**Table S1: Metabolites, Enzymes, Abbreviations, and Variable Names**

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| **Metabolites and their Representations in the Computational Analysis** |
| *X*1 | 3-Keto-Dihydrosphingosine (KDHS) | *X*17 | Cytidine Diphosphate-Ethanolamine (CDP-Eth) |
| *X*2 | Dihydrosphingosine (DHS) | *X*18, *X*18b | Mannosylinositol Phosphorylceramide (MIPC-g) from DHC or PHC, respectively |
| *X*3 | Dihydroceramide (Dihydro-C) | *X*19, *X*19b | Mannosyldiinositol Phosphorylceramide (M(IP)2C-g) from DHC or PHC, respectively |
| *X*4 | Dihydrosphingosine-1-P (DHS-P) | *X*20, *X*20b | Plasma Membrane Inositol Phosphorylceramide (IPC-m) from DHC or PHC, respectively |
| *X*5 | Phytosphingosine (PHS) | *X*21, *X*21b | Plasma Membrane Mannosylinositol Phosphorylceramide (MIPC-m) from DHC or PHC, respectively |
| *X*6 | Phytosphingosine-1-P (PHS-P) | *X*22, *X*22b | Plasma Membrane Mannosyldiinositol Phosphorylceramide (M(IP)2C-m) from DHC or PHC, respectively |
| *X*7 | Phytoceramide (Phyto-C) | *X*23 | Very Long Chain Fatty Acid (C26-CoA) |
| *X8, X*8b | Inositol Phosphorylceramide (IPC-g) from DHC or PHC, respectively | *X*24 | Malonyl-CoA (Mal-CoA) |
| *X*9 | CDP-Diacylglycerol (CDP-DAG) | *X*25 | Acetyl-CoA (Ac-CoA) |
| *X*10 | Phosphatidylserine (PS) | *X*28 | Adenosime-5’-Triphosphate (ATP) |
| *X*11 | Phosphatidic Acid (PA) | *X*37 | 3-Phosphoserine (3-P-Serine) |
| *X*12 | Palmitoyl-CoA (Pal-CoA) | *X*47 | Glucose-6-P (G6P) |
| *X*13 | Serine | *X*58 | Palmitate |
| *X*14 | Sn-1,2-Diacylglycerol (DAG) | *X*61 | CoA |
| *X*15 | Phosphatidylinositol (PI) | *X*62 | Acetate |
| *X*16 | Inositol (I) |  |  |

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| **Enzymes and their Representations in the Computational Analysis** |
| *X*26 | Phosphatidylinositol Synthase (PI Synthase) | *X*45 | DG-Ethanolamine Phosphotransferase (EthPT) |
| *X*27 | 3-Ketodihydrosphingosine Reductase (KDHS Reductase) | *X*46 | Inositol-1-P Synthase (I-1-P-Synth.) |
| *X*29 | Dihydroceramide Alkaline Ceramidase (Dihydro-CDase) | *X*48 | Acyl-CoA-Binding Protein (ACBP) |
| *X*30 | Palmitoyl Transport & Palmitoyl-CoA Synthase (Transp./Palmitoyl CoA Synthase) | *X*49 | Glycerol-3-Phosphate Acyltransferase (G3P Acyltransferase) |
| *X*31 | Phosphoserine-Phosphatase (P-Serine-PPase) | *X*50 | Sphingosine-Phosphate Lyase (Lyase) |
| *X*32 | Serine Hydroxymethyl Transferase (SHMT) | *X*51 | Inositol Phosphosphingolipid Phospholipase C (IPCase) |
| *X*33 | Inositol Phosphorylceramide Synthase (IPC Synthase) | *X*52 | Fatty Acid Synthetase (FAS) |
| *X*34 | Ceramide Synthase (Cer Synthase)  | *X*53 | Phytoceramide Alkaline Ceramidase (Phyto-CDase) |
| *X*35 | Mannosyl Inositol Phosphoceramide Synthase (MIPC Synthase) | *X*54 | 4-Hydroxylase (Hydroxylase; SYR2p-SUR2p) |
| *X*36 | Sphingoid Base Kinase | *X*55 | Mannosyldiinositol Phosphorylceramide Synthase (M(IP)2C Synthase) |
| *X*38 | Phosphatidylserine Synthase (PS Synthase) | *X*56 | Phosphatidylserine Decarboxylase (PS Decarboxylase) |
| *X*39 | Phosphatidate Phosphatase (PA-PPase) | *X*57 | Serine Palmitoyltransferase (SPT) |
| *X*40 | CDP-Diacylglycerol Synthase (CDP-DAG Synthase) | *X*59 | Very Long Chain Fatty Acid Synthase / Elongase (ELO1p) |
| *X*41 | Sphingoid-1-phosphate Phosphatase (SB-PPase) | *X*60 | Acetyl-Coenzyme A Carboxylase (ACCp) |
| *X*42 | DG-Choline Phosphotransferase (ChoPT) | *X*63 | Acetyl-Coenzyme A Synthetase (ACSp) |
| *X*43 | GPI Remodelase (Remodeling) | *X*65 | Not yet identified |
| *X*44 | Phosphoinositol Kinase (PI Kinase) | *X*66 | Not yet identified |