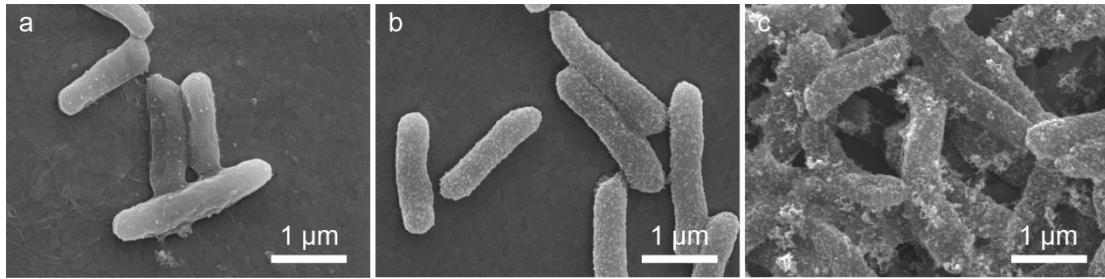


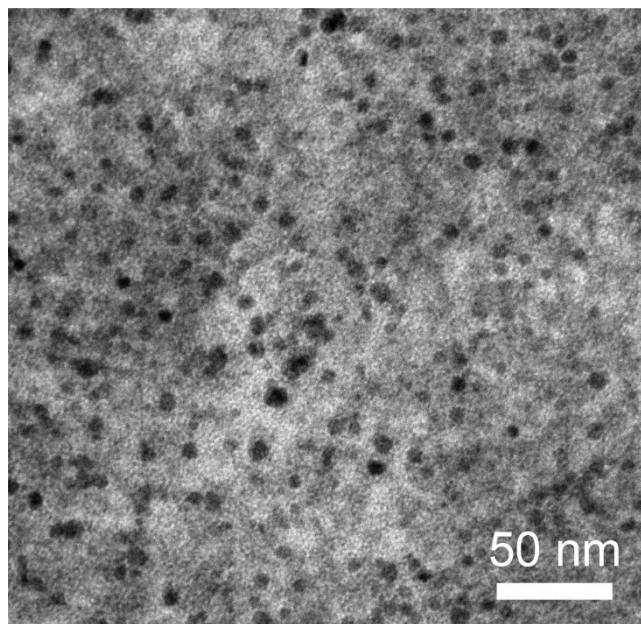
## **Supplementary Information**

### **Enhanced transmembrane electron transfer in *Shewanella oneidensis* MR-1 by gold nanoparticles for high- performance microbial fuel cells**

