



**Supplementary information, Fig. S12: 2-E mutant channels relieve robust immune responses in vitro and in vivo.**

**a** Schematic for detecting the immune response of macrophages. **b** Expression of cytokines and chemokines following transfection of 2-E, 2-E<sup>F4A</sup> and 2-E<sup>T11A</sup> plasmids, measuring mRNA expression via qRT-PCR. **c** Histopathology of lungs and spleens from 2-E and 2-E<sup>F4A</sup> protein treatment groups (bar, 10  $\mu$ m). **d** qRT-PCR analysis of cytokine levels after 6 h treatment (n>4). All data are representative of three independent experiments. \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ ; unpaired Student's t test. All error bars are SEM.