# Supplementary Information

Figure S1. Biacore analysis to determine the concentration of anti-ricin Ab in polyclonal Fab/F(ab')$_2$ preparations. Serial dilutions of Ab or fragments (30–250 nM, based on total protein concentration) were captured on a ricin-coated sensor chip under mass transport limited conditions (flow rate 5 µL/min) or non-mass transport limited (100 µL/min) conditions. Concentration of anti-ricin Ab or fragment was determined according to the following calculations [21].
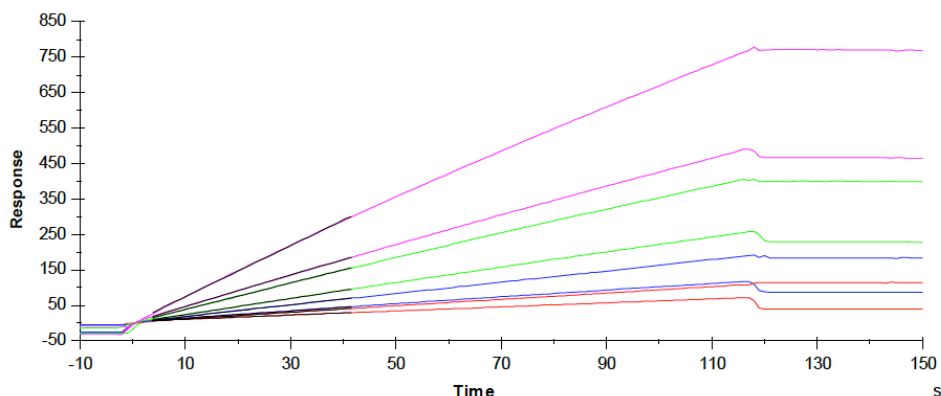
The concentration of the analyte [A$_{bulk}$] is calculated by the following equation:

$$[A_{bulk}] = \frac{\dfrac{1}{L_{m1}} - \dfrac{1}{L_{m2}}}{MW \cdot G \cdot \left(\dfrac{1}{\dfrac{dR_1}{dt_1}} - \dfrac{1}{\dfrac{dR_2}{dt_2}}\right)}$$

L_m = mass transport coefficient
MW   = 100,000g/mole for F(AB')$_2$
G   = 1000RU ·mm^2/ng = 1x10^6 RU·m^2/g
dR/dt = linear slope (measured within the first ~36s of binding where k_d is negligible) of 2 curves
    1. Mass transport limited (flow 5 µl/min)   flw$_5$ = 8.33×10^{-11} m^3/s
    2. Non mass transport (flow 100 µl/min)   flw$_{100}$ = 1.67×10^{-9} m^3/s

L_m in m/s is calculated as follows:

$$L_m = \sqrt[3]{\frac{D^2 \cdot \text{flw}}{h^2 \cdot w \cdot l}}$$

h   height of the flow cell   = 1.8 x10^{-5} m
w   width of the flow cell   = 5 x 10^{-4} m
l   length of the flow cell   = 1.6 x 10^{-3} m

D   the diffusion coefficient for F(AB')$_2$ at 37°C calculated as follows:

$$D = \frac{1.0x10^{-11} \cdot 324.3 \cdot MW^{-\left(\frac{1}{3}\right)} \cdot C_{t37}}{\dfrac{f}{fo} \cdot \dfrac{v}{vo}}$$

f/fo friction factor   =1.2
v/vo solution viscosity   =0.89
C_{t37} conversion to 37°C   =1.06