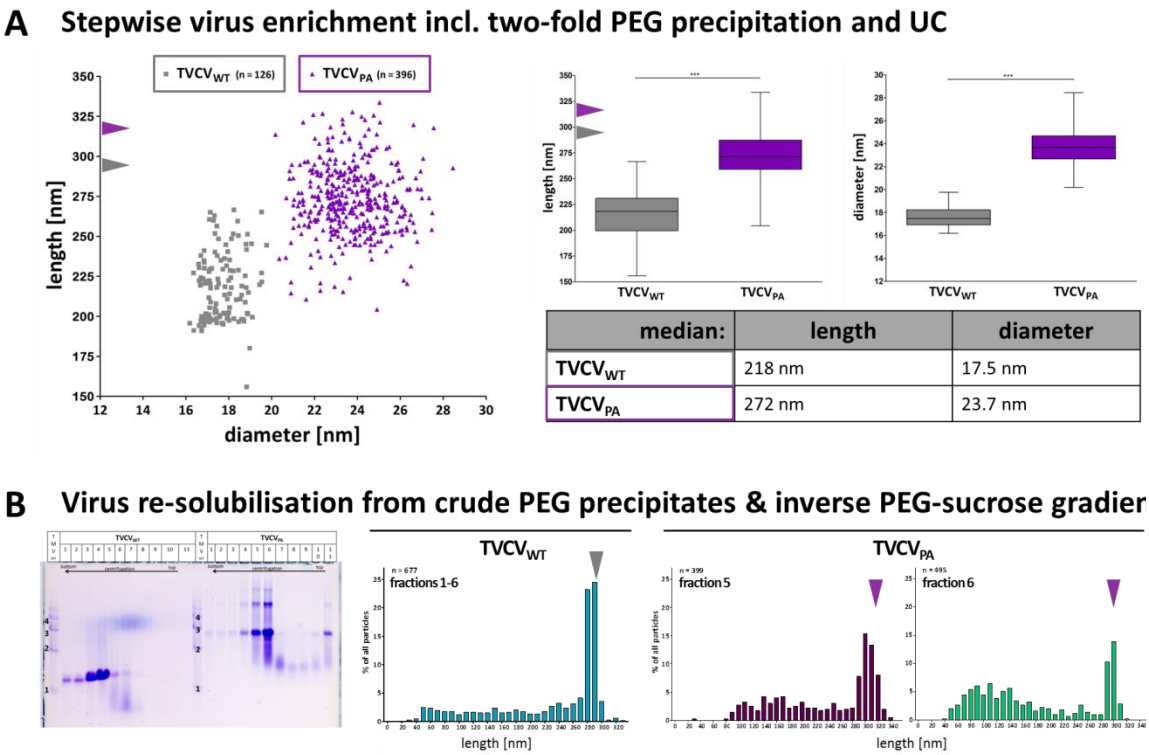
Supplementary Data



median:	length	diameter
$TVCV_{WT}$	218 nm	17.5 nm
$TVCV_{PA}$	272 nm	23.7 nm

Figure S1. Analyses of virion lengths resulting from two alternative isolation procedures (as indicated). TEM images of randomly selected grid areas with $TVCV_{WT}$ or $TVCV_{PA}$ particles from typical experiments were analyzed by software ImageJ. **A)** After purification through standard stepwise procedures, virion length and diameter distributions in the final preparations were compared. Left: Scatterplots show $TVCV_{WT}$ (n = 126) and $TVCV_{PA}$ (n = 396) particles in regard to length and diameter. Right: Boxplots of lengths (left) and diameters (right) of $TVCV_{WT}$ and $TVCV_{PA}$ and table showing the median values obtained (lines: median values, box boundaries: 25/75 % quartiles, whiskers: 100 % percentiles). Statistical analyses were performed using the non-parametric Mann–Whitney Rank Sum Test. A p value of less than 0.05 was considered to be significant (* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$). Arrows: expected particle lengths. **B)** After purification via inverse PEG solubility gradients, particles were analyzed by native agarose gels (left) and TEM (right). In TEM image analysis, the virions corresponding to the fractions of highest purity were attributed to 10 nm length classes. For $TVCV_{PA}$, length distributions in fractions 5 and 6 are shown separately. Arrows indicating the expected particle lengths demonstrate the substantially increased particle integrity obtained through this purification protocol.

