

GDCB SEMINAR

4:10 p.m. • Tuesday, Jan. 15, 2019 • 1414 Molecular Biology Building

'Turtle genomic insights into the evolution of sex chromosomes and their dosage compensation'

Abstract: Gene dosage imbalance may cause suboptimal phenotypes or death. Dosage compensation (DC) mechanisms remedy this by equalizing the activity of X- or Z-linked genes between sex chromosomes and autosomes, and between males and females. DC is important in development, genome evolution and speciation. Yet, the diversity of dosage compensation and evolution remain unclear, as new data continually debunk purported patterns. Turtles are an ideal system to study these issues because unlike mammals and other model organisms, XX/XY and ZZ/ZW have evolved independently multiple times in turtles. We tested for dosage compensation in turtles for the first time ever by comparing the expression of Z-linked and autosomal genes in the spiny soft-shell turtle *Apalone spinifer*. We examined whether the evolution of sex chromosome dosage compensation is inevitable, whether DC in turtles is global or local, and whether it is affected by age and environmental factors. Expression of homologs of these Z-linked and of the autosomal genes from *Apalone* was also examined in the painted turtle *Chrysemys picta*, which are all autosomal since this turtle has temperature-dependent sex determination (TSD) and lacks sex chromosomes. This comparison permits testing whether dosage compensation, if present in turtles with sex chromosomes, evolved after the evolution of genotypic sex determination or whether it results from the co-option of pre-existing sex-biased expression present in the TSD ancestor.



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Host: Marna Yandea-Nelson

Please join us for refreshments before the seminar outside Room 1414 of the Molecular Biology Building.

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