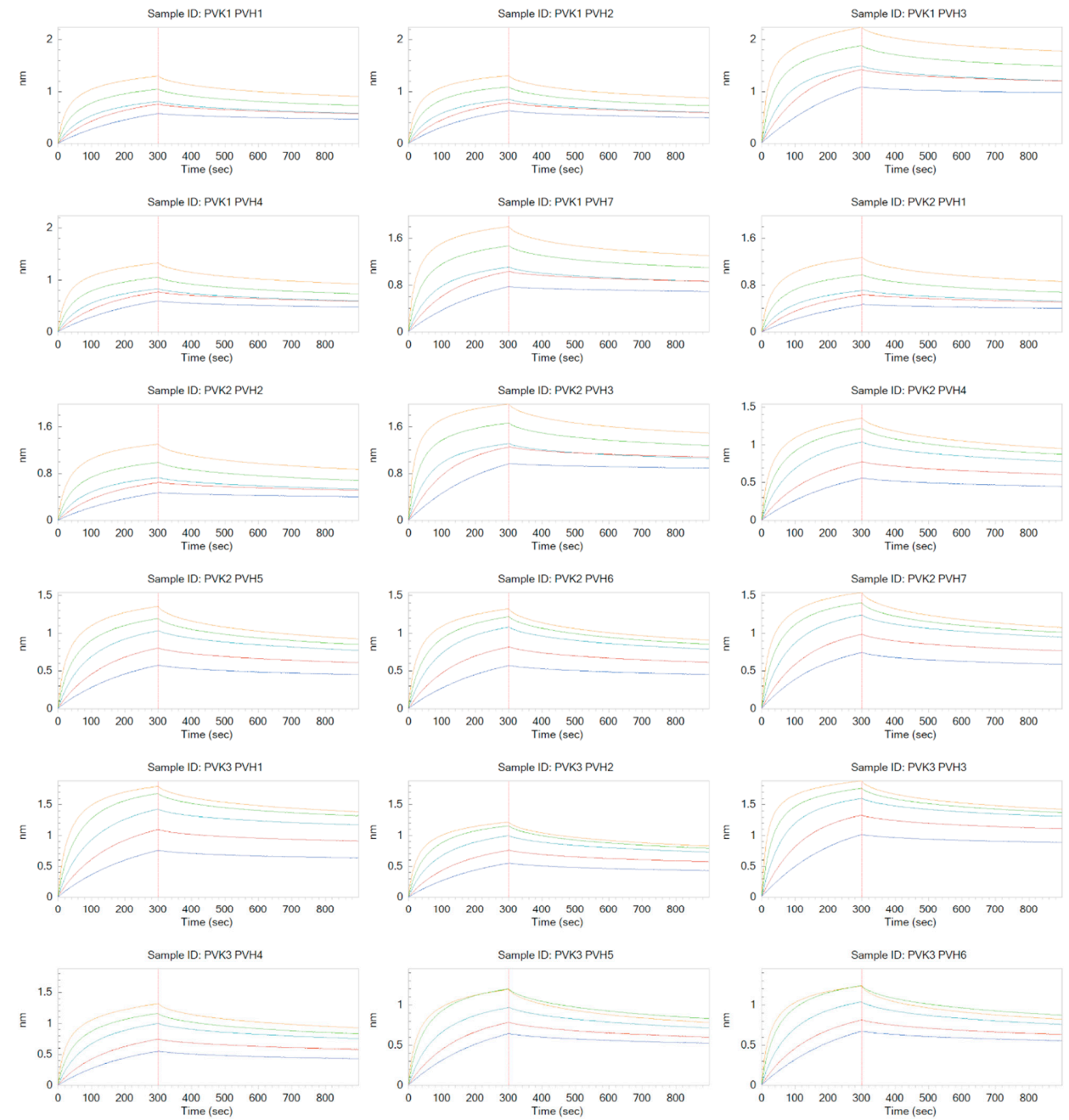
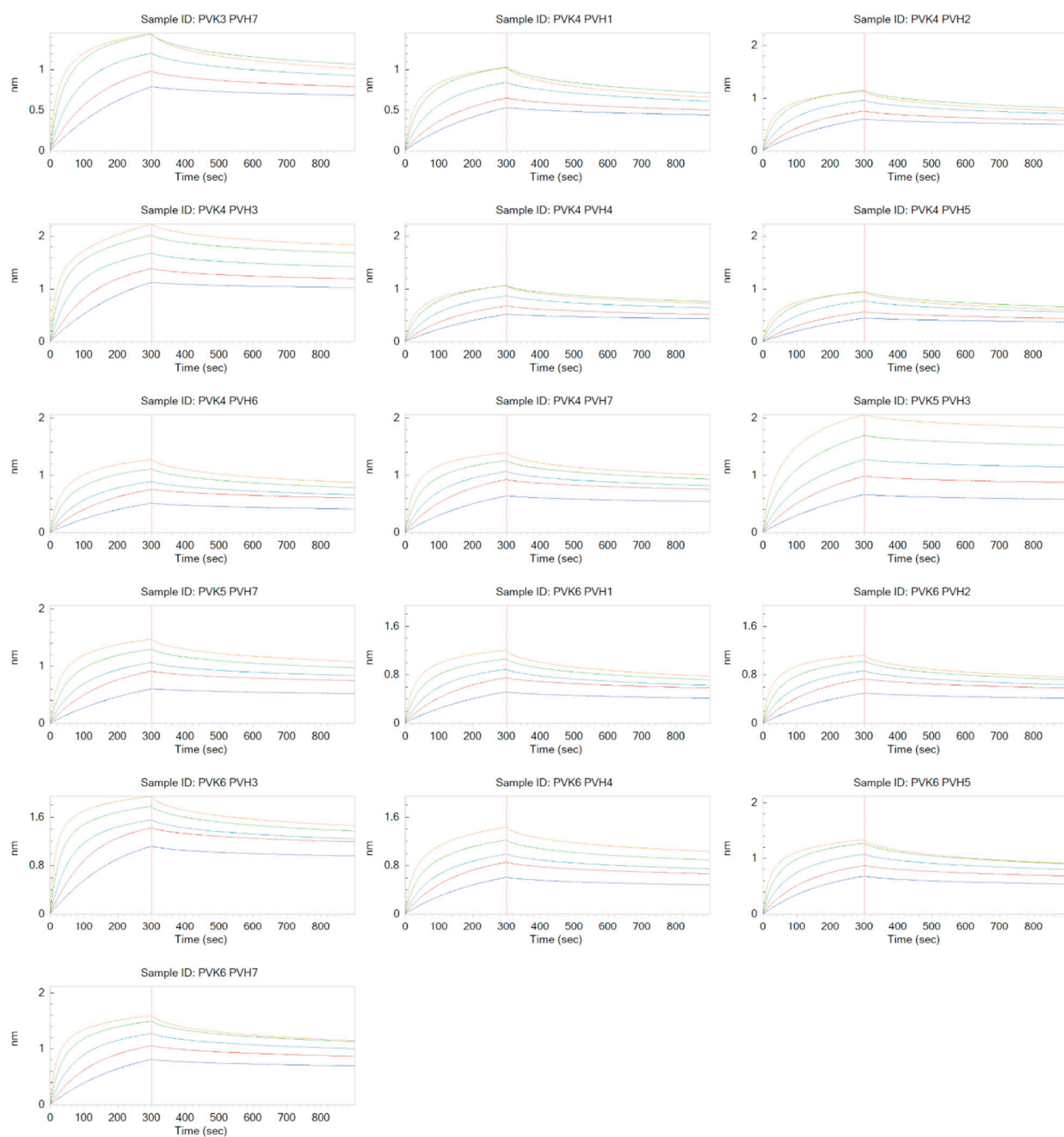


