Title Development of post-harvest pathogens at low temperature: the *Botrytis cinerea*-grapes interaction.

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Abstract

Cold storage is the primary means to prevent deterioration of fresh agricultural produce after harvest and development of fungal decay. However, during cold storage there is often a selection process in which postharvest pathogens become dominant and prevent further storage. *Botrytis cinerea* is a prominent example of a pathogen that dominates this niche, attacking a multitude of fresh produce. Table grapes with their fleshy and sweet berry are an ideal substrate for *B. cinerea*. Cold storage at 0°C slows down but does not prevent the fungus from causing decay, necessitating the use of aggressive antifungal treatments. Understanding the processes underlying development of *B. cinerea* at 0°C should enable better control of fungal development in cold stores. Measuring germination and growth of *B. cinerea* at different temperatures and on different media including grape berries enabled determination of the kinetics of development and acclimation of the fungus to low temperature. Molecular enrichment for RNAs highly expressed at low temperature helped to identify several novel genes, and their involvement in low-temperature development was genetically dissected. Availability of the *B. cinerea* genome sequence enabled the systematic study of mechanisms and genes known to be involved in the response and survival of psychrotrophic microrganisms to low temperature. Taken together, our data suggests that *B. cinerea* is highly adopted to pathogenic interactions at low temperature.