

Supporting Information

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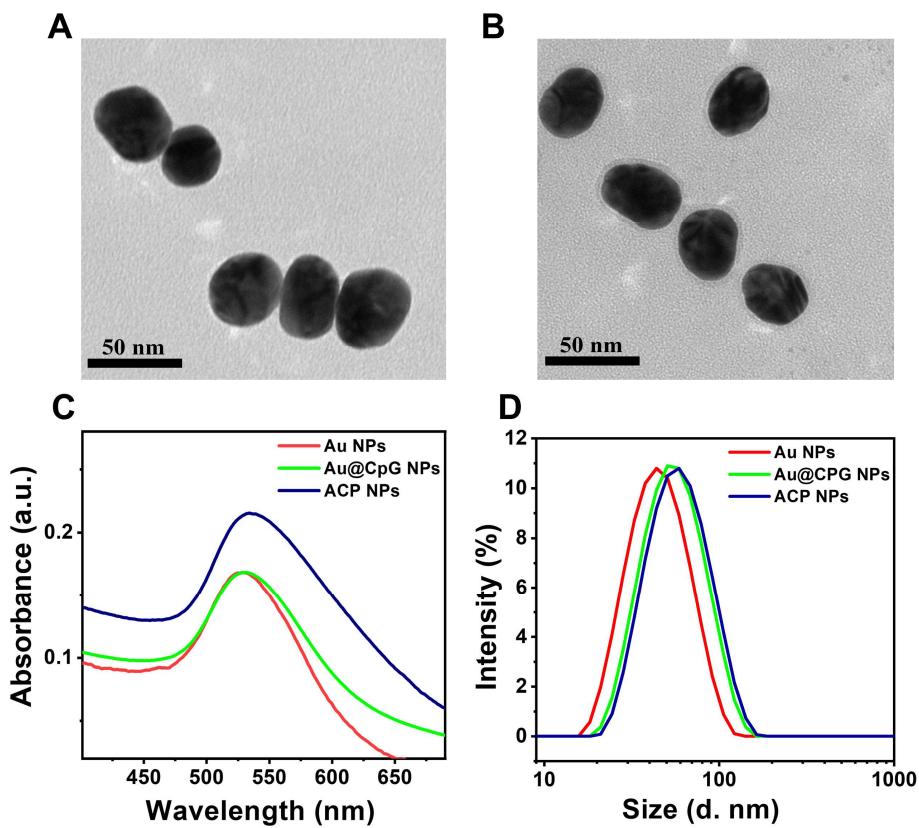


Figure S1. Characterization of the prepared nanoparticles. TEM images of Au NPs (A) and Au@CpG NPs (B). (C) UV-vis absorption spectra of Au NPs, Au@CpG NPs and ACP NPs. (D) Hydraulic diameters of the prepared nanoparticles.

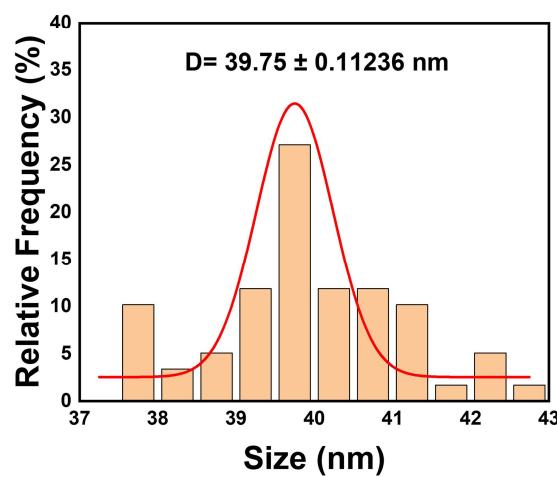


Figure S2. The size distribution histogram of Au NPs.