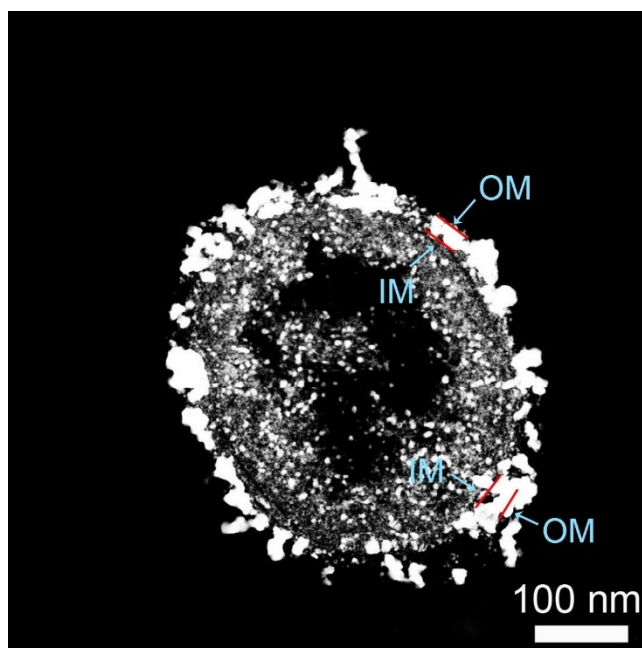
**Supplementary Figures**



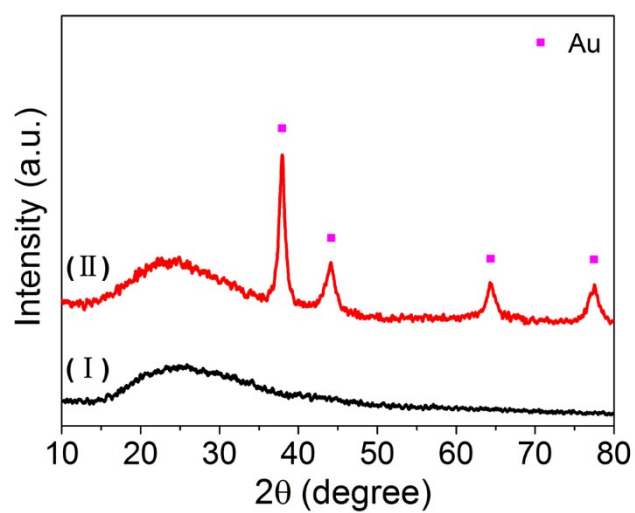
**Fig. S1** SEM images of *S. oneidensis* MR-1@Au after different biomineralization time. (a) 13 h, (b) 16 h, (c) 19 h.



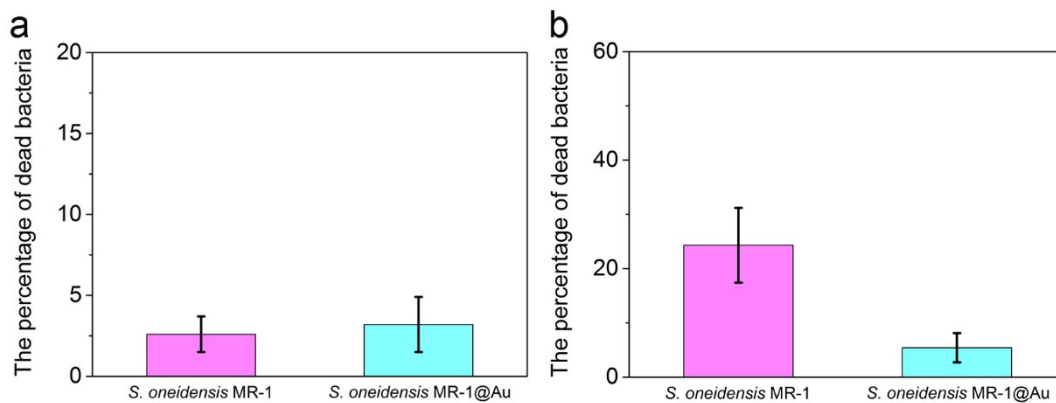
**Fig. S2** TEM image of *S. oneidensis* MR-1@Au. These intracellular Au nanoparticles are about 5-10 nm in size.



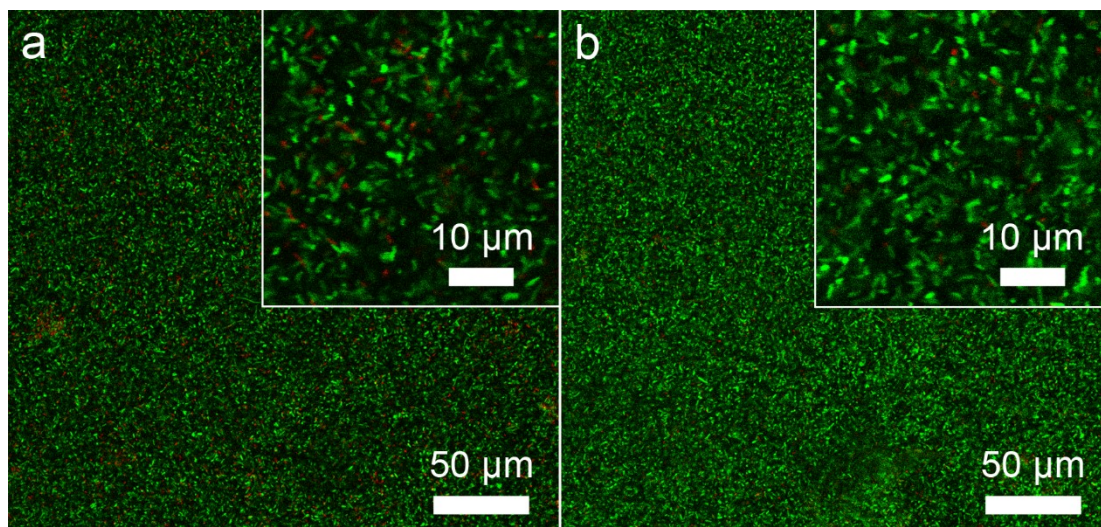
**Fig. S3** high-magnification HAADF-STEM image of *S. oneidensis* MR-1@Au. OM: outer membrane of *S. oneidensis* MR-1, IM: inner membrane of *S. oneidensis* MR-1.



