Supplementary Information (SI) for Nanoscale.
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One-Dimensional Rough Magnetic Nanochains as Magnetically Actuated Mechano-Antibacterial Materials

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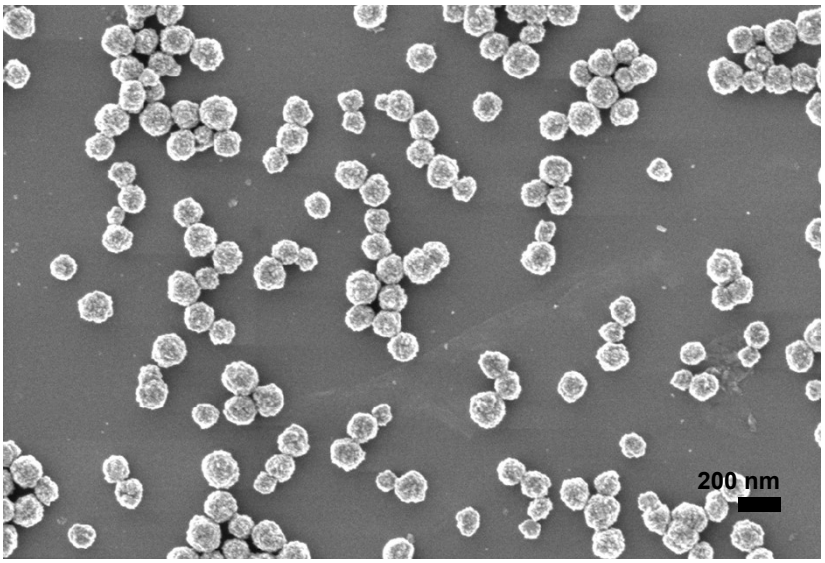

Fig. S1 Scanning electron microscopy image (SEM) of (a) Fe_3O_4. It can be seen that Fe_3O_4 nanoparticles exhibit excellent dispersion and uniformity.

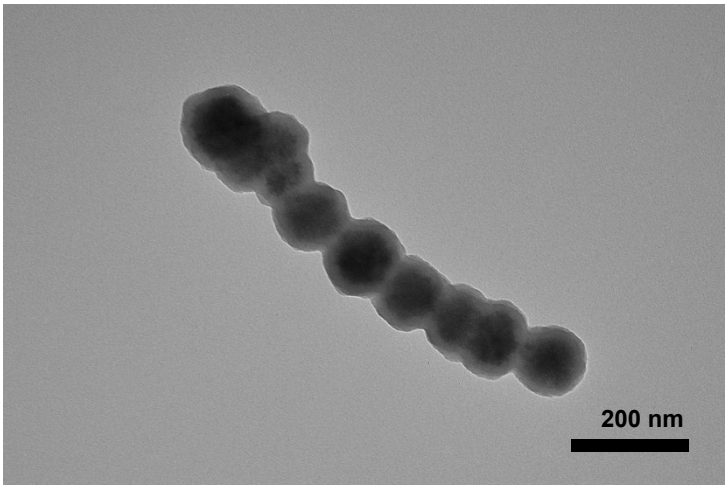

Fig. S2 Transmission electron microscope (TEM) image of Fe_3O_4@SiO_2 nanoparticles captured during the solution growth process after 12 h. It can be seen that Fe_3O_4@SiO_2 nanoparticles exhibit excellent dispersion and uniformity.

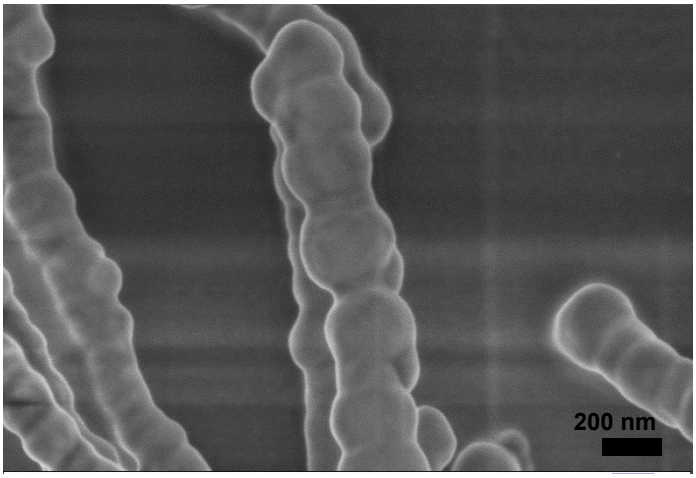

Fig. S3 SEM image of Fe_3O_4@SiO_2 nanoparticles captured after the solution reacting 12 h. It can be seen that Fe_3O_4@SiO_2 nanoparticles exhibit excellent dispersion and uniformity.

