S2 Table. Multi-cycle Kinetics (MCK)
Validation of Langmuir modeling [a]

Fab	Affinity purification	$T (k_{on})$	$T (k_{off})$	χ^2	k_t (RU/Ms)	$T (k_t)$	U
3BNC117	2G12 (n=2)	$2.8 \cdot 10^3$ ± 50	$3.0 \cdot 10^2$ ± 20	$6.0 \cdot 10^{-2}$ $\pm 5.0 \cdot 10^{-4}$	$6.2 \cdot 10^{20}$ $\pm 6.2 \cdot 10^{20}$	$4.7 \cdot 10^{-2}$ $\pm 4.7 \cdot 10^{-2}$	3.0 ± 0

[a] Tabulated values are means $\pm$ S.E.M of 'n' independent replicates. The data complement **SI Figure 4**.

Validation of Heterogeneous-ligand modeling [a]

Fab	Affinity purification	$T (k_{on1})$	$T (k_{off1})$	$T (k_{on2})$	$T (k_{off2})$	χ^2	k_t (RU/Ms)	$T (k_t)$
PGT151	2G12 (n=2)	$7.1 \cdot 10^2$ ± 5.0	$1.0 \cdot 10^2$ ± 70	$2.8 \cdot 10^2$ ± 65	$3.4 \cdot 10^2$ ± 65	$2.3 \cdot 10^{-2}$ $\pm 4.1 \cdot 10^{-3}$	$3.9 \cdot 10^{21}$ $\pm 3.5 \cdot 10^{20}$	$8.1 \cdot 10^{-4}$ $\pm 4.0 \cdot 10^{-4}$

[a] Tabulated values are means $\pm$ S.E.M of 'n' independent replicates. The data complement **SI Figure 4**.