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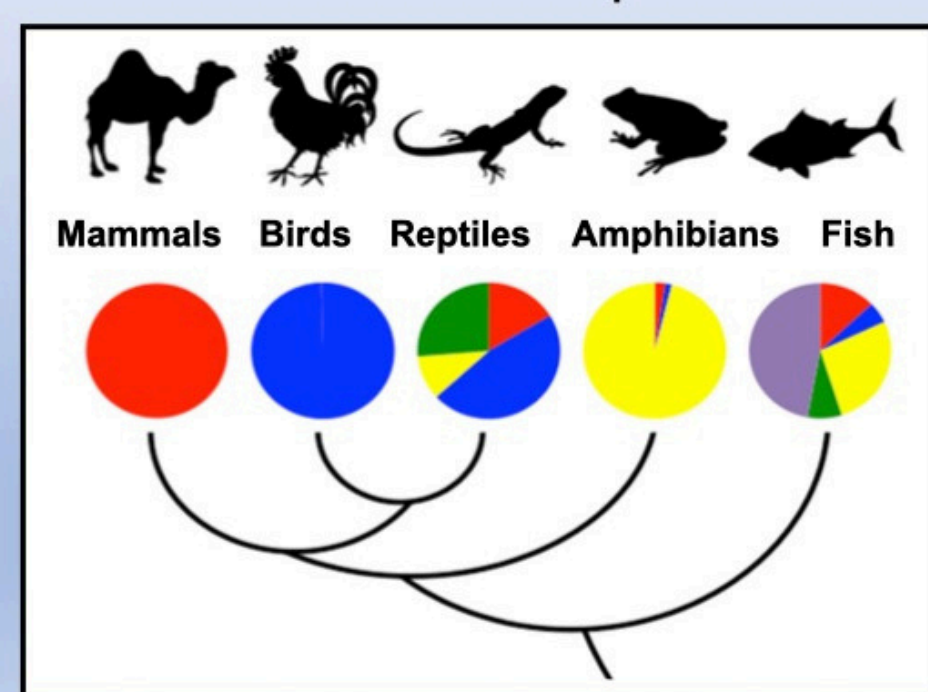
UNIVERSITY OF
GEORGIA

Sex determination and gonad differentiation in the brown anole lizard, *Anolis sagrei*

My work aims to understand sex chromosome evolution, uncover the timing of gonadal sex differentiation, and identify the genetic basis of sex determination in *A. sagrei*.

Why Study Sex Determination?

SD is fundamental for species survival, reproductive success, and influences many core evolutionary processes.

