中 央 研 究 院
農業生物科技研究中心
ABRC SEMINAR

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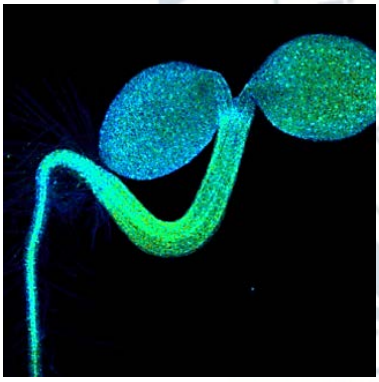

Monitoring Subcellular Energy Physiology using Fluorescent Protein Biosensors

Host: Dr. Der-Fen Suen

11:00 AM

March 9, 2020 (Monday)

Auditorium A134, Agricultural Technology Building

農業科技大樓1樓A134演講廳

Please see the abstract on reverse side.

The energy conversion that occurs in cells requires tight surveillance and dynamic adjustment to meet demands, maintain efficiency and avoid dysfunction. This is particularly relevant in plant cells which are directly exposed to frequent and often dramatic changes in their immediate environment, including light-dark transitions or changes in oxygen availability. Yet, our understanding of the dynamics of energy physiology and their regulation at the sub-cellular or even sub-compartmental level is limited. We have been using quantitative confocal microscopy and fluorimetry to assess transitions in respiratory physiology in vivo using a growing set of genetically-encoded fluorescent protein sensors. I would like to introduce both fundamental considerations as well as the recent progress that we have made in the dissection of cellular energy physiology highlighting ATP dynamics1, ROS and redox regulation2,3. I will discuss our efforts towards multiparametric monitoring4, as an approach towards an integrated picture of subcellular stress physiology, while appraising technical and biological limitations. The impact of subcellular energy dynamics and its control as central determinant of plant performance and stress responses will be discussed.