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Evidence for the Impact of Reactive Oxygen Species on Branch Density Homeostasis in *Neurospora crassa*

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Evidence for the Impact of Reactive Oxygen Species on Branch Density Homeostasis in *Neurospora crassa*

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In preliminary screenings, genes involved in the control of reactive oxygen species (ROS), were identified as playing a role in the process of growth rate compensation of branch density. Here we examine the relationship between ROS and branch density further. The maintenance of branch density under growth at various temperatures was examined in a selection of mutants in genes known to be important in ROS control. In all ROS control mutants tested, growth showed clear sustained hypobranching when grown at lower temperatures. This can be contrasted with wild-type *Neurospora* which branches at the same density under both conditions. We also tested the impact of environmental agents which lower the concentration of ROS on branching. In tests on wild type *Neurospora*, water soluble anti-oxidants (reducing agents), Ascorbic Acid and Glutathione produced unusual branching patterns. While lower doses produce sustainable hypobranching in wild-type *Neurospora*, hypha exposed to higher concentrations of Ascorbic Acid or Glutathione display a distribution of branching with two clear maxima. They show an increase in both very closely spaced branching as well as an increase in more distantly spaced branching.

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