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# Merck Awards ‘Next Game-Changing Technology’ Prize to University of Melbourne Researcher

* Dr Liam Hall, University of Melbourne, wins for miniaturizing nuclear magnetic resonance (NMR) spectroscopy concept

Darmstadt, Germany, March 15, 2019 – [Merck](https://www.merckgroup.com/), a leading science and technology company, today announced the winner of its “Next Game-Changing Technology” prize, created as part of the company’s 350 Research Challenges initiative. Dr Liam Hall, of the University of Melbourne, won for his concept: Time-dependent *in situ* NMR spectroscopy, based on Nitrogen-Vacancy Defects in Diamonds.

“Dr Liam Hall has shown a series of developments in NMR, a workhorse in chemical structural analytics as well as non-invasive medical imaging techniques, which are leading to enhanced sensitivity and miniaturization of this key technology,” said prize sponsor Christoph Huels, head of Technology Foresight & Scouting at Merck’s Innovation Center. “We consider this concept as a breakthrough in the well-established NMR spectroscopy technique and congratulate him on his success.”

Merck’s Innovation Center, located at the company’s headquarters in Darmstadt, Germany, aims to foster ideas with the potential to grow into viable new businesses beyond the company’s current scope. With the “Next Game-Changing Technology” prize, the Innovation Center awards technologies with the potential to disrupt and fundamentally change the Healthcare, Life Science or Performance Materials markets. This challenge was initiated by Merck’s Innovation and Entrepreneurship Incubator, organized within the context of the company’s 350th anniversary celebrations.

Dr Hall’s concept addresses the challenge of *in situ* monitoring of chemical composition in microscopic reaction systems on timescales previously inaccessible to nuclear magnetic resonance techniques. Time-dependent monitoring of NMR signatures associated with short-lived intermediate species will provide a new window into the relevant processes of reaction mixtures and nano-assembly systems. This research has the potential to revolutionize our understanding of many chemical reaction mechanisms and pathways, and thus promises to catalyze further research in synthetic chemistry and biochemical fields.

“We are proud that such innovative concepts are being developed in Australia and that they are getting recognized by our headquarters,” said Bradley Simpson, managing director, Life Science, at Merck in Australia. “We are delighted to present the prize to Dr Hall on behalf of the Merck Innovation Center.”

Dr Hall’s concept convinced the judges because of the way it complements projects already running within Merck’s Innovation Center, and the future relevance of the field for Merck. While Merck employees at the Innovation Center are already working on a solution for X-ray crystallography without the need for crystallization, Dr Hall’s work concentrates on NMR using diamond-based detector devices which is aimed at enabling the investigation of individual cells.

Merck representatives presented the prize to Dr Hall at an event in Melbourne. The award ceremony followed a presentation about Dr Hall’s concept to representatives of the University and Merck employees.

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**About Merck**

Merck, a leading science and technology company, operates across healthcare, life science and performance materials. Around 52,000 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 – Merck is everywhere. In 2018, Merck generated sales of €14.8 billion in 66 countries.

Scientific exploration and responsible entrepreneurship have been key to Merck’s technological and scientific advances. This is how Merck has thrived since its founding in 1668. The founding family remains the majority owner of the publicly listed company. Merck holds the global rights to the “Merck” name and brand. The only exceptions are the United States and Canada, where the business sectors operate as EMD Serono in healthcare, MilliporeSigma in life science, and EMD Performance Materials.