

# SUPPORTING INFORMATION

## Indole Derivative-Capped Gold Nanoparticles as an Effective Bactericide in Vivo

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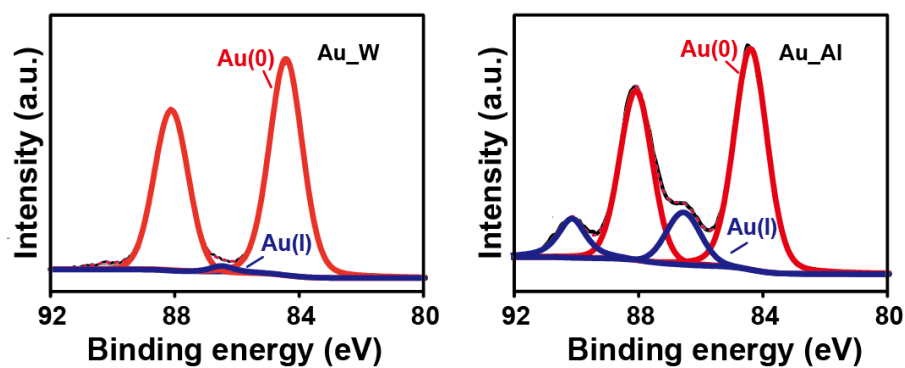
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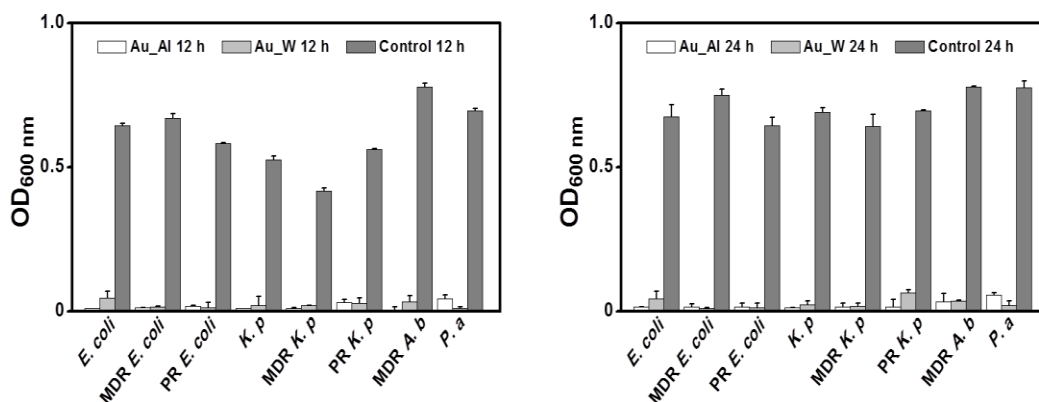
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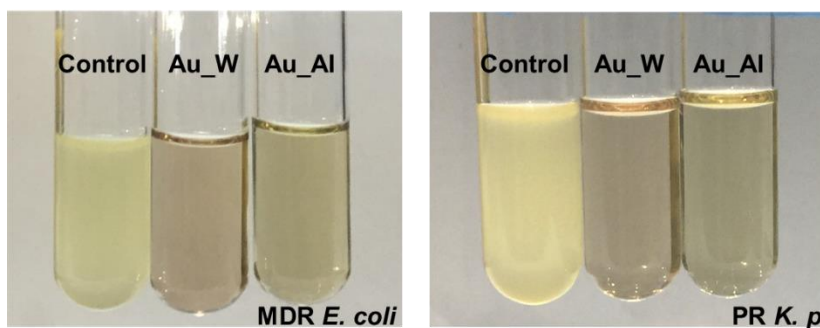
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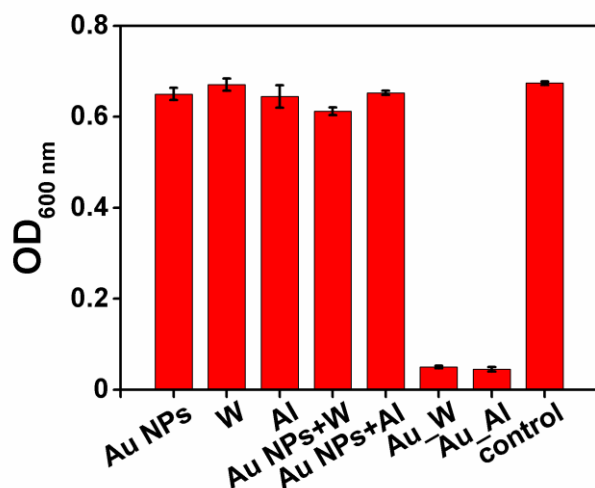
**Figure S1.** The high-resolution Au 4f XPS spectra of Au\_W and Au\_AI (right) NPs.



