

KANSAS STATE
UNIVERSITY
Division of Biology Presents:

**Mechanisms Of Ploidy Adaptation During Embryogenesis and
Evolution in Frogs**

Monday, November 3rd, 2025 • 3:30 PM • 232 Ackert Hall



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Across the tree of life, genome size varies by six orders of magnitude. Polyploidy is an extreme form of genome size expansion in which entire copies of the genome are duplicated. During evolution, polyploidy correlates with bursts of speciation and genetic innovation. Within a species, including in humans, polyploid cells have specialized functions in many tissues including the liver, eye and reproductive organs. Across this huge range, the ratio between genome size, nuclear size, and cell size is largely conserved for a given species and cell type. Deviations in nuclear-to-cytoplasmic (N/C) ratio are strongly correlated with pathologies such as aging and cancer through unknown mechanisms. In the Zhou Lab, we use naturally polyploid African clawed frogs *Xenopus* to discover the basic molecular mechanisms that sense and adapt to changes in genome size during embryogenesis and evolution. Gaining this knowledge is critical for understanding how genomes maintain homeostasis while creating new functions during health and disease.

If you would like to visit with Dr. Coral Zhou, please contact Dr. Jocelyn McDonald at jmcdona@ksu.edu.

Coffee & snacks served preceding the seminar in Ackert Hall, Room 225