

## Scientists decoded how plants survive during drought

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For the first time, scientists at National Institute of Plant Genome research (NIPGR), New Delhi have discovered that plants can survive drought with help of lignin deposition xylem, a tissue responsible for food and water transport in plants.

Research team headed by Dr. Debasis Chattopadhyay carried out a detailed study to uncover how model plant Arabidopsis survives during drought and phosphorus deficient conditions. Team found that water- and phosphate nutrient scarcity can increase levels of a particular kind of microRNA called miR397b. The miR397b was found to control the deposition of lignin in xylem by controlling the formation of an enzyme called Laccase 2 (LAC 2). The Laccases are a family of enzymes that regulate lignin metabolism in plants.

Furthermore, LAC 2 acts as a negative factor for of lignin deposition in root xylem. Dr. Chattopadhyay's team found that miR397b controls lignin deposition in xylem by regulating the expression levels of LAC 2.

Team also found that excessive lignin deposition in roots is accompanied with iron and callose deposition in the spaces between cells and inhibits the growth of roots. Thus, the lignin deposition reduces diameter of xylem, which increases water pressure towards the aerial part of the plant. Furthermore, lignin deposition in xylem also improves nutrient transport in plants. The current study was published in high impact factor journal, *Plant Physiology*.

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