

Want to breed a horse that's disease free and can run faster? CRISPR may offer that possibility

Argentine researchers have successfully edited the genes in an equine embryo, raising the possibility of producing horses with custom-designed DNA. "To our knowledge," they wrote in the paper announcing their work, "edited horse embryos had not been reported until now."

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The researchers in Argentina used CRISPR to "knock out" the myostatin gene. "We chose the myostatin gene because of its role regulating muscle development," says Gabriel Vichera, PhD, from Kheiron Biotech. "In sport horses this gene plays a crucial role as it controls muscle composition and growth." More specifically, when this gene is "downregulated"—which can happen as a natural mutation in some individuals—that horse will have more muscle mass, different proportions of muscle fibers and be able to run short distances faster.

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The potential applications of CRISPR in horses goes beyond the myostatin gene, says Vichera. "We chose to knock out the myostatin gene as a proof of concept. But our long-term goal is to identify natural advantageous allele sequences present in the genome of some individuals and incorporate them in others to endow them with the desired characteristics."

CRISPR can also be used to remove or edit disease-causing genes, says [Lucia] Moro. "With this technique available other revisions could be achieved, including the correction of genetic defects that cause equine diseases."

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