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Merck KGaA, Darmstadt, Germany and Intel Accelerate Sustainable Semiconductor Processes and Manufacturing Technologies Through Academic Research in Europe

- **Collaborative research program to harness and augment state-of-the-art artificial intelligence**
- **Aiming for breakthroughs in more sustainable semiconductor processes and manufacturing technologies**

Darmstadt, Germany, March 9, 2023 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, and Intel Corporation, one of the world's largest semiconductor designers and manufacturers, are enabling more sustainable semiconductor manufacturing solutions by funding a new academic research program in Europe. The program will specifically leverage artificial intelligence (AI) and machine learning technologies to drive innovation in semiconductor manufacturing processes and technologies. The companies have signed a memorandum of understanding aimed at making a joint investment over three years. With this program, Merck KGaA, Darmstadt, Germany, is pursuing its goal of being climate-neutral by 2040.

"Semiconductors are the basis for most of our everyday electronic devices and demand is increasing worldwide. Manufacturing is very energy and resource intensive and practically calls for sustainable innovations. Identifying these cutting-edge practices and technologies while ensuring the stable performance of chips that are becoming smaller and more sensitive is crucial. Artificial intelligence can open completely new avenues for us here," said Dr. Beate Burkhart, Head of Materials Innovation Pipeline at the Electronics business of Merck KGaA,

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Darmstadt, Germany, adding, "we want to combine expertise from science and practice because we believe in the benefits of multidisciplinary collaboration to achieve innovative breakthroughs and positively change the entire industry."

The companies will invite suitable Europe-based research groups to apply for funding through a joint Call for Proposals process, beginning in Q2 2023. Potential solutions could include, environmentally friendlier materials, more efficient use of resources, AI-based solutions for modeling chemical processes, and opportunities for waste and emissions reductions.

"More sustainable solutions for semiconductor process technology are important for the planet and benefit from collaboration throughout the value chain. New fundamental insights, methodologies and tools are needed—from material and process technology research and development through high-volume manufacturing," said David Nessim, Program Manager at Intel Corporation. "The time is ripe to responsibly harness and accelerate the potential of AI to continue to deliver innovative pathways and breakthrough solutions. We look forward to engaging European academic excellence and government support for the success of these ambitious goals."

Sustainable innovations through cooperation and artificial intelligence

The joint research program will focus on new technologies and collaborations. For example, developing new artificial intelligence programs with analytical capabilities to identify innovation potential. Merck KGaA, Darmstadt, Germany and Intel will work directly with the awarded research groups during the program period, engaging closely with faculty and students. In addition to university funding from both companies, public co-funding of the program, including from European governments, will be sought to support the program's ambitious, multi-disciplinary scope and goals.

Merck KGaA, Darmstadt, Germany, as a major supplier of materials and components for chip manufacturing, and Intel, as a leading technology company, are working together to focus on sustainability along the entire semiconductor

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value chain. Both companies are members of the "Semiconductor Climate Consortium" founded in November 2022.

In May 2022, the independent Science Based Targets Initiative (SBTi) confirmed that Merck KGaA, Darmstadt, Germany's climate targets correspond to the current status of climate science. The company has committed to lowering its absolute direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions by 50% by 2030 and reducing its indirect emissions along the entire value chain (Scope 3) by 52% per euro value added by 2030. The baseline year is 2020. The company's progress is documented in the sustainability report 2021.

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About Merck KGaA, Darmstadt, Germany

Merck KGaA, Darmstadt, Germany, a leading science and technology company, operates across life science, healthcare and electronics. More than 64,000 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 providing products and services that accelerate drug development and manufacturing as well as discovering unique ways to treat the most challenging diseases to enabling the intelligence of devices – the company is everywhere. In 2022, Merck KGaA, Darmstadt, Germany, generated sales of € 22.2 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 MilliporeSigma in life science, EMD Serono in healthcare and EMD Electronics in electronics. Since its founding in 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.