Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.
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SUPPORTING INFORMATION

Table S1. A summary of bioinformatics screening to eliminate potentially false positive sequences.

clone	Peptide sequence	SmartBlast	TUPScan	PSBiner	PhD7Faster	SABinder	Lowest ATTRACT force field energy
1	WSLGYTG	No matches	No matches	No	No	No	-14.57
2	GTIYWNS	No matches	No matches	Yes (63%)	No	No	-15.17
3	SPLSPRY	No matches	No matches	No	Yes (99%)	No	-12.24
4	ETGITRQ	No matches	No matches	No	No	No	-11.17
5	WIFTPLG	No matches	No matches	No	No	No	-14.44
6	RNSWPVW	No matches	Plastic binder	Yes (65%)	No	No	-14.92
7	GSSGKPG	No matches	No matches	No	No	No	-12.13
8	RGTGHYW	No matches	No matches	No	No	No	-15.22
9	WWSTHDR	No matches	No matches	No	No	No	-15.56
10	RNMRGYG	No matches	No matches	No	No	No	-15.86
11	WTARPTG	No matches	No matches	No	No	No	-14.21
12	GSWTTGQ	No matches	No matches	Yes (95%)	No	No	-15.22
13	YNHTMMY	No matches	No matches	No	No	No	-15.68

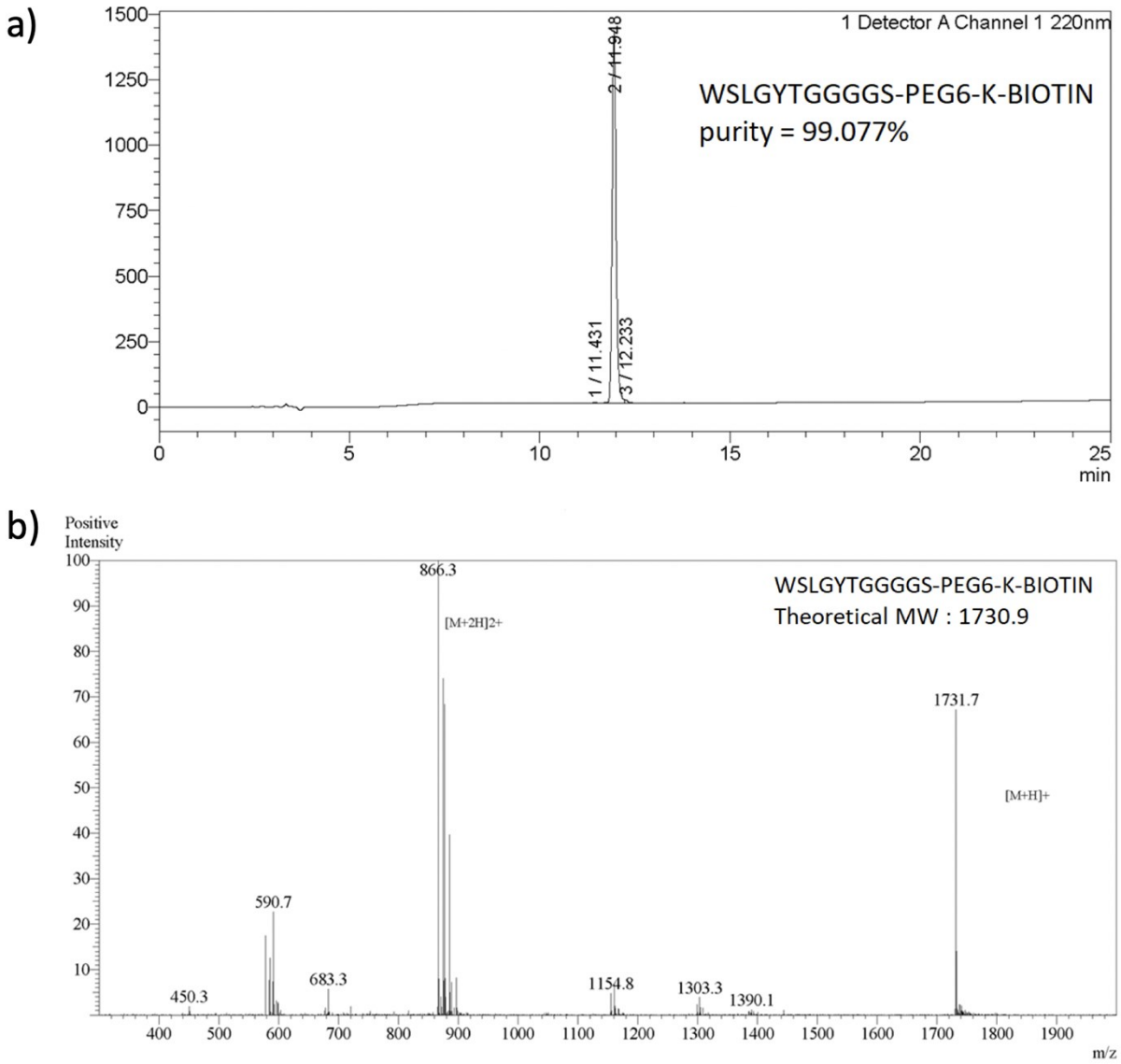


Figure S1. Purity and identity of the synthesized peptide WSLGYTGGGGS-PEG6-K-BIOTIN examined by (a) HPLC and (b) ESI-MS, respectively. The data was provided by GenScript (NJ, USA).

