

Supporting Information

**Enhanced *in vivo* antiviral activity against pseudorabies virus through transforming gallic acid into graphene quantum dots with stimulation of interferon-related immune responses**

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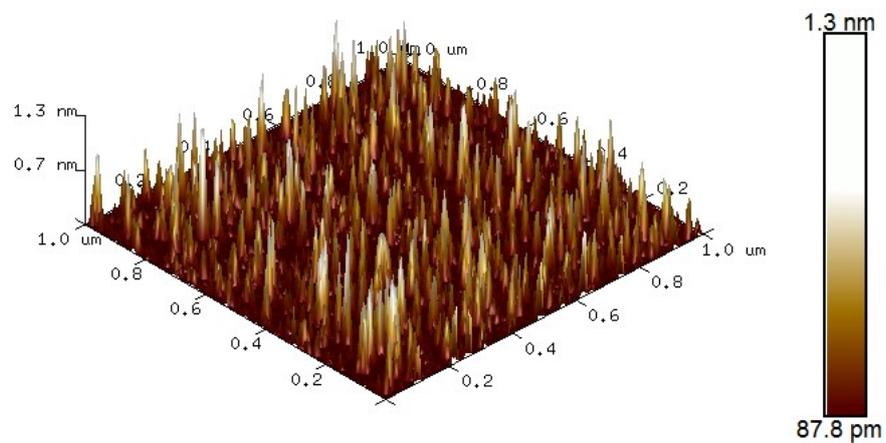
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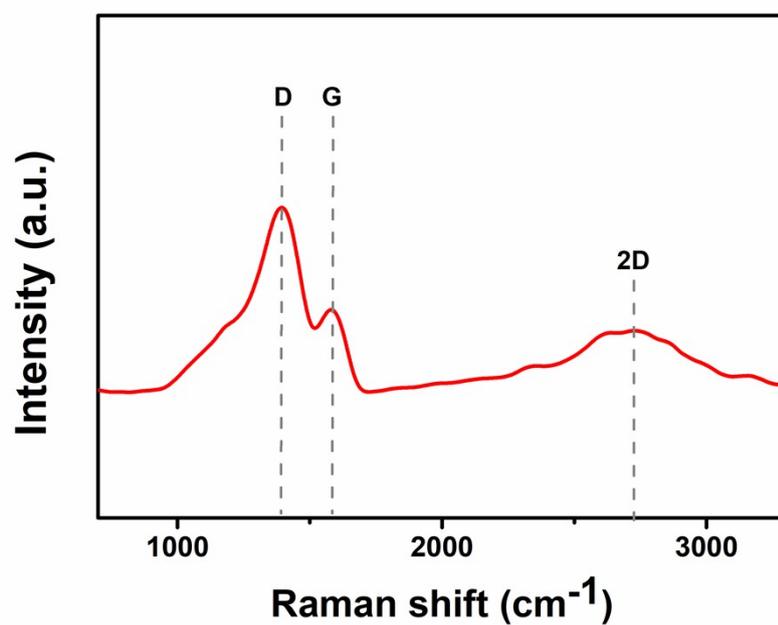
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## Characteristics of graphene quantum dots



