

Video: Explaining CRISPR gene editing with a toy train

When people refer to Crispr, they're probably talking about Crispr-Cas9, a complex of enzymes and genetic guides that together finds and edits DNA.

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[I]n the lab, scientists have harnessed this powerful Crispr system to do things other than fight off the flu. The first step is designing a guide RNA that can sniff out a particular block of code in any living cell—say, a genetic defect, or an undesirable plant trait. If that gene consists of a string of the bases A, A, T, G, C, scientists make a complementary strand of RNA: U, U, A, C, G. Then they inject this short sequence of RNA, along with Cas9, into the cell they're trying to edit.

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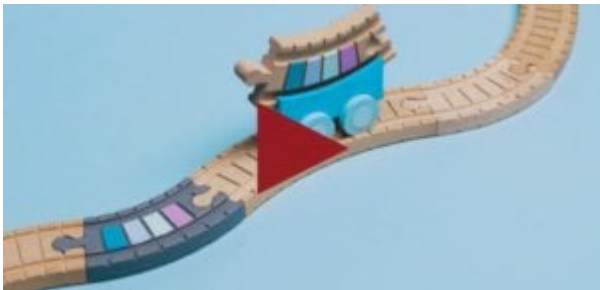
Once in the cell's nucleus, the Crispr-Cas9 complex bumps along the genome, attaching every time it comes across a small sequence called PAM.

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The process can stop there, and simply take a gene out of commission. Or, scientists can add a bit of replacement DNA—to repair a gene instead of knocking it out.

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Crispr isn't perfect; sometimes the protein veers off course and makes [cuts at unintended sites](#). So scientists are actively working on ways to minimize these off-target effects. And as it gets better, the [ethical questions](#) surrounding the technology are going to get a lot thornier.



Read full, original post: [Everything you need to know about CRISPR gene editing](#)