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Abstract 13-44

Fps1p channel is the mediator of the major part of glycerol passive diffusion in *Saccharomyces cerevisiae* : artefacts and re-definitions.

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Glycerol has been shown to cross *Saccharomyces cerevisiae* plasma membrane (i) by an H⁺/symport mechanism with the involvement of Gup1p and Gup2p, (ii) by passive diffusion and (iii) through the constitutive glycerol channel Fps1p. This has been named a facilitator, for mediating glycerol low affinity transport of the facilitated diffusion type. However, results of transport measurements in mutants affected in either *GUT1*, encoding glycerol kinase, or in *FPS1*, show that the channel mediates the major part of glycerol passive diffusion and that the saturable component, detected only at late-exponential phase in glucose-grown cells, is due to partial derepression of *GUT1*. In mutants affected in *FPS1*, glycerol diffusion through the plasma membrane was almost undetectable. In addition, an effect in glycerol diffusion has been detected by further deletion of YFL054c in an *fps1* genetic background. This is, to our knowledge, the first time a phenotype can be attributed to deletion of YFL054c. These results are in agreement with the role of Fps1p as a channel, specialised in controlling glycerol export and adaptation to hypo-osmotic shock. Results are also compatible with the hydrophilic nature of glycerol resulting in very low diffusion through the lipid bilayer. Finally, overexpression of *FPS1* caused an increase in H⁺/symport V_{max} suggesting an involvement on active transport regulation.

[Return to YGM2003 Home](#)