Looking back on gene editing's thirty years of development

In the mid-1980s, Oliver Smithies, then at the University of Wisconsin–Madison, and Mario Capecchi of the University of Utah independently used homologous recombination—a molecular process to repair broken DNA—to change specific regions of the genome in cultured mouse cells.

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But Capecchi and Smithies couldn't introduce genetic changes into living animals until Martin Evans, now of Cardiff University in the U.K., established a method for culturing mouse embryonic stem cells (ESC).

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In 1994, developmental biologist Maria Jasin…found a way to increase the rate of homologous recombination events 10- to several thousand-fold.

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In 2001, researchers successfully combined an engineered zinc finger protein and a nuclease to make targeted cuts in the DNA of Xenopus oocytes…Combining this technique with Jasin's work, researchers could not only make double-strand breaks, but make them anywhere in the genome. "Those two things together are what started gene editing," says Charles Gersbach, a molecular biologist at Duke University.

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CRISPR/Cas use has recently exploded…The new approach has spurred international discussion about the ethics of human gene editing…Above all, it has changed the game of genome tinkering….

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post: Gene Editing: From Roots to Riches