



The 'Ubiquitous' Potential of Gene Editing

An interview with Rodolphe Barrangou

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So many people have heard about CRISPR. CRISPR is actually an acronym which stands for Clustered Regularly Interspaced Short Palindromic Repeats; very scientific, very complex. What CRISPR is biologically, is a DNA-encoded, RNA-mediated, DNA-targeting immune system that enables bacteria to survive virus attack by cutting their DNA. That's CRISPR in a nutshell in biology.

If you go into CRISPR the technology, CRISPR technology is repackaging the biology of CRISPR-Cas systems in bacteria and turning into a technology, a tool, whereby you have an enzyme called Cas9—a pair of scissors, a molecular scalpel, a knife, right—that can come in and strategically, and precisely, and accurately, enable you to cut DNA.

Like any molecular scalpel—if you imagine like a razor blade cutting your skin—when you cut DNA, when you cut your skin, you're going to repair it. And that's why it's called genome editing, because by using CRISPR to cut and slice DNA at the precise location of your choosing, you trigger, you behove nature to use natural DNA repair pathways to repair the site of cleavage precisely, and in doing so you generate a mutation exactly at the site of cleavage. People, in the last three and half years, have been able to use this DNA cut and repair technology to alter, edit, rewrite, or change the genetic content of almost any organism you can think of on planet earth.

In a nutshell, CRISPR has been able to revolutionize, not just science and the business, but society as a whole, because the products of that science, the products of the research, the products of those companies are impacting us as patients, us a consumers of ag and food products. It has had a ubiquitous impact on a very short timeline across many parts of consumers' and patients' lives.