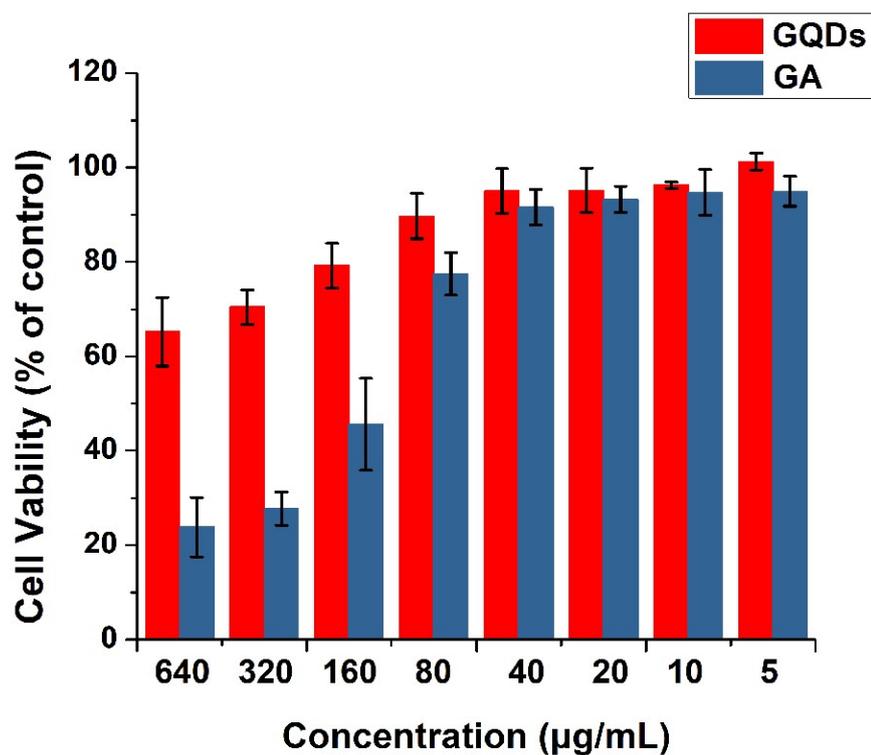
Height Sensor

**Figure S1.** AFM image of GAGQDs.

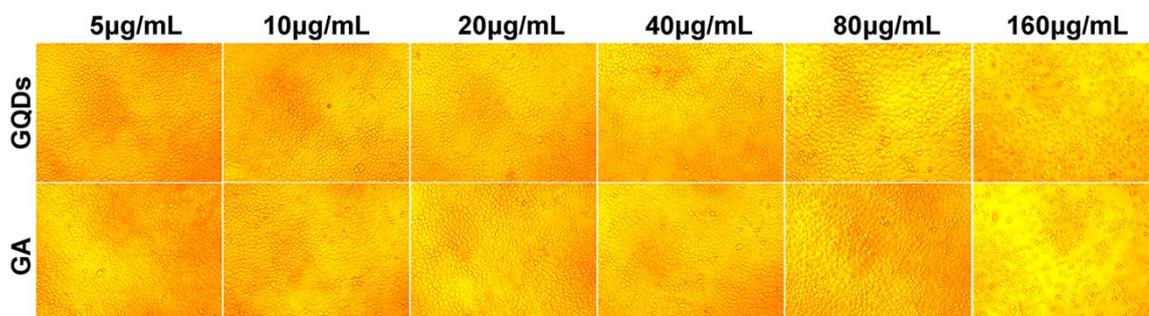


**Figure S2.** Raman spectrum of GAGQDs.

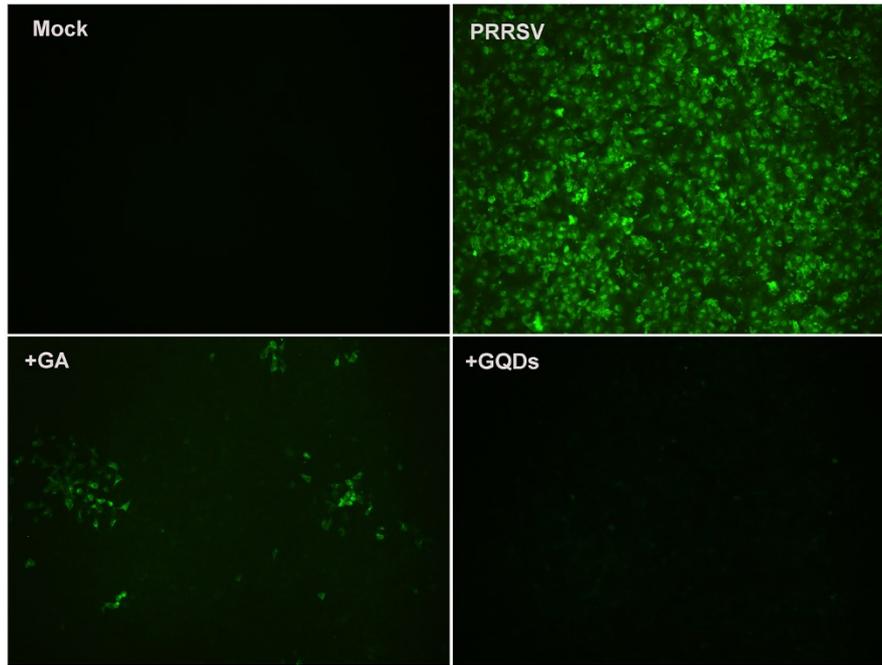
### Cytotoxicity of GAGQDs



**Figure S3.** Cytotoxicity of the GAGQDs and GA on Vero cells.