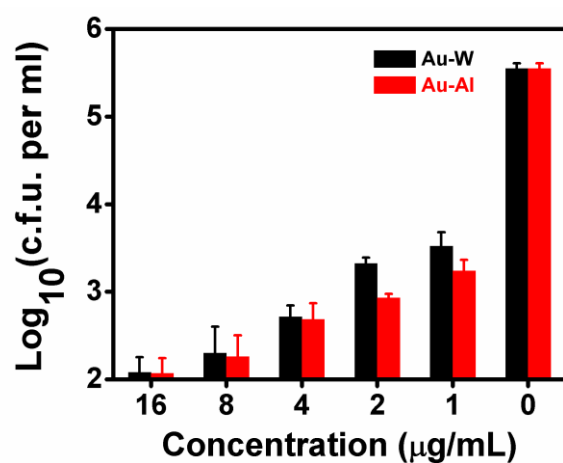
**Figure S2.** Optical density at 600 nm ( $OD_{600\text{ nm}}$ ) of different bacterial suspensions treated and untreated with Au\_AI, Au\_W NPs.



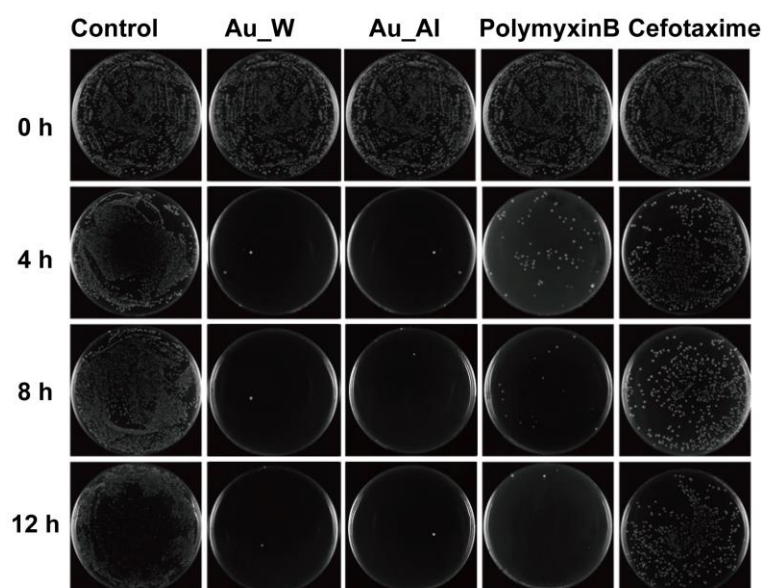
**Figure S3.** LB liquid medium turbidity assays.



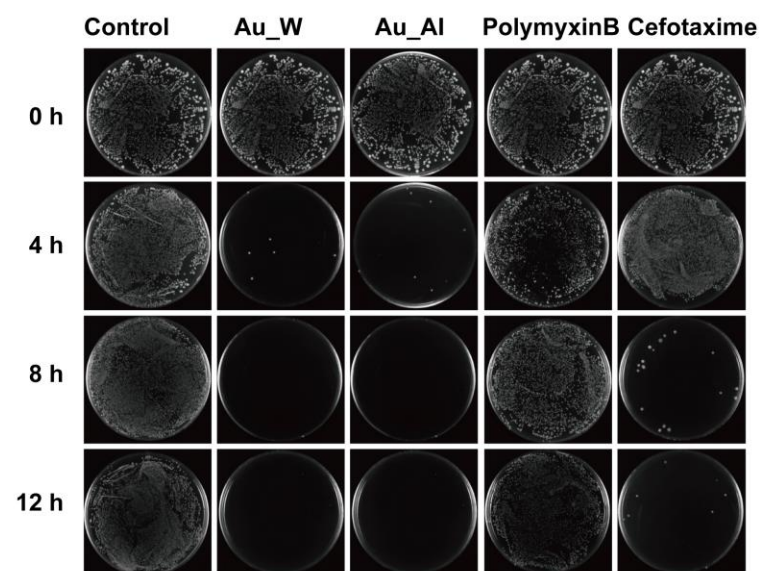
**Figure S4.** OD<sub>600 nm</sub> of *E. coli* treated with Au NPs, W, AI, Au NPs+W, Au NPs+AI, Au\_W, Au\_AI and control.



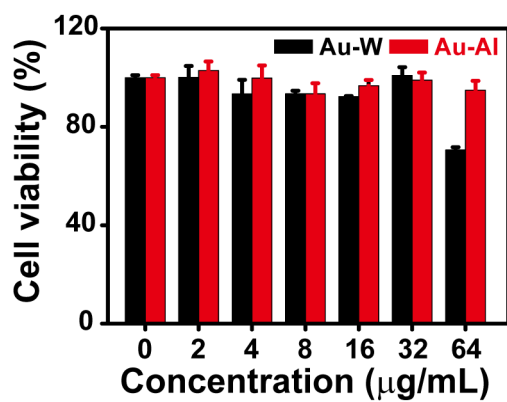
**Figure S5.** Concentration-dependent bactericidal activity of Au\_IDS cultured with MDR *E. coli* for 12 h. The initial bacterial concentration:  $2 \times 10^5$  CFU/mL.



