

# BioSyM Seminar Series 2018

The multifaceted nature of bacterial interactions that impact on community function, virulence and evolution

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**Time** : 12 pm to 1 pm

**Venue** : Level 5, Perseverance Room



### **Abstract**

Biofilms predominantly comprise multiple microbial species that are in complex ecological relationships with each other, such as synergistic, mutualistic, competitive or antagonistic relationships. These relationships influence the multispecies composition of the biofilm, which then determines the community's metabolic activity, function, virulence and mutability. As such, it is important to identify the molecular mechanisms of these relationships to fully understand their impact on disease development and evolution, as well as biogeochemical processes. *P. aeruginosa* and *S. aureus* are two pathogens known to form biofilm communities and are involved in co-infections of cystic fibrosis lung and chronic wounds. *P. aeruginosa* is known to use PQS and pyoverdine to compete with *S. aureus*, which can select for *S. aureus* small-colony variants that are more resistant to killing and worsen disease state. Our study elucidates how various structural components contribute to the mechanical properties of the biofilm to affect microcolony growth, surface spreading and biofilm growth by several fold. Our study further identifies an important regulatory component for *P. aeruginosa* competitiveness over *S. aureus* in a previously undescribed mechanism involving the c-di-GMP pathway.

### **Short Biography**

Su Chuen joined SMART-BioSyM in 2017 as a SMART Scholar and Research Scientist under Prof. Patrick Doyle. She obtained her interdisciplinary doctoral degree at Nanyang Technological University. Her research interests are microbiology, ecology, materials and microfluidics.