism of Cas-mediated editing, the use of genome editing to dissect hematopoietic stem cell biology, and increasing the efficiency of sequence replacement in order to cure genetic disorders.