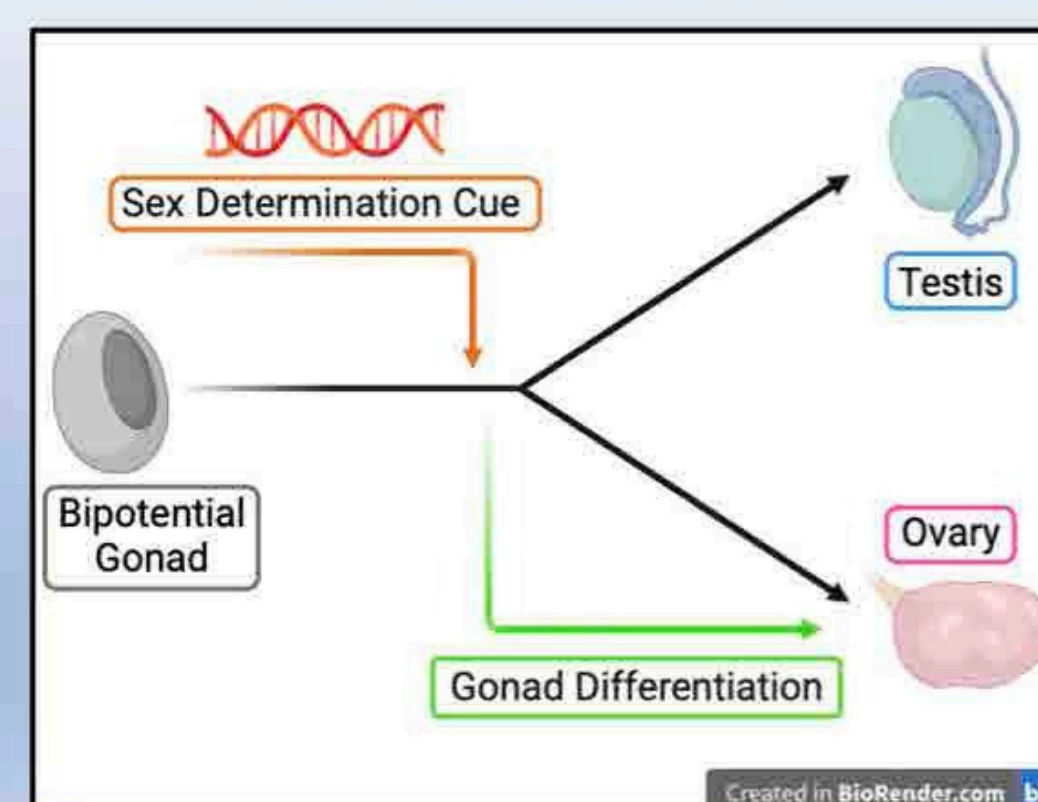


Vertebrate SD Systems

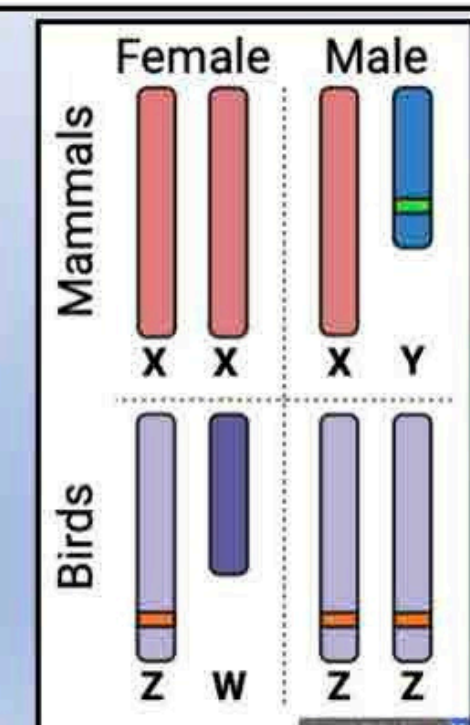
- XY Genetic SD
- ZW Genetic SD
- Homomorphic Genetic SD
- Environmental SD
- Hermaphroditism

Adapted from Bachtrog et al 2014

What is Genetic Sex Determination?