**Figure S4.** Cell morphology of Vero treated with GAGQDs and GA with different concentration for 48 h.



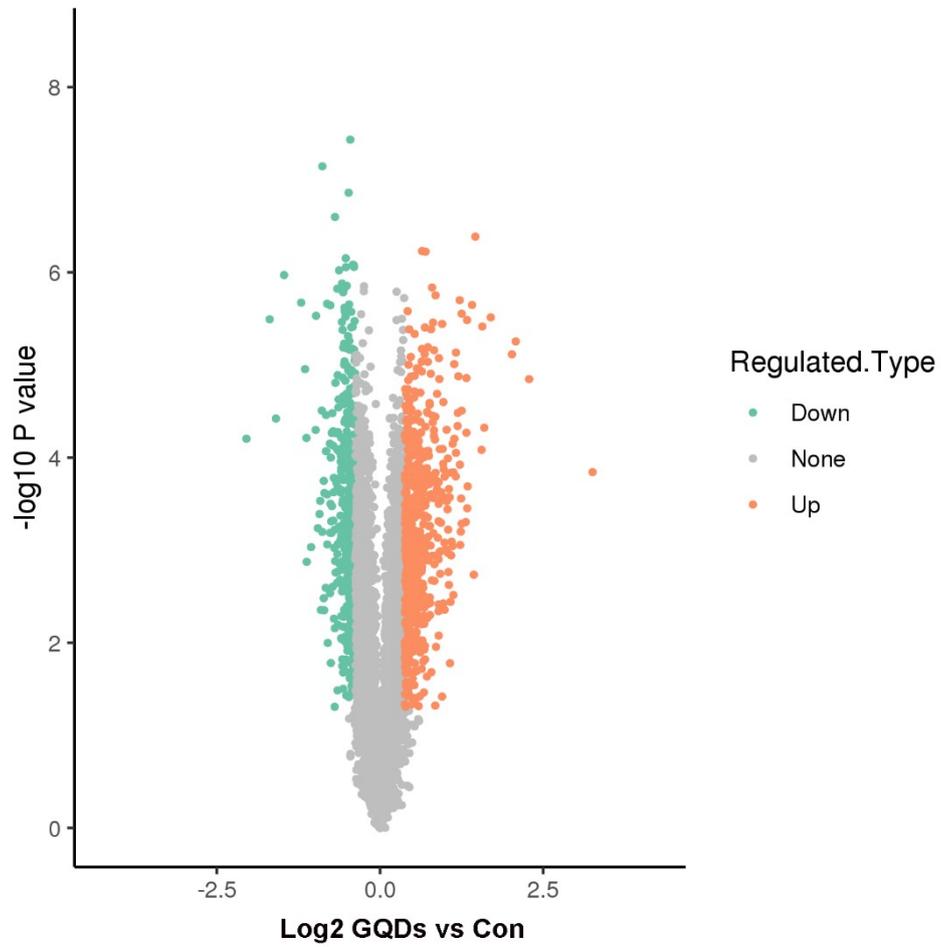
**Figure S5.** IFA images of PRRSV infected cells treated with GAGQDs and GA.

Green represents the M protein of PRRSV.

