UNIVERSITY of GUELPH

COLLEGE of BIOLOGICAL SCIENCE

DEPARTMENT OF MOLECULAR AND CELLULAR BIOLOGY

Seminar SPEAKER SERIES

2019 - 2020

OCT **WED 09** **10:30 AM**

Summerlee Science Complex
SSC 2315

DR. JAIDEEP MATHUR

LABORATORY OF PLANT DEVELOPMENT AND INTERACTIONS

ASSOCIATE PROFESSOR, DEPARTMENT OF MOLECULAR AND CELLULAR BIOLOGY, UNIVERSITY OF GUELPH

Maintaining Homeostasis in the Eukaryotic cell: Insights from the Plant model

Years of schooling have embedded an image of the eukaryotic cell in our minds where discrete organelles have readily recognizable shapes and sizes. Unfortunately, this picture fails to convey the true dynamic nature of the cell and the myriad and continuous interactions that allow it to remain alive. I use the living plant cell as a eukaryotic model to understand sub-cellular mechanisms underlying 'homeostasis'. Numerous transgenic *Arabidopsis thaliana* plants that express different organelle-targeted, multi-coloured fluorescent proteins have been created to facilitate routine sub-cellular observations on plants placed directly on the microscope stage. I will demonstrate the phenomenon of rapid organelle pleomorphy by showing the dynamic behaviour of peroxisomes, mitochondria and plastids. I will use peroxisomal and mitochondrial responses to reactive oxygen species (ROS) to demonstrate how protein sharing can alter organelle shapes and help in rapid re-establishment of cellular homeostasis. Alternatively, as demonstrated through observations on plastid extensions and the ER, organelle pleomorphy may result from transient membrane contact sites between organelles. Considering the high degree of molecular conservation amongst eukaryotes I suggest that the rapid sub-cellular responses observed in plants are part of general survival strategies employed by all eukaryotic lineages.

All welcome to attend
Light refreshments will be served

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