

June 14, 2017

MilliporeSigma Awarded its First CRISPR Patent by Australian Patent Office

- **Patent covers successful integration of an external DNA sequence into the chromosome of eukaryotic cells using CRISPR**
- **Similar patents pending in other countries; anticipate favorable outcomes**

Billerica, Massachusetts, June 14, 2017 – [MilliporeSigma](#) today announced that the Australian Patent Office has granted the company patent rights relating to the use of CRISPR in a genomic integration method for eukaryotic cells.

The patent is the first that MilliporeSigma, a leader in genome editing, has received for CRISPR technology. The patent covers chromosomal integration, or cutting of the chromosomal sequence of eukaryotic cells (such as mammalian and plant cells) and insertion of an external or donor DNA sequence into those cells using CRISPR.

“MilliporeSigma has developed an incredible tool to give scientists the ability to find new treatments and cures for conditions for which there are limited options, including cancer, rare diseases and chronic conditions, such as diabetes,” said Udit Batra, CEO, MilliporeSigma. “This patent decision recognizes our expertise in CRISPR technology—a body of knowledge that we are committed to grow.”

MilliporeSigma has patent filings for its insertion CRISPR method in Brazil, Canada, China, Europe, India, Israel, Japan, Singapore, South Korea, and the U.S.

CRISPR genome-editing technology, which allows the precise modification of chromosomes in living cells, is advancing treatment options for some of the



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toughest medical conditions faced today. CRISPR applications are far-ranging—from identifying genes associated with cancer and rare diseases to reversing mutations that cause blindness.

MilliporeSigma has a 14-year history in the genome-editing field. It was the first company to offer custom biomolecules for genome editing globally (TargeTron™ RNA-guided group II introns and CompoZr™ zinc finger nucleases), driving adoption of these techniques by researchers all over the world. MilliporeSigma was also the first company to manufacture arrayed CRISPR libraries covering the entire human genome, accelerating cures for diseases by allowing scientists to explore more questions about root causes.

With MilliporeSigma's CRISPR genomic integration technology, scientists can replace a disease-associated mutation with a beneficial or functional sequence, a method important for creation of disease models and gene therapy. Additionally, scientists can use the method to insert transgenes that label endogenous proteins for visual tracking within cells.

In May 2017, MilliporeSigma announced that it had developed an alternative CRISPR genome-editing method called proxy-CRISPR. Unlike other systems, MilliporeSigma's proxy-CRISPR technique can cut previously unreachable cell locations, making CRISPR more efficient, flexible and specific, and giving researchers more experimental options. MilliporeSigma has filed several patent applications on its proxy-CRISPR technology, and those applications are just the latest of multiple CRISPR patent filings made by the company since 2012.

In addition to basic gene-editing research, MilliporeSigma supports development of gene- and cell-based therapeutics and manufactures viral vectors. In 2016, MilliporeSigma launched a genome-editing initiative aimed at advancing research in novel modalities—from genome editing to gene medicine manufacturing—through a dedicated team and enhanced resources, further solidifying the company's commitment to the field.

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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 19,000 employees and 65 manufacturing sites worldwide, with a portfolio of more than 300,000 products enabling scientific discovery. 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 is a leading company for innovative and top-quality high-tech products in healthcare, life science and performance materials. The company has six businesses – Biopharmaceuticals, Consumer Health, Allergopharma, Biosimilars, Life Science and Performance Materials – and generated sales of €15 billion in 2016. Around 50,000 employees work in 66 countries to improve the quality of life for patients, to foster the success of customers and to help meet global challenges.

Merck KGaA, Darmstadt, Germany is the world's oldest pharmaceutical and chemical company – since 1668, the company has stood for innovation, business success and responsible entrepreneurship. Holding an approximately 70 percent interest, the founding family remains the majority owner of the company to this day. The company holds the global rights to the name and the trademark "Merck" internationally except for the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Performance Materials.