

ABC transporter action in biological field

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Abstract

The model plant *Arabidopsis thaliana* has many well-known and well-characterized transporter proteins out of which the ATP-binding cassette (ABC) families of transporter proteins play a prominent role. The ABC transporters are multidomain transmembrane proteins who make use of the energy obtained from ATP hydrolysis to translocate molecules like xenobiotics, hormones, heavy metals and ions among others. Moreover they also take part in resistance against pathogens in plants, pathogenesis in bacteria, cell division, maintenance of osmotic homeostasis and nutrient uptake. In higher plants, ABC transporters represent a large family separated into eight subfamilies ABCA–ABCI (except ABCH). Originally isolated for their ability to confer multidrug resistance, nowadays we know that ABC transporters are involved in several aspects of plant growth and adaptation also through the mobilization of plant hormones. Plant ABC class C transporters were previously known as multidrug resistant-associated proteins (MRPs), were first described in barley. *Arabidopsis* ABCC transporters are most commonly found in cell or vacuolar membrane. Some ABCC transporters have been found to play important roles in folic acid & naphthoquinone transport; anthocyanin import and xenobiotics detoxification. Among the eight subfamilies of plant ABC transporters the ABCG subfamily is the largest one, with *Arabidopsis thaliana* housing 28 half size proteins (called White-Brown complex or WBC proteins) and 15 full size proteins (called Pleiotropic Drug Resistance or PDR proteins). Except the ABCG19 transporter in *Arabidopsis thaliana*, all the other known ABCG transporters are found to be localized in the cell plasma membrane. Among many ABCG transporters some have shown to play multi-functional role like acting as a Cd²⁺ and Pb²⁺ exporter on one hand and also helps in providing pathogenic resistance to the plant.

Biography

Ayan Raichaudhuri is currently an Assistant Professor at Amity Institute of Biotechnology, Amity University, Kolkata, India. Originally he was a first class Masters & Doctorate in Biochemistry from Department of Biochemistry, University of Calcutta, India. He completed his Post Doctoral in Biochemistry from Department of Biology, University of

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