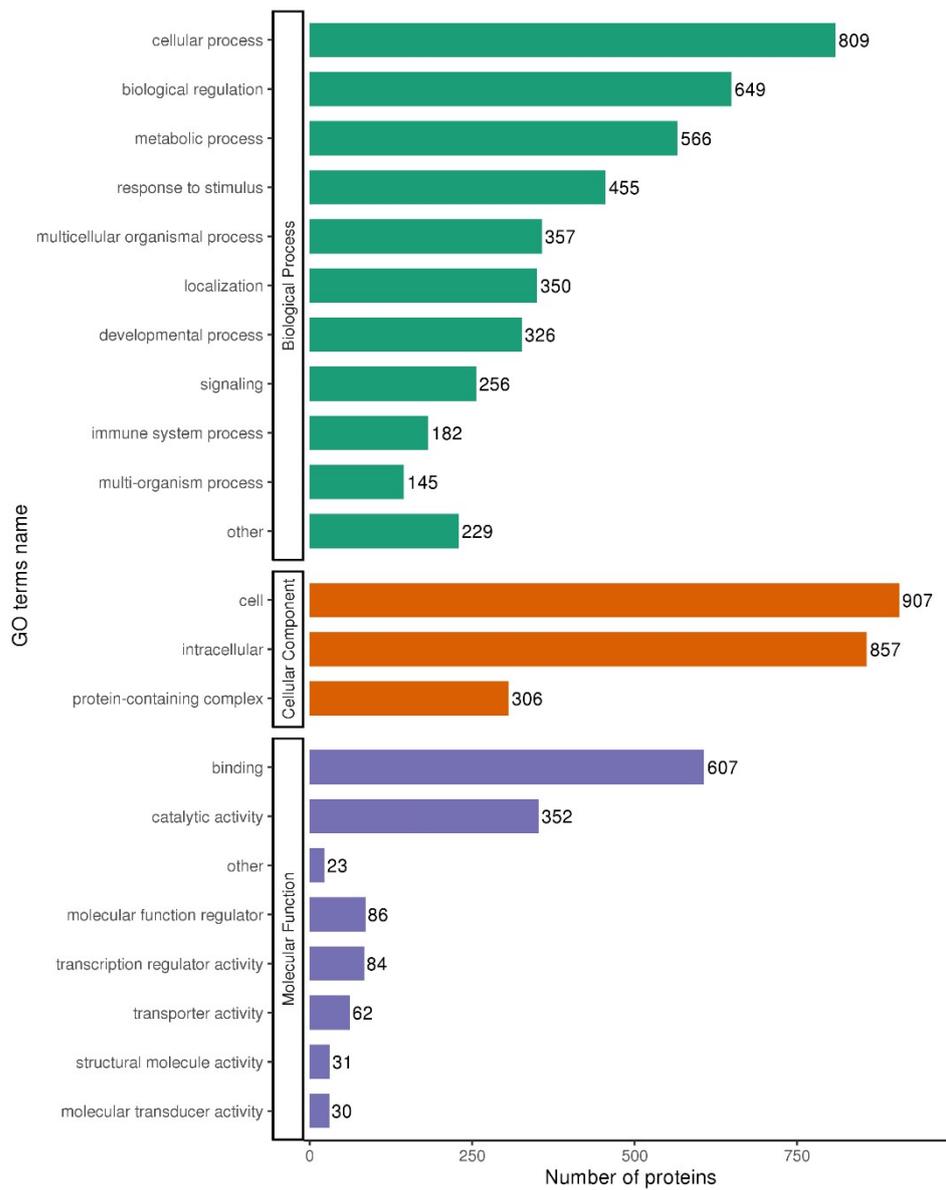
### **Differentially Expressed Proteins in GAGQDs Treated Vero Cells**

A dot-plot was also provided here to give the overview of quantified proteins and differentially expressed cellular proteins (Figure S4). Red dots represent up-regulated proteins, green dots represent down-regulated proteins, and gray dots represent non-differential proteins.

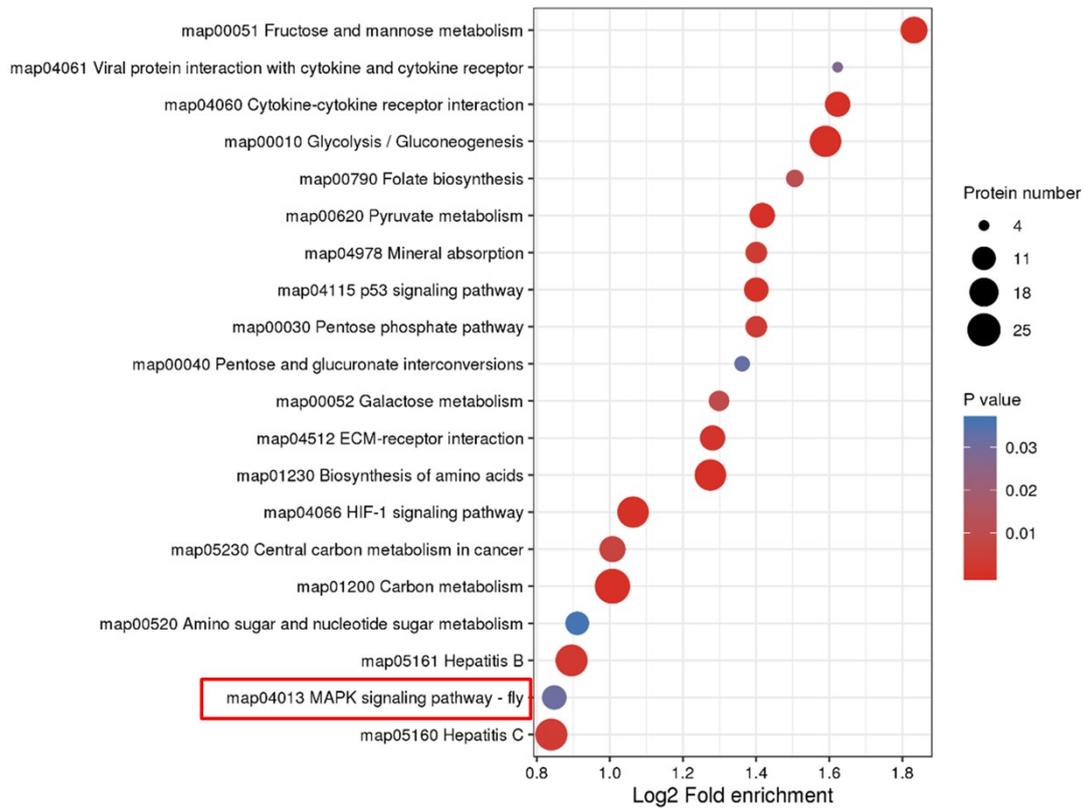
GO classification (Figure S5) and KEGG pathway enrichment analysis (Figure S5) of differentially expressed proteins in each comparison group were conducted to find out whether differentially expressed proteins have a significant enrichment trend in some functional types.



