

**Oral administration of silver nanomaterials affects the gut microbiota
and metabolic profile to alter the secretion of 5-HT in mice**

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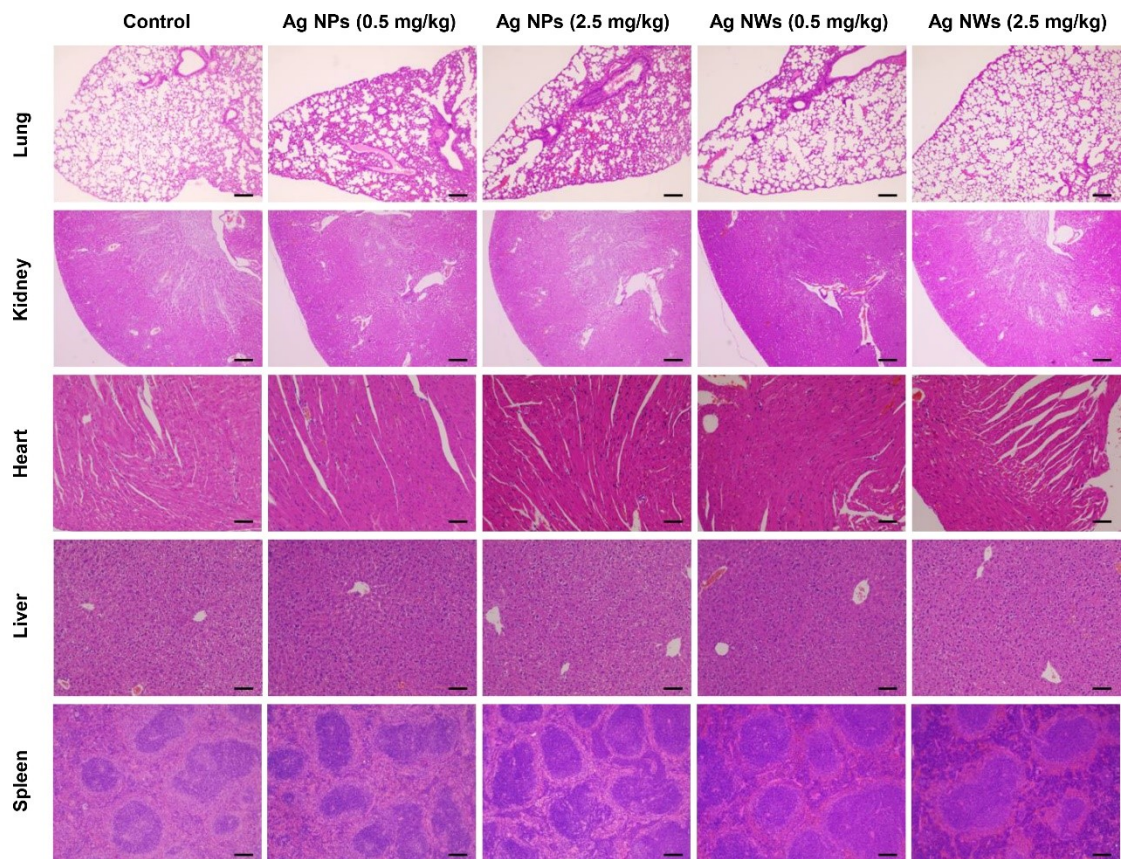
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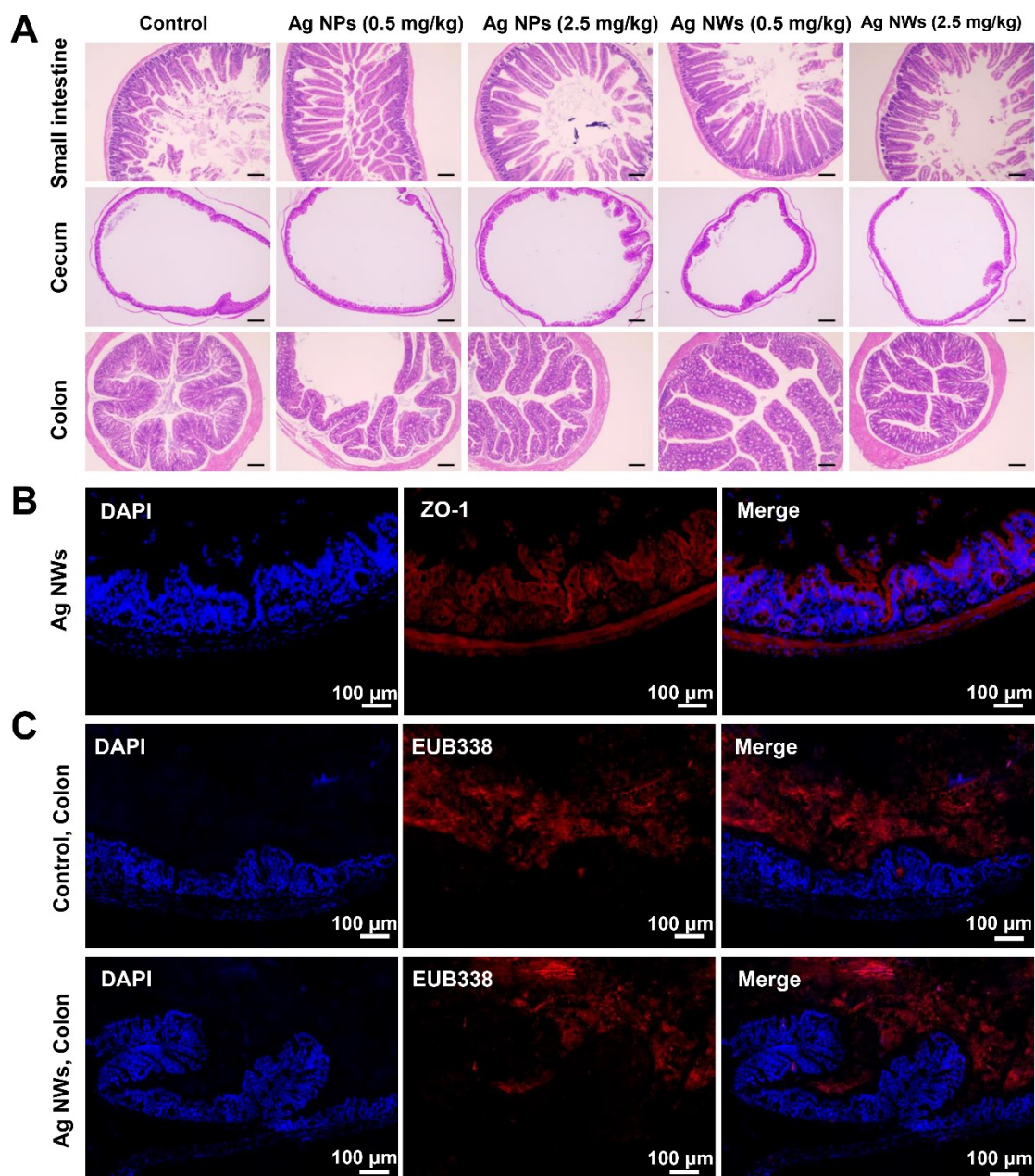
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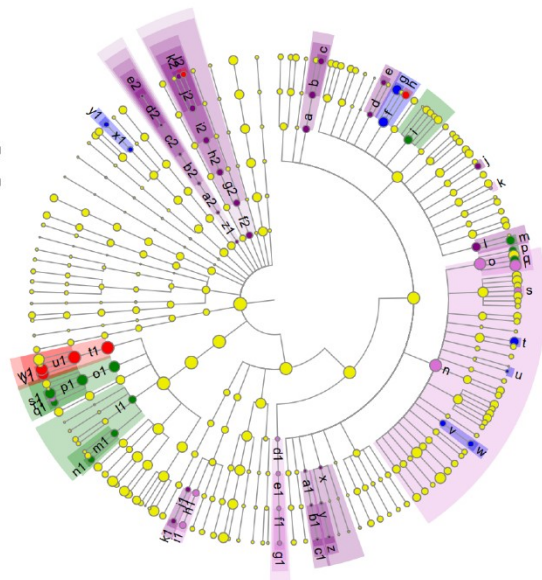
Supplementary Fig. 1 Representative H&E staining images of tissues after oral administration of Ag NPs and Ag NWs with various dosage for 28 days. Scale bar: 500 μm .



