

SUPPORTING INFORMATION

Complementary Imaging of Silver Nanoparticle Interactions with Green Algae: Dark-field Microscopy, Electron Microscopy and Nanoscale Secondary-Ion Mass Spectrometry

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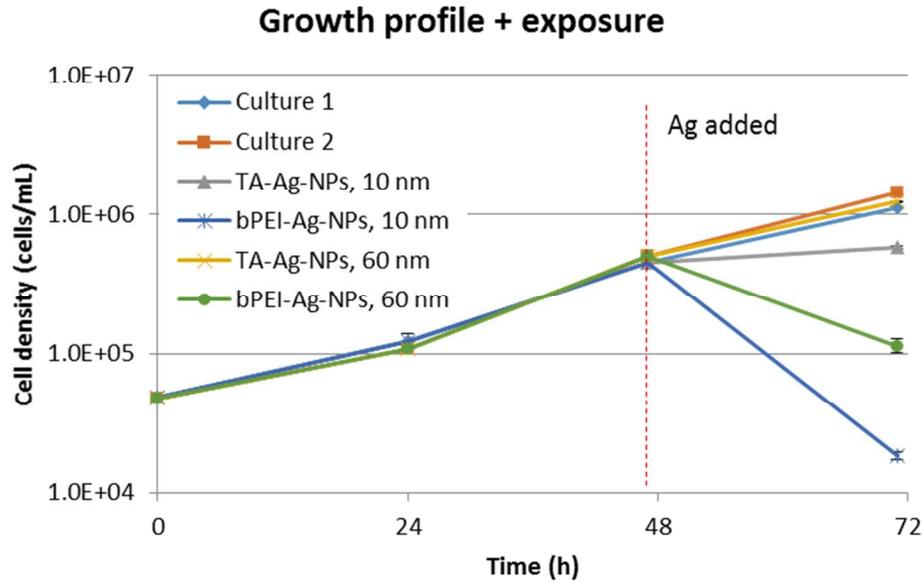


Figure S1. Growth profile of *R. subcapitata* exposed to 40 $\mu\text{g/L}$ Ag-NPs used for dark-field microscopy.

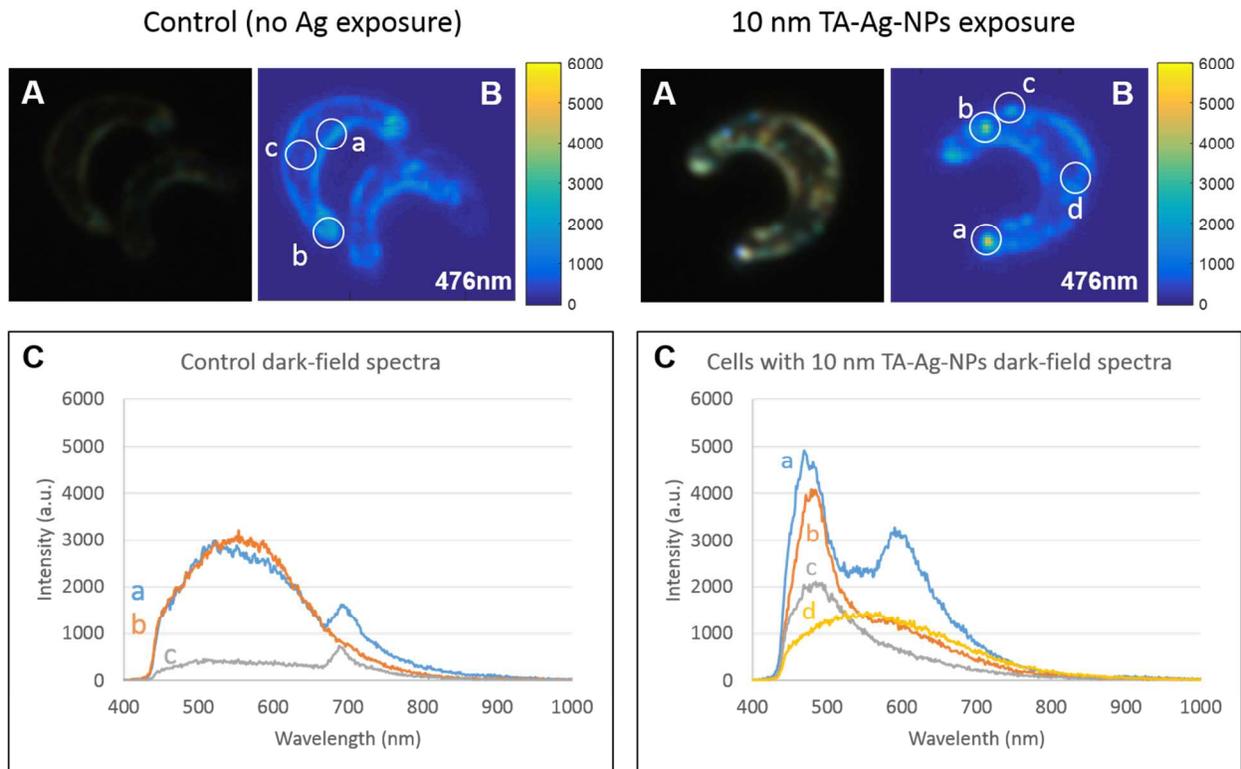


Figure S2. (A) Dark-field images, (B) dark-field intensity maps (measured at 476 nm) and (C) extracted dark-field spectra corresponding to the circled areas *a* to *d* in dark-field intensity maps. The peak at 680 nm is due to chlorophyll fluorescence.

