

Supplementary Information

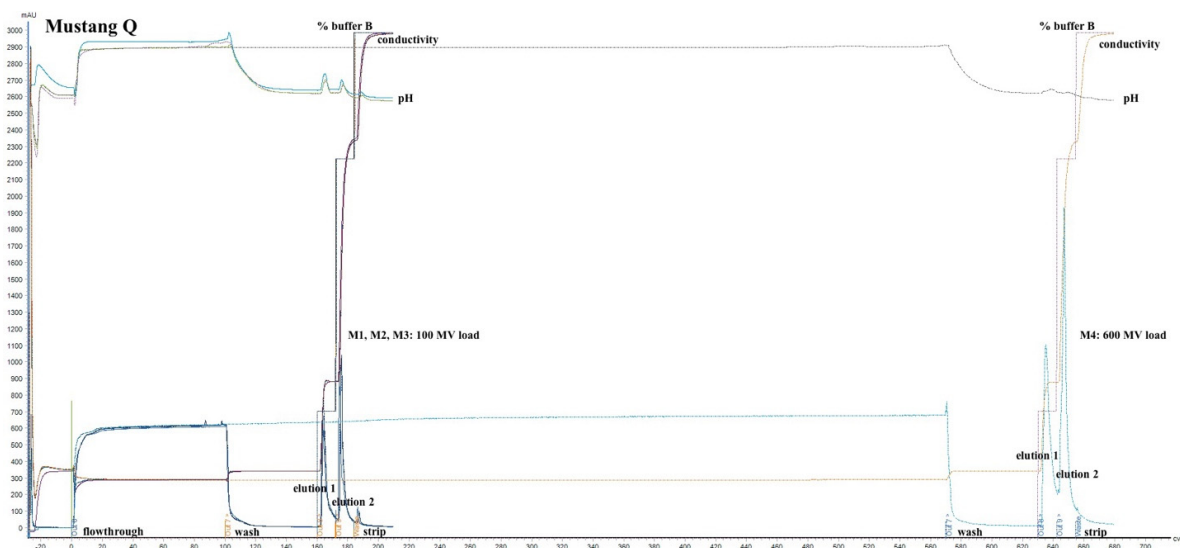


Figure S1: Overlaid chromatograms for the experiment to establish run conditions for Mustang Q as a capture step, as presented in Figure 1 of the main text. mAU refers to A280 signal; cv = column volume.

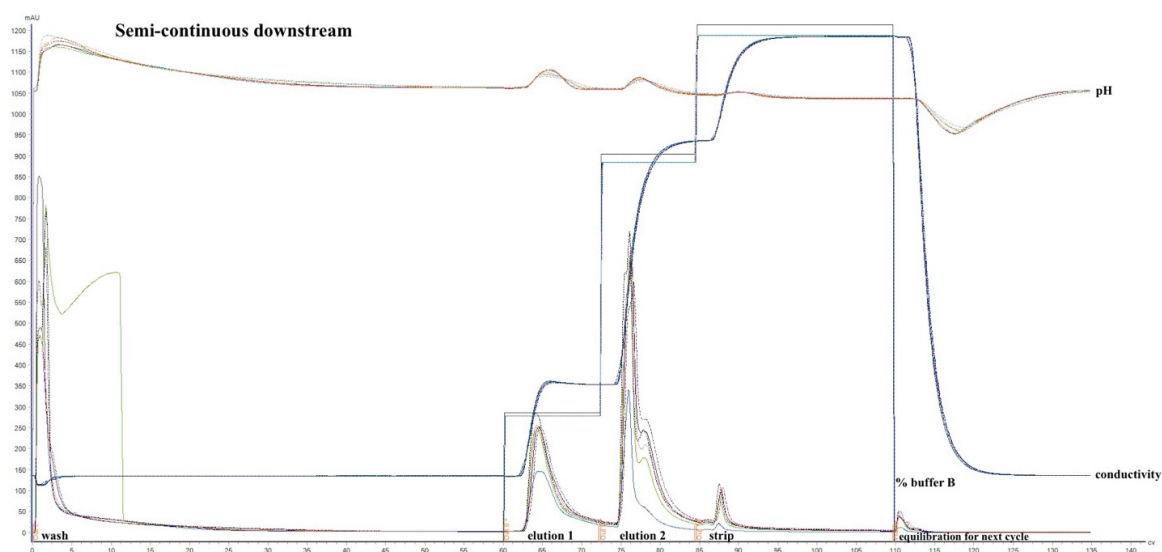


Figure S2: Overlaid chromatograms for the semi-continuous downstream run (6 cycles), as presented in Figures 3 and 4 of the main text. mAU refers to A280 signal; cv = column volume.

