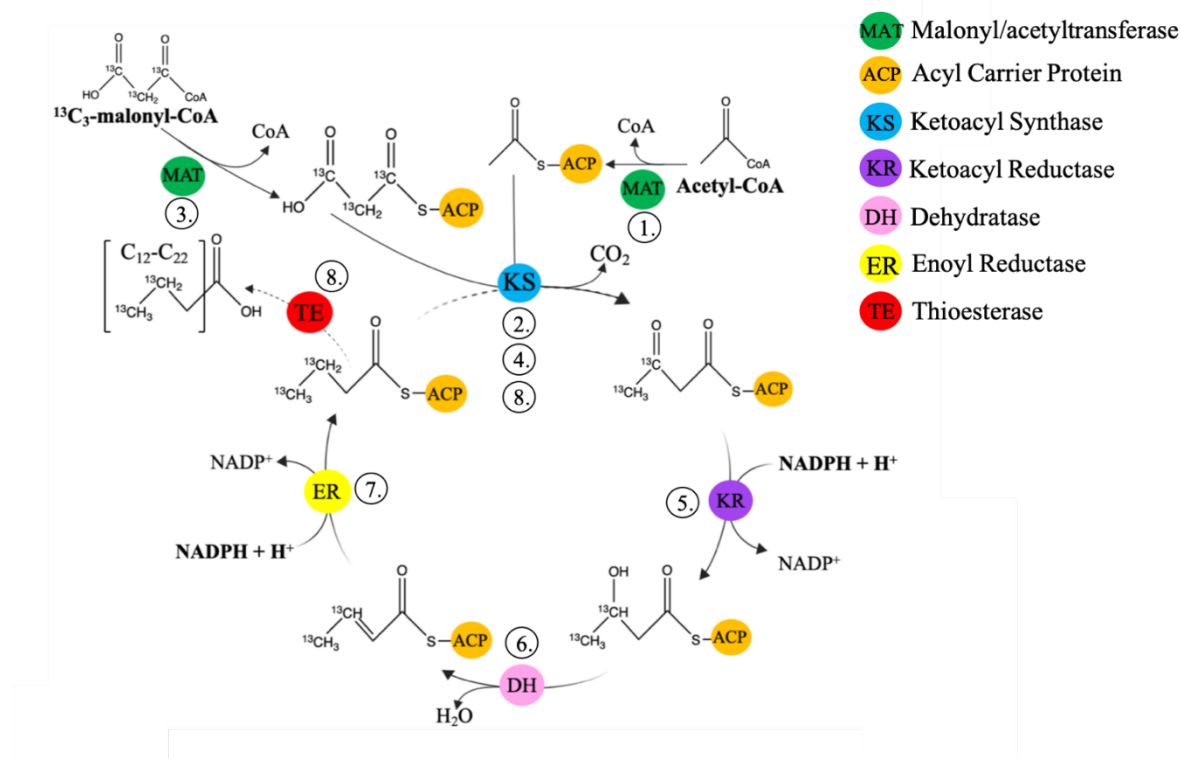
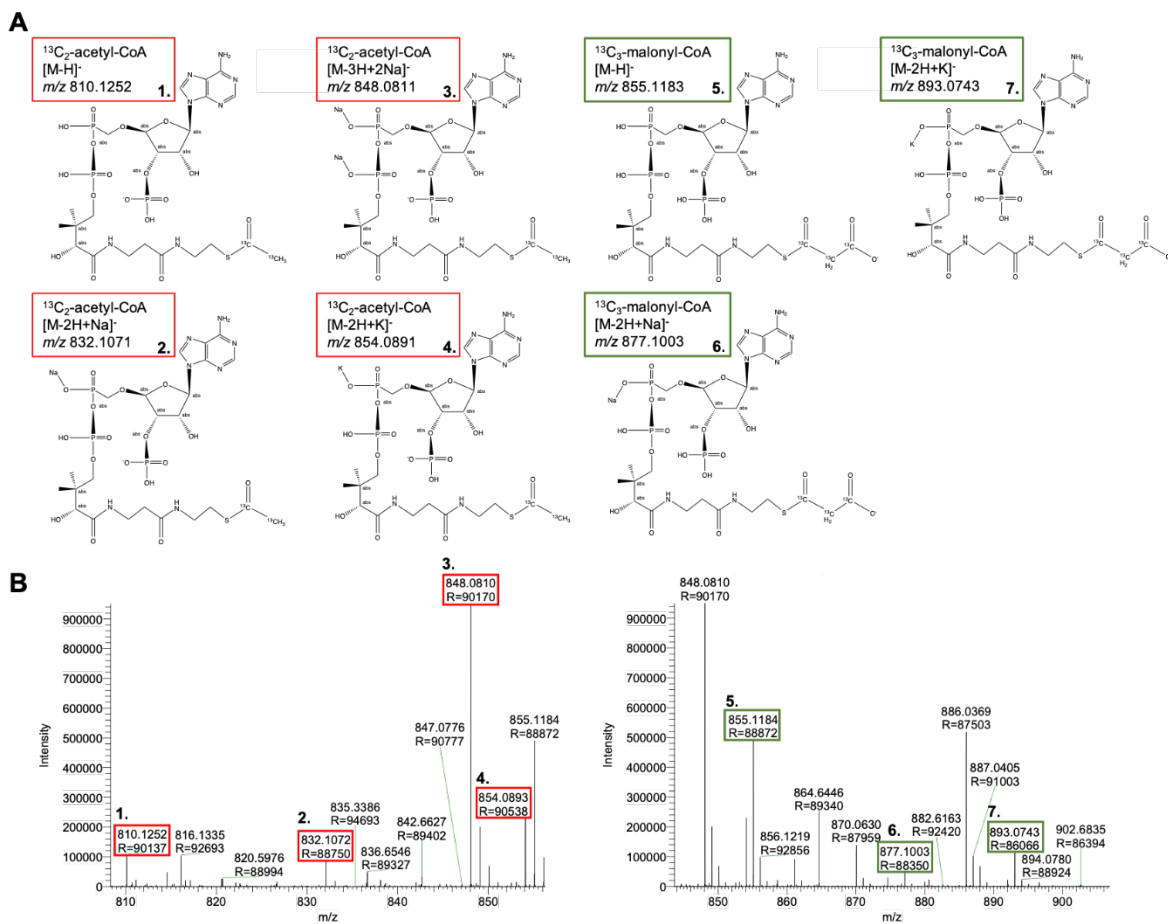


## Supplementary information



**Figure S1. Overview of de novo fatty acid synthesis in mammals.** Numbers denote the order of the reaction cycle: (1) Acetyl transfer onto ACP by MAT; (2) Acetyl/acyl transfer to KS; (3) malonyl transfer to ACP by MAT (exemplified with a  $^{13}\text{C}_3$ -malonyl group); (4) condensation of acetyl/acyl group with the malonyl group by the KS; (5) ketoacyl reduction using NADPH; (6) dehydration; (7) enoyl reduction using NADPH; and (8) release of the FA chain by TE as an NEFA.



**Figure S2. Negative ion mode FTMS analysis of commercially available  $^{13}\text{C}_3$ -malonyl-CoA. (A-B)** The  $^{13}\text{C}_3$ -malonyl-CoA was diluted to 10  $\mu\text{M}$  in methanol and directly injected using a Triversa NanoMate robotic nanoflow ion coupled to an LTQ Orbitrap XL mass spectrometer. Chemical structures of the detected  $^{13}\text{C}_3$ -malonyl-CoA and  $^{13}\text{C}_2$ -acetyl-CoA are highlighted in green and red, respectively.