Comparisons of Fatty Acid Oxidation, Fatty Acid Biosynthesis, and the First Three Stages of Cholesterol Biosynthesis

	Site	Starting material	Cofactors	Regulatory step(s)
Fatty acid β-oxidation	Mitochondrial matrix	Fatty acyl-CoA (after carnitine shuttling)	FAD, NAD^+	Carnitine acyltransferase I, NADH/NAD^+ ratio inhibits β-hydroxyacyl-CoA dehyrogenase, acetyl-CoA feedback inhibits thiolase, glucagon-stimulated release of fatty acids from TAGs.
Fatty acid biosynthesis	Cytosol	Acetyl-CoA (transported from mitochondrial matrix as citrate by triocarboxylate transporter)	NADPH	Acetyl-CoA carboxlyase (see Slide 3b-12)
Cholesterol biosynthesis (Stages 1 to 3)	Cytosol	Acetyl-CoA (transported as above)	NADPH	HMG-CoA reductase (See last 3b Slide)