PRESS RELEASE

16 APRIL 2026 | FOR IMMEDIATE RELEASE

NUS Dentistry researcher's novel biomaterials research approach could make dental treatments safer, faster, and more affordable while reducing reliance on animal testing

Singapore, 16 April 2026 — A researcher from the National University of Singapore (NUS) Faculty of Dentistry has garnered international acclaim for developing a new way to develop and test biomaterials that could make treatments safer, more effective, cheaper, and faster to reach patients.

Associate Professor Vinicius Rosa was recently awarded the prestigious IADR Innovation in Oral Care Award, a highly competitive global accolade presented by the International Association for Dental, Oral and Craniofacial Research (IADR) and consumer healthcare company Haleon. The award, presented during IADR's 104th general session and exhibition in San Diego, USA, from 25-28 March 2026, recognises bold, high-impact innovations with strong potential to improve oral health at the population level. This recognition highlights Singapore's growing role as a hub for cutting-edge biomedical innovation with global relevance.

Assoc Prof Rosa's project tackles a long-standing problem in biomedical research: most materials today are tested in overly simplified laboratory models that do not reflect how human tissues actually behave. These traditional systems often fail to predict real-life outcomes, contributing to lengthy development cycles and continued reliance on animal testing.

Assoc Prof Rosa has been using AI to develop biomaterials with properties that match patient requirements since 2018. Now, he will leverage this expertise to develop advanced hydrogel-based systems—soft, water-rich materials that mimic human tissue—combined with artificial intelligence to create "living" laboratory models that change over time, just like real tissues in the body.

Unlike conventional approaches, where materials are created first and tested later, this research flips the process. Artificial intelligence is used to design biomaterials around how cells are expected to behave, allowing scientists to study treatments in dynamic, evolving environments—for example, how inflamed tissue becomes more acidic over several days and responds differently to treatment at each stage.

This could enable researchers to test therapies under more realistic conditions much earlier, improving reliability while reducing trial-and-error experimentation.

The implications extend beyond dentistry. This approach could accelerate the development of safer biomaterials and treatments across healthcare, while also reducing dependence on animal studies over time.

“This award recognises not just a scientific advance, but a shift in how we think about designing and testing biomaterials,” said Assoc Prof Rosa. “By creating systems that better reflect real biology, we can improve how treatments are developed and ultimately benefit patients more quickly.”

The Innovation in Oral Care Awards are given to a select group of researchers worldwide whose work shows strong potential for real-world impact. Three competitive awards of up to 50,000 USD each are provided to recipients to advance oral care programmes directed toward the development of innovative and novel compounds, biomaterials, or devices that can be used ultimately at the public health level.

Further details, data, and expert commentary as well as exclusive interviews are available upon request.

For media enquiries, please contact:

Andrew EE
Head, Communications
Faculty of Dentistry
National University of Singapore
HP: +65 9677-3818
Email: a.ee@nus.edu.sg

About National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore’s flagship university, which offers a global approach to education, research, and entrepreneurship, with a focus on Asian perspectives and expertise. We have 15 colleges, faculties, and schools across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established more than 20 NUS Overseas Colleges entrepreneurial hubs around the world.

Our multidisciplinary and real-world approach to education, research, and entrepreneurship enables us to work closely with industry, governments, and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, research centres of excellence, corporate labs, and more than 30 university-level research institutes focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research, and cybersecurity.

For more information on NUS, please visit nus.edu.sg.

About NUS Faculty of Dentistry

The NUS Faculty of Dentistry began as the Department of Dentistry within the King Edward VII College of Medicine in 1929. It was the first dental school to be established in a British colony in the East. It achieved full Faculty status in 1966 and continues to be the only dental school in Singapore.

The Faculty is led by a Dean and a team of academic and administrative staff, in fulfilling its strive for excellence in the areas of oral health clinical care, research, and education. It works closely with departments in the NUS Yong Loo Lin School of Medicine and other teaching hospitals and institutions across Singapore in healthcare delivery and education. It also partners departments in other faculties of NUS, public institutions, and private enterprises in multi-disciplinary research activities.

For more information on the Faculty, please visit dentistry.nus.edu.sg.