Postdoc positions available in the Zheng group

We seek motivated postdoctoral fellows interested in pursuing one of the following two areas of research at Carnegie Institution's Embryology Department in Baltimore. Please contact Dr. Yixian Zheng: zheng@carnegiescience.edu.
https://emb.carnegiescience.edu/science/faculty/yixian-zheng

1. The role of genome organization in development, tissue function, and aging.

How cells in different lineages acquire and maintain their unique genome architecture has remained poorly understood. We use various tools and organisms to study how genome organization in different cells influences lineage specification and terminal differentiation, how such organization is maintained in differentiated cells, and whether genome dis-organization accompanies aging and contributes to organ decay.

Selected publications:

a. Kim Y...Zheng Y (2011). Mouse ES cells do not need any lamins but proper organogenesis requires lamin-Bs. *Science* 334:1706-1710.
b. Jia J…Zheng Y (2012). Regulation of pluripotency and self-renewal of ES cells through epigenetic threshold modulation and mRNA pruning. *Cell* 151:576–589.
c. Chen H, Chen X, and Zheng Y (2013). The nuclear lamina regulates germline stem cell niche organization via modulation of EGFR signaling. *Cell Stem Cell* 13:73-86.
d. Chen H, Zheng X, and Zheng Y (2014). Age-associated loss of lamin-B leads to systemic inflammation and gut hyperplasia. *Cell* 159:829-843.
e. Zheng X...Zheng Y (2018). Lamins organize the global three-dimensional genome from the nuclear periphery. *Molecular Cell* DOI: https://doi.org/10.1016/j.molcel.2018.05.017

2. Cell division mechanisms

We are interested in understanding how cells segregate chromosomes equally into daughter cells using mitotic spindle apparatus. We discovered protein complexes called γ-tubulin ring complex (γTuRC) and γ-tubulin small complex (γTuSC) that mediate microtubule nucleation and organization in mitotic and interphase cells. By using the powerful *Xenopus* egg extract system, we and others have uncovered an important signaling pathway mediated by the nuclear small GTPase Ran that regulates multiple aspects of cell division. More recently we discovered a new spindle assembly factor called BuGZ that regulates mitosis in part by its ability to undergo protein phase separation or transition.

Selected publications:

a. Zheng Y…Mitchison TJ (1995). A γ-tubulin ring complex from the unfertilized egg of *Xenopus laevis* can nucleate microtubule assembly in vitro. *Nature* 378:578-583.
b. Wilde A & Zheng Y (1999). Stimulation of microtubule aster formation and spindle assembly in *Xenopus* egg extracts by the small GTPase Ran. *Science* 284:1359-1362.
c. Wiese C…Zheng Y (2001). Role of importin-β coupling Ran to downstream targets in microtubule assembly. *Science* 291:653-656.
d. Tsai M-Y…Zheng Y (2006). A mitotic lamin B matrix induced by RanGTP required for spindle assembly. ***Science*** 311:1887-1893.

e. Jiang H…Zheng Y (2014). A microtubule-associate zinc finger protein, BuGZ, regulated mitotic chromosome alignment by ensuring Bub3 stability and kinetochore targeting. *Developmental Cell* 28:268-281.
f. Jiang H…Zheng Y (2015). Phase transition of spindle-associated protein regulate spindle apparatus assembly. ***Cell*** 163:108-122.