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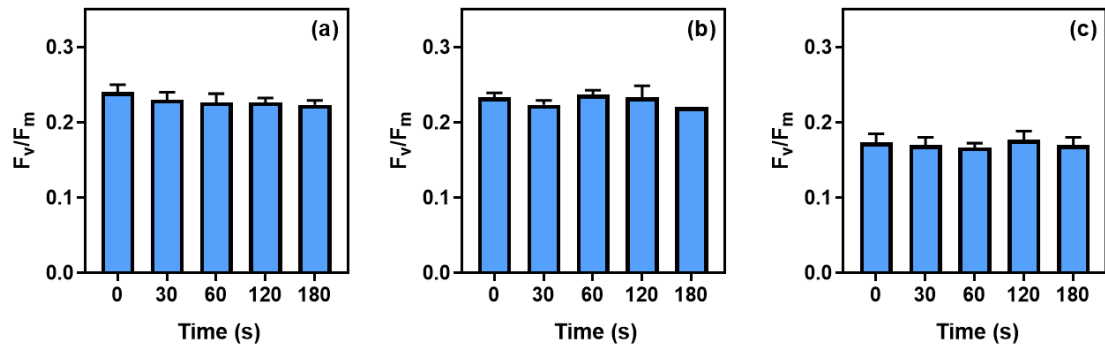


Fig.S1 F_v/F_m variations of *M. aeruginosa* in exponential phase (a), late lag phase (b), and model *M. aeruginosa* aggregates (c) in ultra-pure water

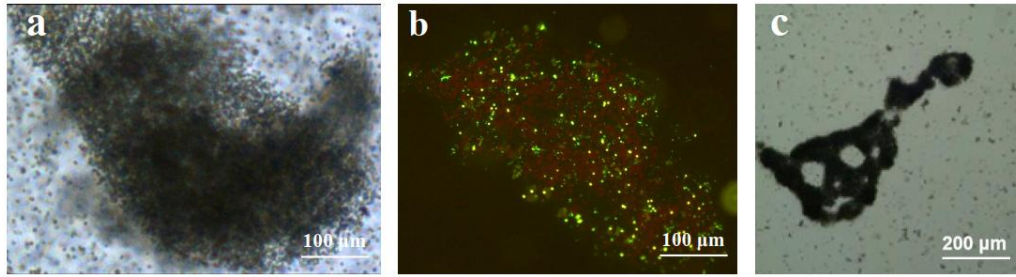


Fig. S2 Microscope images of laboratory-prepared *M. aeruginosa* aggregates (a, b) and field aggregates samples in Taihu Lake (c). a, c: optical microscope; b: fluorescence microscope

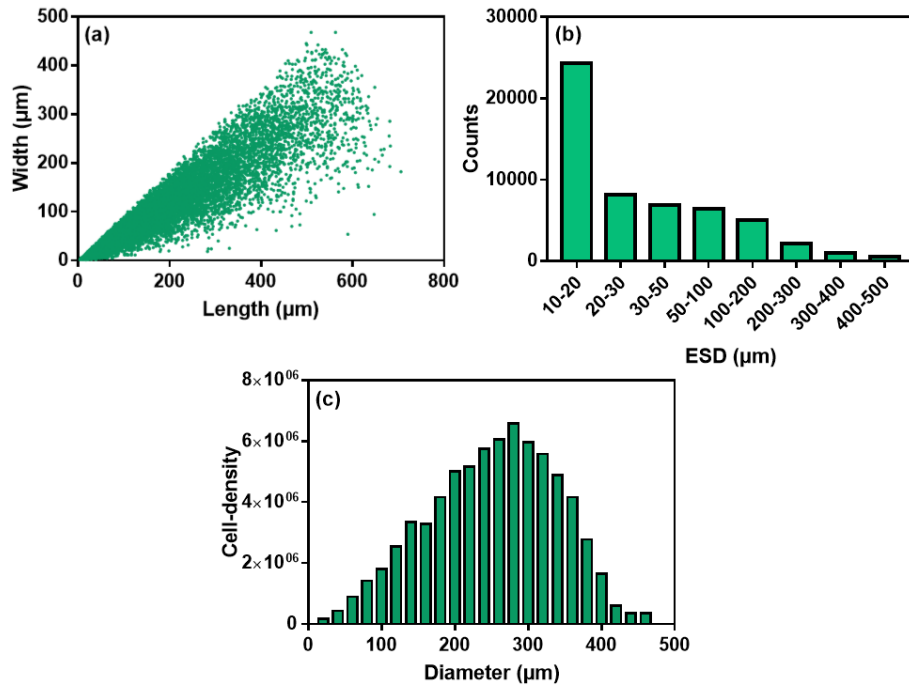


Fig. S3 Size distribution of the laboratory-prepared *M. aeruginosa* aggregates. a: length and width; b: equivalent spherical diameter; c: distribution of cell density along with size