**Supplementary materials**

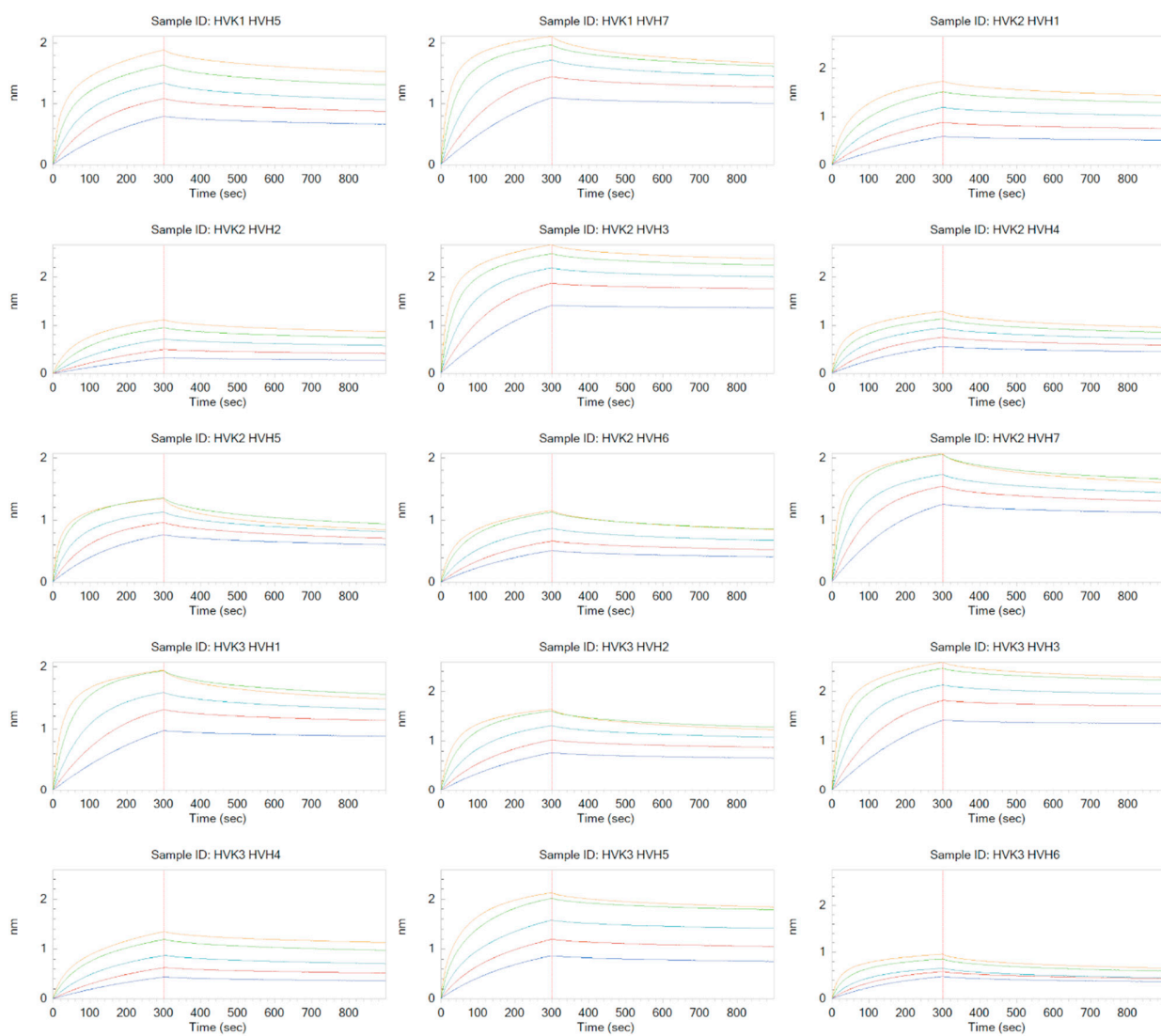
**Measured SpA BLI interactions with the Pertuzumab and Trastuzumab variants**



