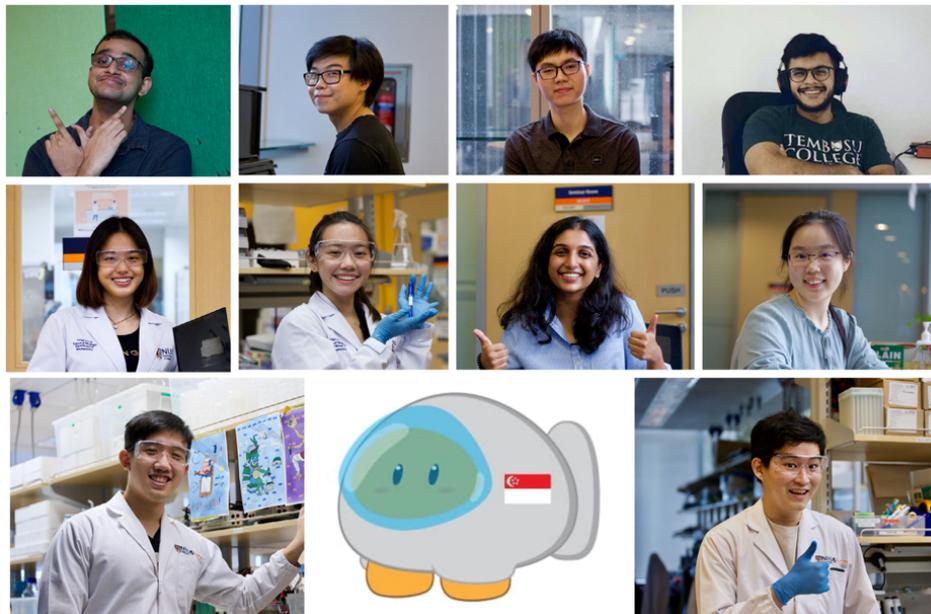


NUS 2021 iGEM Team won 2nd spot in global iGEM competition!

This year, the NUS iGEM team has scaled new heights with their project to solve the Singapore food security challenge! The NUS iGEM team showcased their project, PRYSM, at the annual iGEM competition and came first-runner up in the undergraduate category (out of over 200 undergraduate teams around the world)! This is the first time a Singapore team has achieved a placing amongst the Top 2 positions.

The team was also awarded the Gold medal, Best BioManufacturing Award, Best Part Collection Award and Best Wiki Award. They were also nominated for the Best Hardware, Best Model, Best Integrated Human Practices and Best Presentation. This is NUS's and Singapore's best-ever showing at the global premier competition.

iGEM (International Genetically Engineered Machine competition) is the world's largest synthetic biology competition for students, attracting over 340 teams this year from universities and high schools across the world.



The NUS iGEM 2021 Team with their mascot, Yeastboi!

This year's project was developed to tackle the problem of food security in Singapore. As Singapore moves to accomplish the national goal of locally producing 30% of its food consumption by 2030, the demand for suitable pest control in the ever-increasing number of farms will surge. Synthetic pesticides are still considered the gold standard in pest control. However, concerns with the negative environmental/health effects of synthetic pesticides limit their use. Thus, the need arose for a biological solution – biopesticides. The team identified biological antimicrobial peptides that could be used as potential substitutes. With current bioproduction methods, it is economically unfeasible to produce such compounds for use as bio-pesticides. So, as a proof of concept, PRYSM produced Human Beta Defensin, an antimicrobial peptide that is eco-friendly and human-safe, using a cost-effective approach for use as a bio-bactericide/fungicide at the farms. This was achieved through the development of a first-of-its-kind dual-optogenetically controlled yeast and an open-source decentralized bioreactor. Ultimately, the team aims to revolutionize biopesticide production both locally and globally.



Behind the Scenes! (Clockwise from top-left): Exploring 'Singrow', their main stakeholder farm; Working in the wet lab with their optogenetic systems; Visiting farms in Lim Chu Kang; Developing their hardware; Taking the finished product back to 'Singrow'

The 10 undergraduates from different disciplines, including Biomedical Engineering, Life Sciences, Pharmaceutical Science, Data Science and Mathematics, have worked together tenaciously to achieve these results. They were mentored by A/Prof Chueh Loo Poh (PI) and Asst/Prof Jimmy Chih-Hsien Peng, with support from A/Prof Matthew Chang, A/Prof Wen Shan Yew, and the many researchers at NUS Synthetic Biology for Clinical and Technological Innovation ([SynCTI](#)) (the leading Synthetic Biology research centre in Singapore at NUS) and the BioMakerSpace, as well as passionate, past NUS iGEMers.

For information about their project, follow this link https://2021.igem.org/Team:NUS_Singapore. You can also view their presentation video here <https://video.igem.org/w/90aa4ba3-bf8b-477a-a1ba-ae1b5b21d264> and promotion video here <https://video.igem.org/w/i8Xcg34SgejRiZKcd4HNAu>

If you are inspired and like to know more about iGEM and the NUS iGEM teams, please contact A/Professor Chueh Loo Poh at poh.chuehloo@nus.edu.sg