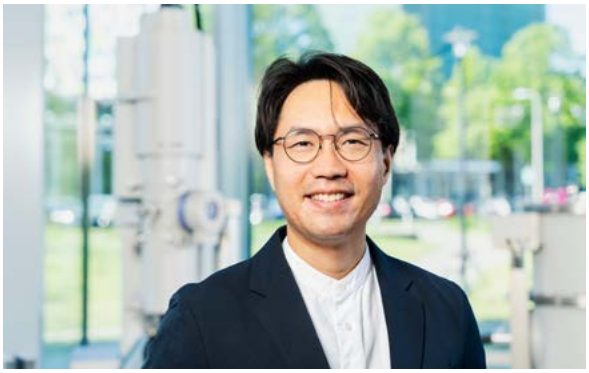
News release

Miguel Leung receives 2026 Heineken Young Scientists Award for Medical/Biomedical Sciences



Miguel Leung
Photo: Bram Belloni

Amsterdam, June 9, 2026 – In many forms of infertility, it has been established that something is going wrong with sperm or egg cells, but exactly what remains unclear. Miguel Leung (1996) is trying to unravel that mystery by closely studying the molecules in these cells. As a structural biologist at the Hubrecht Institute, he combines cryo-electron microscopy with AI to visualise protein structures at a resolution that was previously inaccessible. For his research, he is receiving the Heineken Young Scientists Award for Medical/Biomedical Sciences 2026.

What becomes visible if you can zoom in far enough on the interior of a cell? Using cryo-electron microscopy and tomography, Miguel Leung is able to visualise protein complexes in very high resolution, in an almost natural state. When molecules are flash-frozen at incredible speed, they stay trapped in the form they had inside the cell. This allows him to capture processes that normally remain invisible.

Combining this technique with AI applications provides a 3D glimpse into the machinery of the cell. That precision opens up many possibilities: where researchers previously only had a vague idea of what proteins were doing inside the cell, they can now observe which proteins are part of the complex and what their interaction partners are.

New insights into how the sperm cell works

One of Leung's most important discoveries offers new insight into the inner workings of the sperm cell. To fertilise an egg cell, a sperm cell must be able to propel itself forward. This is achieved by moving the tail rhythmically back and forth. Working with colleagues, Leung was able to map the 3D structure of the molecular machinery behind that movement. As a result, he not only discovered that it consists of more than 150 different proteins, but also learned how those proteins interact with each other within the sperm cell.

For more information, questions and interview requests, please contact:
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Miguel Leung: “Unravelling the 3D structures of proteins reveals how a cell works, and therefore also what goes wrong in disease.”

Recent breakthrough

In early 2026, Leung and his team solved a puzzle that has stumped biologists since the 1960s. The researchers discovered that more than twelve proteins together form a single huge storage complex in egg cells. That complex stores a supply of proteins that is essential for early embryonic development. “In some cases of infertility, it is likely that something is going wrong with that storage mechanism,” says Leung. “By identifying where a mutation occurs within the structure, we can increasingly understand how such problems arise.”

Jury praises pioneering work

The jury, chaired by Hester den Ruijter (professor at UMC Utrecht), calls Leung a pioneer in molecular and developmental biology. His work allows him to study structures within the cell at very high resolutions and to visualise processes that were previously inaccessible. In addition to his scientific achievements, the jury praises his dedication to mentoring young international researchers. “With his combination of technological innovation, fundamental biological discoveries, and commitment to the next generation of scientists, we consider him a role model for young researchers and expect his work to have a lasting impact,” Den Ruijter says.

About the Heineken Young Scientists Awards

Every two years, the Heineken Young Scientists Awards recognise and encourage highly promising researchers affiliated with Dutch universities or research institutes. Established in 2010 by Charlene de Carvalho-Heineken, the awards are presented by the Alfred Heineken Fondsen Foundation in the domains of Medical/Biomedical Sciences, Humanities, Natural Sciences, and Social Sciences. The award consists of an unrestricted cash prize of €15,000 and a specially commissioned artwork designed by Karel Martens.

The awards ceremony will take place on Thursday, 1 October 2026, at the ARTIS Amsterdam Royal Zoo. Joining Leung, the following laureates will receive an award:

Yusuf Çelik – Heineken Young Scientists Award for Humanities

Ayushi Rastogi – Heineken Young Scientists Award for Natural Sciences

Anne Urai – Heineken Young Scientists Award for Social Sciences

In previous editions, the Heineken Young Scientists Award for Medical/Biomedical Sciences was awarded to Kevin ten Haaf (2024), Laura Kervezee (2022) and Meta Roestenberg (2020), among others.

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About the Heineken Prizes

The Heineken Young Scientists Awards are part of the Heineken Prizes, Netherlands' most prestigious international prizes in science and the arts. This honour has been conferred since 1964.

Every two years, a Heineken Young Scientists Award is presented to four researchers affiliated with a Dutch university or research institute. Their outstanding research and innovative insights offer an inspiring example for other young researchers. The laureates are selected by an independent jury, which is responsible for the nomination and selection process.

More information: HeinekenPrizes.org.

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