



Model depicting the possible role of the microtubule- and RNA-binding activities of MFP on its translation and subsequent import into peroxisomes. Nascent MFP binds simultaneously to cortical microtubules as well as to its own mRNA (top panel). This association functions to repress translation in an autoregulatory fashion (middle panel). As peroxisomes pass by or pause on microtubules, microtubule-bound MFP is imported into the peroxisome and the repression of translation is lifted, resulting in the synthesis of additional MFP protein (bottom panel). A pre-formed translation complex that includes ribosomes and translation factors, such as the microtubule-binding protein EF1a (shown in middle and bottom panels), ensures that the rapid initiation of translation takes place once the repressing activity of MFP is lifted following import. The dynamic nature of the plant cytoskeleton would result in a constant repositioning of cortical microtubule-actin filament intersection sites, thereby assisting in the efficient import of the MFP that is uniformly localized along the length of the microtubule. MFP is depicted as a monomer in this model based on our observations from the biochemical characterization of active, recombinant MFP, and on *in vivo* experiments (SDX Chuong, RT Mullen, and DG Muench, unpublished results). From: Muench DG, Park N-I. 2006. Messages on the move: the role of the cytoskeleton in mRNA localization and translation in plant cells. *Canadian Journal of Botany*, 84:572-580. Special issue highlighting Canadian Plant Cell Biology research.