

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Photon-stress ($6.00 \text{ mW} \cdot \text{cm}^{-2}$) quickly triggers the accumulation of pyoverdine in the periplasms of *P. aeruginosa* in 4 minutes. (Bar: $2 \mu\text{m}$)

File Name: Supplementary Movie 2

Description: ROS was generated quickly in single *P. aeruginosa* with photon-stress ($6.00 \text{ mW} \cdot \text{cm}^{-2}$) in 8 minutes. (Bar: $2 \mu\text{m}$)

File Name: Supplementary Movie 3

Description: Accumulation of pyoverdine in the periplasms allows more wild-type *P. aeruginosa* cells to survive in the presence of environmental stress ($3.00 \text{ mW} \cdot \text{cm}^{-2}$). (Bar: $2 \mu\text{m}$)

File Name: Supplementary Movie 4

Description: Environmental stress ($3.00 \text{ mW} \cdot \text{cm}^{-2}$) leads more $\Delta pvdA$ cells to be damaged without the accumulation of pyoverdine. (Bar: $2 \mu\text{m}$)

File Name: Supplementary Movie 5

Description: Exogenous addition of PVDI allows more $\Delta pvdA$ cells to survive in presence of environmental stress ($3.00 \text{ mW} \cdot \text{cm}^{-2}$). (Bar: $2 \mu\text{m}$)

File Name: Supplementary Movie 6

Description: Environmental stress ($3.00 \text{ mW} \cdot \text{cm}^{-2}$) leads more $\Delta pvdA \Delta fpvA$ cells to be damaged even with the exogenous addition of PVDI. (Bar: $2 \mu\text{m}$)