Supplementary Fig. 2 (A) Representative H&E staining images of small intestine, cecum and colon after oral administration of Ag NPs and Ag NWs with various dosage for 28 days. Scale bar: 500 μ m. (B) Representative images of histological sections to evaluate intestinal integrity by immunofluorescence. DAPI, blue; ZO-1, red. Scale bars, 100 μ m. (C) Bacteria in the colon stained by fluorescence in situ hybridization (FISH). DAPI, blue; EUB338, red. Scale bars, 100 μ m. All data are presented as the mean \pm SEM.

A

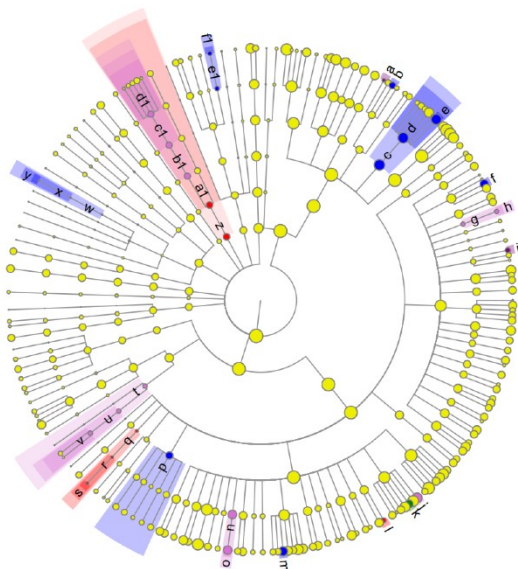
- Control
- Ag NPs (0.5 mg/kg)
- Ag NPs (2.5 mg/kg)
- Ag NWs (0.5 mg/kg)
- Ag NWs (2.5 mg/kg)



- a: f_Clostridiales_vadinB609_group
- b: g_norank_f_Clostridiales_vadinB609_group
- c: s_unclassified_g_norank_f_Clostridiales_vadinB609_group
- d: g_Ruminococcaceae_UCG-010
- e: s_uncultured_organism_g_Ruminococcaceae_UCG-010
- f: g_Ruminococcaceae_UCG-014
- g: s_unclassified_g_Ruminococcaceae_UCG-014
- h: s_uncultured_bacterium_g_Ruminococcaceae_UCG-014
- i: g_Anerotruncus
- j: s_uncultured_bacterium_g_Ruminococcaceae_UCG-014
- k: s_unclassified_g_Eubacterium_coprostan
- l: g_Ruminoclostridium_9
- m: s_unclassified_g_Ruminoclostridium_9
- n: f_Lachnospiraceae
- o: g_Lachnospiraceae_NK4A136_group
- p: s_Lachnospiraceae_bacterium_COE1
- q: s_uncultured_Clostridiolobus_bacterium_g_Lachnospiraceae_NK4A136_group
- r: s_unclassified_g_Lachnospiraceae_NK4A136_group
- s: s_Lachnospiraceae_bacterium_DW8
- t: s_unclassified_g_Eubacterium_xylanophilus
- u: s_uncultured_bacterium_g_Lachnospiraceae
- v: g_Coprococcus_1
- w: s_unclassified_g_Coprococcus_1
- x: f_Clostridiaceae_1
- y: g_Clostridium_sensu_stricto_12
- z: s_unclassified_g_Clostridium_sensu_stricto_12
- a1: f_Syntrophomonadaceae
- b1: g_unclassified_f_Syntrophomonadaceae
- c1: s_unclassified_f_Syntrophomonadaceae
- d1: o_Thermoanaerobacteriales
- e1: f_Thermoanaerobacteraceae
- f1: g_Gelfia

