



Supplementary Fig. 1s. The phenotype of *in vitro* tobacco plant leaves with four different tobacco mosaic virus (TMV) infection external stimuli. Prior to the main infection experiment, a preliminary experiment was conducted to establish the virus infection route in tobacco plants. To accelerate virus infection, plant leaves were lightly scratched using a knife to create a cross-shape (bottom panel) and these leaves were compared to the non-cut group (upper panel). Four treatments were conducted for each experimental group (HT, hand touch; SA, saliva; SM, smoke; MA, mashed cigarette sap solution). Photographs were taken six days after pathogen inoculation. Among the four different external stimuli, the experimental group in which MA was applied onto the scratched leaf tissues showed the most severe symptoms among the leaves of plants with high expression levels, grown under *in vitro* conditions, and transplanted into a soil pot in a greenhouse.