

News Release

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October 24, 2017

Canadian Patent Office to Grant Merck KGaA, Darmstadt, Germany's Patent Application for CRISPR Technology

- **Patent covers successful integration of an external DNA sequence into the chromosome of eukaryotic cells using CRISPR**
- **First patent allowance for company's CRISPR technology in North America**
- **Related patent application by European and Australian Patent Offices already received; similar patents pending elsewhere**

Darmstadt, Germany, October 19, 2017 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, today announced that the Canadian Patent Office has issued a “Notice of Allowance” for the company’s patent application covering the company’s CRISPR technology used in a genomic-integration method for eukaryotic cells.

“Our patent portfolio continues to grow worldwide, extending protection for our unique CRISPR technology as we work with the global scientific community to find new treatments for diseases,” said Udit Batra, Member of the Executive Board of Merck KGaA, Darmstadt, Germany, and CEO, Life Science. “This decision by the Canadian Patent Office is an important acknowledgement of our role in advancing genome editing.”

Merck KGaA, Darmstadt, Germany, also has patent filings for its insertion CRISPR method in the U.S., Brazil, China, India, Israel, Japan, Singapore and South Korea.



The forthcoming Canadian patent, entitled “CRISPR-BASED GENOME MODIFICATION AND REGULATION,” 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. Scientists can replace a disease-associated mutation with a beneficial or functional sequence, a method important for creating disease models and gene therapy. Additionally, scientists can use the method to insert transgenes that label endogenous proteins for visual tracking within cells.

Once formally granted, the Canadian patent will extend the protection of Merck KGaA, Darmstadt, Germany's CRISPR integration technology into North America for the first time, further strengthening the company's patent portfolio. The Australian Patent Office granted Merck KGaA, Darmstadt, Germany, its first CRISPR patent in June of 2017, followed by the grant of a European patent in September of 2017.

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

With a 12-year history in the genome-editing field, Merck KGaA, Darmstadt, Germany, 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. Merck KGaA, Darmstadt, Germany, 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.

In May 2017, Merck KGaA, Darmstadt, Germany, announced its alternative CRISPR genome-editing method, called proxy-CRISPR. Unlike other systems, the proxy-CRISPR technique of Merck KGaA, Darmstadt, Germany, can cut previously unreachable genomic locations, making CRISPR more efficient, flexible and specific, and giving researchers more experimental options. Merck KGaA, Darmstadt, Germany, 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.

Merck KGaA, Darmstadt, Germany, recognizes the potential benefits of conducting properly defined research with genome editing because of the breakthrough therapeutic potential. Therefore, Merck KGaA, Darmstadt, Germany, supports research with careful consideration of ethical and legal standards. The company has established the a Bioethics Advisory Panel to provide guidance for research in which Merck KGaA, Darmstadt, Germany, is involved, including research on or using genome editing.

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About Merck KGaA, Darmstadt, Germany

Merck KGaA, Darmstadt, Germany, is a leading science and technology company in healthcare, life science and performance materials. Around 50,000 employees work to further develop technologies that improve and enhance life – from biopharmaceutical therapies to treat cancer or multiple sclerosis, cutting-edge systems for scientific research and production, to liquid crystals for smartphones and LCD televisions. In 2016, Merck KGaA, Darmstadt, Germany, generated sales of € 15.0 billion in 66 countries. Founded in 1668, Merck KGaA, Darmstadt, Germany, is the world's oldest pharmaceutical and chemical company. The founding family remains the majority owner of the publicly listed corporate group. Merck KGaA, Darmstadt, Germany, holds the global rights to the „Merck“ name and brand. The only exceptions are the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Performance Materials.