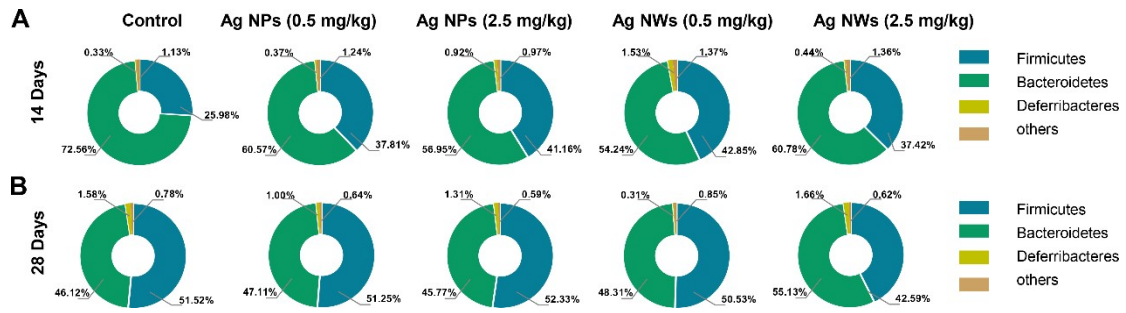
B

- Control
- Ag NPs (0.5 mg/kg)
- Ag NPs (2.5 mg/kg)
- Ag NWs (0.5 mg/kg)
- Ag NWs (2.5 mg/kg)



- a: s_unclassified_g_Parabacteroides
- b: s_Parabacteroides_distasonis
- c: f_Bacteroidaceae
- d: g_Bacteroides
- e: s_unclassified_g_Bacteroides
- f: s_uncultured_bacterium_g_Ocillobacteroides
- g: g_Ruminococcus_1
- h: s_unclassified_g_Ruminococcus_1
- i: s_uncultured_organism_g_Ruminococcaceae
- j: s_uncultured_bacterium_g_norank_f_Lachnospiraceae
- k: s_Lachnospiraceae_bacterium_DW8
- l: s_uncultured_bacterium_g_Lachnospiraceae
- m: s_Eubacterium_plexicaudatum
- n: g_Marvinbryantia
- o: s_uncultured_bacterium_g_Marvinbryantia
- p: f_Family_XIII
- q: f_Defluviitaleaceae
- r: g_Defluviitaleaceae_UCG-011
- s: s_unclassified_g_Defluviitaleaceae_UCG-011
- t: o_Bacillales
- u: f_Staphylococcaceae
- v: g_Staphylococcus
- w: f_Phylobacteriaceae
- x: g_Mesorhizobium
- y: s_unclassified_g_Mesorhizobium
- z: g_Teneriutes
- a1: o_Molluscites
- b1: o_Molluscites_RF9
- c1: g_norank_o_Molluscites_RF9
- d1: g_norank_o_Molluscites_RF9
- e1: g_Adlercreutzia
- f1: s_uncultured_bacterium_g_Adlercreutzia

Supplementary Fig. 3 Linear discriminant analysis, Effect Size (LEfSe), was used to perform the discrimination between groups after oral exposure to Ag NPs and Ag NWs for 14 days (A) and 28 days (B).



Supplementary Fig. 4 The gut microbiota at phylum level in mice after oral exposure to Ag NPs and Ag NW for 14 days (A) and 28 days (B). *Firmicutes*: gram-positive bacteria. *Bacteroidetes*: gram-negative bacteria.