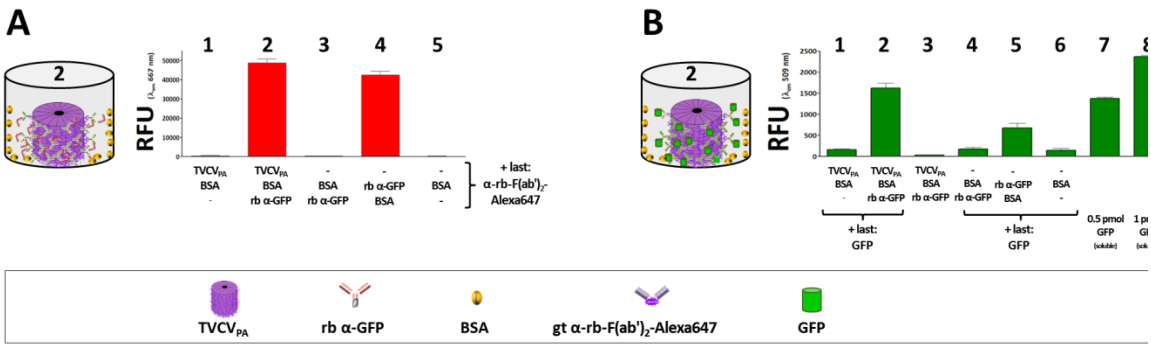


Figure S2. Antibody-mediated immobilization of GFP on TVCV$_{PA}$ particles.
A) Scheme: Adapter-(TVCV$_{PA}$)-coated and empty plate wells were subjected to the serial treatments indicated below the diagram (scheme left: layout 2). Binding of rabbit anti-(α)-GFP IgGs was detected by fluorescent secondary F(ab')$_2$-fragments (goat F(ab')$_2$-Alexa647). Fluorescence was determined spectrophotometrically at λ_{Ex} = 630 nm; λ_{Em} = 667 nm. **B)** Layouts as in (A) and additional controls as indicated were tested for binding of GFP from solution. Captured GFP was detected at λ_{Ex} = 470 nm; λ_{Em} = 509 nm. The application of TVCV$_{PA}$ adapters presenting rabbit anti-GFP IgGs yielded an immobilization of around 0.7 pmol GFP/well [column 2], compared to ≈ 0.25 pmol in the corresponding layout lacking TVCV$_{PA}$ [column 5].

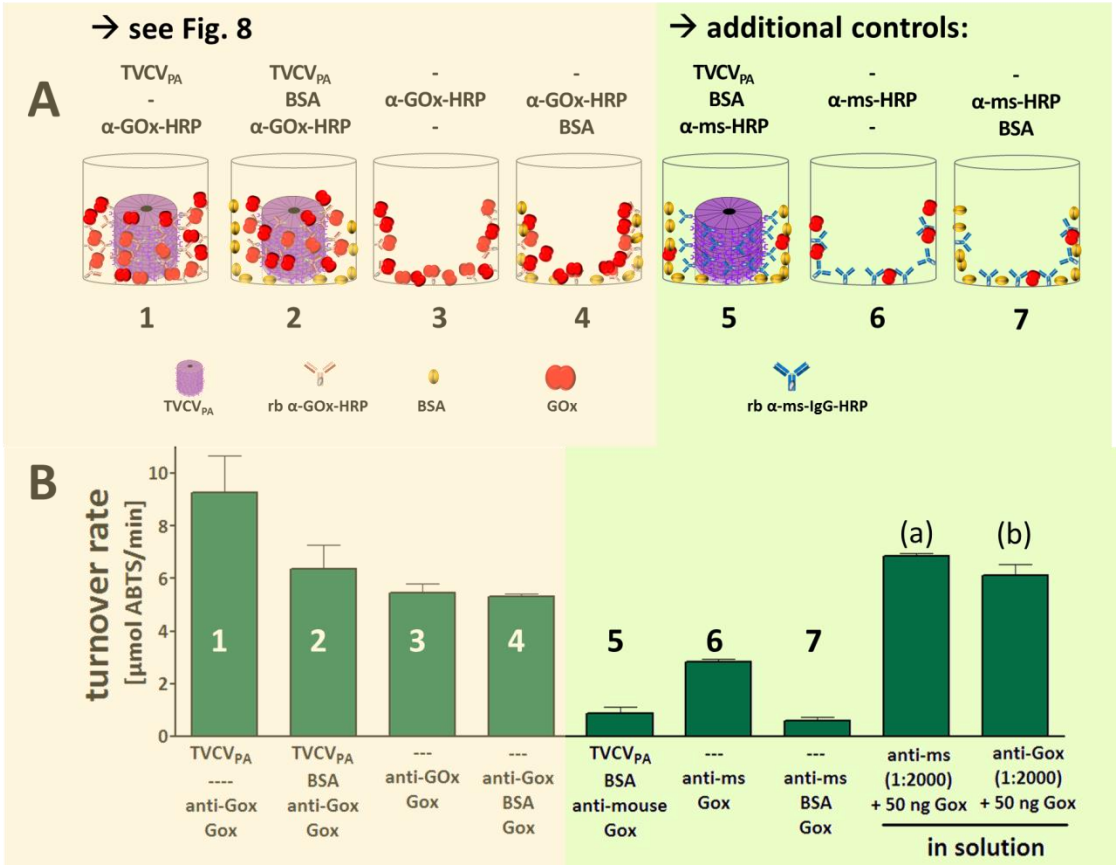


Figure S3 - extension of Fig. 8: Antibody-mediated immobilization of the bi-enzyme cascade GOx/HRP in microtiter plates with or without TVCV$_{PA}$ particles and enzyme activities - controls lacking GOx-specific IgGs.
A) Schemes of layouts and **B)** corresponding ABTS turnover rates. **Yellow (left) part:** see Fig. 8 for details. **Green (right) part:** Layouts 5-7: control treatments using rabbit anti-mouse-HRP as non-GOx-directed IgG. **B)** in addition */**: Enzymatic conversion rates of GOx/antibody mixtures in solution.