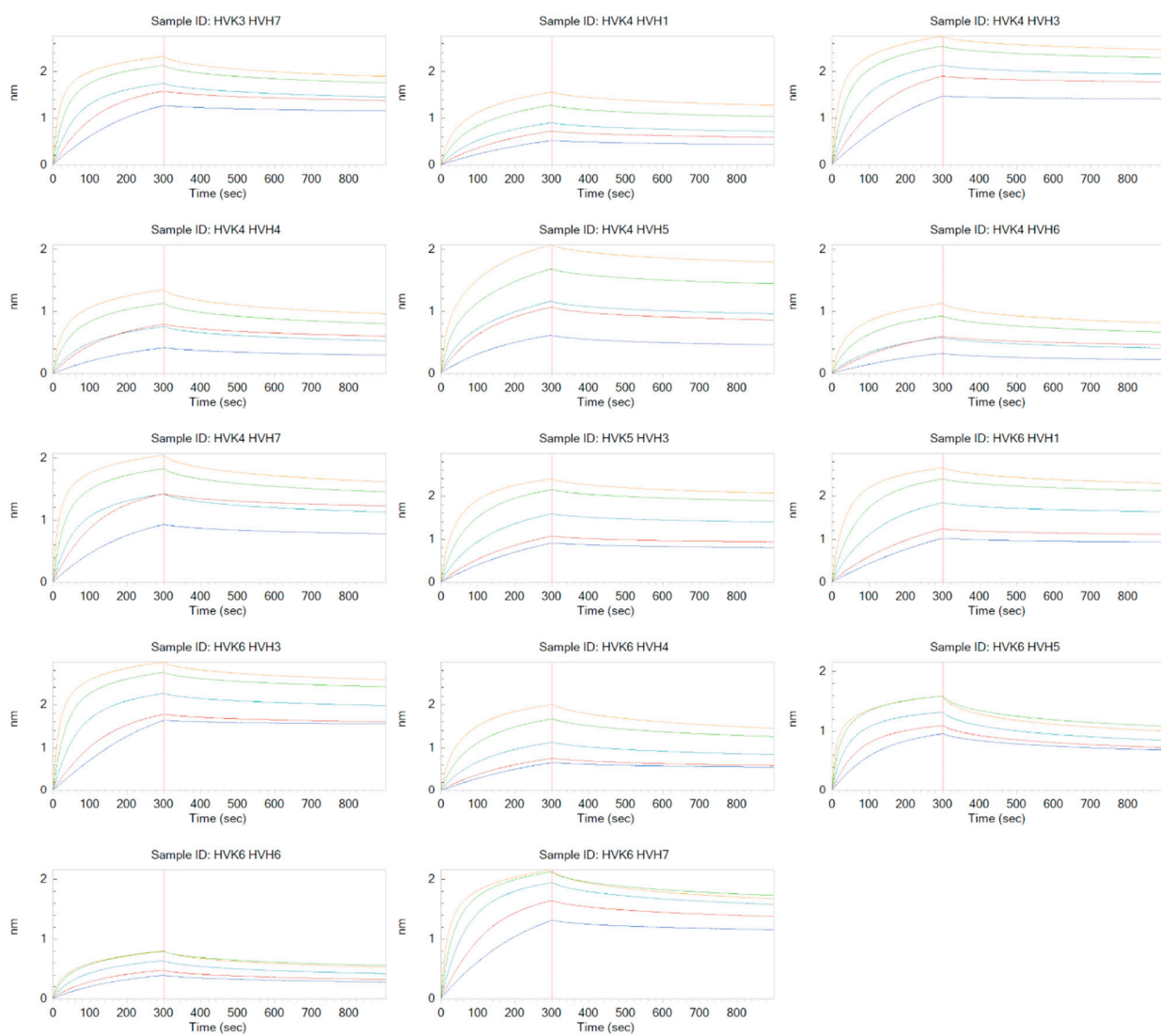
**Figure S1:** Binding graph of Pertuzumab variants (PVK1 PVH1 to PVK3 PVH5) to Protein A.