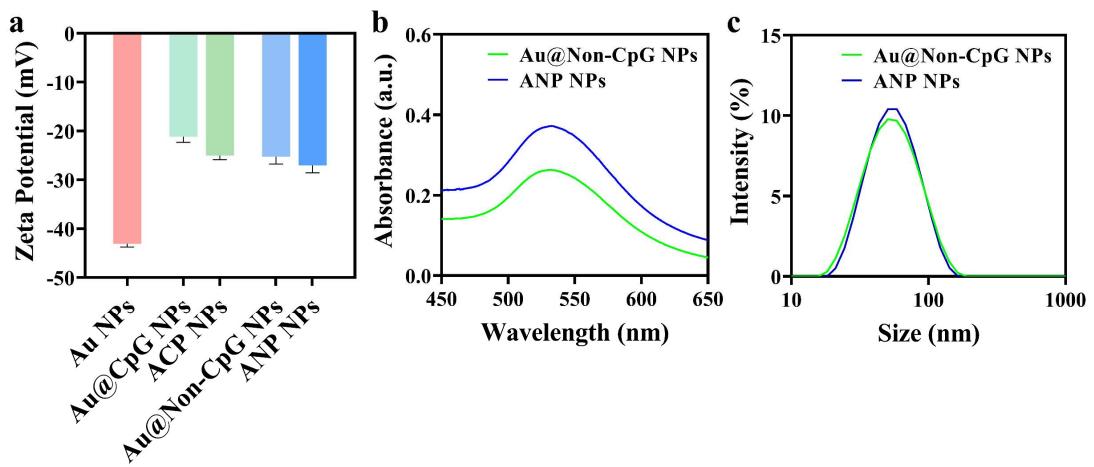
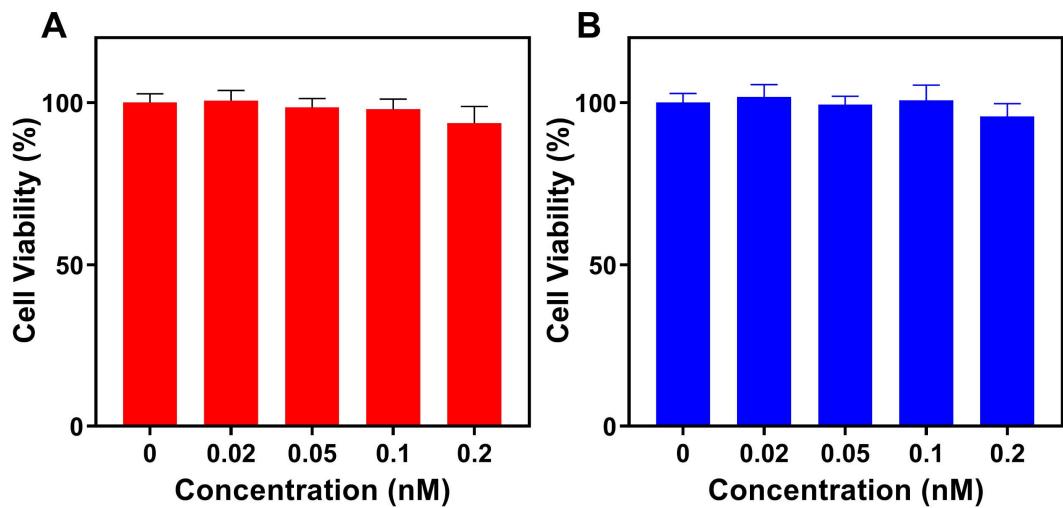
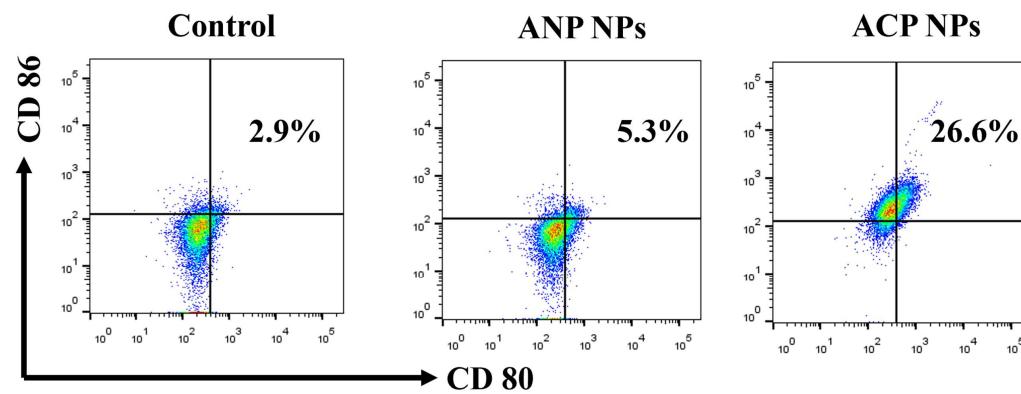
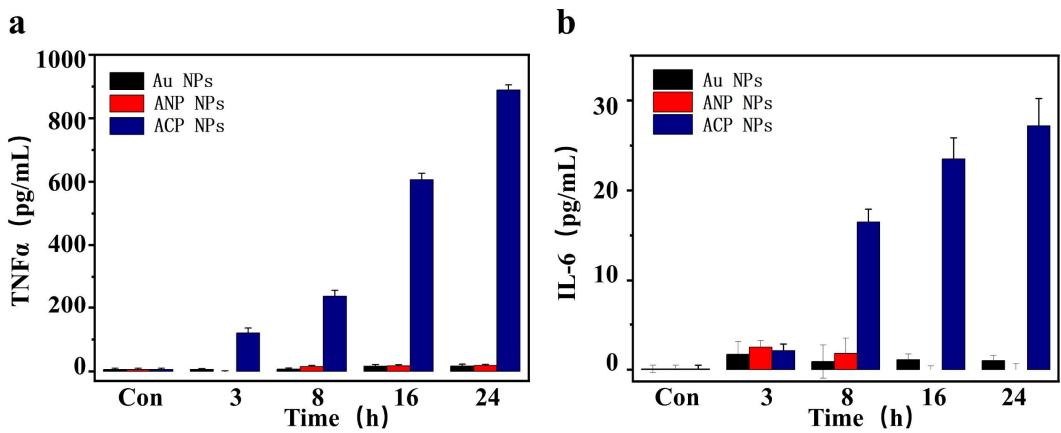


