



It is not over until it is dry: molecular aspects of late seed maturation.

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Résumé en anglais The maturation phase is described as a developmental program encompassing the accumulation of storage reserves, drying and abscission from the mother plant. Besides regulatory pathways involved in seed filling, additional pathways must be activated to confer to orthodox seeds its dispersal characteristics, namely germination capacity, dormancy and the ability to survive in the dry state. The molecular pathways underlying the acquisition of longevity during late seed maturation and its interaction with the environment have received little attention. Yet, this trait is an important factor in the preservation of seed viability and quality during dry storage and an essential parameter to ensure fast and homogenous seedling establishment. In this presentation, we will focus on the physiological, biochemical and molecular events that occur during late seed maturation of *Medicago truncatula* using transcriptomic and metabolomic profiling together with a conditional-dependent network of global transcriptional interactions. Using an integrative biology approach linking phenotype with these molecular data, we will demonstrate how to identify key genes that govern the acquisition of longevity. The role of the transcriptional regulator ABSCISIC ACID INSENSITIVE 3 (ABI3) in late seed maturation will be discussed, based on molecular analysis of Mtabi3 mutants. We will show that the long maturation phase of *Medicago* makes it particularly adapted model to apply network-based approaches to unravel regulatory pathways underlying the preparation for the dry and quiescent state.

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