**Figure S2:** Binding graph of Pertuzumab variants (PVK3 PVH7 to PVK6 PVH7) to Protein A.



**Figure S3:** Binding graph of Trastuzumab variants (HVK1 HVH5 to HVK3 HVH5) to Protein A.



**Figure S4:** Binding graph of Trastuzumab variants (HVK3 HVH7 to HVK6 HVH7) to Protein A.



Measured SpG BLI interactions with the Pertuzumab and Trastuzumab variants

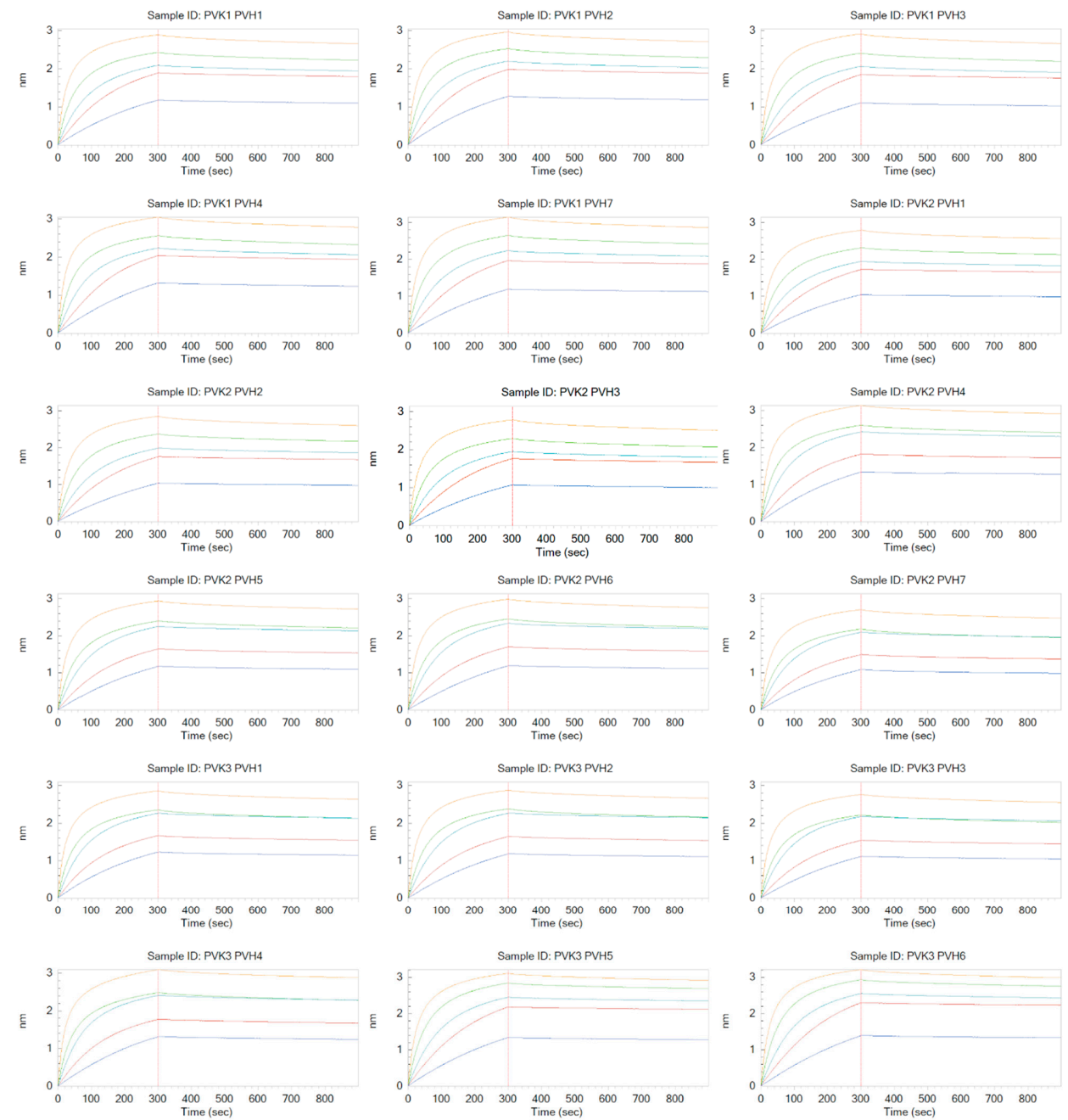
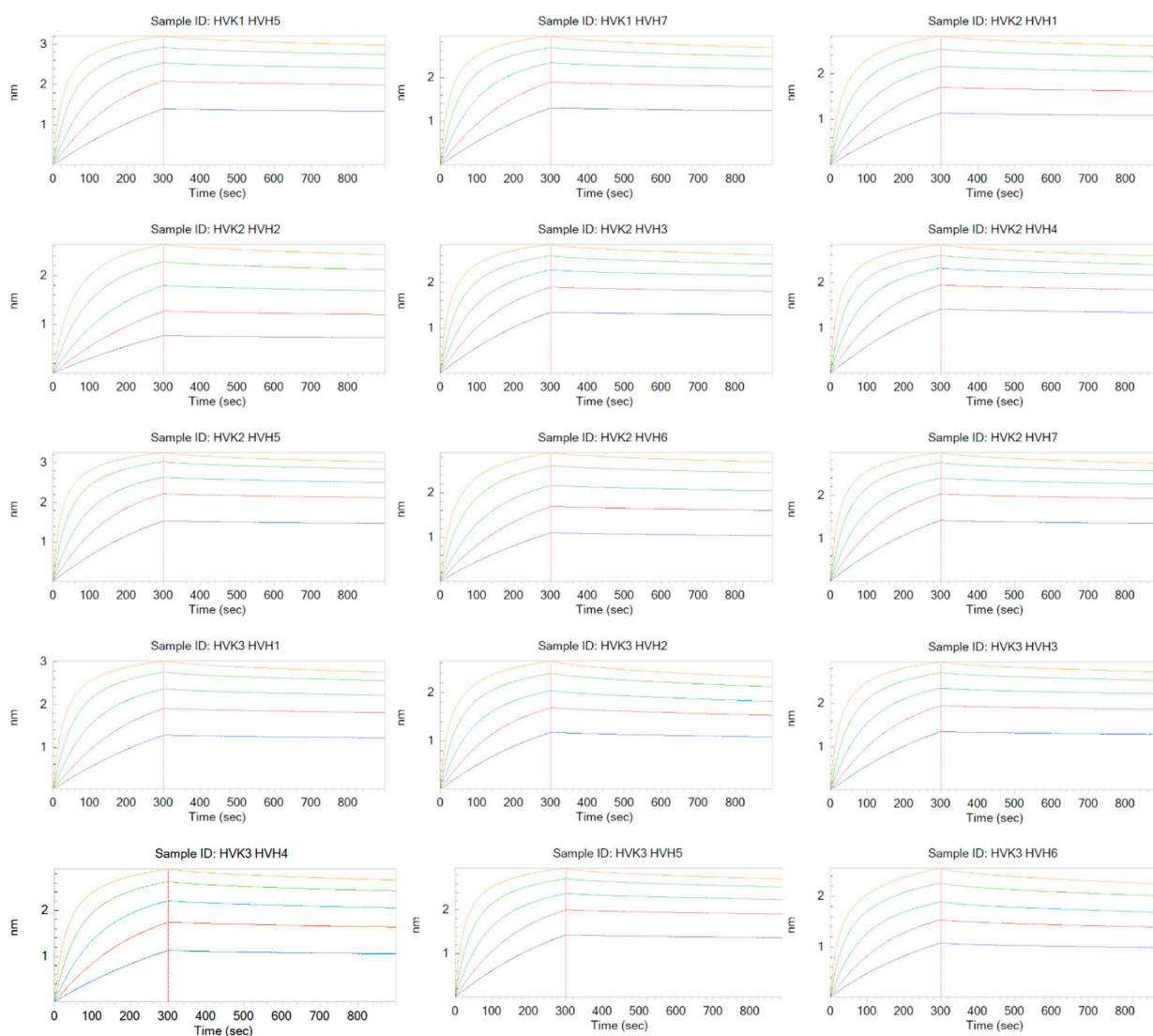