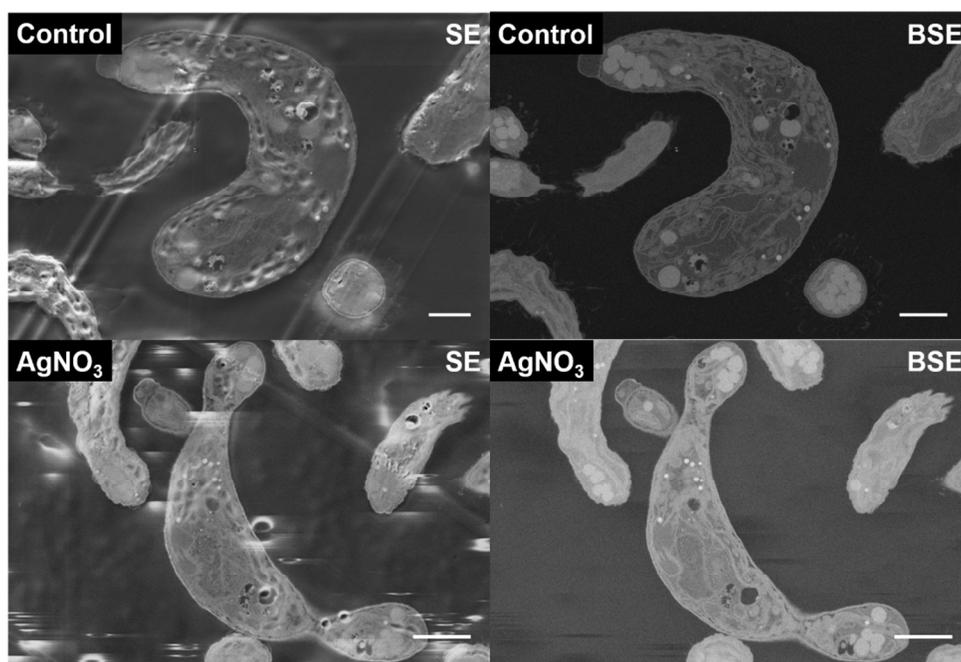


Figure S3. SEM images of algae cells for the control and AgNO₃-exposed treatments in secondary electron (SE) and backscattered electron (BSE) modes. Scale bar: 1 μm, HV = 2 keV, WD = 4.9 – 7 mm.

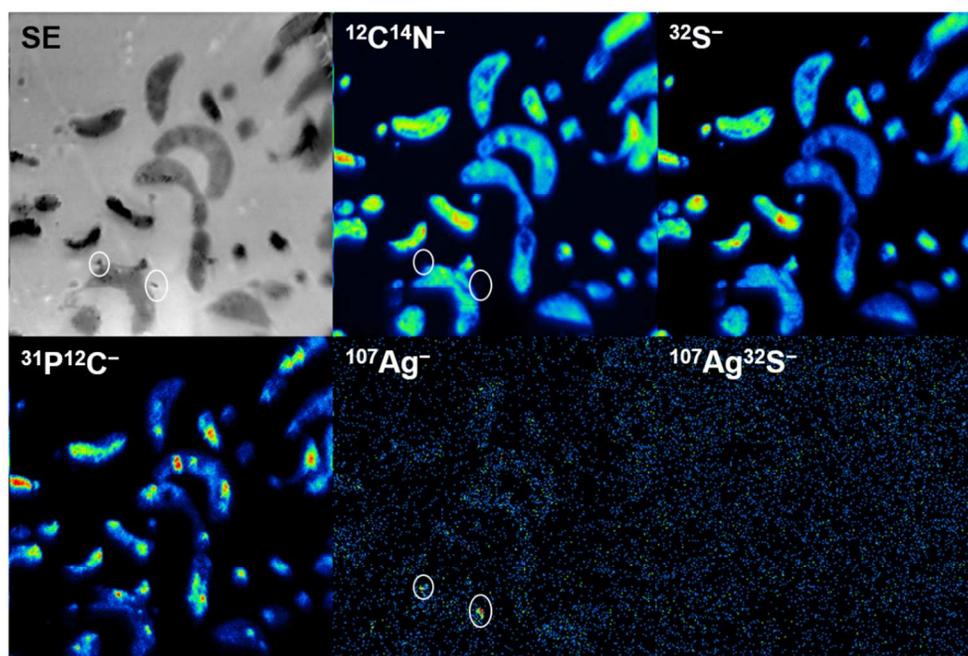


Figure S4. NanoSIMS images of algae cells for the control treatment. A uniform ¹⁰⁷Ag⁻ signal across the image correlates with the ¹²C¹⁴N⁻ map due to likely mass interference from ⁹⁵Mo¹²C⁻. The two intense spots indicated by circles in the ¹⁰⁷Ag⁻ image are not located inside cells. As they are not present in the ¹⁰⁷Ag³²S⁻ image they are not likely to be Ag and are likely to represent artefacts, seen as dark spots in the SE image. Each map is 30 μm wide.

