NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

School of Biological Sciences
College of Science

Seminar Announcement

Towards understanding plant cellulose biosynthesis and the linked crown gall disease infected by *A. tumefaciens*

Date:	**9 April 2021, Friday**
Time:	**4pm**
Venue:	**Classroom 1, SBS**

As the most abundant biopolymer in Earth, cellulose has many potential industrial applications, such as the source of renewable energy. Cellulose is synthesized by the synthase of the Glycosyltransferase GT-2 family. In bacteria, the cellulose synthase (CESA) is composed of several hetetro-subunits that form a complex (also called terminal complex) to synthesize and extrude glucan chain. In land plants, cellulose is produced at the plasma membrane by six-lobed rosette-shaped CESA complexes (CSCs) where each CESA is thought to synthesize one cellulose chain. Bacterial cellulose is not essential. In contrast, plant cellulose is absolutely required, which is an essential component for cell wall formation. While plant cellulose's biological functions are relatively well understood, molecular details of how cellulose is produced remain largely unknown. Very recently, atomic structural information has closed this gap to some extent, and greatly advanced our understanding of its biosynthesis. In this talk, we will be introducing these exciting progress, in particular our structures of Arabidopsis thaliana CESA3, in apo and substrate UDP-glucose bound form. In addition, plant crown gall disease was caused by Agrobacterium, and cellulose fibrils synthesized by the bacteria play an important role in colonization and virulence attachment. I will also briefly present our recent results on the newly discovered sucrose–SghR/SghA–SAG–SA signalling cross-talk which reprograms bacterial virulence gene expression during the infection process of this disease.

Speaker:

Gao Yonggui
Associate Professor
School of Biological Sciences
Nanyang Technological University