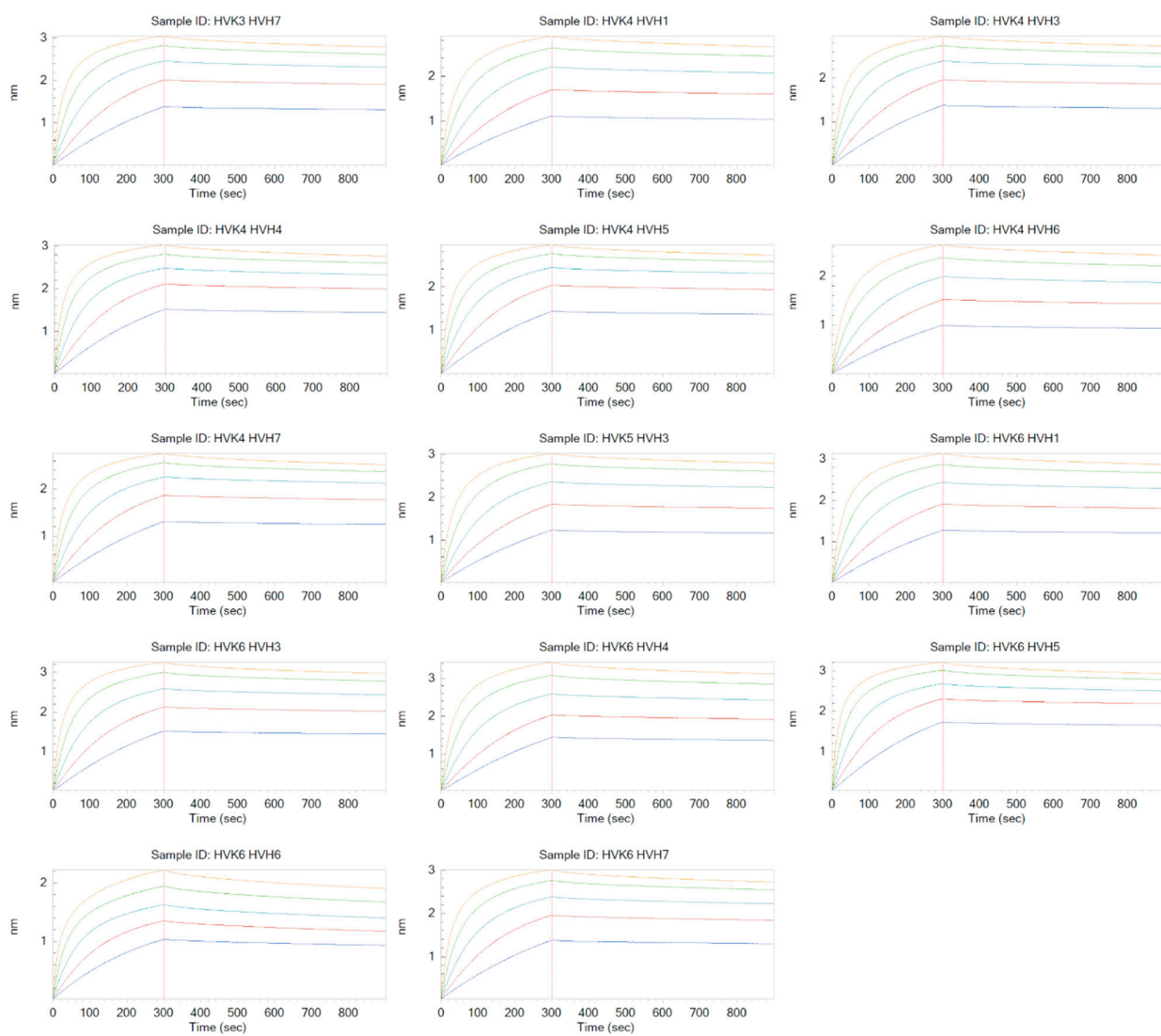
Figure S5: Binding graph of Pertuzumab variants (PVK1 PVH1 to PVK3 PVH5) to Protein G.



