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ABSTRACT BOOK

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MIR156 TRANSDUCES THE STRIGOLACTONE SIGNAL UNDER DROUGHT STRESS IN TOMATO

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ABSTRACT

Strigolactones (SL) control plant architecture and interactions with rhizosphere organisms. Recently, a role of SL in plant responses to drought stress has been also demonstrated. Tomato (*Solanum lycopersicum* L.) plants defective in SL biosynthesis are more sensitive to drought and this is not only dependent on changes in abscisic acid (ABA) levels but rather on decreased stomatal sensitivity to ABA. As SL are mostly synthesized in the root and transported to the shoot, they can contribute to a root-to-shoot drought signal. Accordingly, SL concentration decreases in roots under drought stress, while we observe enhanced SL biosynthesis in shoots, and correspondingly an intensification of stomatal closure due to higher sensitivity to ABA. We are searching for downstream effectors of SL action under drought stress and we are focusing on miR156, a small RNA with a pivotal role in the control of growth and stress responses in plants. We show that miR156 concentration increases under stress but only in presence of SL (i.e. it is not recorded in SL biosynthetic mutants), while synthetic SL treatments increase miR156 concentration in absence of stress, by enhancing transcription of *MIR156* genes, and processing to mature miRNAs. A tomato line overexpressing a *MIR156* gene exhibits increased stomatal closure and shows increased sensitivity to ABA, suggesting that miR156 concentration can transduce the effects of drought stress-induced changes of SL levels in the shoot.

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