

The early expression of *WUSCHEL*, an organ identity gene, is a marker in Tobacco and *Beta palonga* during the onset of *in vitro* shoot morphogenesis

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The two *in vitro* morphogenesis pathways leading to whole plant regeneration involve either shoot organogenesis followed by root organogenesis or somatic embryogenesis. Both developmental pathways can occur either directly without an intermediate callus stage, or indirectly following an unorganized callus stage. Reports of involvement of *WUS* gene concerning *in vitro* shoot organogenesis are very scanty, particularly in the non-model plant systems, i.e., plants other than *Arabidopsis*. We have studied the role of growth regulators behind *in vitro* shoot organogenesis and somatic embryogenesis in two plant systems, viz. tobacco (*Nicotiana tabacum* L. var. Jayasri) and *Beta palonga* R.K.Basu & K.K.Mukh, a model and a non-model plant system respectively. We have also correlated the phenomena of de differentiation with the relative expression of *WUS* (*WUSCHEL*) gene in a time-dependent manner. The results indicated that early *WUS* gene expression is a definite marker for *in vitro* shoot organogenesis in tobacco and *Beta*

both in direct and indirect modes of regeneration. Additionally, we have performed a comparative homology modelling and *in silico* structural analysis of *WUSCHEL* proteins of *B. palonga*, *B. vulgaris*, and *Arabidopsis* to find out the commonality of the ligand binding site. The amino acids of the binding sites were identical (Arginine, Tryptophan, Proline, Asparagine, and Tyrosine) in the three materials under study; except two additional amino acids (Isoleucine and Alanine) in *B. vulgaris*.

Speaker Biography

Gaurab Gangopadhyay, Associate Professor, Division of Plant Biology, Bose Institute, Kolkata, India is in the field of plant science research for last 28 years. After graduating from Presidency College, Kolkata and post graduation in Botany (University of Calcutta) he did his doctoral work at Bose Institute. He has a Post Doctoral Research experience for over twelve years. Dr Gangopadhyay has 68 research publications and 58 NCBI GenBank submissions. His H-index is 14, and he acts as editorial board member and reviewer for peer-reviewed scientific journals. His present area of research interest is Marker Assisted Plant Breeding, Plant Biotechnology and Molecular Biology.

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