Figure S3. (A) Zeta potential of prepared nanoparticles. (B) UV-vis absorption spectra of Au@Non-CpG NPs and ANP NPs. (C) Hydraulic diameters of Au@Non-CpG NPs and ANP NPs.





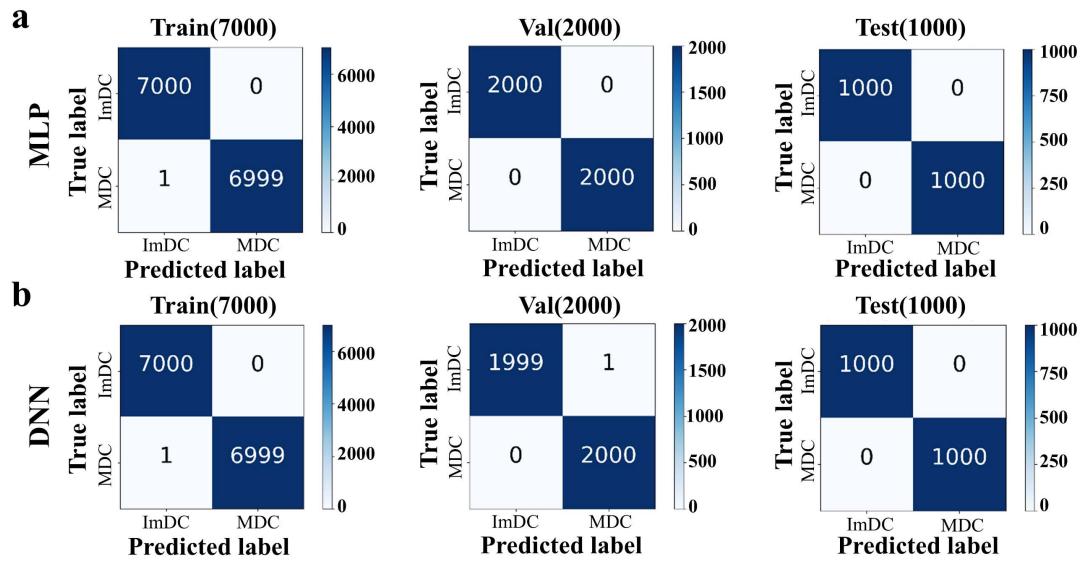


Figure S7. (A) Training, Validation and Test results from MLP algorithms. (B) Training, Validation and Test results from DNN algorithms.

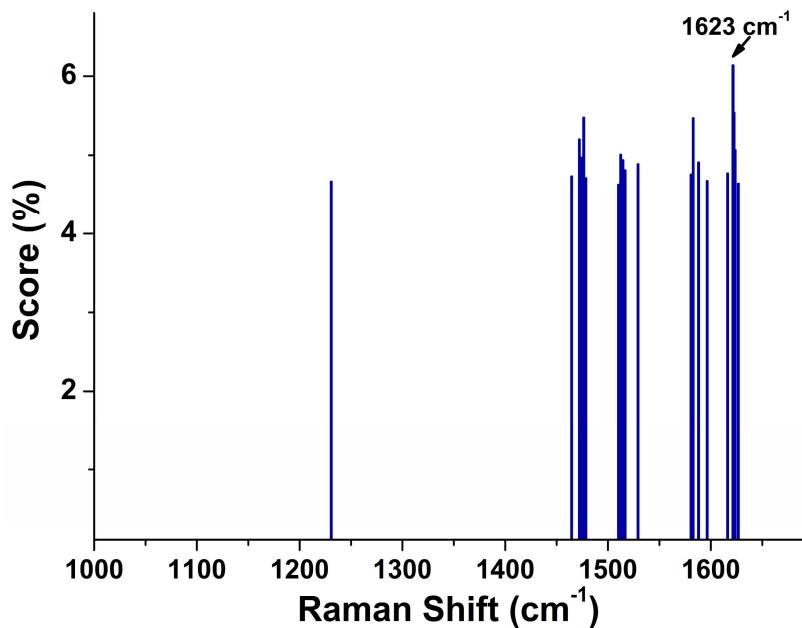


Figure S8. The contribution of individual Raman spectral peaks to the CNN model's classification performance.

