

Supplementary Materials

SI Table S1: Sequences of tandem repeat proteins utilized in these experiments.

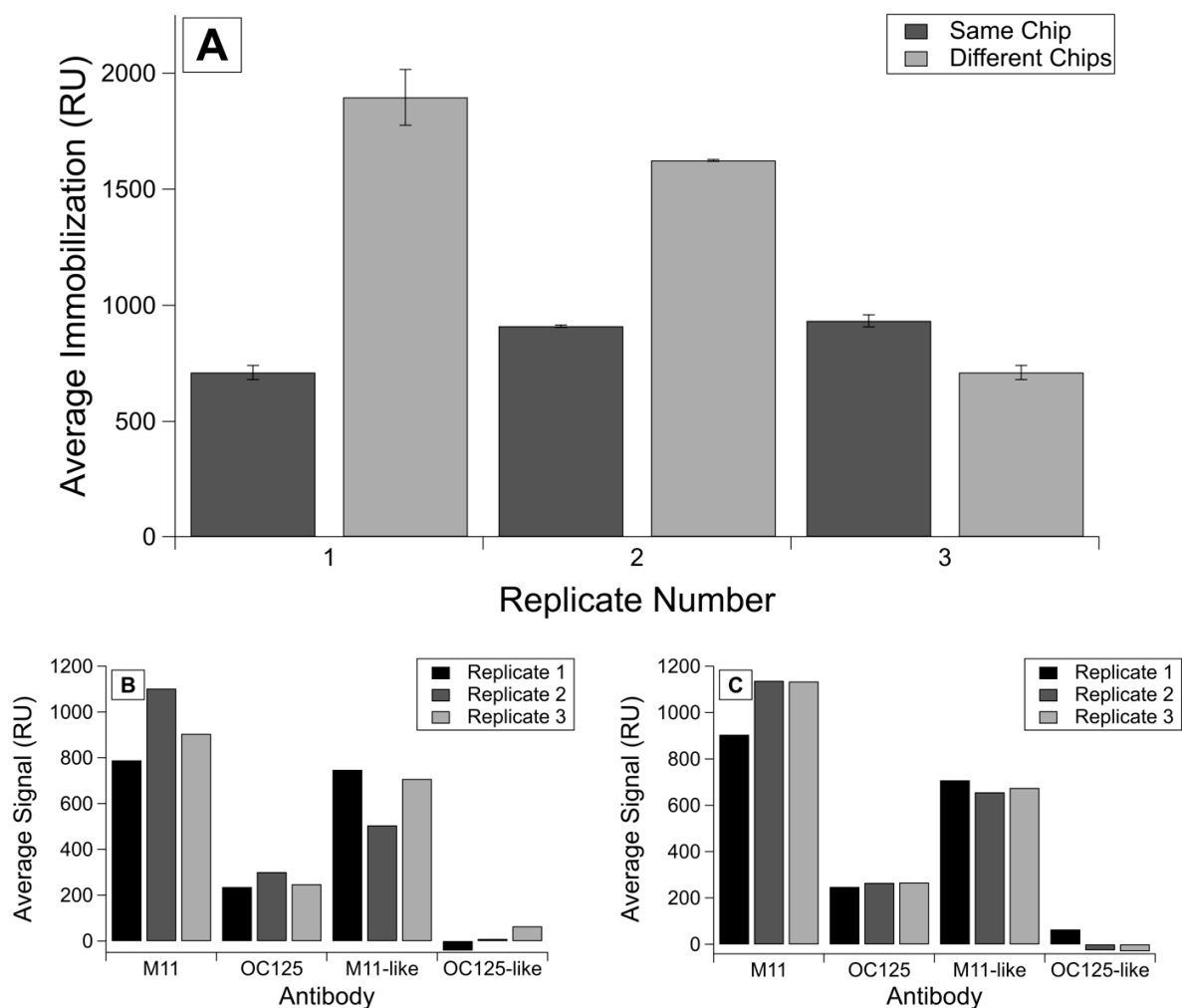
SI Figure S1: Comparison of immobilization and binding signals on the same chip versus different chips for R58.

