**Additional file 1**

**Metabolic network model of recombinant *C. necator* producing isobutanol and hexadecanol under autotrophic condition**







**Nomenclature**:

G6P: glucose-6-phosphate; F6P: fructose-6-phosphate; F16BP: fructose-1,6-biphosphate; DHAP: dihydroxyacetone phosphate; GA3P: glyceraldehyde-3-phosphate; R5P: ribose-5-phosphate; X5P: xylulose-5-phosphate; 3PG: 3-phosphoglycerate; 3PGP: 3-phosphoglyceroylphosphate; 6PG: 6-phosphogluconate; 2PG: 2-phosphoglycerate; PEP: phosphoenolpyruvate; PYR: pyruvate; CoASH: coenzyme A; AcCoA: acetyl-coenzyme A; ERY4P: erythrose-4-phosphate; RIBO5P: ribose-5-phosphate; S7P: sedoheptulose-7-phosphate; OAA: oxaloacetate; MAL: malate; CIT: citrate; ICIT: isocitrate; NH3: ammonium; AKG: a-ketoglutarate; GLUT: glutamate; GLUM: glutamine; SUCCoA: succinyl-coA; FUM: fumarate; MAL: malate; GLYOXY: glyoxylate; AAcCoA: acetoacetyl-coenzyme A; ACTDH: acetaldehyde; ACP: acetyl phosphate; ETOH: ethanol; ACET: acetate; LAC: lactate; SUCC: succinate; AcLAC: acetolactate; DHIV: 2,3-dihydroxyisovalerate; KTIV: a-ketoisovalerate; iBUTANAL: isobutanol; MCoA: malonyl-coenzyme A; ACPSH: acyl carrier protein; MACP: malonyl-ACP; AA\_ACP: acyl- acyl carrier protein; C6\_ACP: C6-acyl acyl carrier protein; C8\_ACP: C8-acyl acyl carrier protein; C10\_ACP: C10-acyl acyl carrier protein; C12\_ACP: C12-acyl acyl carrier protein; C14\_ACP: C14-acyl acyl carrier protein; C16\_ACP: C16-acyl acyl carrier protein; HAD: hexadecanoate; HexCoA: hexadecanioyl-coenzyme A; HEXADECANAL: hexadecanal; AMP: adenosine-5'-monophosphate; ADP: adenosine-5'-diphosphate; ATP: adenosine-5'-triphosphate; ATP\_base: ATP for cell maintenance; FAD: Flavin adenine dinucleotide; FADH2: Flavin adenine dinucleotide reduced; NAD: nicotinamide adenine dinucleotide; NADH: dihydronicotinamide adenine dinucleotide; NADP: nicotinamide adenine dinucleotide phosphate; NADPH: dihydronicotinamide adenine dinucleotide phosphate; Q : quinone; QH2: quinol. Metabolite names containing “ext” are referred to external metabolites.