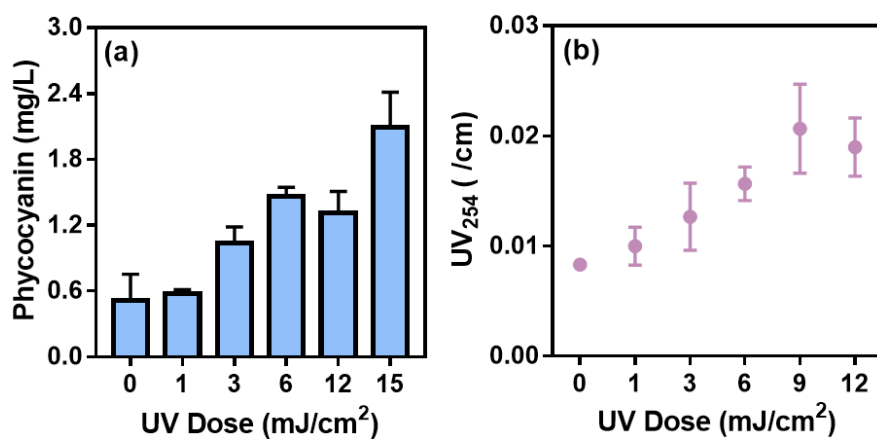


Fig. S4 Phycocyanin (a) and extracellular organic matter aromatic UV₂₅₄ (b)

variations of laboratory -prepared *M. aeruginosa* aggregates after UV₂₂₂ treatment.

Table S5 Growth rate variations of unicellular *M. aeruginosa* after UV₂₂₂ treatment.

Doses (mJ/cm ²)	0	1	3	6	9	12	15
Day 1	0.29	-0.36	-0.28	-0.49	-0.60	-0.62	-0.67
Day 2	0.70	0.36	0.08	0.06	-0.17	-0.19	-0.25

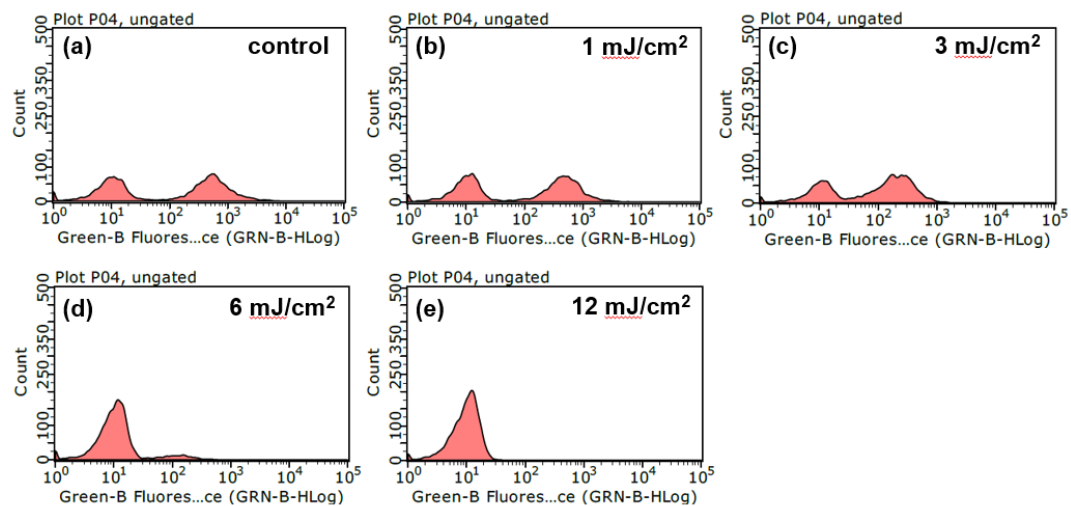


Fig. S6 Fluorescence distribution of the esterase activity distribution before and after

UV₂₂₂ treatment.

