

Which of our 25,000 genes matter most?

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Humans have between 20,000 and 25,000 genes, but which of these really matter? Which are essential, and which are merely optional add-ons?

It's crazy to me that we still don't know, even though it's been almost 15 years since the first draft of the human genome was published. Partly, the problem is a technological one. The best way of working out if a gene is essential is to disable it and see what happens, and "we just didn't have a good way of systematically manipulating genes in humans cells," says Jason Moffat from the University of Toronto. Sure, scientists have been able to tinker with individual genes, but working through them all, and knocking them out one by one, has been nigh-on impossible.

A technique called RNA interference has come closest. When genes are activated, the instructions encoded within their DNA must first be transcribed into a related molecule called RNA. By interfering with these transcripts, scientists can stop those instructions from ever being realized. But this technique is imperfect: It often fails to silence genes entirely, and it sometimes silences the wrong gene.

Enter the revolutionary gene-editing technique called CRISPR, which [was invented billions of years ago by bacteria](#), as part of a defense system for hacking into the genes of invading viruses. But in the last five years, scientists have [repurposed it into a tool](#) that can edit *any gene* at will.

Read full, original post: [The New Gene-Editing Technique That Reveals Cancer's Weaknesses](#)