**Figure S6:** Binding graph of Pertuzumab variants (PVK3 PVH7 to PVK6 PVH7) to Protein G.



**Figure S7:** Binding graph of Trastuzumab variants (HVK1 HVH5 to HVK3 HVH5) to Protein G.



**Figure S8:** Binding graph of Trastuzumab variants (HVK3 HVH7 to HVK6 HVH7) to Protein G.

Measured PpL BLI interactions with the Pertuzumab and Trastuzumab variants

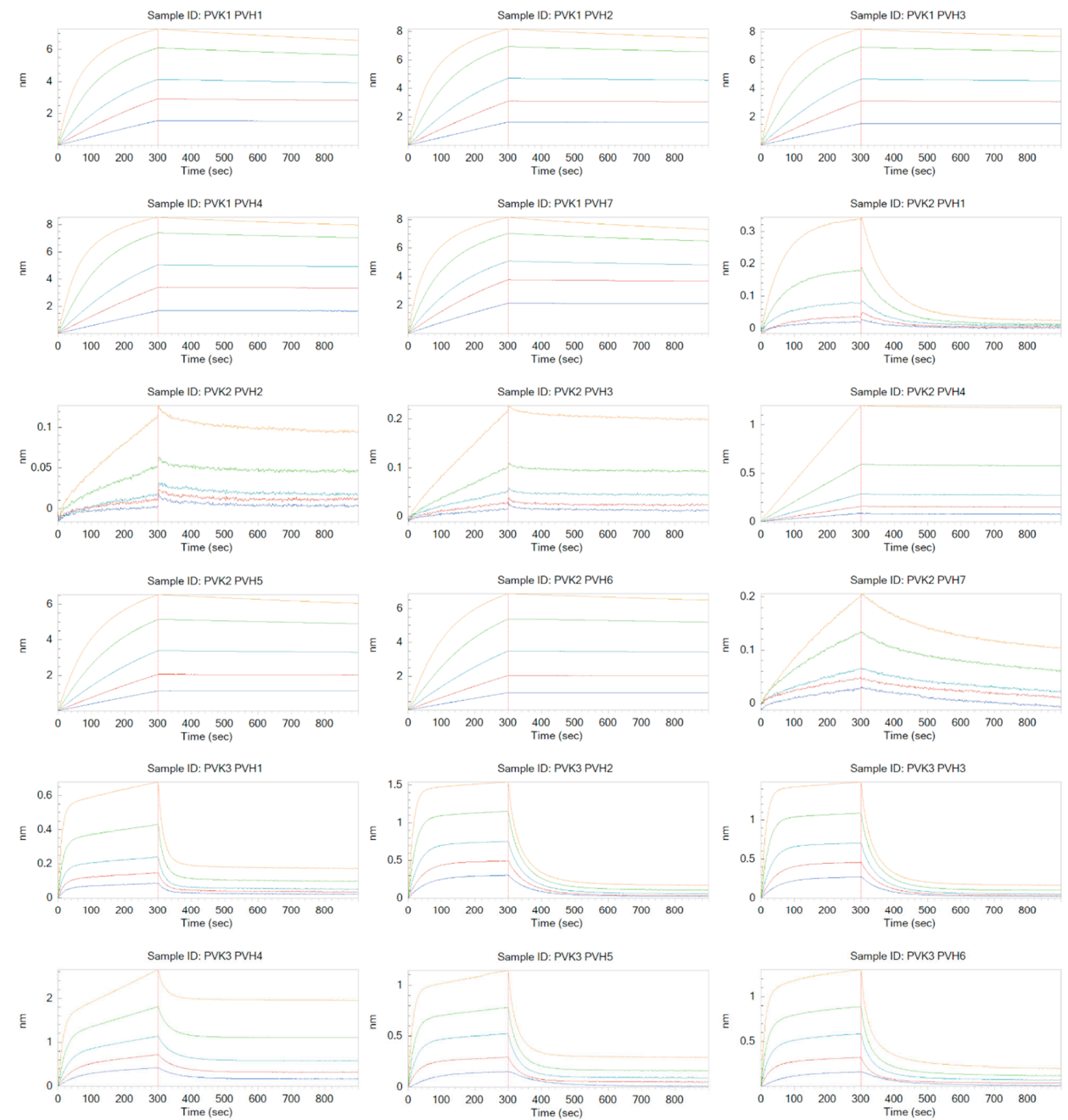
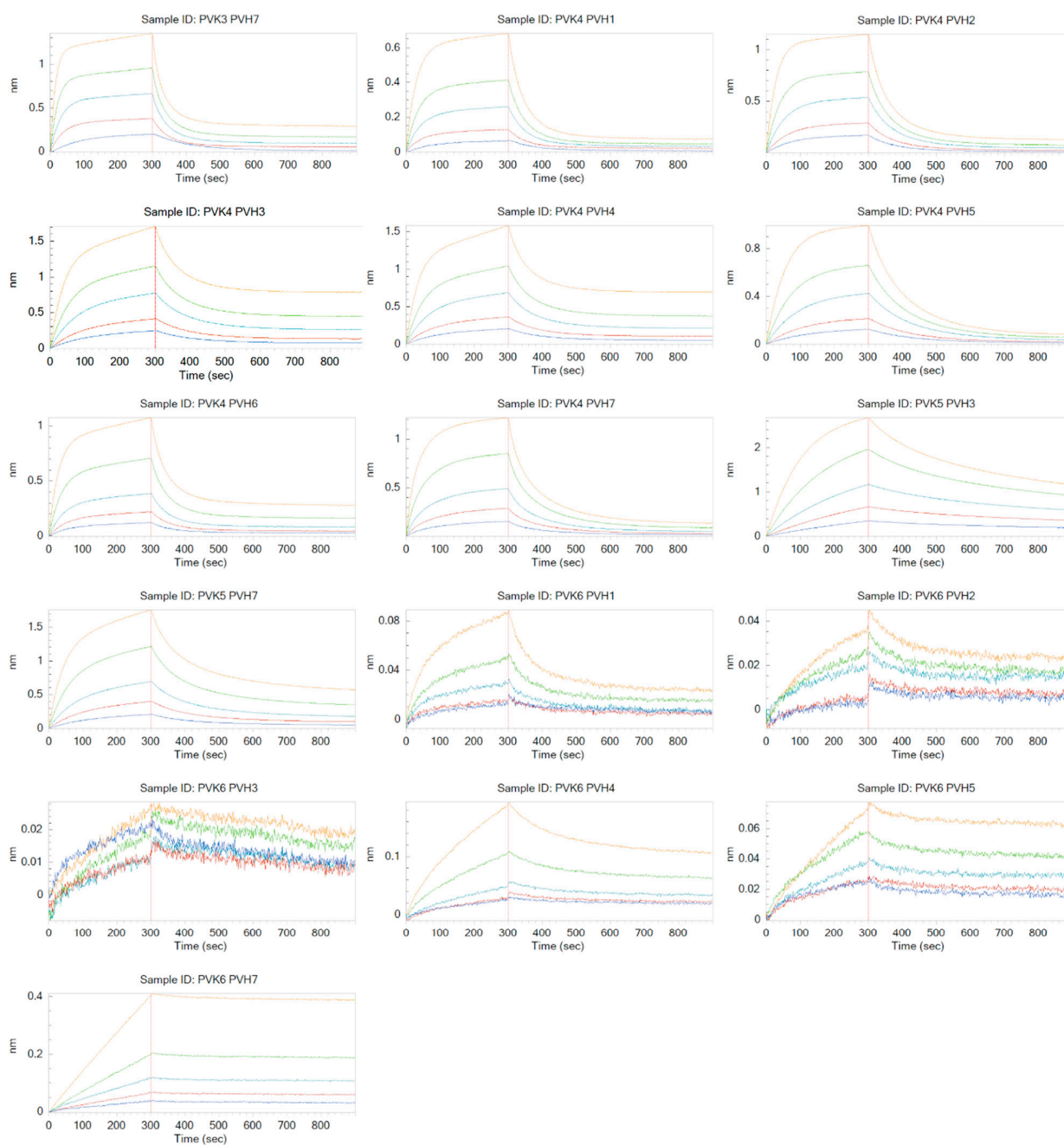