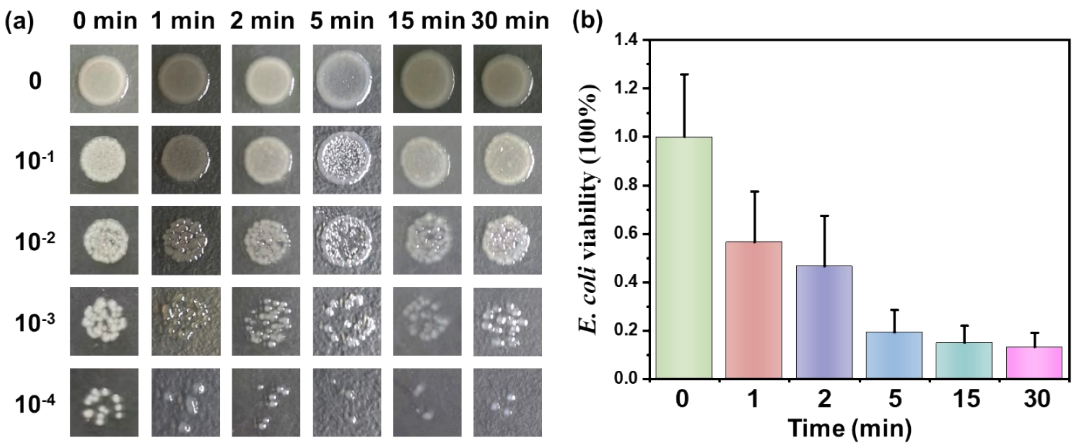

Fig. S4 (a) Photographs of agar plates showing bacterial colonies after various time treatments at different dilution levels following 3 h incubation. (b) Quantitative analysis of bacterial survival rates corresponding to panel.

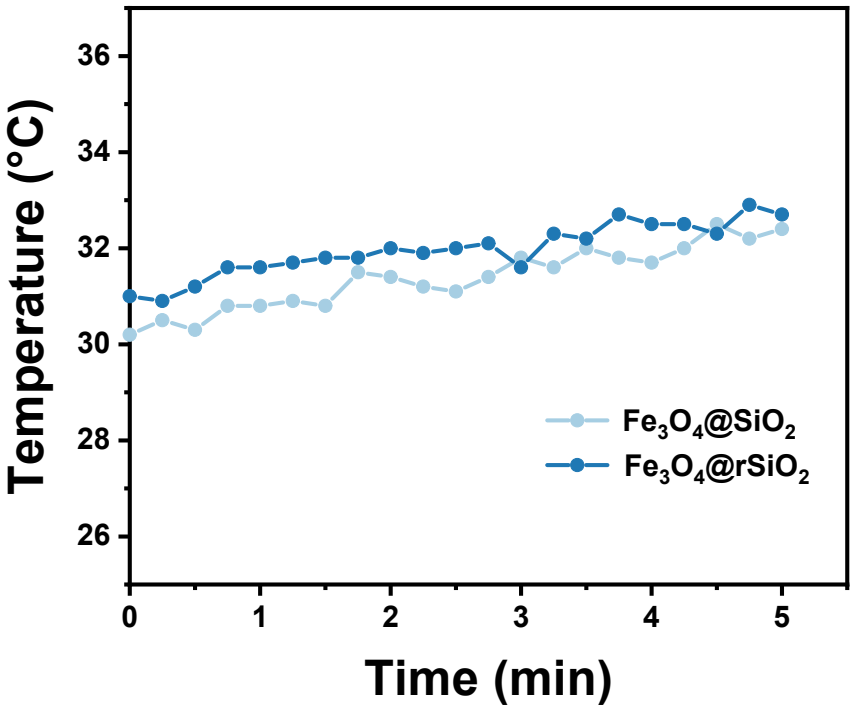

Fig. S5 Temperature curves of contrast (Fe_3O_4@SiO_2) and nanochains (Fe_3O_4@rSiO_2) with 1mL PBS (0.1 mg mL^{-1}) under rotating magnetic field (14.4 A m^{-1}) for 5 min.

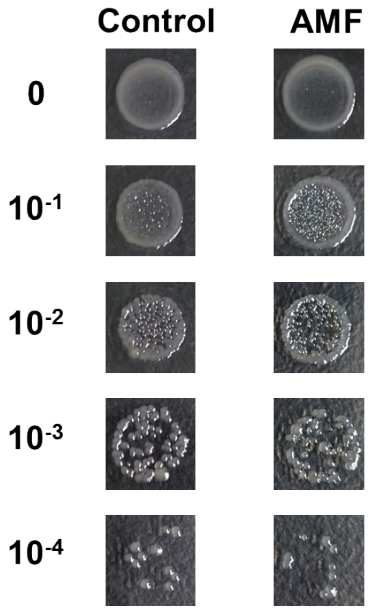

Fig. S6 Photographs of agar plates showing bacterial colonies after various treatments at different dilution levels following 3 h incubation.