SI Figure S2: Measured glass thickness across a set of blank chips.

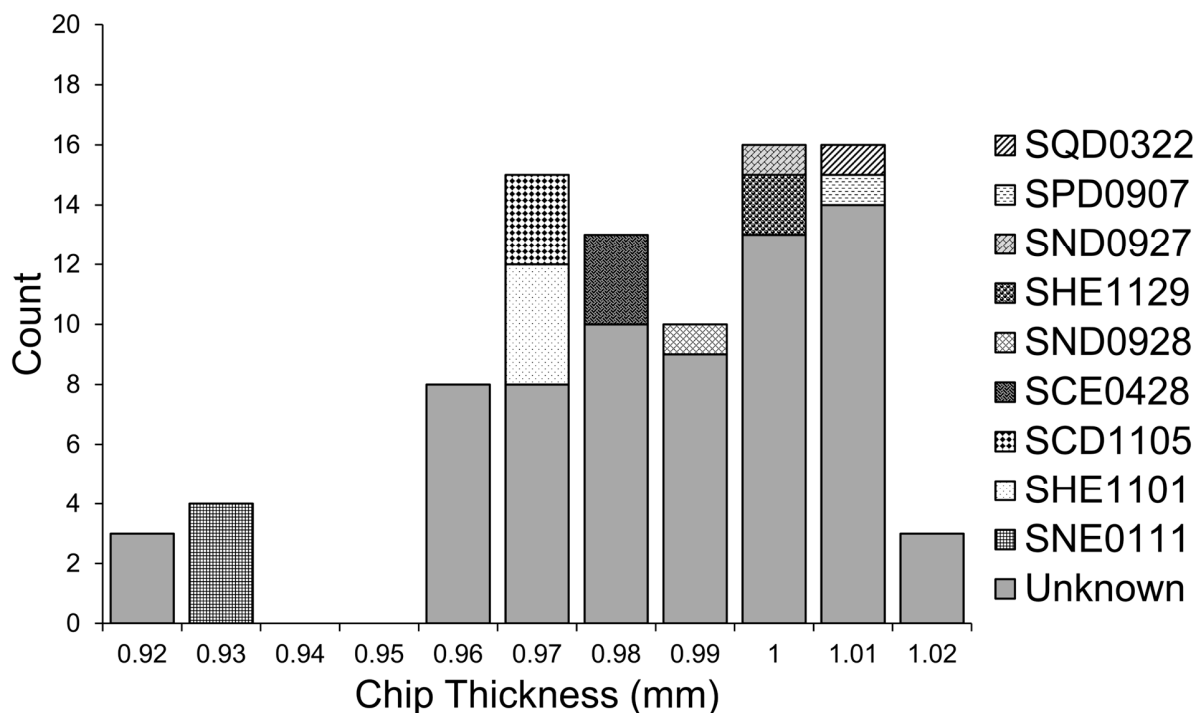
References

Repeat	Sequence	Coverage
R2	AAGPLLMPFTLNFTITNLQYEEDMRRTGSRKFNTMESVLQGLLKPLFKNTSVGPLYSGCRLTLLRPEKDGAATGVDAIC THRLDPKSPGLNREQLYWELSKLTNDIEELGPYTLDRNSLYVNGFTHQSSVSTTSTPGTSTVDLRTSGTPSSLSSPTIM	100%
R5	AAGPLLVPFTLNFTITNLQYEEDMHHPGSRKFNTTERVLQGLLGPMFKNTSVGLLYSGCRLTLLRSEKDGAATGVDAIC THRLDPKSPGVDREQLYWELSQLTNGIKELGPYTLDRNSLYVNGFTHQTSAPNTSTPGTSTVDLGTSGTPSSLPSPT	100%
R6	SAGPLLVPFTLNFTITNLQYEEDMRHPGSRKFNTTERVLQGLLKPLFKSTSVGPLYSGCRLTLLRSEKDGAATGVDAIC THRLDPKSPGVDREQLYWELSQLTNGIKELGPYTLDRNSLYVNGFTHQTSAPNTSTPGTSTVDLGTSGTPSSLPSPT	67%
R7	SAGPLLVPFTLNFTITNLQYEEDMHHPGSRKFNTTERVLQGLLGPMFKNTSVGLLYSGCRLTLLRPEDNGAATGMDAIC SHRLDPKSPGLNREQLYWELSQLTHGIKELGPYTLDRNSLYVNGFTHRSSVAPTSTPGTSTVDLGTSGTPSSLPSPT	100%
R9	TAGPLLVPFTLNFTITNLQYEEDMHRPGSRKFNATERVLQGLLSPIFKNSSVGPLYSGCRLTSLRPEKDGAATGMDAVC LYHPNPKRPGLDREQLYWELSQLTHNITEGLPYSLDRDSLYVNGFTHQNSVPTTSTPGTSTVYWATTGTPSSFPGHT	96%
R11	EPGPLLIPFTFNFTITNLHYEENMQHPGSRKFNTTERVLQGLLKPLFKNTSVGPLYSGCRLTLLRPEKHEAATGVDTIC THRVDPIGPGLDRERLYWELSQLTNSITELGPYTLDRDSLYVNGFNPRSSVPTTSTPGTSTVHLATSGTPSSLPGHT	100%
R25	TAGPLLVPFTLNFTITNLKYEEDMHCPGSRKFNTTERVLQSLLGPMFKNTSVGPLYSGCRLTLLRSEKDGAATGVDAIC THRLDPKSPGVDREQLYWEKSQLTNGIKELGPYTLDRNSLYVNGFTHQTSAPNTSTPGTSTVDLGTSGTPSSLPSPT	97%
R34	APVPLLIPFTLNFTITDLHYEENMQHPGSRKFNTTERVLQGLLKPLFKSTSVGPLYSGCRLTLLRPEKHGAATGVDAIC TLRLDPTGPGLDRERLYWELSQLTNSITELGPYTLDRDSLYVNGFNWSSVPTTSTPGTSTVHLATSGTPSSLPGHT	100%