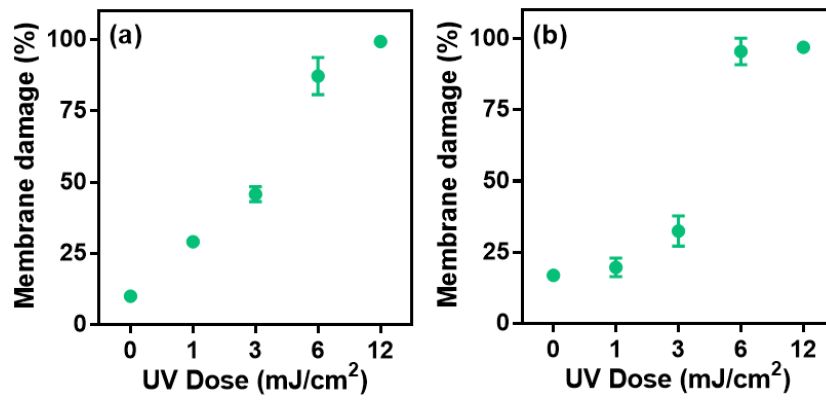


Fig. S7 Membrane damage percentage variations of unicellular *M. aeruginosa* in exponential phase (a) and late lag phase (b) after UV₂₂₂ treatment.

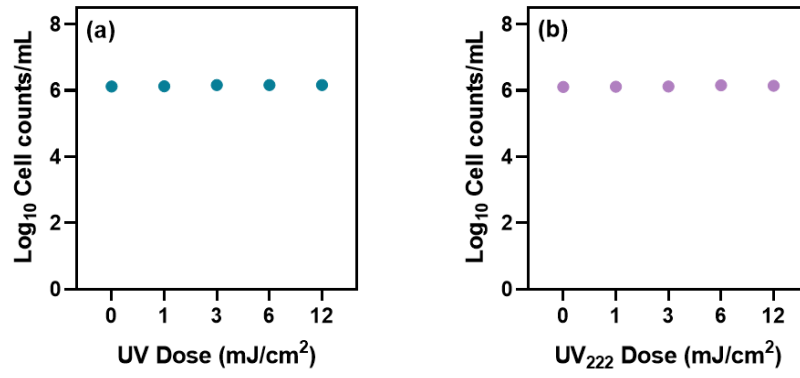


Fig. S8 Cell counts variations of unicellular *M. aeruginosa* in exponential phase (a) and late lag phase (b) after UV₂₂₂ treatment.

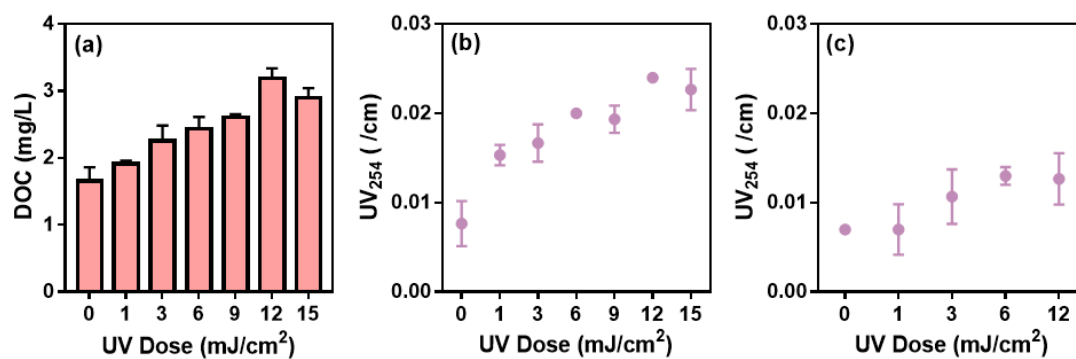


Fig. S9 Extracellular organic matter contents and aromatic properties variations of unicellular *M. aeruginosa* after UV₂₂₂ treatment. a: extracellular DOC in exponential phase; b: UV₂₅₄ in exponential phase; c: UV₂₅₄ in late lag phase