

I'm starving!: A Fungal Perspective on Nutrient Deprivation

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Abstract

Filamentous fungi have long been important in human welfare, as they can affect us negatively (as crop and human pathogens) or positively (in food production or bioprocessing). In many instances these fungi are exposed to nutrient deprivation that results in starvation. Interestingly, there is still a lack of understanding of starvation response in filamentous fungi at the cellular and molecular level. We grew *Aspergillus oryzae* and *Aspergillus nidulans* in a parallel plate flow chamber to study the effects of carbon starvation at the level of individual mycelia. In addition, we studied autophagy, a natural self-eating phenomenon well-characterized in yeast but not in filamentous fungi. Autophagy is induced by nutrient starvation or by the immunosuppressant drug rapamycin. Comparing starvation response to autophagy-induced response, our results suggest that autophagy may only be one part of the starvation stress response.