Supplementary materials

![Fig. S1](image1.png)

**Fig. S1** Surface structures of the standard PAO1 strain (left) and the recombinant PAO1-*lux* strain (right) were observed by SEM.

![Fig. S2](image2.png)

**Fig. S2** Characteristics of the bioluminescent PAO1-*lux* strain. A The PAO1-*lux* and PAO1 strains were cultured to logarithmic phase and serial dilutions were inoculated into a 96-well plate, which were photographed using a Bio-Rad imaging system in white light and luminescent modes. B The 96-well plate was observed at the 1st, 3rd, and 7th day. The OD at 600 nm and RLU were detected by a Multi-Mode Reader at the same time.
**Fig. S3** Characteristics of the bioluminescent PAO1-\textit{lux} strain for ten consecutive generations. 

\textbf{A} The PAO1-\textit{lux} strain of ten generations (P1 to P10) were cultured to stationary phase and serial dilutions of each generation were inoculated into a 96-well plate for imaging and detection. 

\textbf{B} The linear relationship between the OD value at 600 nm and the RLU of the PAO1-\textit{lux} strain for ten generations.

**Fig. S4** Bacterial adhesion was evaluated by the bioluminescence method (\textbf{A}) and crystal violet staining method (\textbf{B}) under different nutritional conditions (LB or M9 medium) and different pH conditions (pH = 6.2 or 7.2).