Title:	Investigating the role of Root Hair Related 29 (RHR29) in root development and iron homeostasis in the model plant Arabidopsis thaliana
Authors:	Shreya
Keywords:	Homeostasis Model plant Root Hair
Issue Date:	May-2024
Publisher:	IISER Mohali
Abstract:	Iron deficiency has been known to cause serious problems for both plants as well as humans. Since plants are the major source of dietary iron, increasing crop iron content is a critical goal to achieve improved health. However, excess of iron also leads to stress due to release of large quantities of Reactive Oxygen Species, which further causes cell damage. Thus, optimum level of iron in plants is crucial for both plants and humans. Iron is the fourth most prevalent metal on Earth, and is an essential micronutrient for plants, but, a significant portion of the world's soil is deficient in the absorbable form of iron. Improving iron absorption in plants to help them adapt better to iron-depleted soils has been a major research focus for many years. Although much research has taken place in understanding the molecular mechanisms underlying the stress response pertaining to iron deficiency, knowledge gaps remain. Root hairs are crucial in the uptake of essential nutrients and water in plants. Though the molecular mechanisms of root hair development are well explored, however, the role of novel regulators in plants remains largely unknown. In this project, we aimed to decode the molecular function and biological process, in order to functionally characterise the gene RHR29. This work aspires to fill the knowledge gaps in the molecular pathway of root hair development and iron homeostasis in Arabidopsis thaliana. Our study shows that the RHR29 is induced under iron deficiency conditions and is involved in root hair development. The mutants of the gene showed decreased number of root hairs, and the length of root hairs was also shorter as compared to the wild-type plants. The study also involved experiments to find the putative receptor for our gene of interest. Moreover, the iron content of the mutants was also lesser as compared to the wild-type plants, suggesting that the gene is involved in the iron homeostasis pathway.
Description:	Under Embargo Period
URI:	http://hdl.handle.net/123456789/5706
Appears in Collections:	MS-19

Files in This Item:

File	Description	Size	Format	
embargo period.pdf		6.04 kB	Adobe PDF	View/Open

Show full item record