# REGIONAL CENTRE FOR BIOTECHNOLOGY

## Journal Club

## "Identification of a Plant Receptor for Extracellular ATP"

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**ATPC Seminar room**

# Abstract

Extracellular adenosine 5′-triphosphate (ATP) is an essential signaling molecule that is perceived in mammals by plasma membrane P2-type purinoceptors. Similar ATP receptors do not exist in plants, although extracellular ATP has been shown to play critical roles in plant growth, development, and stress responses. Here, we identify an ATP-insensitive Arabidopsis mutant, dorn1 (Does not Respond to Nucleotides 1), defective in lectin receptor kinase I.9 (Arabidopsis Information Resource accession code At5g60300). DORN1 binds ATP with high affinity (dissociation constant of 45.7 T 3.1 nanomolar) and is required for ATP-induced calcium response, mitogen-activated protein kinase activation, and gene expression. Ectopic expression of DORN1 increased the plant response to physical wounding. We propose that DORN1 is essential for perception of extracellular ATP and likely plays a variety of roles in plant stress resistance.