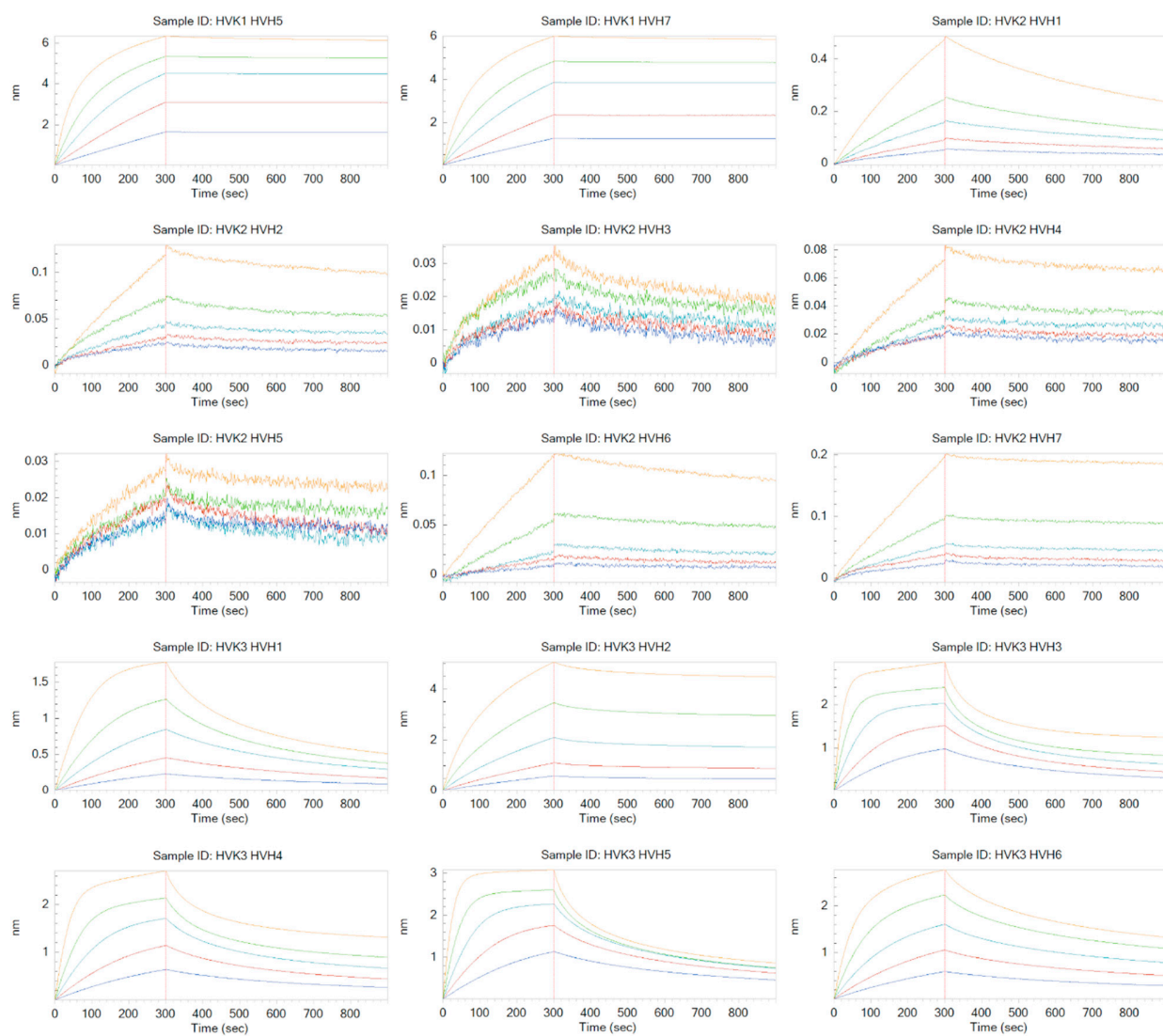
Figure S9: Binding graph of Pertuzumab variants (PVK1 PVH1 to PVK3 PVH5) to Protein L.



