



ABSTRACT

“Involvement of the Whirly proteins in communication between the organelles and the nucleus within the plant cell”

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Besides a nuclear genome and a mitochondrial genome plant cells have a third genome in their plastids. For coordination of the activities of the three genomes the DNA containing compartments need to exchange information. Whirly proteins form a small family of nucleic acid binding proteins with two to three members exclusively found in higher plants. Investigations on their subcellular localization and their effects on gene expression indicate that the Whirly proteins play a role in transduction of information between organelles and nucleus.

After a general introduction on intracellular communication recent results on Whirly1 will be presented. Whirly1 has been identified originally as a nuclear activator of pathogen response genes. Later it was shown that Whirly1 is targeted to plastids and that it has the same molecular weight in plastids and the nucleus, respectively. To investigate whether plastid located Whirly1 might be translocated to the nucleus, we constructed transplastomic tobacco plants synthesizing an HA-tagged version of Whirly1 inside the plastid. Immunological analyses revealed that the tagged protein is also contained in nuclei. Our results give support for a retrograde protein translocation pathway from plastids to the nucleus.