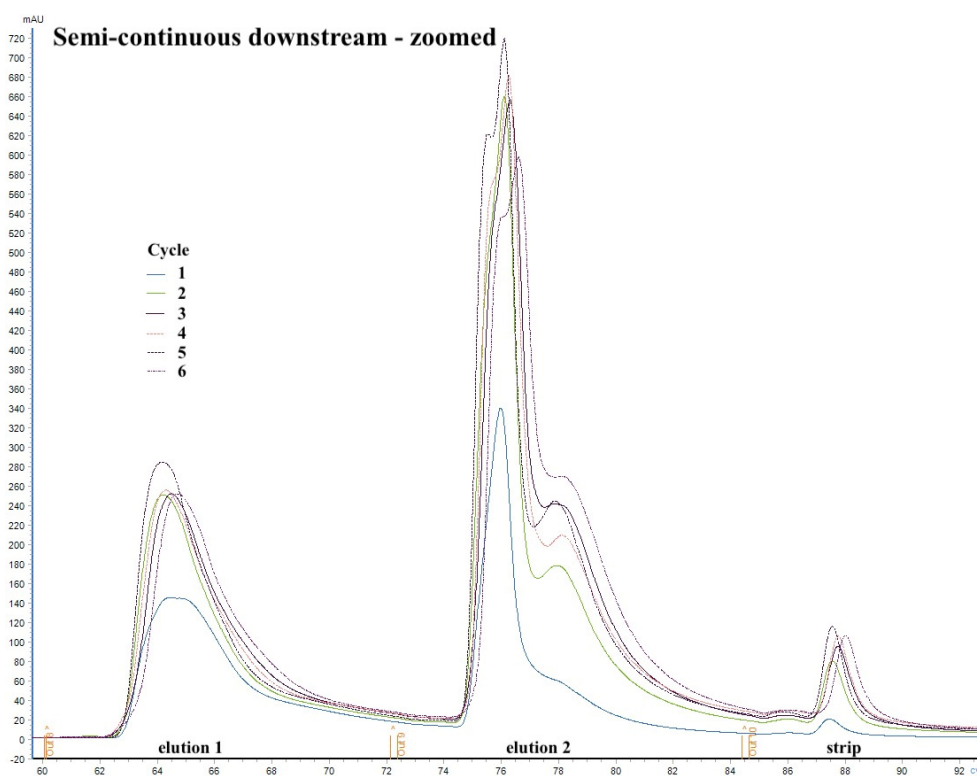


Figure S3: Zoomed version of the overlaid chromatograms for the semi-continuous downstream run shown in Figure S2. Cycle 1 shows lower A280 signal as compared to cycles 2-6. mAU refers to A280 signal; cv = column volume.

