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TEMASEK LIFESCIENCES LABORATORY

29 August 2018 (Wednesday), 11am
The Auditorium (Level 1)

Hosted by: Dr Pek Jun Wei

Polyploidy in Organ Development and Repair

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Dr Donald Fox is an Assistant Professor at Duke University Medical Center. He has a BS in Biology from College of William and Mary, and a Ph.D from UNC-Chapel Hill. After which, Donald joined Allan Spradling's lab in Carnegie Institution and worked as Postdoc from 2006 to 2011. Donald set up his own lab in 2011 and had received funding from the National Institutes of Health, American Cancer Society, American Heart Association, Pew Scholars Program, March of Dimes, NASA and CNIHR.

Cells in otherwise diploid organisms with extra chromosome sets are referred to as polyploid cells. Such cells, first described over a century ago, are long-ignored contributors to developing, repairing, and cancerous tissues. Our work has contributed to a renewed interest in these fascinating cells. In the last several years, we developed new and accessible models to break new ground on understanding the impact of polyploidy on developing and repairing tissues. We also demonstrated that polyploid cells employ mechanisms to counter genome instability. We only made these discoveries because we focused on naturally occurring models of polyploidy. We are currently undertaking unbiased genetic screens in flies to uncover novel polyploidy-specific biology, with related work on conserved cell-cell fusion mechanisms. We have also initiated work to apply our findings to mammalian models. Our continued study of polyploidy will reveal new properties of a critical cell biological phenomenon that remains largely mysterious.

Recent Publications:

1. Stormo BM, and **Fox DT** (2016). Distinct Responses to Reduplicated Chromosomes Require Distinct Mad2 Responses. *eLife*, 10.7554/eLife.15204.
2. Bretscher HS, and **Fox DT** (2016). Proliferation of Double Strand Break Resistant Polyploid Cells Requires *Drosophila* FANCD2. *Developmental Cell* 37: 444-457.
3. Payne EH, Ramalingam D, **Fox DT*,** and Klotman ME* (2018). Polyploidy and Mitotic Cell Death are Two Distinct HIV-1 Vpr-Driven Outcomes in Renal Tubule Epithelial Cells. *J. Virology* 92: e01718-17
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