R58	ATGPVLLPFTLNFTITNLQYEEDMHRPGSRKFNTTERVLQGLLMPLFKNTSVSSLYSGCRLTLLRPEKDGAATRVDVC THRPDPKSPGLDRERLYWKLSQLTHGITELGPYTLDRHSLYVNGFTHQSSMTTTRTPDTSTMHLATSRTPASLSGPT	95%

SI Table S1: Sequences of tandem repeat proteins utilized in these experiments. The sequences and numbering scheme were sourced from the published sequence [1]. Protein expression was confirmed via LC/MS-MS as described in our previous work [2] and coverage is reported in the table.



SI Figure S1: Comparison of immobilization and binding signals on the same chip versus different chips for R58. Shown is A) the averaged corrected signal for each immobilization of R58 protein per replicate on the same chip or on different chips. Error bars are standard error of the mean, with $n=4$. Also shown are averaged corrected signal for each antibody injection by replicates shown in B) the analyte binding on different chips and C) the analyte binding on the same chip.



SI Figure S2: Measured glass thickness across a set of blank chips. Utilizing digital calipers, 88 blank chips were measured. Twenty of the chips were from known sensor lots (lot numbers given in legend with corresponding colors), and other chips were from unknown lots.

References

1. O'Brien, T. J.; Beard, J. B.; Underwood, L. J.; Dennis, R. A.; Santin, A. D.; York, L., The CA 125 Gene: An Extracellular Superstructure Dominated by Repeat Sequences. *Tumor Biology* **2001**, 22, (6), 348-366.
2. Wang, C.-W.; Hanson, E.K.; Minkoff, L.; Whelan, R. J., Individual recombinant repeats of MUC16 display variable binding to CA125 antibodies. *Cancer Biomarkers* **2023**, 37, (2), 85-94.