

Biology Seminar



12:30 - 1:30 pm
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BGS 0165



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Computational Approaches to Understanding Genome- Environment Interactions

Quantitative genomic methods have been used in crop breeding for decades to predict the performance of new crop varieties from genetic information only. These approaches can help breeders make decisions about important traits like yield earlier in the breeding cycle and reduce the need for extensive field testing. However, crop performance also depends on environmental factors, and genome-environment interactions remain a major challenge for predictive methods.

In this talk, I will describe how machine learning methods can combine genomic data with measured environmental variables to improve prediction of complex agricultural traits. Rather than treating environments as simple categories, these approaches use environmental data directly. However, these models can also reflect how environmental conditions modify the effects of genetic variation on crop performance. This provides both practical tools for breeding and a computational framework for identifying genome-environment interactions for potential further biological investigation.

