Title:	Studying the role of ELONGATED HYPOCOTYL 5(HY5) in the regulation of iron deficiency responses in Arabidopsis thaliana
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Abstract:	Iron (Fe) is a key micronutrient required for several physiological functions in plants, including photosynthesis, respiration, and enzyme activation. Maintaining optimum Fe levels in plant cells is essential for proper growth, development, and overall well-being. Iron homeostasis in plants is strictly regulated by a complex network of genes and signalling pathways. The transcription factor HY5 (Elongated Hypocotyl 5) has emerged as a crucial regulator controlling the plant's response to Fe availability. Recent research has revealed an important role for HY5 in regulating the expression of key genes involved in the regulation of Fe uptake. So, next, we wanted to investigate whether HY5 has any role in the regulation of Fe transport. Interestingly, we found that HY5 directly controls the expression of the genes OPT3 (Oligopeptide Transporter 3), and YSL2 (Yellow Stripe-Like 2) which encode the transporters involved in the mobilization of Fe in plant tissues. Additionally, HY5 is known to act downstream to photoreceptors and play important roles in photomorphogenesis. So, we wanted to study which photoreceptor acts upstream to HY5 in the regulation of Fe deficiency response. Phenotypic analysis of cry1cry2 double mutant revealed that they play an important role in maintaining optimal Fe levels in the root. Furthermore, they play a crucial role in maintaining shoot chlorophyll levels in the presence of Fe deficiency. Additional research is required to confirm that HY5 works downstream of CRY1 and CRY2 in the regulation of Fe deficiency response.
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