FBS Seminar

September 27 (Fri), 2019
16:00 - 17:00

2F Seminar room, BioSystems Building

Paul S. Maddox

University of North Carolina at Chapel Hill

“Epigenetic regulation of centromeres in early development: Fluorescence based technologies for long term, high spatio-temperal resolution.”

Centromeres are a fundamental component of all cell divisions, required for establishing a kinetochore, facilitating the attachment of microtubules, and faithfully segregating chromosomes. It is thought that the histone-3 variant CENtromeric-Protein-A acts as an epigenetic mark defining the location of centromeres on chromosomes. Work from many model systems has defined a “centromere cycle” as the amount of CENP-A on a given chromosome halving during cell division and subsequently doubling in preparation for the next cell cycle. We have found that this cycle is distinct in the early C. elegans embryo. Using a custom analysis pipeline, we have found that in early C. elegans embryos, global CENP-A levels decrease after every cell cycle, resulting in a reduced amount of CENP-A within each nucleus. However, within each cell cycle, the amount of CENP-A roughly doubles from the beginning of a cell (anaphase of the last cell cycle) to the end of the cell (the following metaphase). Thus, some CENP-A is lost during mitosis via an unknown mechanism lowing the amount per chromosome at the start of the next cell cycle. We also find that similar to CENP-A dynamics reported for yeast and certain plant species, levels of CENP-A rise near the end of the cell cycle, occurring after the rise observed for canonical histones during the S-Phase of each cell cycle and indicating that CENP-A loading (doubling) occurs after DNA replication onset.

Chairperson: Tatsuo Fukagawa
If you want to speak Dr. Maddox in person, please let me know. I will arrange the Interview with him.
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世話人：深川竜郎 (tfukagawa@fbs.osala-u.ac.jp, 06-6879-4428)
セミナー終了前、後に、Maddox 博士と個別の discussion を行います。面談希望者は、深川までご連絡ください。