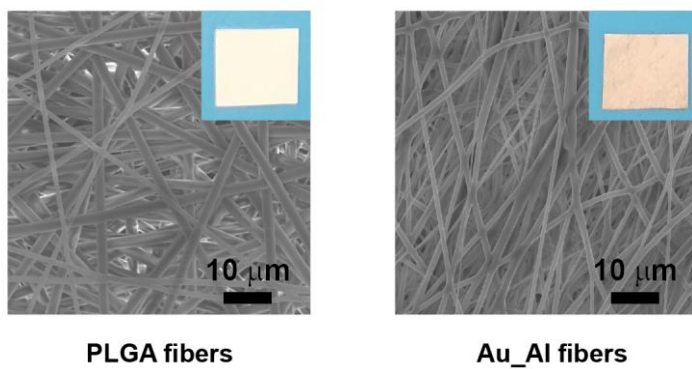
**Figure S6.** The bacterial colonies (MDR *E. coli*) present on the plates.



**Figure S7.** The bacterial colonies (PR *K.p*) present on the plates.



**Figure S8.** Concentration-dependent cytotoxicity of Au\_W and Au\_AI.



**Figure S9.** SEM images of PLGA and Au\_AI fibers.

**Table S1** Antibacterial Activities of Au NPs and Ligands Indicate with Minimal Inhibitory Concentration (MIC,  $\mu\text{g/mL}$ ).

| NPs      | MIC ( $\mu\text{g/mL}$ )<br><i>S. aureus</i> | IDs   | MIC ( $\mu\text{g/mL}$ )<br><i>S. aureus</i> |
|----------|----------------------------------------------|-------|----------------------------------------------|
| Au_ID    | >128                                         | ID    | >128                                         |
| Au_W     | >128                                         | W     | >128                                         |
| Au_4-AI  | >128                                         | 4-AI  | >128                                         |
| Au_5-AI  | >128                                         | 5-AI  | >128                                         |
| Au_6-AI  | >128                                         | 6-AI  | >128                                         |
| Au_7-AI  | >128                                         | 7-AI  | >128                                         |
| Au_5-BI  | >128                                         | 5-BI  | >128                                         |
| Au_5-CII | >128                                         | 5-CII | >128                                         |
| Au_IAA   | >128                                         | IAA   | >128                                         |
| Au_5-CNI | >128                                         | 5-CNI | >128                                         |
| Au_4-HI  | >128                                         | 4-HI  | >128                                         |
| Au_3-SI  | >128                                         | 3-SI  | >128                                         |

**Table S2.** Characterization of Au\_W and Au\_AI NPs.

| NPs   | Zeta potential<br>(mV) | Hydrodynamic<br>size (nm) | Concentration of Au<br>Element ( $\mu\text{g/mL}$ ) | Concentration of NPs<br>( $\mu\text{M}$ ) |
|-------|------------------------|---------------------------|-----------------------------------------------------|-------------------------------------------|
| Au_W  | -16.3 $\pm$ 2.93       | 10.55 $\pm$ 0.21          | 257                                                 | 0.14                                      |
| Au_AI | -27.6 $\pm$ 1.08       | 6.32 $\pm$ 0.34           | 260                                                 | 0.19                                      |

**Table S3.** Antibacterial Activities of Antibiotics Indicate with MIC.

| Antibiotics | MDR <i>E. coli</i>       |                       | PR <i>K. p</i>           |                       |
|-------------|--------------------------|-----------------------|--------------------------|-----------------------|
|             | MIC ( $\mu\text{g/mL}$ ) | MIC ( $\mu\text{M}$ ) | MIC ( $\mu\text{g/mL}$ ) | MIC ( $\mu\text{M}$ ) |
| polymyxin B | 4                        | 3                     | 64                       | 49                    |
| cefotaxime  | >64                      | >141                  | 0.6                      | 1                     |
| oxacillin   | >64                      | >159                  | >64                      | >159                  |
| penicillin  | >64                      | >180                  | >64                      | >180                  |
| gentamicin  | >64                      | >46                   | >64                      | >46                   |
| imipenem    | 2                        | 7                     | >64                      | >214                  |
| Au_W        | 2                        | 0.001                 | 4                        | 0.002                 |
| Au_AI       | 2                        | 0.001                 | 4                        | 0.003                 |

**Table S4.** Antibacterial Activities of Au NPs, W, AI, Au NPs+W, Au NPs+AI, Au\_W, Au\_AI Indicate with MIC and MBC.

| Materials | MIC ( $\mu\text{g/mL}$ ) | Antibacterial Activity | MBC ( $\mu\text{g/mL}$ ) | Bactericidal Activity |
|-----------|--------------------------|------------------------|--------------------------|-----------------------|
| Au NPs    | >349                     | No                     | >349                     | No                    |
| W         | >5000                    | No                     | >5000                    | No                    |
| AI        | >5000                    | No                     | >5000                    | No                    |
| Au NPs+W  | >583                     | No                     | >583                     | No                    |
| Au NPs+AI | >439                     | No                     | >439                     | No                    |
| Au_W      | 4                        | Yes                    | 8                        | Yes                   |
| Au_AI     | 4                        | Yes                    | 8                        | Yes                   |