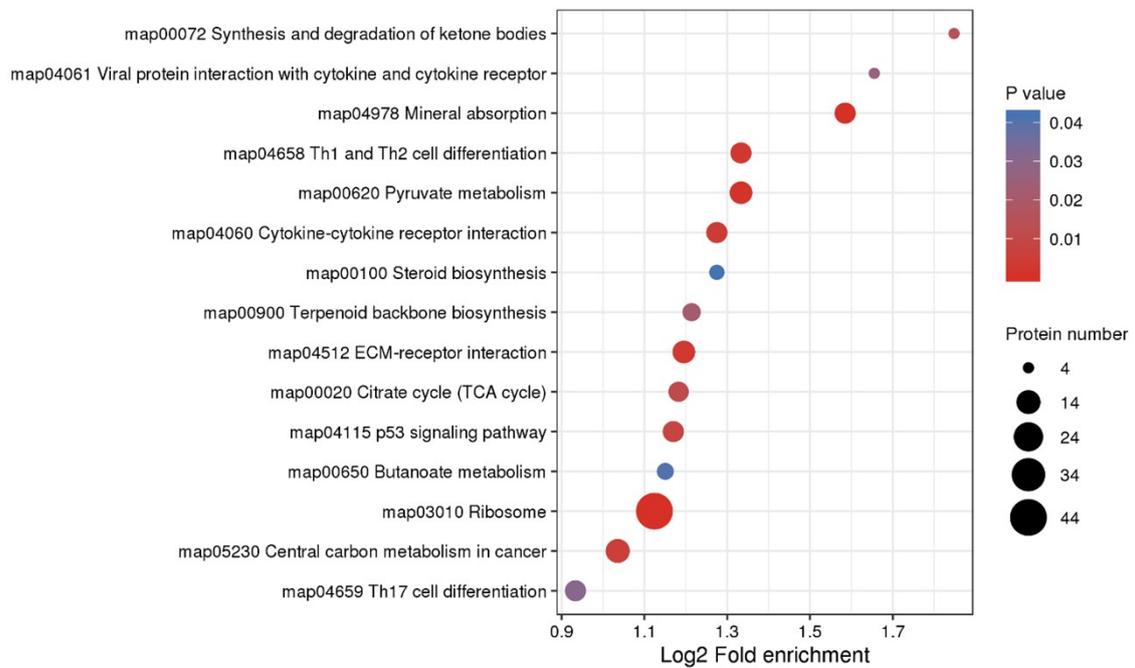
**Figure S6.** A dot-plot of the overview of quantified proteins and differentially expressed cellular proteins.