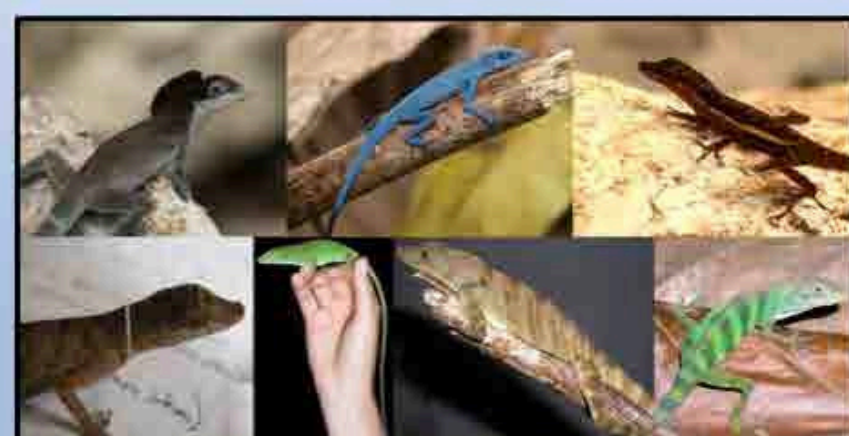


GSD Cues in Model Species

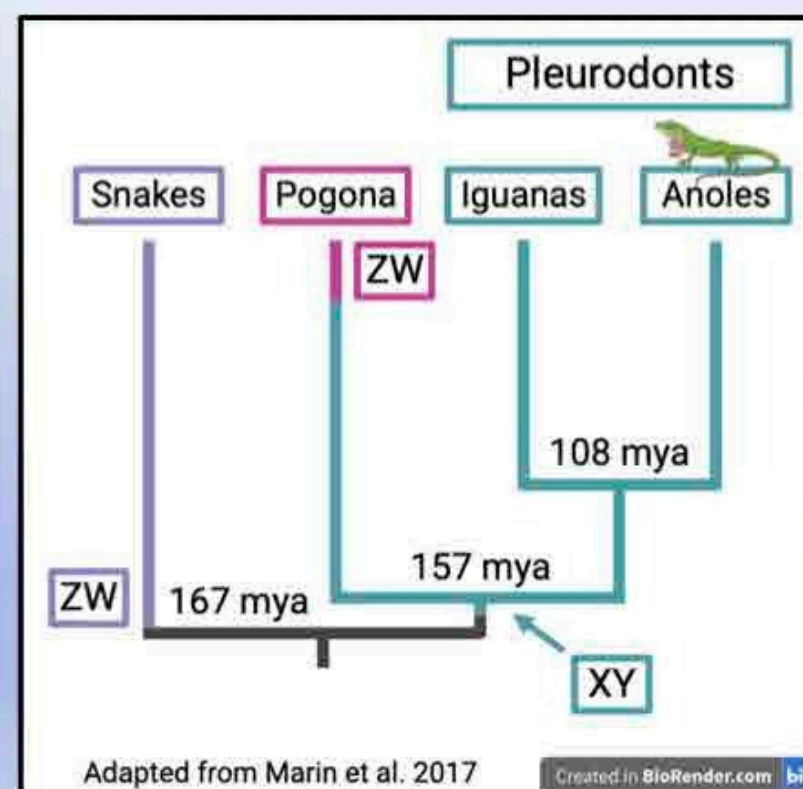


Sex Chromosomes of *Anolis*

- Diverse genus of 400+ species
- XX/XY GSD system
- Estimated to arisen 160 mya



Eastern Tropical Pacific anoles, Phillips et al 2019



Adapted from Marin et al. 2017

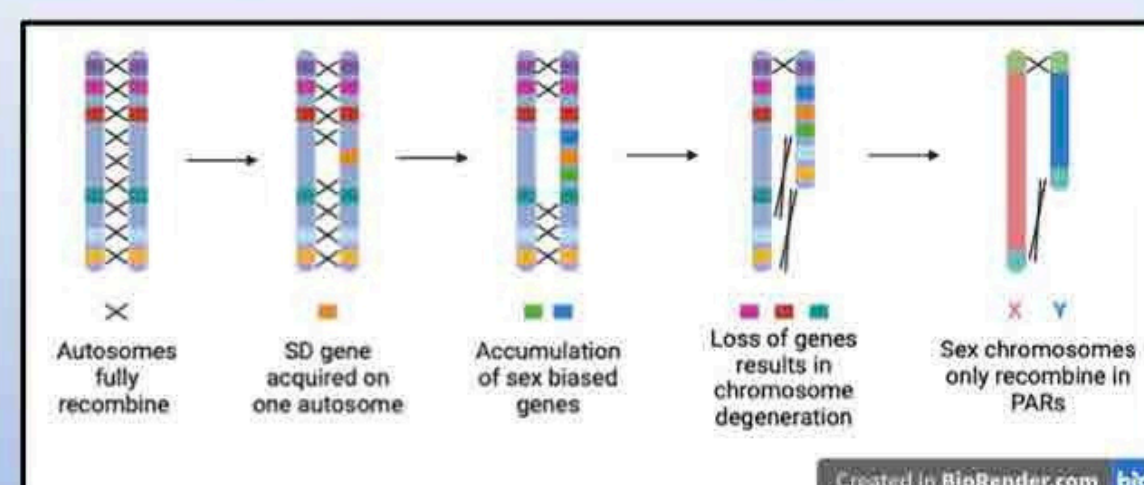
Why use the Brown Anole to Study GSD?

