

ESI, Fig. S1. Loadings from mammary gland aqueous fraction: (A) PLS loadings plot for *Majorera* control and *Majorera* restricted group; (B) OPLS loadings plot for *Palmera* control and *Palmera* restricted group. Key: (1) 3-methylhistidine; (2) acetate; (3) acetyl-L-carnitine; (4) adenine; (5) adenosylhomocysteine; (6) alanine; (7) AMP/ADP/ATP; (8) anserine; (9) aspartate; (10) benzoate; (11) betaine; (12) carnitine; (13) carnosine; (14) choline; (15) citrate; (16) creatine; (17) creatine phosphate; (18) creatinine; (19) formate; (20) fumarate; (21) glucose; (22) glutamate; (23) glutathione; (24) glycerophosphocholine; (25) glycine; (26) IMP; (27) inosine; (28) isoleucine; (29) lactate; (30) lactose; (31) leucine; (32) methylmalonate; (33) myo-inositol; (34) NAD⁺; (35) NADP⁺; (36) nicotinurate; (37) phenylalanine; (38) phosphocholine; (39) pyruvate; (40) succinate; (41) taurine; (42) tyrosine; (43) UDP-glucose; (44) uridine; (45) valine; (46) xanthine.

ESI, Fig. S2. Loadings from milk serum: (A) PLS loadings plot for *Majorera* control and *Majorera* restricted group; (B) PLS loadings plot for *Palmera* control and *Palmera* restricted group. Key: (1) 2-oxobutyrate; (2) 2-oxoglutarate; (3) β -hydroxybutyrate; (4) acetate; (5) acetone; (6) acetylcholine; (7) acetyl-L-carnitine; (8) adenine; (9) adenosine; (10) alanine; (11) benzoate; (12) betaine; (13) carnitine; (14) choline; (15) cis-aconitate; (16) citrate; (17) creatine; (18) creatine phosphate; (19) creatinine; (20) dimethylglycine; (21) ethanolamine; (22) formate; (23) fucose; (24) fumarate; (25) galactose; (26) glucose; (27) glutamate; (28) glycine; (29) hippurate; (30) inosine; (31) isoleucine; (32) lactate; (33) lactose; (33) lactose, but with several less concentrated metabolites underneath them; (34) leucine; (35) malonate; (36) methylmalonate; (37) N-acetylglucosamine; (38) orotate; (39) pantothenate; (40) phosphocholine; (41) pyruvate; (42) riboflavin; (43) succinate; (44) taurine; (45) trimethylamine oxide; (46) UDP-galactose; (47) UDP-glucose; (48) UDP-glucuronate; (49) uridine; (50) valine.