

YOUNG SCIENTIST AWARDS 2022
BIOLOGICAL & BIOMEDICAL SCIENCES CATEGORY

Dr Bi Renzhe

Senior Scientist, Institute of Bioengineering and Bioimaging, Agency for Science,
Technology and Research

“For his work in developing and translating novel bio-optical technologies and medical technology innovations”

Dr Bi’s research focuses on advancing biophotonics for medical technology innovation and clinical translation. He develops novel optical technologies and devices that will help clinicians quantitatively evaluate more suitable treatment for patients in areas such as cardiovascular disease, skin disorders, and cancer diagnosis.

Dr Bi has developed a non-invasive, portable smart optical skin analysis device. It is able to measure the chemical composition of skin using optical spectroscopy, and has been used for quantitative eczema assessment, treatment efficacy evaluation and skincare product validation through the collaboration with the National Skin Centre. One of his inventions has been licensed to an A*STAR spin-off company and developed into a medical device for COVID-19 patients monitoring, to help clinicians better predict potential health complications. He is currently working on a hybrid photoacoustic and ultrasound imaging system for breast cancer risk classification, which aims to significantly reduce the false positive rate of breast cancer diagnosis. The prototype is being tested in a clinical trial at the National University Hospital.

Recognising collaboration as key to translating biophotonics technologies from bench to bedside, Dr Bi works closely with clinicians from local hospitals to identify real-world challenges and explore potential solutions that can be easily adopted by healthcare staff and fit into current clinical workflows. He also collaborates with international scientists from the California Institute of Technology and University of Zurich to identify novel approaches to healthcare solutions.

Dr Bi also encourages the younger generation of researchers to pursue impactful and meaningful science through public talks and scientific outreach activities, and speaks regularly at international conferences and events.

Dr Bi has 34 peer reviewed publications with an h-index of 16 and total citation of 1,166. He also has 11 patent applications, and three granted patents that are assigned or licensed to Singapore-based medtech companies.