



**The Chinese University of Hong Kong
Non-confidential Abstract of Technology Disclosure**

Title:

Application of Purple Acid Phosphatase Genes and Their Products to Enhance Tolerance toward Salinity, Drought, and Other Abiotic Stresses in Plants and Plant Cell Cultures

CUHK Ref. No.:

06/SCI/229

Inventor(s):

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Patent Status:

US Patent Pending

Non-confidential abstract:

Salinity and drought stresses posed a severe problem to agriculture worldwide. Both stresses will induce oxidative stress and cause damage to plant cells, resulting in retarded plant growth and consequently a reduction in crop yield. We identified a novel purple acid phosphatase (PAP) gene from soybean and its expression can be induced by salinity, drought and oxidative stresses. The majority of the encoded PAP protein is localized in mitochondria. Mitochondrion is one of the primary location in cells where reactive oxygen species (ROS) is produced. Expression of this gene in both plant cell culture or transgenic plants can improve salinity and drought tolerance. The protection mechanism is related to alleviation of oxidative stress and scavenging of ROS. Since many other abiotic stresses also result in oxidative stress and accumulation of ROS, this group of novel PAP genes (stress inducible and encoding mitochondrial localized gene products) can be used to enhance tolerance toward salinity, drought, and other abiotic stresses in plants, cell cultures and cell lines.

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