

GDCB SEMINAR

4:10 p.m. • Tuesday, Aug. 31, 2021 • 1414 Molecular Biology Building

'Using insights from extremophytes and synthetic biology to regulate stress tolerance in plants'

Abstract: In the next 50 years, one of the greatest advances we can make for global human health is the realization of a society that is fully sustainable. My research aims to improve agricultural sustainability by using a holistic approach that integrates across genetic, cellular and organismal scales to understand how plants survive stressful environments (Dinneny, 2015a; 2019). Prior research has explored water-stress responses at unparalleled spatial and temporal resolution, and identified the endodermal tissue layer as a critical signaling center for controlling growth and tissue differentiation in roots (Duan et al., 2013; Geng et al., 2013; Dinneny et al., 2008). The discovery of novel adaptive mechanisms used by roots to capture water established potential targets for breeding to improve water use efficiency (Bao et al., 2014; Sebastian et al., 2016). The invention of imaging methods enabled multidimensional studies of plant acclimation and illuminated our understanding of organ system growth from germination to senescence (Rellán-Álvarez et al., 2015; Sebastian et al., 2016). Physiological and molecular insight has been gained in understanding how plants sense water availability through computational modeling of tissue hydraulics (Robbins and Dinneny, 2015, 2018).

Additionally, fine-scale biomechanical measurements identified a novel mechanism by which salinity damages cells through its effects on cell-wall integrity (Feng et al., 2018). I have paired my research with a personal passion for improving the education of young plant scientists (Friesner et al., 2021), engaging lawmakers through science policy, and by being a vocal advocate for the broad deployment of agricultural biotechnology (Fahlgren et al., 2016).

Host: Dior Kelley, GDCB assistant professor



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