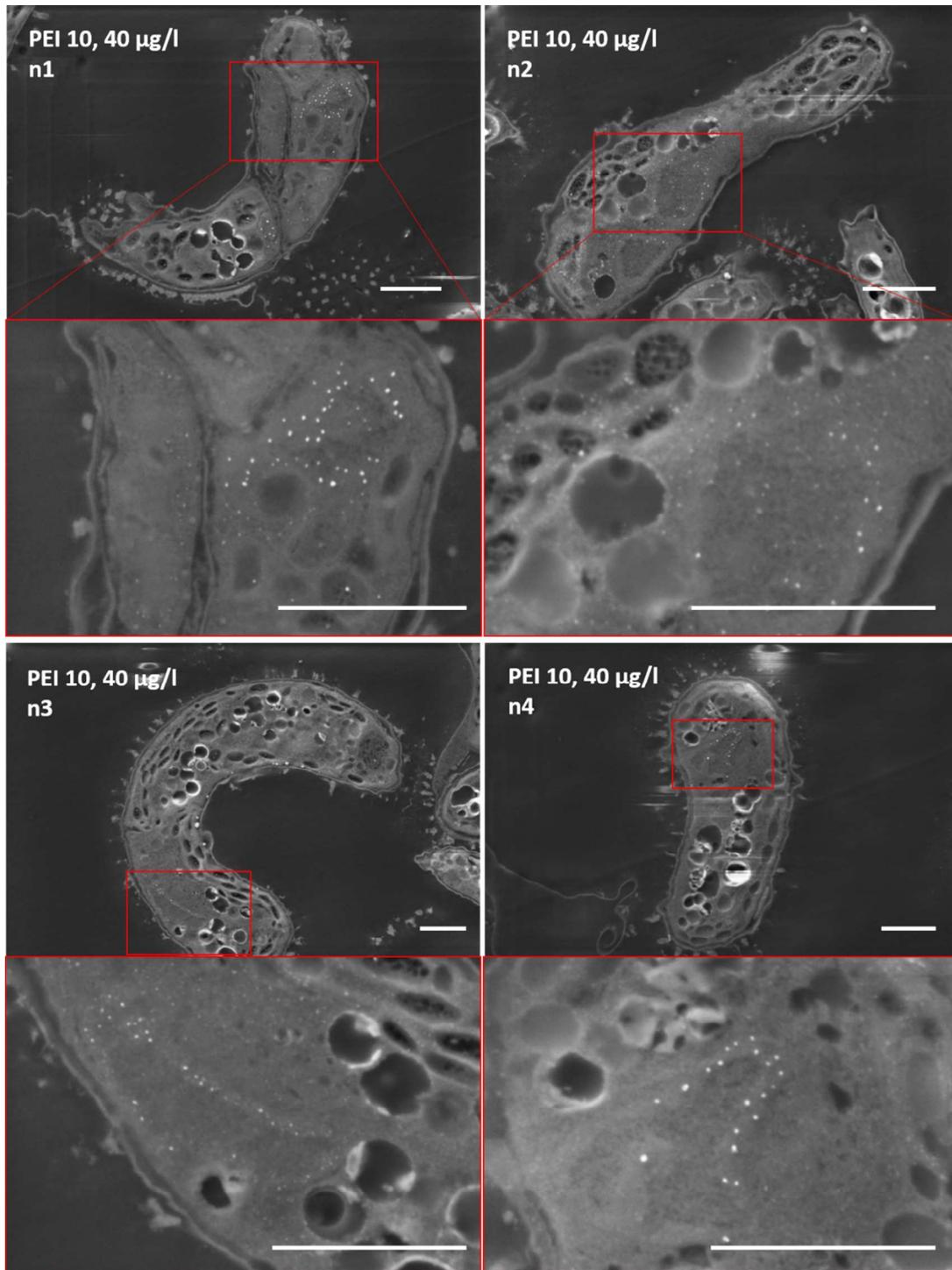


Figure S5. SEM images of *R. subcapitata* cells exposed to 10 nm bPEI-Ag-NPs at 40 µg/L showing nanoparticle-like features *inside* the cells. The cross sectional size of these “nanoparticles” are 17.2 ± 2.2 nm (N=6) and some are as large as 24.0 nm FWHM. Scale bars indicate 1 µm, SE mode, HV = 2 keV, WD = 4.7 mm.