**S2 Text. Metabolic alterations induced by AgNO3 exposure.**

The OPLS-DA scores plots (S6B Fig) of the 1H NMR spectra manifested clear difference between the profiles of Ag+-treated and untreated *E. coli* cells. Ag+ induced metabolic alterations were further verified by constructing OPLS-DA models and the quality of the models was evaluated by the values of *R2* and *Q2*, which represent the quality of fit and predictability of the model respectively (S7 Table). The models were further cross-evaluated via a CV-ANOVA approach (*P* < 0.05) and permutation tests. The dominant metabolites in *E. coli* cells relevant to Ag+ treatment was annotated in the OPLS-DA coefficient plots (S6B Fig) and summarized in S7 Table. The absolute value of coefficient |r| indicates the significance of altered metabolites.

 Compared to the untreated *E. coli* cells, treatment of cells with low concentration of AgNO3 induced a reduction in the levels of aspartate, histidine, lactate, glucosamine, UDP GlcNAc, NADP+, uracil, uridine, guanosine, hypoxanthine, trimethylamine and GSH. Both similarities and differences were observed for *E. coli* in response to low and high concentrations of AgNO3. Exposure to high concentration of AgNO3 induced more profound depletion in the levels of histidine, glucosamine, uridine, guanosine and trimethylamine, but the concentration of NADP+ decreased less. The levels of tryptophan, phenylalanine, glucose, AMP, gluconate, NAD+, IMP, betaine and glycine were depleted only for cells treated with high but not low concentration of AgNO3. Significant elevation in the levels of succinate, UDP GlcA and uracil were observed after exposure cells to high concentration of AgNO3. The disrupted metabolites are mainly involved in energy metabolism, TCA cycle, oxidative stress, nucleic acid metabolism (both decomposition and biosynthesis), cell membrane integrity and amino acid metabolism.