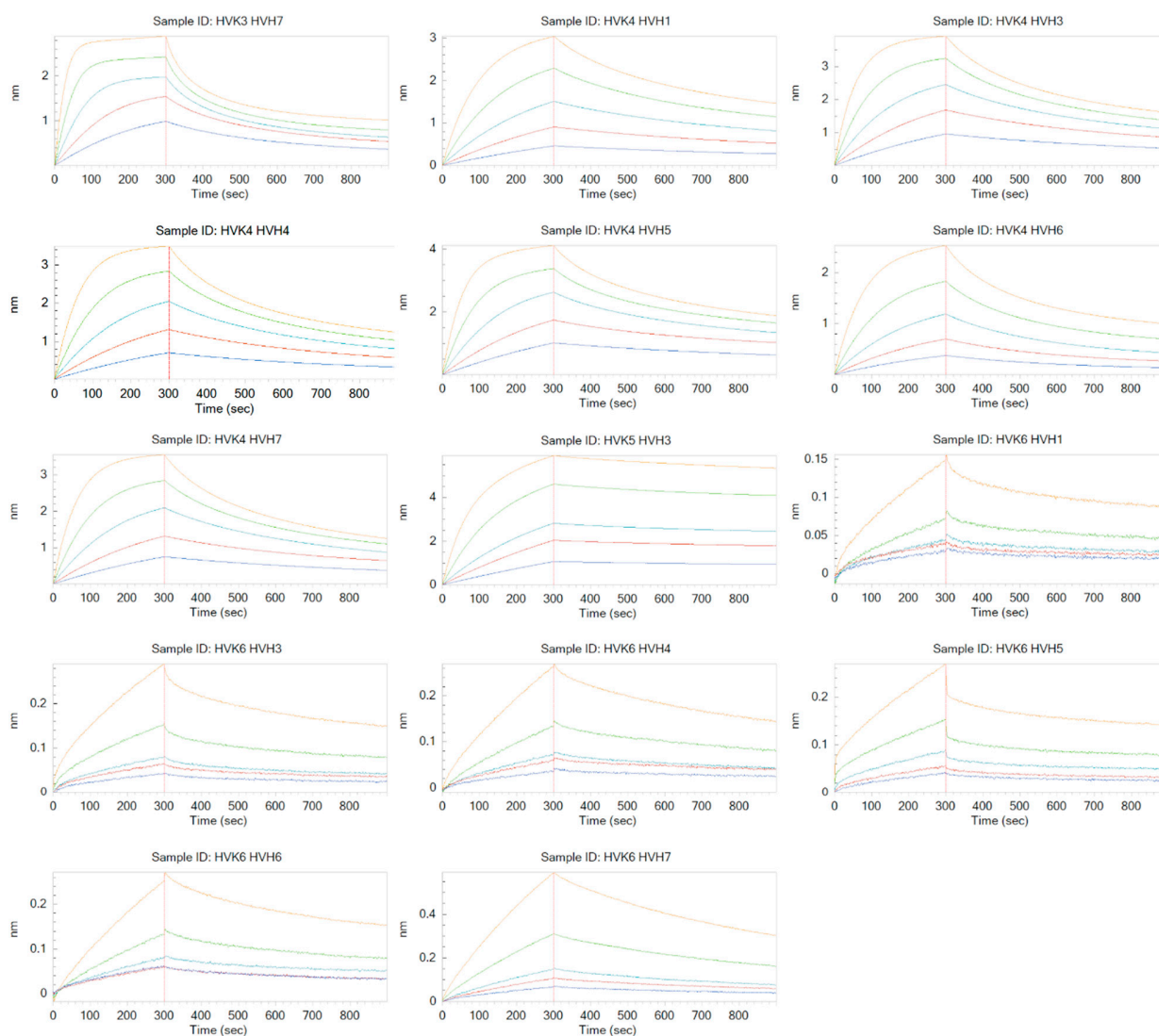


**Figure S10:** Binding graph of Pertuzumab variants (PVK3 PVH7 to PVK6 PVH7) to Protein L.



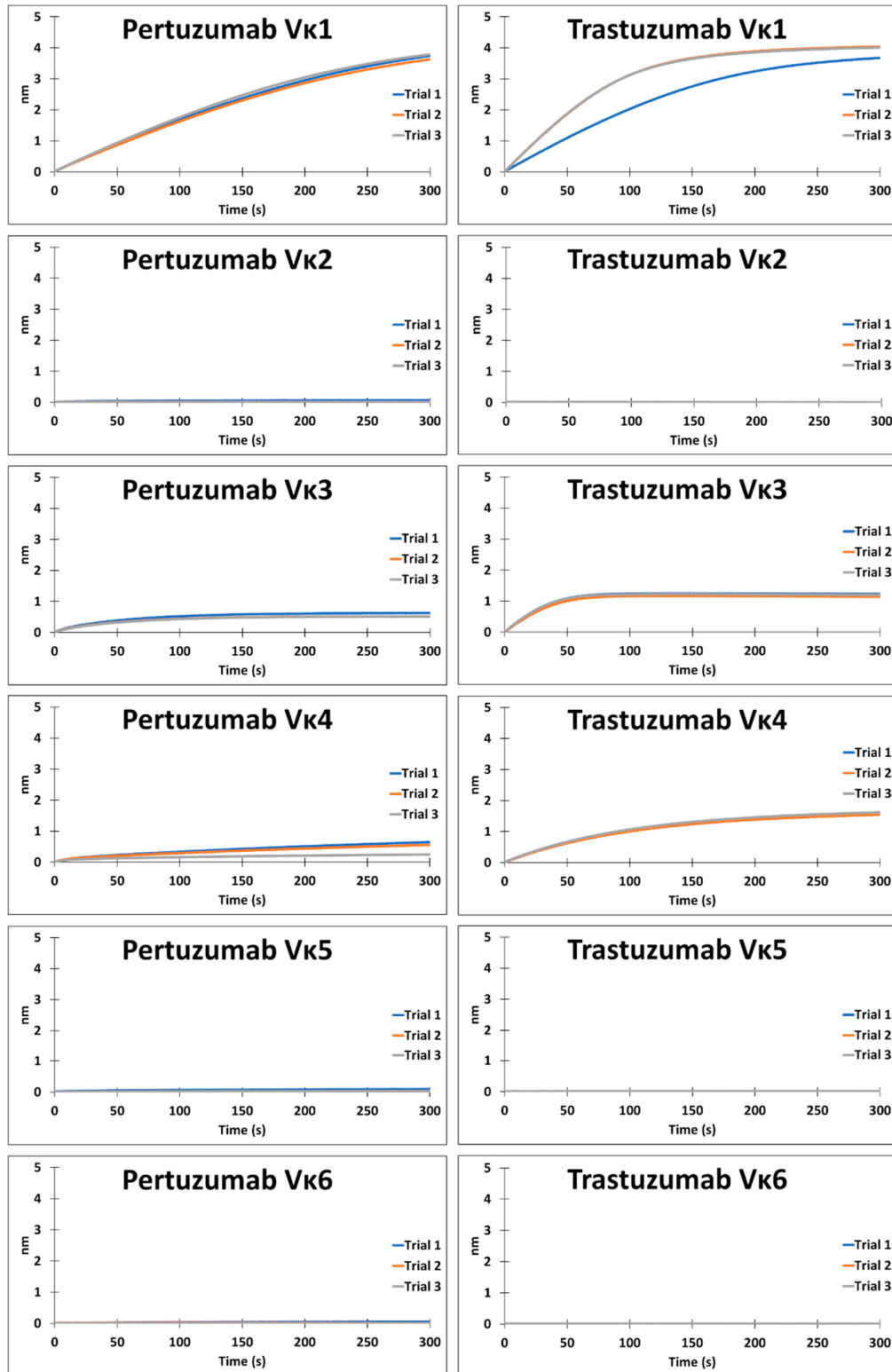


**Figure S11:** Binding graph of Trastuzumab variants (HVK1 HVH5 to HVK3 HVH5) to Protein L.



**Figure S12:** Binding graph of Trastuzumab variants (HVK3 HVH7 to HVK6 HVH7) to Protein L.

**BLI Measurements of Pertuzumab and Trastuzumab  $\kappa$ -chains to PpL**



**Figure S13:** BLI measurement of Pertuzumab and Trastuzumab V $\kappa$ 1-6 binding to immobilized PpL biosensor.