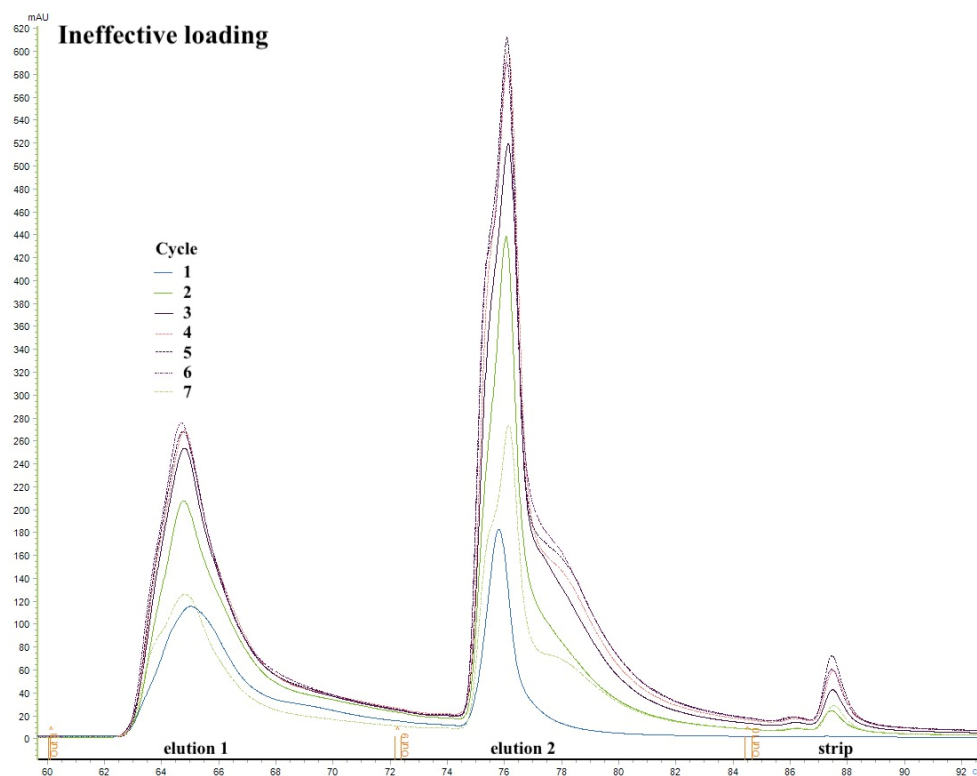


Figure S4: Zoomed version of overlaid chromatograms for a different semi-continuous downstream run, where the holdup volume of system 1 in the semi-continuous downstream setup was not accounted for, thereby loading less than 100 MV in cycle 1, and the leftover LV material was loaded in cycle 7. Cycles 1 and 7 show lower A280 signal as compared to cycles 2-6. mAU refers to A280 signal; cv = column volume.

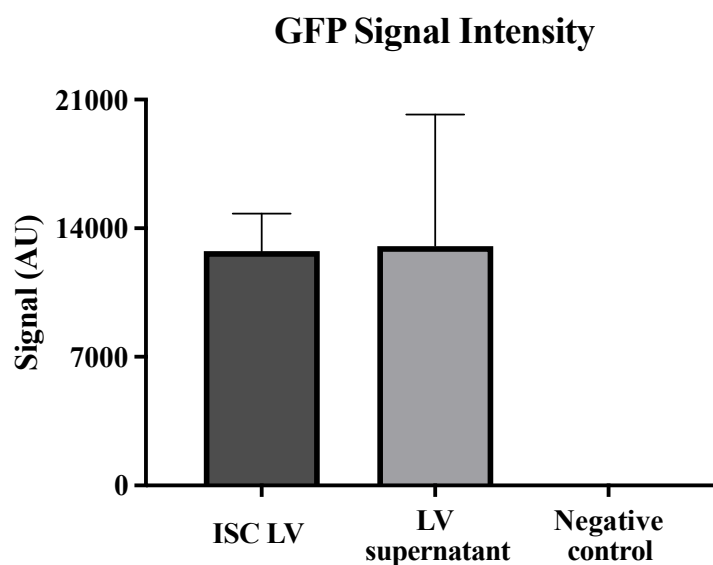


Figure S5. GFP signal intensity for transduced HEK293SF cells. ISC LV refer to LVs manufactured by the integrated semi-continuous process (i.e., LVs produced in perfusion bioreactor and processed downstream in semi-continuous mode); LV supernatant is from a shake flask production; negative control is the supernatant from non-induced producer cells used to transduce HEK293SF cells; GFP signal is in arbitrary units.

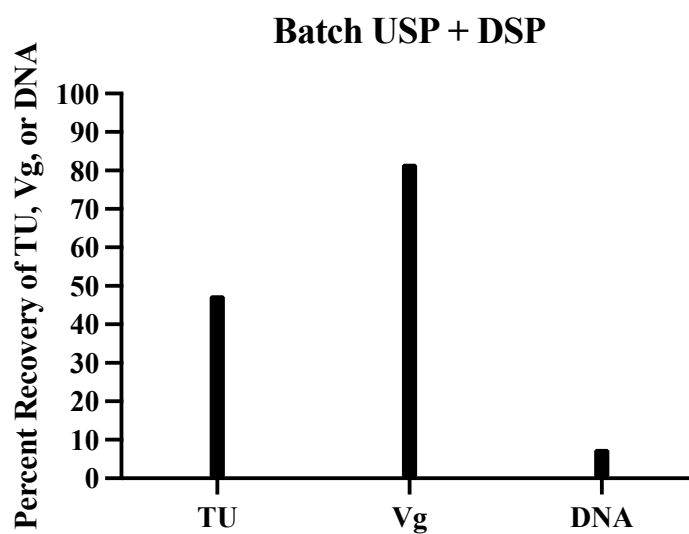


Figure S6. Batch upstream material processed downstream in batch mode. Percent recovery of TU, Vg, or DNA content in Mustang Q elution. USP = upstream processing; DSP = downstream processing; TU = transducing units; Vg = vector genome units.