

P016 Involvement of small GTP-binding proteins in peroxisome biogenesis

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Over the last decade, much has been learned about how peroxisomes arise. Although the growth and division model still serves the field well, more and more experimental evidence suggests that peroxisomes are semi-autonomous organelles that start their life in the endoplasmic reticulum. As small GTP-binding proteins play an essential role in the transport process of ER-derived vesicles, and experiments in our laboratory have shown that the membrane of highly-purified rat liver peroxisomes contains three small GTP-binding proteins, we investigated whether or not viable Rab/Sar/Arf yeast deletion mutants still contain functional peroxisomes. Therefore, the mutants were (i) assayed for their ability to grow on oleic acid medium, and (ii) analyzed for PTS1 protein import after transformation with a plasmid coding for GFP-SKL, a peroxisomal marker protein. These experiments showed that all viable Rab/Sar/Arf mutants contained functional peroxisomes. However, as different Rab/Sar/Arf proteins may exhibit overlapping functions, these findings do not necessarily imply that these proteins are not involved in peroxisome biogenesis.