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US grants Merck patent for CRISPR-chrom technology

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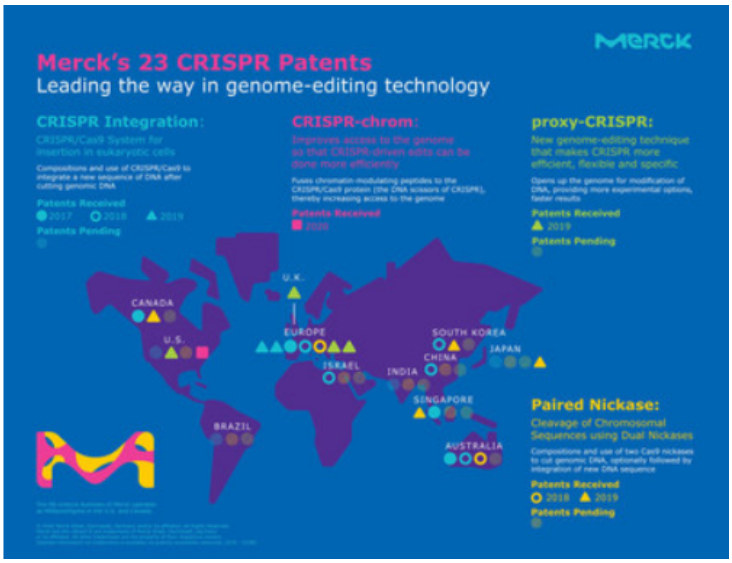
The most recent CRISPR patent award marks Merck's second U.S. CRISPR patent and its 23rd CRISPR-related patent worldwide



Merck, a leading science and technology company, has announced that the United States Patent and Trademark Office has granted the company's patent for CRISPR-chrom technology. With this allowance, Merck is the only provider with a patent covering the fusion of chromatin modulating peptides to CRISPR proteins, helping to clear chromatin out of the way, increasing access to the genome.

"This award marks our second U.S. CRISPR patent and our 23rd CRISPR-related patent worldwide, and as a leading innovator of CRISPR technology, we will continue to drive innovation and collaborate with scientists around the world to ensure that they have the most advanced gene-editing options," said Udit Batra, member of the Merck Executive Board and CEO, Life Science.

Because genomic DNA in mammalian cells is wrapped tightly in protein complexes called chromatin, the genomic DNA is often inaccessible to CRISPR. Merck's CRISPR-chrom technology works by fusing chromatin modulating peptides to a CRISPR protein, Cas9 (i.e., CRISPR's DNA scissors), allowing for more efficient gene editing. This work was initially published in the February 2018 issue of *The CRISPR Journal* and was one of the journal's top five downloaded articles of the year.

The Life Science business of Merck, a leader in genome editing, conducts research and development to drive improvements in gene-editing technologies.

The company's CRISPR patent portfolio includes granted patents for CRISPR-related technologies covering foundational and alternative genome-editing methods. Patents for the company's CRISPR integration technology have been granted in Australia, Canada, China, Europe, Israel, Singapore and South Korea. Patents granted in Europe and pending elsewhere cover plasmid or viral vectors encoding CRISPR systems, which are necessary to perform genome modification in eukaryotic

cells. Other European patents and pending applications are for protein-RNA nickase compositions.

CRISPR technology is a core competency for Merck, which has 16 years' experience with genome editing, spanning from discovery to manufacturing. The company develops technologies in a range of genome-editing applications, including gene knockout, gene integration and CRISPR libraries for genetic screens, among others.

Merck recognizes that genome editing has resulted in major advancements in biological research and medicine. At the same time, the growing potential of genome-editing technologies has opened scientific, legal and societal concerns. The company supports research with genome editing under careful consideration of ethical and legal standards. Merck has established an independent, external Bioethics Advisory Panel to provide guidance for research in which its businesses are involved, including research on or using genome editing, and has developed, defined and transparently published a clear operational position taking into account scientific and societal issues to inform promising therapeutic approaches for use in research and applications.