

News Release

Your Contact

Gangolf Schrimof +49 6151 72-9591

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

- **Patent application covers integration of an external DNA sequence into the chromosome of eukaryotic cells using CRISPR**
- **Related patent application recently awarded in Australia; similar patents pending in other countries, favourable outcomes anticipated**

Darmstadt, Germany, August 3, 2017 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, today announced the European Patent Office (EPO) has issued a “Notice of Intention to Grant” for Merck KGaA, Darmstadt, Germany's patent application covering the company's CRISPR technology used in a genomic integration method for eukaryotic cells.

The patent will provide Merck KGaA, Darmstadt, Germany's CRISPR genomic integration technology with broad protection, further strengthening the company's patent portfolio. A related patent was approved in Australia in June 2017. Merck KGaA, Darmstadt, Germany, anticipates favourable outcomes in other countries as well, because many patent offices worldwide consider the status of related European cases to be highly relevant to the decision to grant patents.

“This is a significant and exciting decision by the EPO, and we view this announcement as recognition of our important contributions to the genome-editing field,” said Udit Batra, Member of the Executive Board of Merck KGaA, Darmstadt, Germany and CEO Life Science. “This patent provides protection for our CRISPR



technology, which will give scientists the ability to advance treatment options for the toughest medical challenges we face today.”

With the CRISPR genomic integration technology of Merck KGaA, Darmstadt, Germany, scientists can replace a disease-associated mutation with a beneficial or functional sequence – a method important for creation of disease models and gene therapy. Scientists can also use the method to insert transgenes to enable basic research, using the technology to label endogenous proteins for visual tracking within cells, for example.

This patent application is one of Merck KGaA, Darmstadt, Germany's multiple CRISPR patent filings since 2012. In May 2017, Merck KGaA, Darmstadt, Germany, introduced an alternative CRISPR genome-editing method called proxy-CRISPR. Unlike other systems, the proxy-CRISPR technique allows cutting of previously unreachable cell locations, making CRISPR more efficient, flexible and specific—giving researchers more experimental options.

Merck KGaA, Darmstadt, Germany, with its 14-year history in the genome-editing field, was the first company to offer custom biomolecules globally for genome editing (TargeTron™ RNA-guided group II introns and CompoZr™ zinc finger nucleases), driving widespread adoption by researchers. In collaboration with the Wellcome Trust Sanger Institute, Merck KGaA, Darmstadt, Germany, was also the first company to manufacture arrayed CRISPR libraries covering the entire human genome, allowing researchers to explore more questions about disease and develop cures faster. Availability of arrayed CRISPR libraries is an important advancement in genome editing and reinforces the company's leadership position.

The company also supports development of gene- and cell-based therapeutics and manufactures viral vectors, in addition to conducting basic genome-editing research. In 2016, Merck KGaA, Darmstadt, Germany launched an initiative to advance research in novel treatment modalities, from genome editing to gene medicine manufacturing, through a dedicated team and enhanced resources. This venture further solidifies the company's commitment to the genome-editing field.

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.

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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.