S1 Table. Single-cycle kinetics (SCK)

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)	$1.5 \cdot 10^3$ ± 50	$7.7 \cdot 10^2$ ± 40	0.10 $\pm 3.5 \cdot 10^{-4}$	$1.0 \cdot 10^{21}$ $\pm 1.0 \cdot 10^{21}$	$1.1 \cdot 10^{-2}$ $\pm 1.1 \cdot 10^{-2}$	1.0 ± 0

[a] Tabulated values are means $\pm$ S.E.M of 'n' independent replicates. The data complement **Figure 10**.

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)	$3.4 \cdot 10^2$ $\pm 1.9 \cdot 10^2$	$2.9 \cdot 10^2$ ± 70	$3.0 \cdot 10^2$ $\pm 1.3 \cdot 10^2$	$2.7 \cdot 10^2$ ± 0	$5.9 \cdot 10^{-2}$ $\pm 1.4 \cdot 10^{-2}$	$2.6 \cdot 10^{17}$ $\pm 1.1 \cdot 10^{17}$	$4.4 \cdot 10^{-5}$ $\pm 2.4 \cdot 10^{-5}$
	PGT151 (n=4)	$3.1 \cdot 10^2$ $\pm 1.2 \cdot 10^2$	$2.4 \cdot 10^2$ ± 43	$2.9 \cdot 10^2$ $\pm 1.1 \cdot 10^2$	$2.3 \cdot 10^2$ ± 45	0.18 $\pm 6.0 \cdot 10^{-3}$	$3.6 \cdot 10^{19}$ $\pm 3.5 \cdot 10^{19}$	$2.1 \cdot 10^{-4}$ $\pm 1.7 \cdot 10^{-4}$

[a] Tabulated values are means $\pm$ S.E.M of 'n' independent replicates. The data complement **Figure 11**.