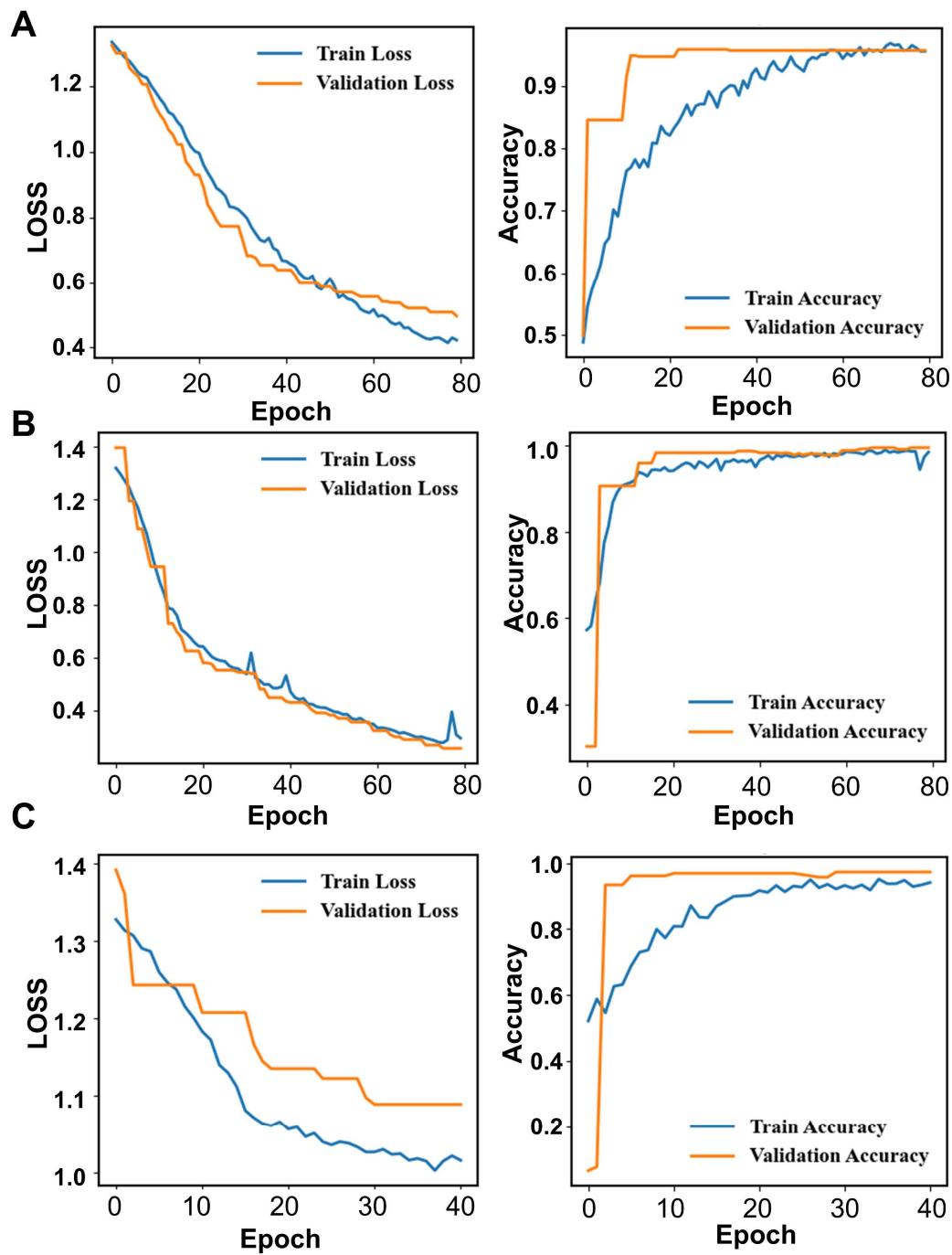


Figure S9. (A) LOSS and accuracy curves of the DCs status classification after incubation with nanoparticles for 2 h. (B) LOSS and accuracy curves of the DCs status classification after incubation with nanoparticles for 4 h. (C) LOSS and accuracy curves of the DCs status classification after incubation with nanoparticles for 6 h.