

**Jackie Yi-Ru Ying \*91**

Singapore

*At-Large Alumni Trustee Candidate*

Recently inducted into the U.S. National Academy of Engineering as one of only two members in the class of 2021 who were based outside the U.S., Jackie Ying is Director of NanoBio Lab in Singapore. Born in Taipei and raised in Singapore and New York, she started doing research two weeks into her freshman year at Cooper Union.

Her Cooper Union professors encouraged her to pursue a Ph.D. at Princeton. Accepted as an AT&T Bell Laboratories Ph.D. Scholar, she began research in materials chemistry. In her second year, she was a teaching assistant in graduate level classes on thermodynamics and reaction engineering.

On returning from a post-doctoral year in Germany in 1992, she began her academic career at MIT, where she was the first female Asian-American professor in engineering. “It was not easy,” Ying recalls, but she thrived there and became the youngest full professor in the history of the Chemical Engineering Department.

In 2003, she moved back to Singapore to establish the Institute of Bioengineering and Nanotechnology (IBN), charged with building a national lab that would make an impact at the interface of science, engineering and medicine. In 2018, she went on to found the NanoBio Lab, which serves as an incubator to translate and commercialize research in nanomedicine and diagnostic assays.

Over the years her inventions have led to more than 190 primary patents, 42 of which have been licensed to multinational and startup companies. She co-founded SmartCells to develop a novel nanomaterial capable of auto-regulating the release of insulin; this company was subsequently sold to Merck for milestone-based aggregate payments of US\$500 million. Ying has served on the board of directors or advisory boards of ten start-up companies. She has become fluent in hiring and developing people, administering an organization, raising funds and spinning off entrepreneurial endeavors, all while navigating the nuances of both public and private institutions, across countries and diverse cultures.

Ying has been recognized with numerous awards for research in bio-nanotechnology. Among other honors, she was the inaugural winner of the Mustafa Prize “Top Scientific Achievement Award” and an inaugural inductee for the Singapore Women’s Hall of Fame. She has been selected every year since 2012 by *The Muslim 500* as one of the world’s 500 most influential Muslims. She was elected to the Leopoldina, the German National Academy of Sciences, and is a fellow of the U.S. National Academy of Inventors and the American Association for the Advancement of Science.

Her passion for innovation in science is echoed in her passion for innovation in science education in Singapore. Although both IBN and NanoBio Lab are national labs rather than academic institutions, she feels it is very important to nurture the next generation. To this end, the Youth Research Program was established in 2003. Over the past 19 years, the program has had over 2,900 students—some as young as fifteen years old—spend at

least one month engaged in full-time research under the individual mentorship of the researchers. Ying wants to “get young people excited about science and engineering by giving them the opportunity to do hands-on interdisciplinary research in the lab.” She was twice the recipient of the Service to Education Award from Singapore’s Ministry of Education.

Even with working a 75- to 80-hour week, Ying still makes time for Princeton. She enthusiastically shares the Princeton story with young students in southeast Asia as an interviewer. She particularly enjoys her role on the Executive Committee of the Princeton Alumni Association of Singapore, noting “we may be very different in age and major, yet we have the common strong bond to our alma mater.”