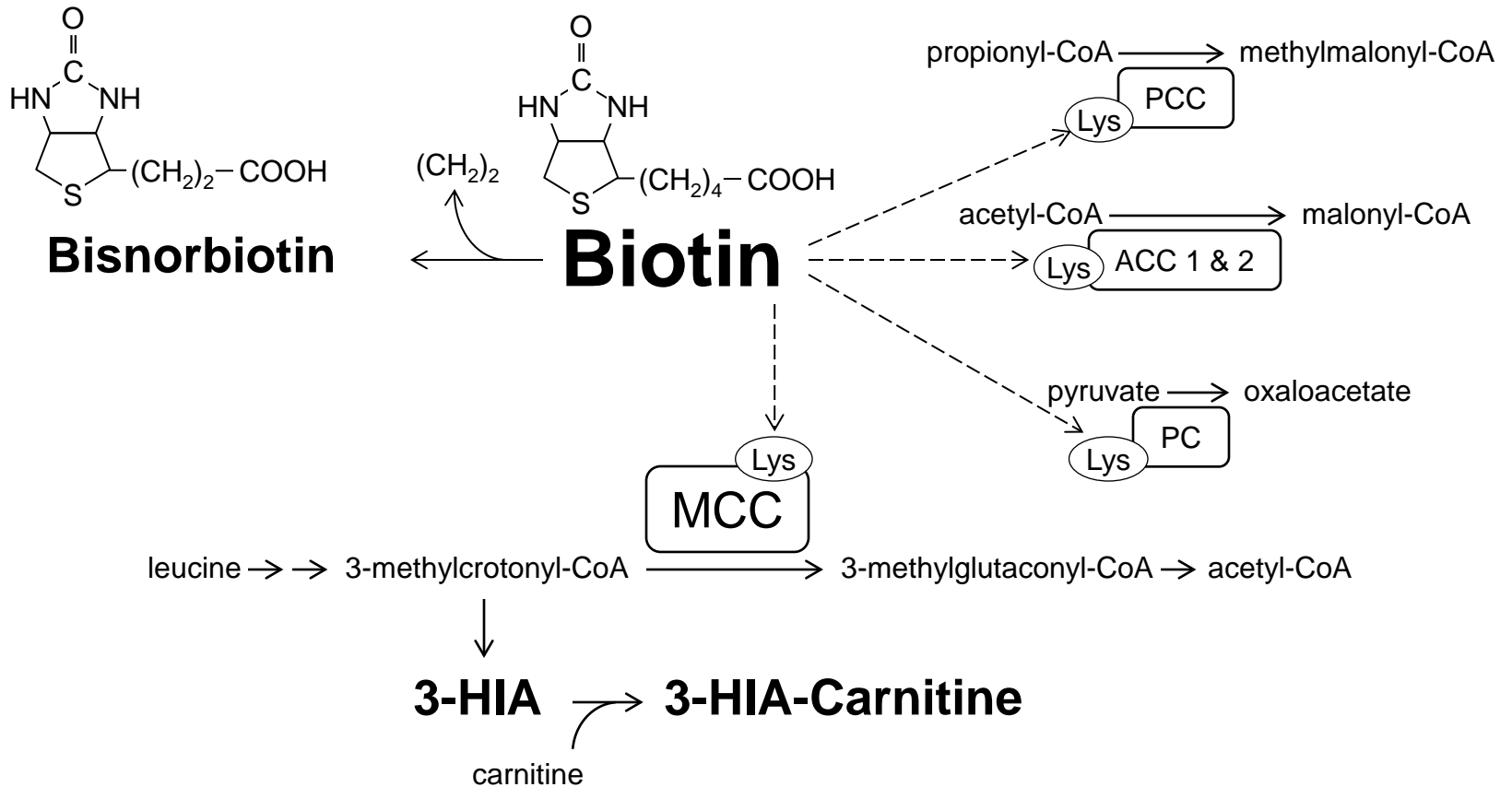


Online Supporting Material



Supplemental Figure 1. A simplified diagram of biotin metabolism and function. Biotin binds to a lysine residue located on the biotin carboxyl carrier protein domain of the five biotin dependent carboxylase enzymes: MCC, PCC, ACC 1 & 2, and PC. The lysine-bound biotin moiety is then used to transfer a carbon dioxide molecule to acceptor molecules (i.e. 3-methylcrotonyl-CoA, propionyl-CoA, acetyl-CoA, or pyruvate). When availability of biotin is low, MCC activity is reduced and conversion of 3-methylcrotonyl-CoA to 3-HIA is increased; 3-HIA may be further metabolized to 3-HIA-carnitine. Thus, increased urinary excretion of 3-HIA and 3-HIA-carnitine are functional indicators of marginal or sub-optimal biotin status. Biotin is converted to the biologically inactive degradation product, bisnorbiotin, via side chain cleavage. Increased urinary bisnorbiotin excretion indicates greater biotin catabolism and turnover.