Temporal and spatial genetic diversity of a wild wheat population under climate change

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Host: Nick Barton

Understanding the impact of climate change on biodiversity and food security is one of the major challenges of the 21st century. Little is known about how climate change will affect plants - how fast they can adapt and what the consequences on productivity will be. Historical records in the form of plants that already underwent adaptation to environmental change in their natural habitat offer our best opportunity to predict future trends. Of particular importance are the wild progenitors of major crops that provide the genetic resources needed for future crop improvement. We propose to assess the impact of recent climate change on the wild emmer wheat population of kibbutz Ammiad, located at the species center of distribution. This population has been studied for the past 34 years, with seeds collected every ~5 years from the same marked spots. During this 34-year period, local CO2 concentrations and temperature have risen, providing an opportunity to assess the evolution and adaptation of a wild population under climate change. The different micro-habitats in the collection area and the long-term collection constitute a unique resource that enables both spatial and temporal genotypic analysis. We characterized the 800 genotypes of the collection using the Genotyping-By-Sequencing (GBS) method. We found that the population is diverse and structured in genotypic clusters corresponding to micro-niches that may provide evidence for micro-adaptation.

Wednesday, October 2, 2019 12:30pm - 01:30pm
IST Austria Campus I22 Lakeside View (I22.01)

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