

Study provides new details of fundamental cellular process

January 23 2012

A recent Van Andel Research Institute (VARI) study published in the journal *Science* investigating the molecular structure and function of an essential plant hormone could profoundly change our understanding of a key cell process, and might ultimately lead to the development of new drugs for a variety of diseases.

The study builds on earlier work by the same team of investigators at VARI that was published in the journal *Nature* in 2009. That study shed light on how plants respond when they are under stress from [extreme temperatures](#), drought and other harsh environmental conditions and was later named by *Science* as one of the top [scientific breakthroughs](#) of 2009.

The current research conducted on the [plant hormone](#) Abscisic acid (ABA) determined that during [signal transduction](#) – the basic process of intercellular and intracellular communication – certain enzymes mimic the structure of the opposing enzyme. This insight may enable scientists to more accurately develop mechanisms to activate or inhibit intercellular and intracellular communication, which could lead to the development of plants that more readily survive drought or other conditions of stress.

In mammalian cells the ability to impact communication has numerous and far-reaching implications. For example, applications that inhibit or activate cell communication in out-of-control metastasizing cancer cells have enormous potential to affect tumor growth.

"This type of finding once again demonstrates the importance of identifying, mapping and understanding fundamental cellular and molecular processes because of the profound implications for human health," said H. Eric Xu, Ph.D., Director of the VARI Center for Structural Biology and Drug Discovery and co-author of the current *Science* study.

Provided by Van Andel Research Institute

Citation: Study provides new details of fundamental cellular process (2012, January 23) retrieved 19 September 2024 from <https://phys.org/news/2012-01-fundamental-cellular.html>

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