BEYOND THE GENOME: EPIGENETICS OF CLIMATIC ADAPTATION IN PLANTS

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Climate change is one of the greatest challenges for the biosphere. As sessile organisms, plants must adapt quickly to keep pace with the rapidly changing climatic conditions. Epigenetic memory is one mechanism which would provide sufficient plasticity under rapid climate change and enable long-lived organisms to survive long enough to adapt by classical genetic selection. In Norway spruce, the timing of bud burst and bud set are regulated by an epigenetic memory established by the temperature sum endured during embryogenesis. The resulting epitypes display a life-long shift in seasonal timing of the bud phenology, a trait previously presumed to be under strict classical selection and highly heritable. However, Norway spruce is a difficult plant to study because it has a very long generation time and an extensive genome size. We therefore seek to find a suitable perennial model plant to study the phenomenon of epigenetic climatic memory. Woodland strawberry (*Fragaria vesca*) may be an ideal model to research the role of epigenetic memory on plant phenology. *Fragaria vesca* is a perennial plant with a small well-characterized genome, a short sexual reproduction cycle and can also propagate asexually trough clonal daughter plants formed by stolons. We will explore whether the temperature sum experienced during sexual and asexual reproduction impact on the phenology of *Fragaria vesca* and use this as a model to decipher the molecular mechanism underlying epigenetic memory in plants.