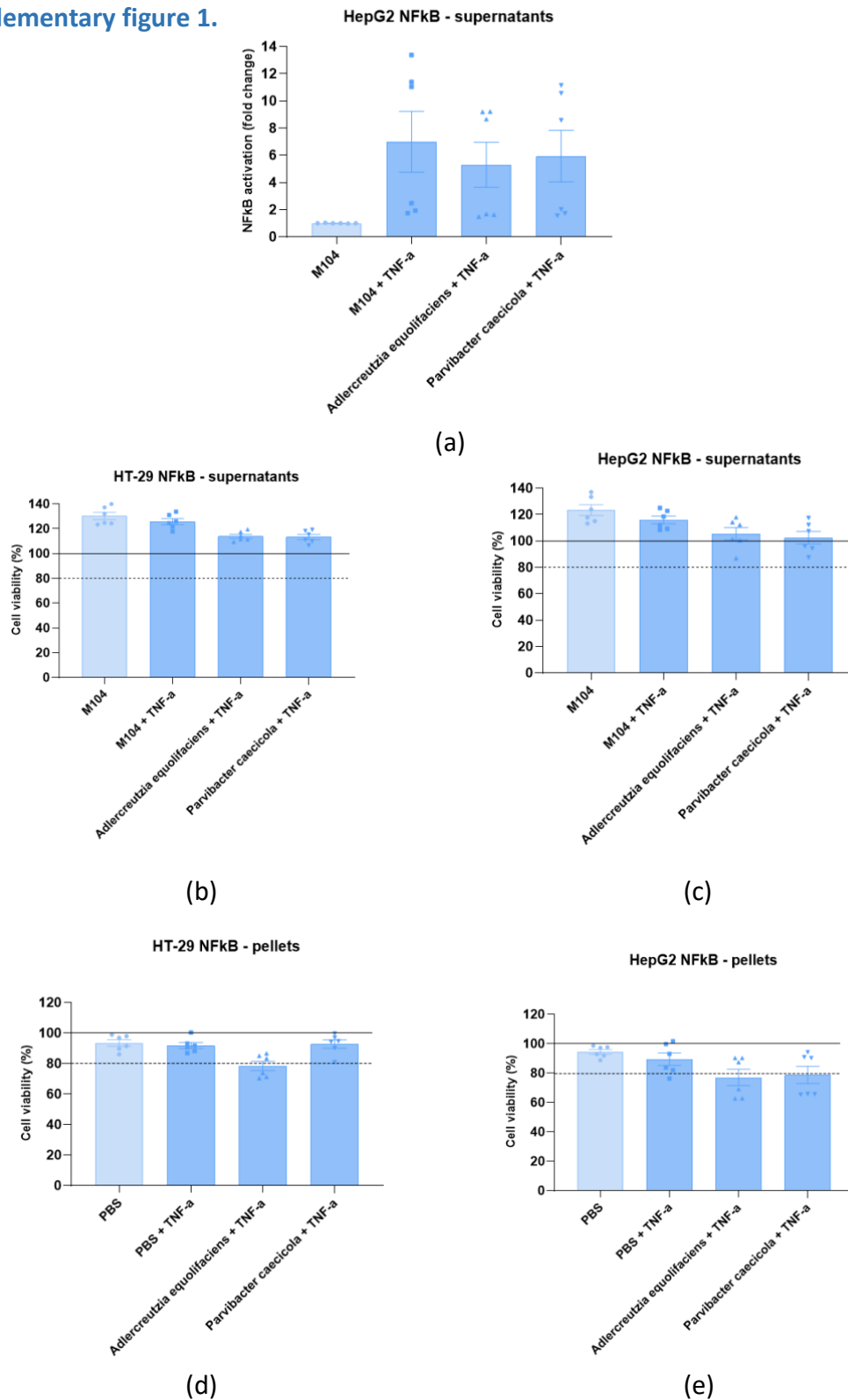


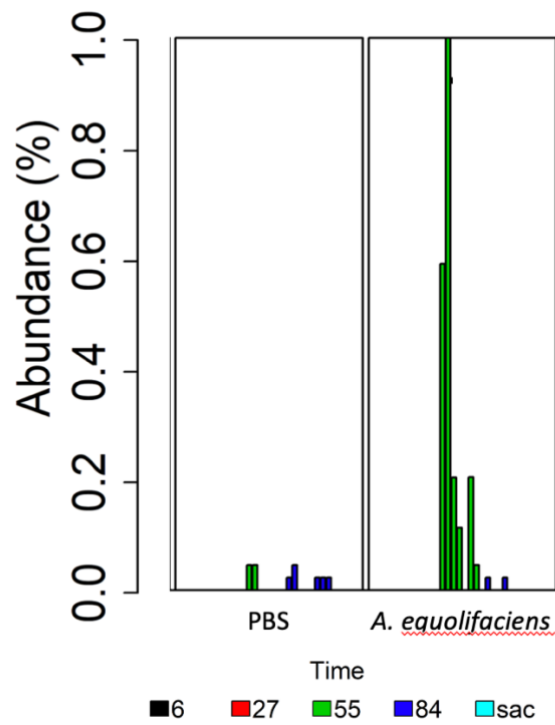
Supplementary figures 1, 2, 3

## Supplementary figure 1.



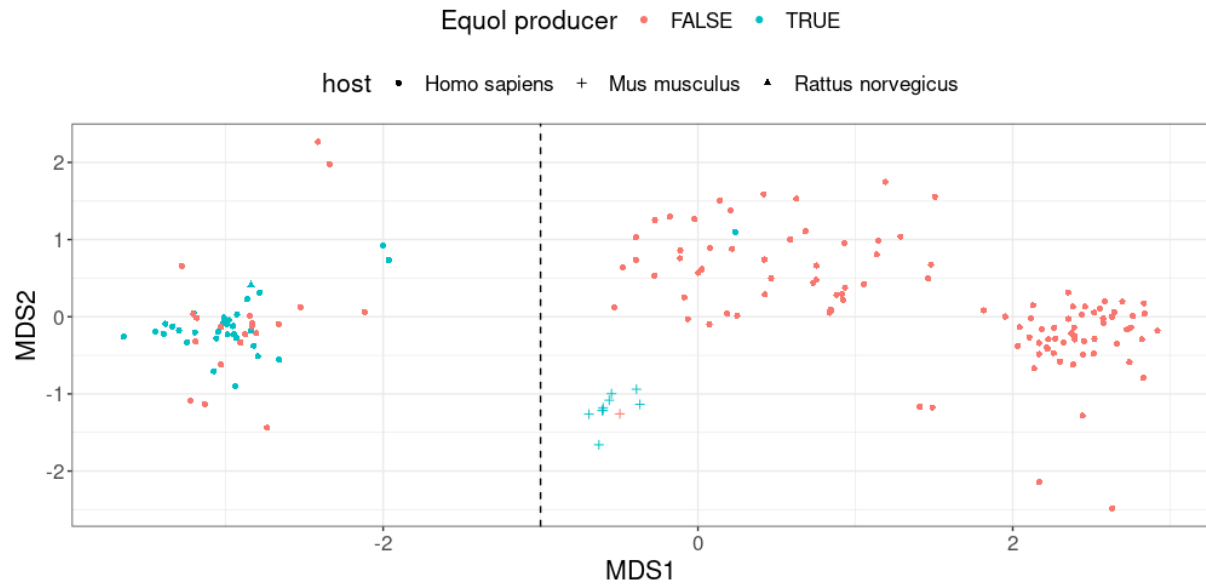
**Supplementary figure 1.** (a). Effect of the supernatant of *A. equifaciens* and *P. caecicola* on NF-κB activity in HepG2 reporter cell line. (b-c). Effect of supernatant of both bacterial strains on HT-29 (b) and HepG2 (c) cell viability as assessed by measuring MTS activity. (d-e). Effect of bacterial pellet on HT-29 (d) and HepG2 (e) cell viability as assessed by MTS viability test.

## Supplementary figure 2



**Supplementary figure 2.** Presence and abundance of *A. equolifaciens* in the feces of mice at different time point after the beginning of the experiment and at sacrifice (sac) as analyzed by 16S rRNA gene sequencing. Gavage started at day 27.

### Supplementary figure 3



**Supplementary figure 3.** Non-Metric Multidimensional Scaling (nMDS) plot representing genomes similarity assessed from pairwise ANI. Each point represents a genome. The shape of the points indicates the host associated with the genome. The vertical dashed line separates the two phylogroups (genomospecies). The color of the points depicts the predicted capacities to metabolize isoflavone and produce equol.