

GDCB SEMINAR

Tuesday, Feb. 8, 2022 — 4:10 p.m.

Online meeting (link below)

'Tackling maize's contribution to climate change by learning from all plant genomic diversity'

Abstract: Maize agriculture needs to increase yield, adapt to climate change, AND become a key element in carbon sequestration. We can accomplish this tall order if we start re-designing maize based on how related species function. Many wild ecosystems have excellent nutrient management and high soil carbon. This research aims to understand how the Andropogoneae grasses (includes maize, sorghum, sugarcane, and Miscanthus), the dominant clade over 17% of the planet, have adapted to those environments and apply that understanding to maize and related forage crops.

The current approaches for allele mining, mapping, genomic selection models are inefficient for scaling to numerous species. We use evolution and machine learning to develop robust models across the central dogma of molecular biology that work across species. We have applied this combination of evolution and machine learning to identify: distal regulatory elements, functional genes, chromatin structure, transcription, translation, and protein structure contribution to yield. Our next stage is to apply these tools to understand Andropogoneae adaptations and leverage that knowledge into maize.

Host: Sarah Anderson, genetics, development and cell biology assistant professor



Edward Buckler

Cornell University

Adjunct Professor,
School of Integrative Plant
Science Breeding and Genetics
Section

Lab website: <https://www.maizegenetics.net/>

Join meeting:

<https://iastate.webex.com/iastate/j.php?MTID=m8df06bbeb8fa235e81bed68affc91ad7>

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