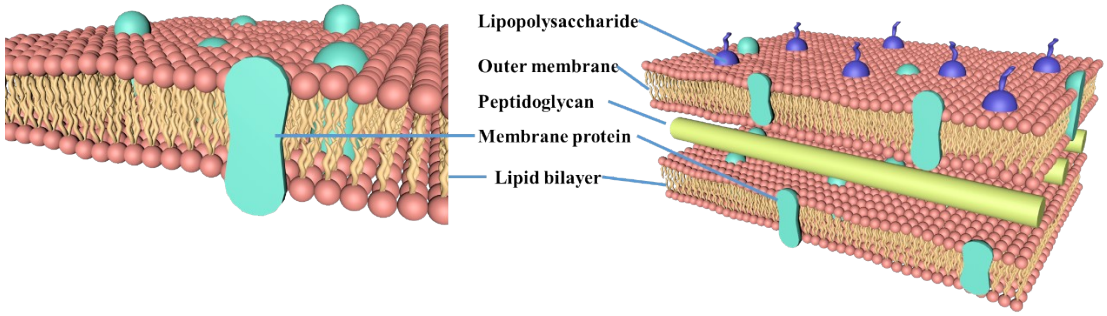

Fig. S7 Diagram of the cell membrane (left) and the cell wall of bacteria (right).

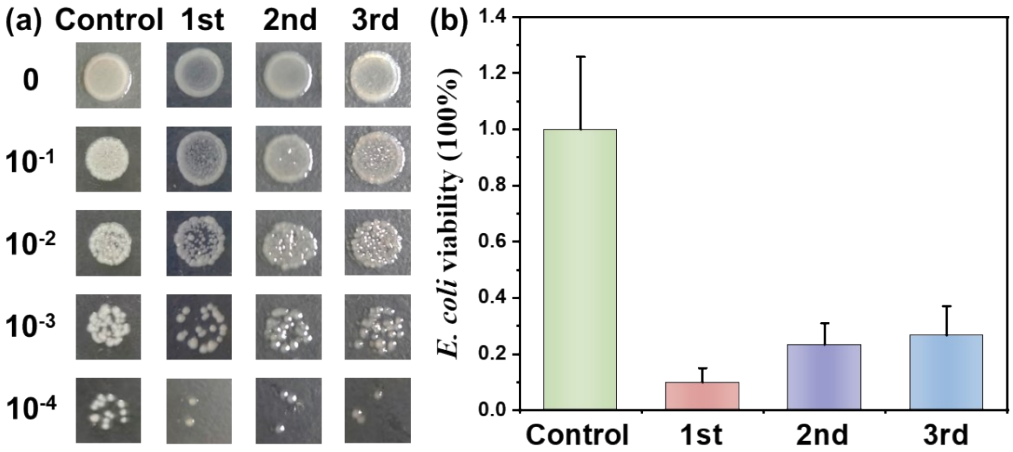

Fig. S8 (a) Photographs of agar plates showing bacterial colonies after different numbers of cycles at different dilution levels following 3 h incubation. (b) Quantitative analysis of bacterial survival rates corresponding to panel.

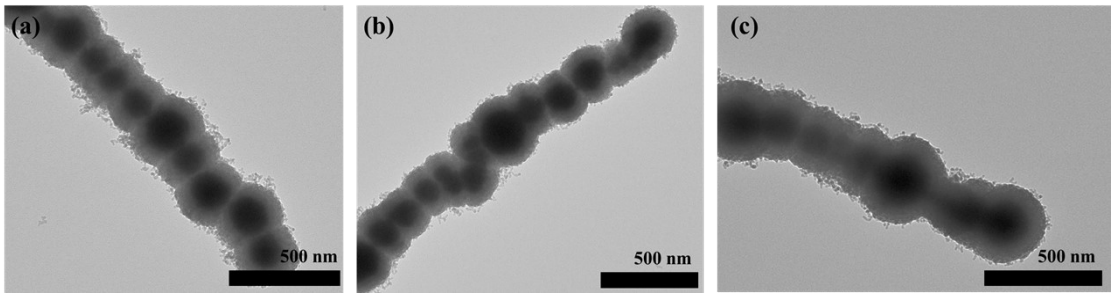

Fig. S9 TEM images of Fe_3O_4@rSiO_2 nanochains after 1st, 2nd, and 3rd cycles antibacterial treatments.