- Invasive to SE USA
- Easy to rear in the lab
- Good reference genome
- Gene editing



Photo: Aaron Alcalá

Sex Chromosome Evolution in *A. sagrei*

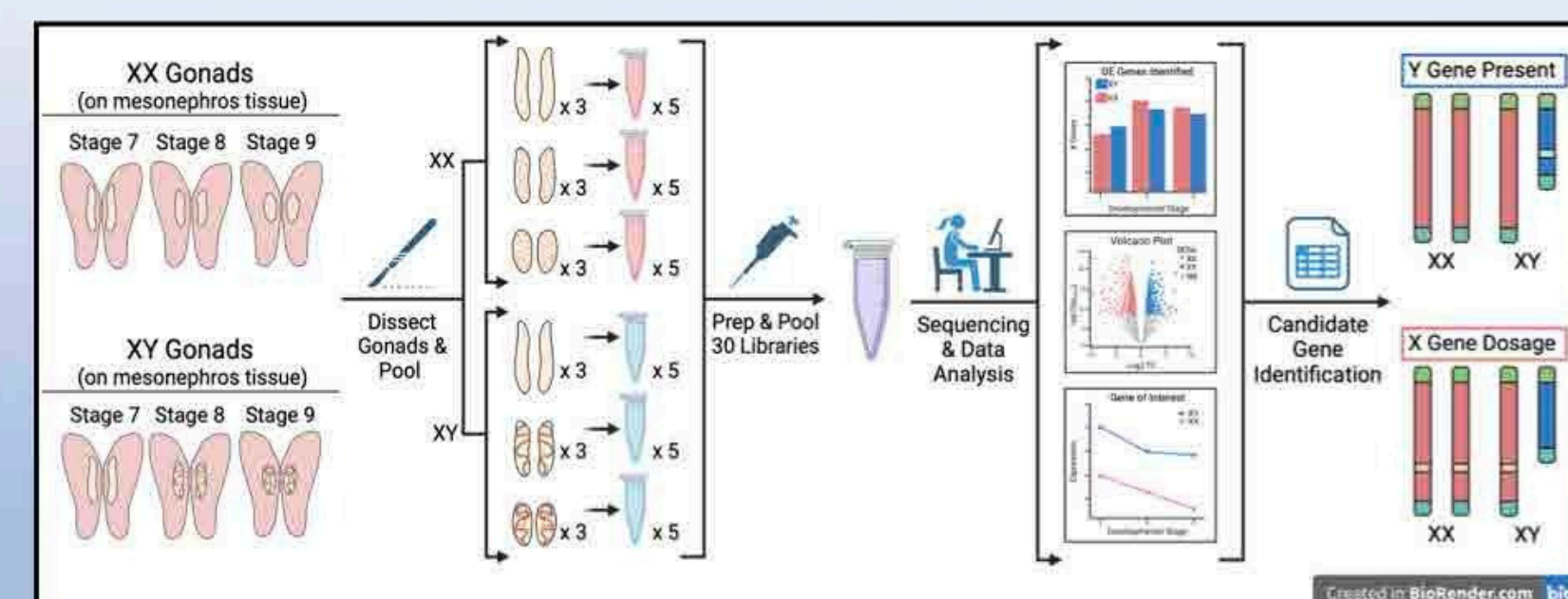


Y chromosome has undergone massive gene loss & degeneration

~340 genes on Y
~1100 genes on X



Identifying SD Genes by Gene Expression



A similar experiment with stage 5 embryonic gonads is currently underway!

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