

# WEBINAR SERIES

30 April 2021

10:00 - 11:00 (UTC +8)

## Zoom Meeting Link:

<https://mit.zoom.us/j/98338530489?pwd=OTM3OXo3Ni9ZFVVGOG04Wmc4bkJ2UT09>

**Meeting ID:** 983 3853 0489

**Passcode:** 321183



## Programme

10:00 am **Tools for Next Generation Agriculture**  
SGT (GMT +8)



**Dr. Gajendra Pratap Singh**  
Scientific Director, DiSTAP, SMART

Dr. Singh is a Principal Investigator and the Scientific Director of DiSTAP IRG at SMART. After his PhD from Spain, he worked at MIT, developing portable and wearable Raman technology for Bayer Healthcare, Samsung and DARPA. He co-founded and led start-up companies in UK and Spain before moving to Singapore.



**Dr. Min Hao Wong**  
Consultant

Dr. Wong has been a part of DiSTAP since its inception. He is a Research Affiliate at the Department of Chemical Engineering, MIT. He was named a Forbes 30 under 30 and MIT Tech Review innovators under 35 for his work on the development of nanosensors for use in plants. He was formerly a project leader at the BCG, serving clients in the Agrifood and specialty chemicals sector.

# Tools for Next Generation Agriculture



Food demand is expected to increase by more than 90% by 2050. This will shape agricultural markets and our society in ways we have not seen before. It is possible that factors like climate change, rapid urbanization and lack of investment will make it challenging to produce enough food. Innovative approaches are urgently required to increase productivity and alleviate the growing pressure on agriculture to meet the rising demand for food. This talk highlights the recent development of new analytical tools at DiSTAP that are rapid and non-destructive and provide information on living plants in real time. They can also be extended across multiple plant species and can be miniaturized into handheld devices for field applications. We will discuss about the utility of engineered plant nanosensors and portable Raman spectroscopy to detect biotic and abiotic stresses, implementation of AI algorithms to process and interpret data and the possibility to characterize the soil, phytobiome and crop health.

We will also assess the economic potential and discuss 'Farm to Fork' implementation strategies that will support the Singapore Government's '30 by 30' initiative. This effort will be supported by knowledge of customer needs. DiSTAP aims to successfully integrate these analytical tools in future farming practices in traditional as well as urban agriculture, so as to support desired food security and economic outcomes for Singapore.

## Reference:

[Species-independent analytical tools for next-generation agriculture \(Nature Plants, 1-10\)](#)

\* The Singapore-MIT Alliance for Research and Technology (SMART) is a major research enterprise established by the Massachusetts Institute of Technology (MIT), USA in partnership with the National Research Foundation of Singapore (NRF) in 2007. SMART is MIT's first, and to-date only, research centre outside the United States. It is also MIT's largest international research programme. Disruptive & Sustainable Technologies for Agricultural Precision (DiSTAP) is one of the five Interdisciplinary Research Groups (IRG) at SMART.