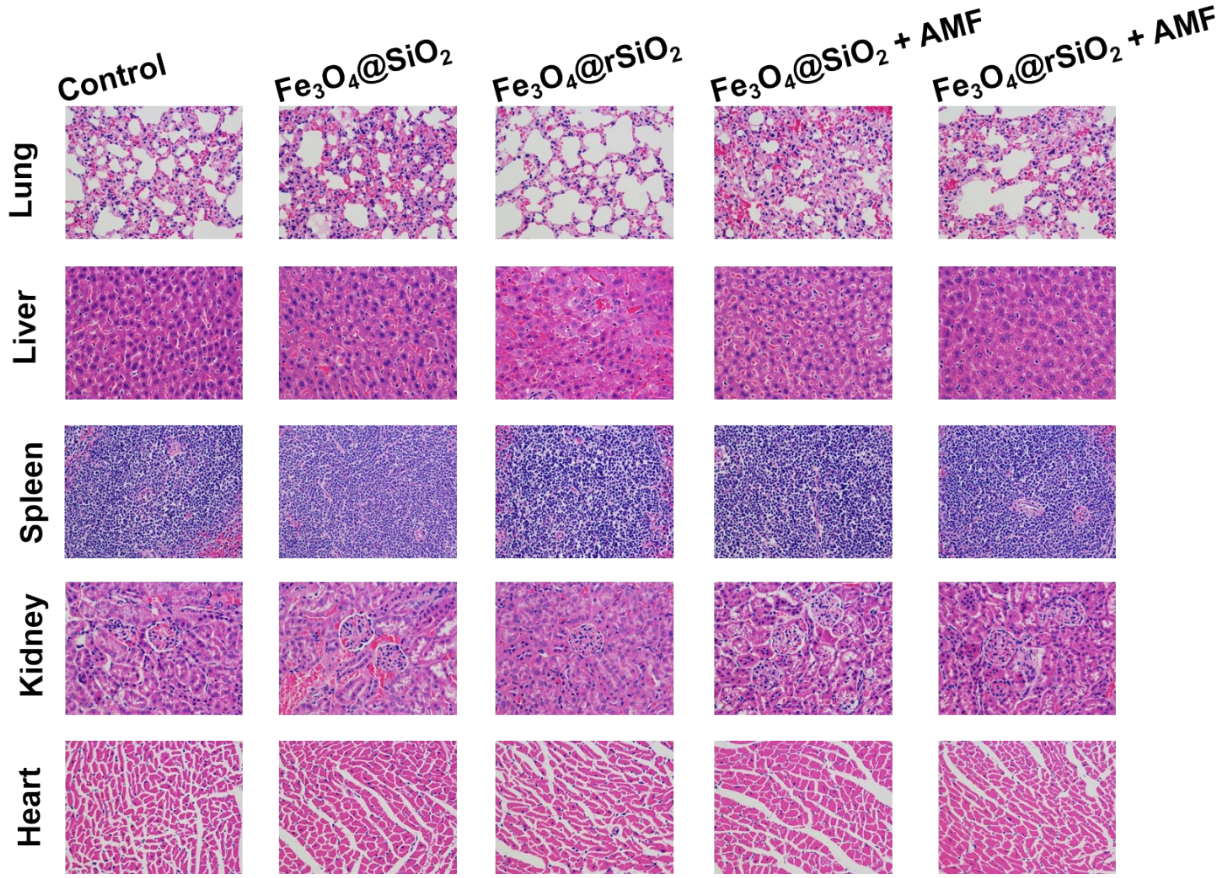

Fig. S10 Hematoxylin and eosin staining images of visceral tissue slices of the BALB/c mice with different treatments after seven days. It is suggested that side effects on major organs are negligible. All samples exhibit no lesion or cell apoptosis after the treatments, indicating the safety of implemented treatments.

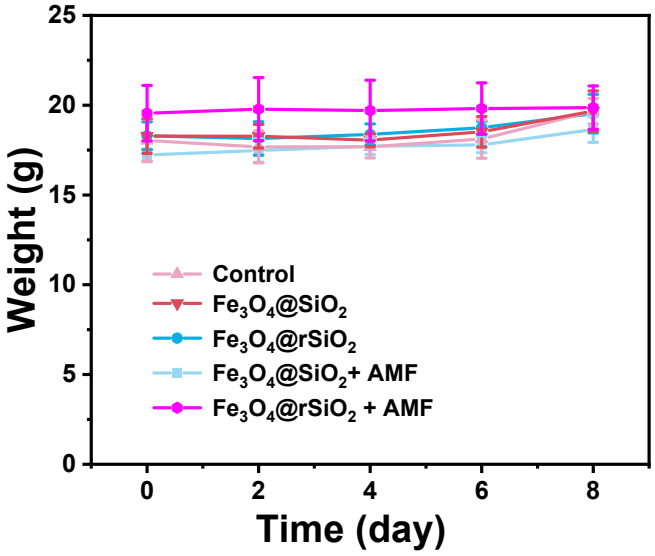

Fig. S11 Body weight growth curves of *E. coli* infected mice during various treatments. It proves that the body weight of the mice is maintained at a normal level.