

News Release

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Japan and Singapore Grant CRISPR Patents to MilliporeSigma

- **MilliporeSigma now holds 22 CRISPR-related patents worldwide across nine different geographies**
- **Patents cover Paired Cas9 Nickase CRISPR genome-editing technology to advance gene therapy and research**

Burlington, Massachusetts, November 26, 2019 – [MilliporeSigma](https://www.milliporesigma.com) today announced that the Japan Patent Office and the Intellectual Property Office of Singapore have each allowed its patent application for the use of paired CRISPR nickases, bringing MilliporeSigma's number of patents to 22 worldwide.

“Paired nickases represent a significant step in increasing specificity through a highly flexible and efficient approach to reduce off target effects in gene editing,” said Udit Batra, CEO, MilliporeSigma. “MilliporeSigma’s technology improves CRISPR’s ability to fix diseased genes while not affecting healthy ones, therefore improving the accuracy of potential gene therapy treatments.”

These patents cover a foundational CRISPR strategy in which two CRISPR nickases are targeted to a common gene target and work together by nicking or cleaving opposite strands of a chromosomal sequence to create a double-stranded break. This process can optionally include an exogenous or donor sequence for insertion in the same manner as MilliporeSigma’s patented CRISPR integration technology. The requirement of two CRISPR binding events greatly reduces the chances of off-target cutting at other locations in the genome.



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In addition to Japan and Singapore, MilliporeSigma has CRISPR-related patents in the following regions: Australia, Canada, China, Europe, Israel, South Korea and the U.S. MilliporeSigma was awarded its first foundational patent in Australia covering CRISPR integration in 2017, and its first U.S. CRISPR patent for proxy-CRISPR in 2019.

MilliporeSigma has been at the forefront of innovation in the field for 15 years, with experience spanning from discovery to manufacturing. MilliporeSigma supports research with genome editing under careful consideration of ethical and legal standards. MilliporeSigma's parent company, Merck KGaA, Darmstadt, Germany, 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. The company has also defined a clear operational [position](#) considering scientific and societal issues to inform promising therapeutic approaches for use in research and applications.

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About the Life Science Business of Merck KGaA, Darmstadt, Germany

The Life Science business of Merck KGaA, Darmstadt, Germany, which operates as MilliporeSigma in the U.S. and Canada, has some 21,000 employees and 59 manufacturing sites worldwide, with a portfolio of more than 300,000 products focused on scientific discovery, biomanufacturing and testing services. Udit Batra is the global chief executive officer of MilliporeSigma.

Merck KGaA, Darmstadt, Germany completed its \$17 billion acquisition of [Sigma-Aldrich](#) in November 2015, creating a leader in the \$125 billion global life science industry.

Merck KGaA, Darmstadt, Germany, a leading science and technology company, operates across healthcare, life science and performance materials. Around 56,000 employees work to make a positive difference to millions of people's lives every day by creating more joyful and sustainable ways to live. From advancing gene-editing technologies and discovering unique ways to treat the most challenging diseases to enabling the intelligence of devices – the company is everywhere. In 2018, Merck KGaA, Darmstadt, Germany generated sales of €14.8 billion in 66 countries.

The company holds the global rights to the name and trademark "Merck" internationally. The only exceptions are the United States and Canada, where the business sectors of Merck KGaA, Darmstadt, Germany operate as EMD Serono in healthcare, MilliporeSigma in life science, and EMD Performance Materials. Since its founding 1668, scientific exploration and responsible entrepreneurship have been key to the company's technological and scientific advances. To this day, the founding family remains the majority owner of the publicly listed company. For more information about Merck, KGaA, Darmstadt, Germany, visit www.emdgroup.com.

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