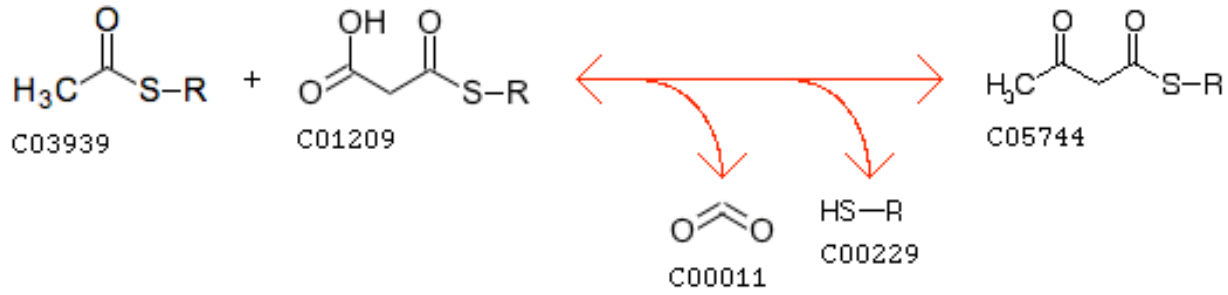
A



B

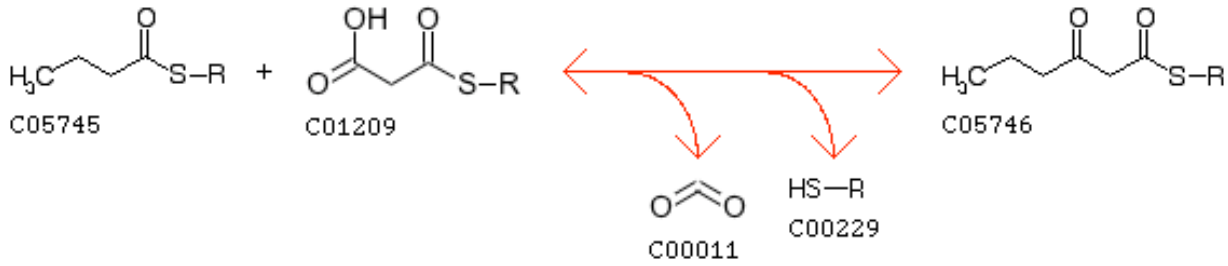


Figure S3. An example of substrate promiscuity. B1095 in *E. coli* is a beta-ketoacyl-acyl-carrier-protein synthase II (EC 2.3.1.179), which can process the two reactions shown in the figure:

A) KEGG ID: R04355

Acetyl-[acyl-carrier prot] + Malonyl-[acyl-carrier prot] <=> Acetoacetyl-[acp] + CO_2 + Acyl-carrier prot

B) KEGG ID: R04952

Butyryl-[acp] + Malonyl-[acyl-carrier protein] <=> 3-Oxohexanoyl-[acp] + CO_2 + Acyl-carrier protein

EC numbers = 1; Reactions = 2; ${}^{1}\sigma(R_A) = {}^{1}\sigma(R_B)$; ${}^{0\text{-}3}\sigma(R_A) \neq {}^{0\text{-}3}\sigma(R_B)$.

In this case, both reactions have the same signature, although they can process different substrates.