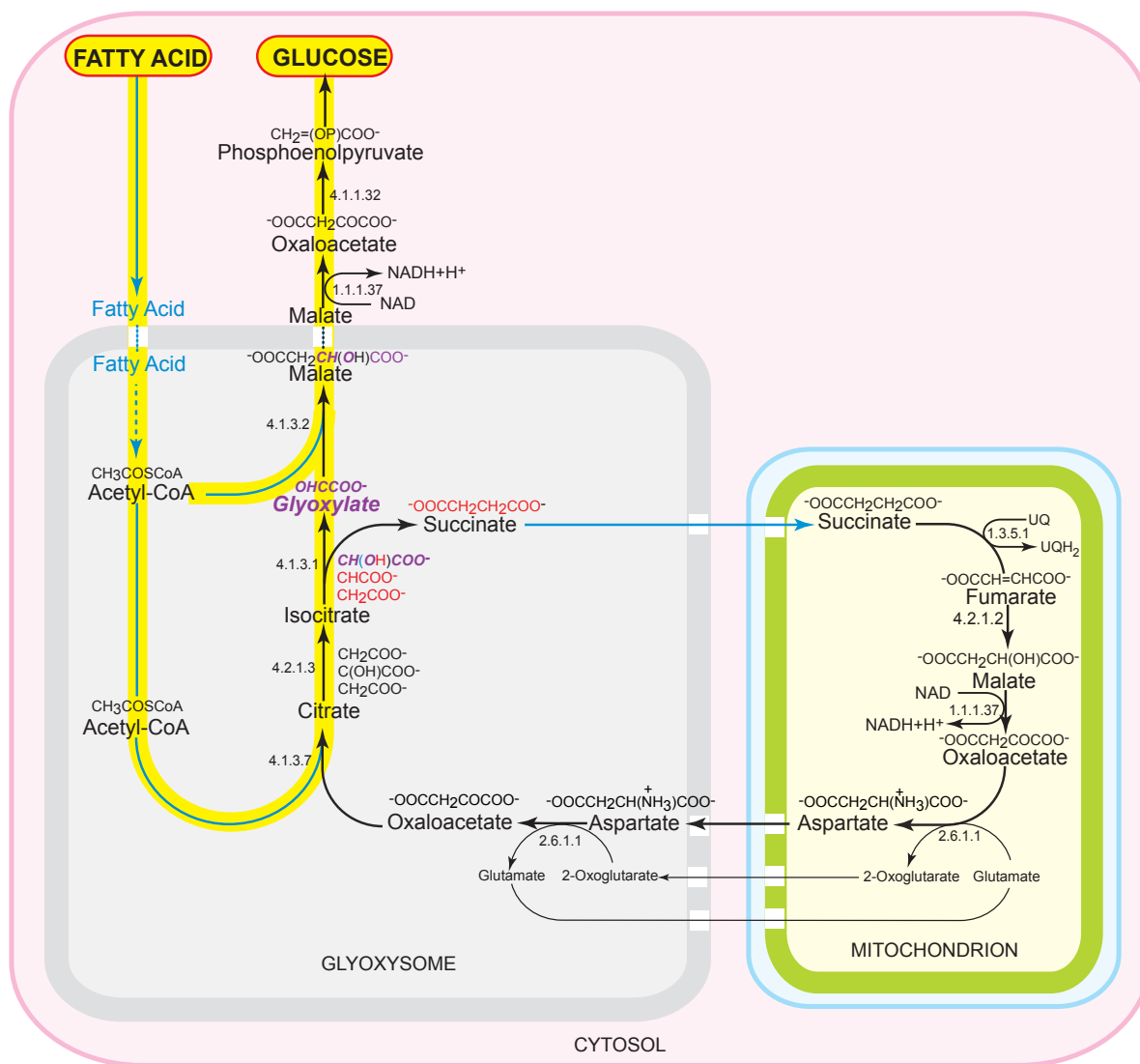


# CONVERSION OF FAT INTO CARBOHYDRATE IN PLANTS - THE GLYOXYLATE PATHWAY



An important metabolic advantage possessed by plants (and some bacteria) and not by animals is their ability to convert fat into carbohydrate. This is especially important to seeds, the germination of which depends on carbohydrates which cannot (in the dark) be formed by photosynthesis. At such stages the organism is equipped with special organelles, *glyoxysomes*, the function of which is to make possible this conversion. The unique enzymes present in the glyoxysomes are *isocitrate lyase* which cleaves isocitrate into succinate and glyoxylate, and *malate synthase* which enables this glyoxylate to react with a second molecule of acetyl-CoA to form malate. This malate can then pass through the mitochondrial membrane into the cytosol where it is oxidised to oxaloacetate for conversion to glucose by gluconeogenesis.



ENZYMES			
1.1.1.37	Malate dehydrogenase	4.1.3.2	Malate synthase
1.3.5.1	Succinic dehydrogenase (ubiquinone)	4.1.3.7	Citrate (si)-synthase
2.6.1.1	Aspartate transaminase	4.2.1.2	Fumarate hydratase
4.1.1.32	Phosphoenolpyruvate carboxylase	4.2.1.3	Aconitate hydratase
4.1.3.1	Isocitrate lyase		