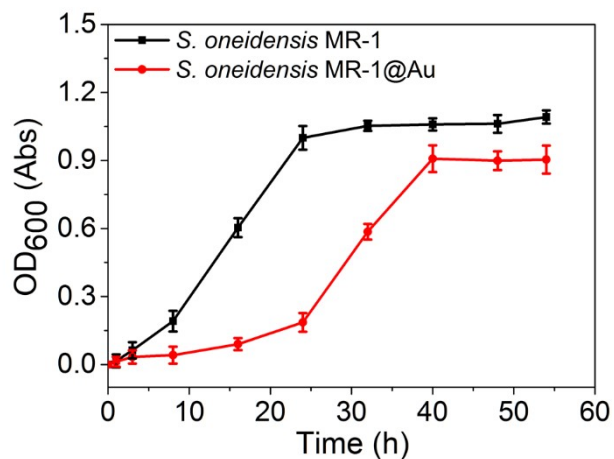
**Fig. S4** XRD patterns of native *S. oneidensis* MR-1 (curve I) and *S. oneidensis* MR-1@Au (curve II).



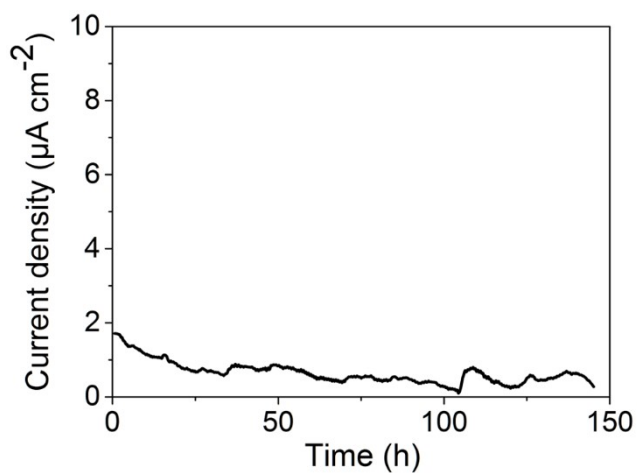
**Fig. S5** (a) The percentage of dead bacteria in *S. oneidensis* MR-1 before and after Au modification. (b) The percentage of dead bacteria in *S. oneidensis* MR-1 and *S. oneidensis* MR-1@Au after 120 h aerobic incubation in medium.



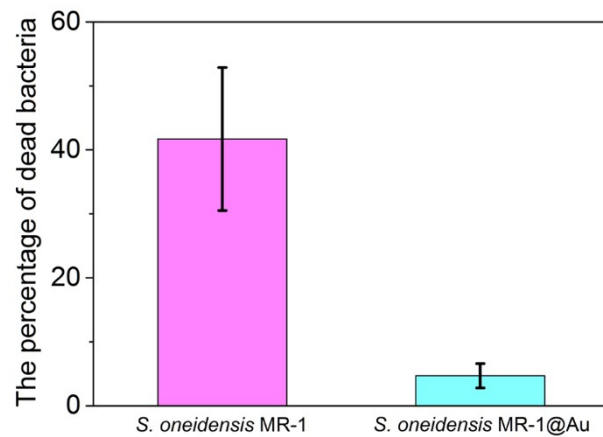
**Fig. S6** CLSM images of *S. oneidensis* MR-1 (a) and *S. oneidensis* MR-1@Au (b) after cultivation for 120 h. The living *S. oneidensis* MR-1 cells were stained with a LIVE/DEAD BacLight kit, which consists of green fluorescent SYTO 9 (live cells) and red fluorescent propidium iodide (dead cells).



**Fig. S7** Growth curves of native *S. oneidensis* MR-1 and *S. oneidensis* MR-1@Au under aerobic condition. Error bars represent standard error (s.e.) determined by three independent experiments.



**Fig. S8** Time profile of electricity generation of the electrochemical half-cell with dead *S. oneidensis* MR-1@Au.



**Fig. S9** The percentage of dead bacteria on the surface of *S. oneidensis* MR-1 and *S. oneidensis* MR-1@Au bioanode after anaerobic incubation in the three-electrode system for 120 h.