**Supplementary Materials:** The following are available online at www.mdpi.com/xxx/s1

Cell density, extracted chlorophyll, absorbance and quantum efficiency were measured for both the WT and CWD strains to maintain consistency in the experiment. The cell density was measured using a hemocytometer (0.0025 $mm^2$, 0.1000 mm) and a Nikon Labophot-2 light-microscope. The maximum quantum efficiency of photosystem II ($\Phi_{PSII}$), an indication of cell culture health and photonic to chemical energy conversion, was determined by PAM fluorometry using a Z985 Cuvette Aquapen Fluorometer (Qubit Biology Inc., Kingston, Ontario, Canada), when the Kautsky Induction (OJIP) curves were recorded for 5 s according to the manufacturer's protocol. The samples were dark adapted for 10 minutes before each measurement.

**Table S1.** The characteristic cell culture parameters.

| Parameters | Wild Type (WT) | Cell Wall Deficient (CWD) |
|---|---|---|
| age of culture (days) | 21 | 21 |
| average cell density (cells $mL^{-1}$) | $1.90 \cdot 10^6$ | $1.84 \cdot 10^6$ |
| absorbance of chlorophyll *a* at 663 nm | 0.516 | 0.466 |
| quantum efficiency $\Phi_{PSII}$ (at t=0) | 0.558 | 0.552 |

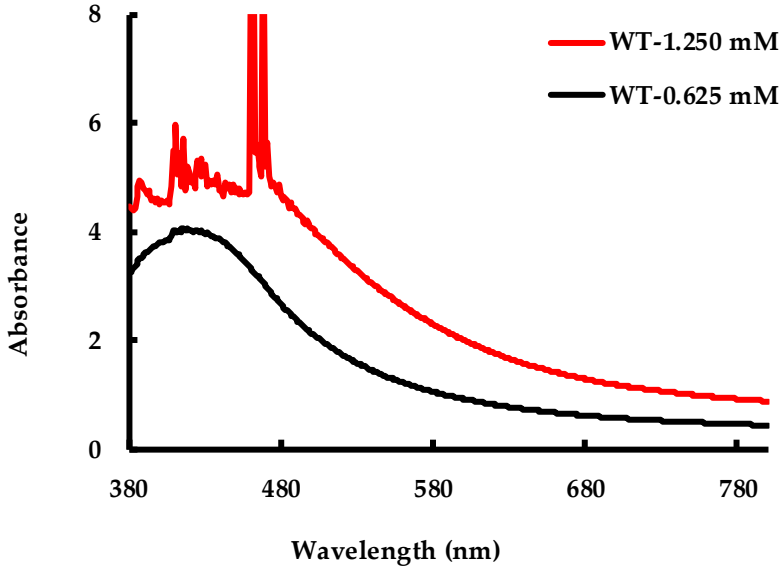



**Figure S1.** Saturated spectrophotometer reading by crude samples of WT-1.250 mM and WT-0.625 mM.

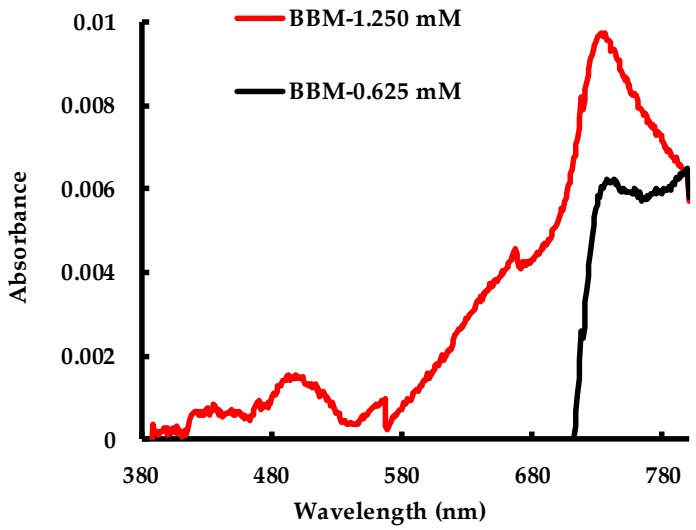
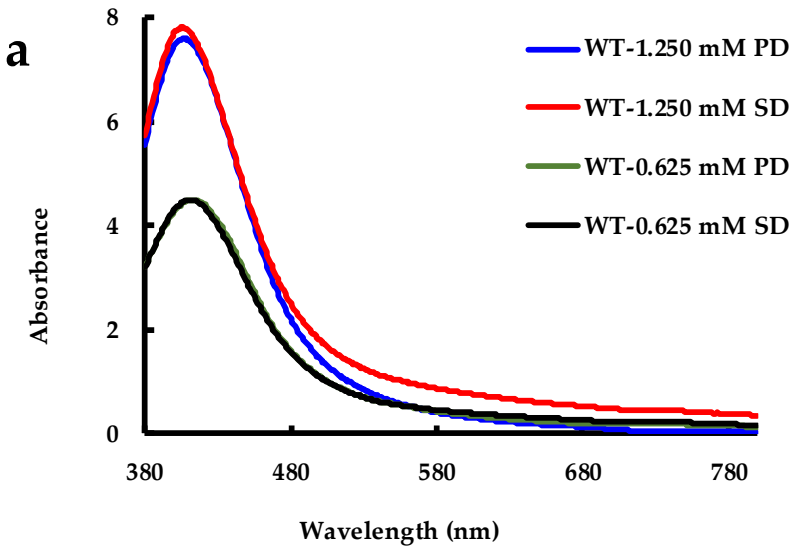



**Figure S2.** Spectrophotometric measurements of BBM + 1.250 mM and BBM + 0.625 mM.



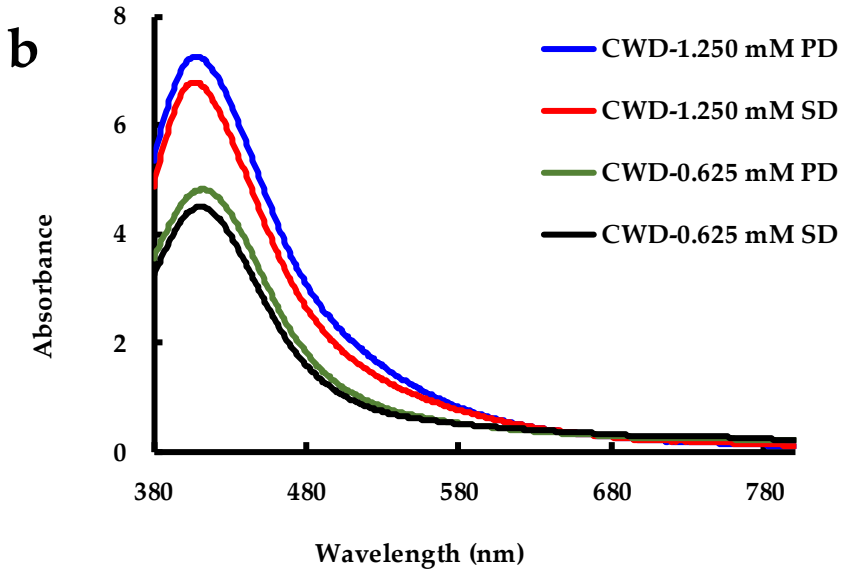



**Figure S3.** Spectrophotometric measurements of AgNPs, (**a**) produced by the Wild Type (WT) strain; and (**b**) produced by the Cell Wall Deficient (CWD) strain, being exposed to NaCl solutions for 72 h.