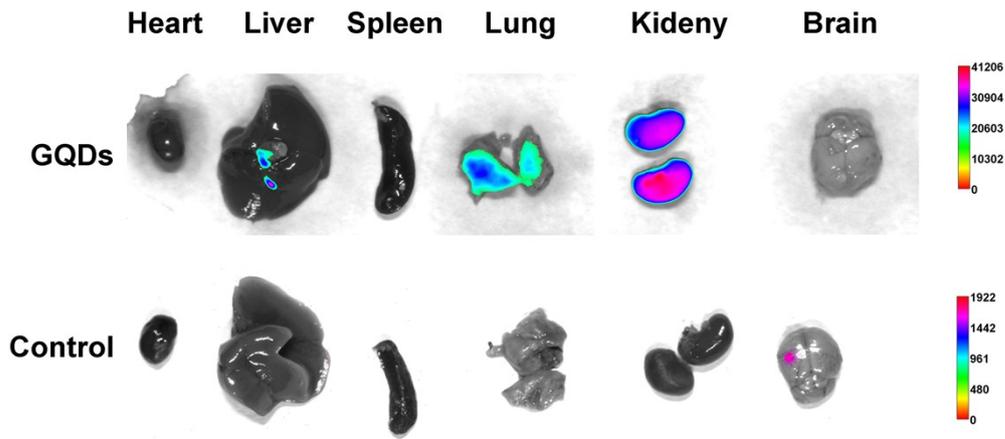
**Figure S7.** GO term annotation upon the differentially expressed proteins.



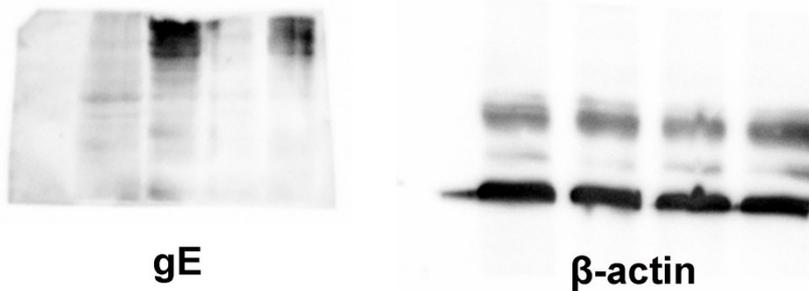
**Figure S8.** KEGG pathway enrichment analysis of differentially expressed cellular proteins in GAGQDs treated cells.



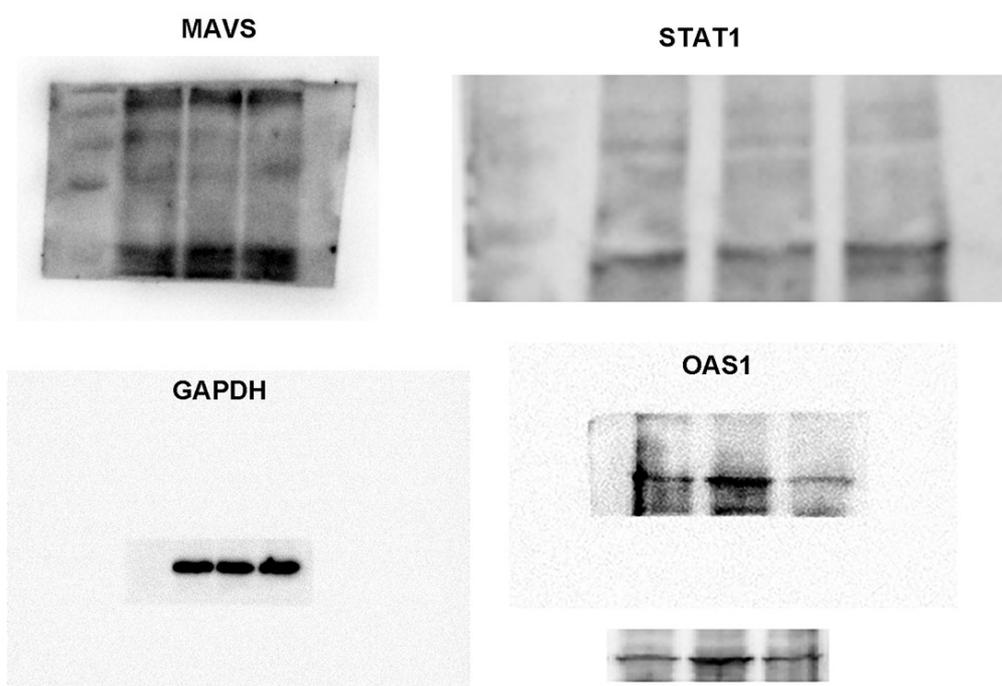
**Figure S9.** KEGG pathway enrichment analysis of differentially expressed cellular proteins in GA treated cells.



**Figure S10.** The distribution of GAGQDs in mice. Representative fluorescence images of main organs in mice after intragastric administration at a dose of 50mg/kg body weight. The mice in control group were given the same amount of saline.



**Figure S11** Original western images used for drawing Figure 3C in the text.



**Figure S12** Original western images used for drawing Figure 5B in the text.