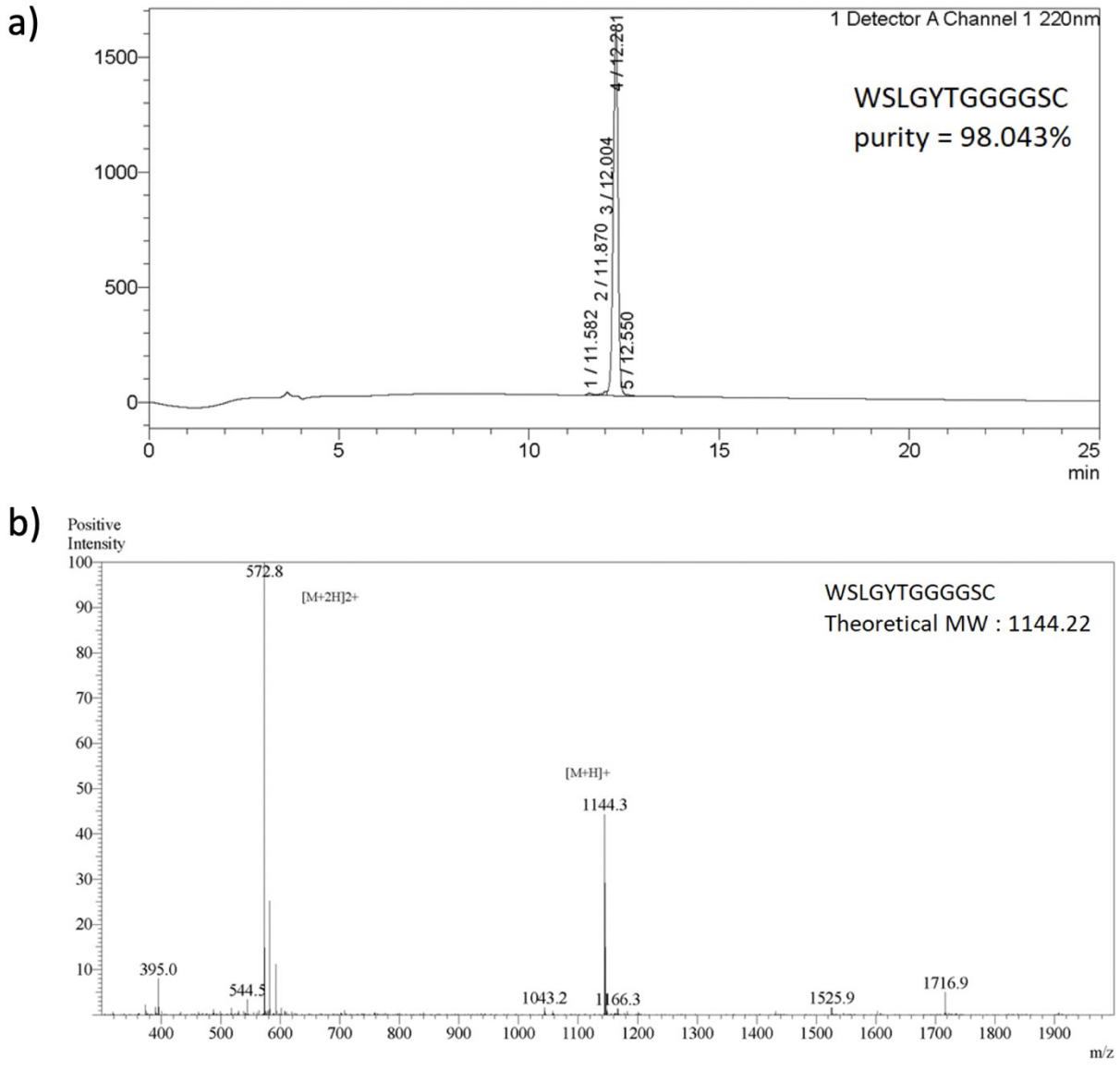


Figure S2. Purity and identity of the synthesized peptide WSLGYTGGGGSC examined by (a) HPLC and (b) ESI-MS, respectively. The data was provided by GenScript (NJ, USA).

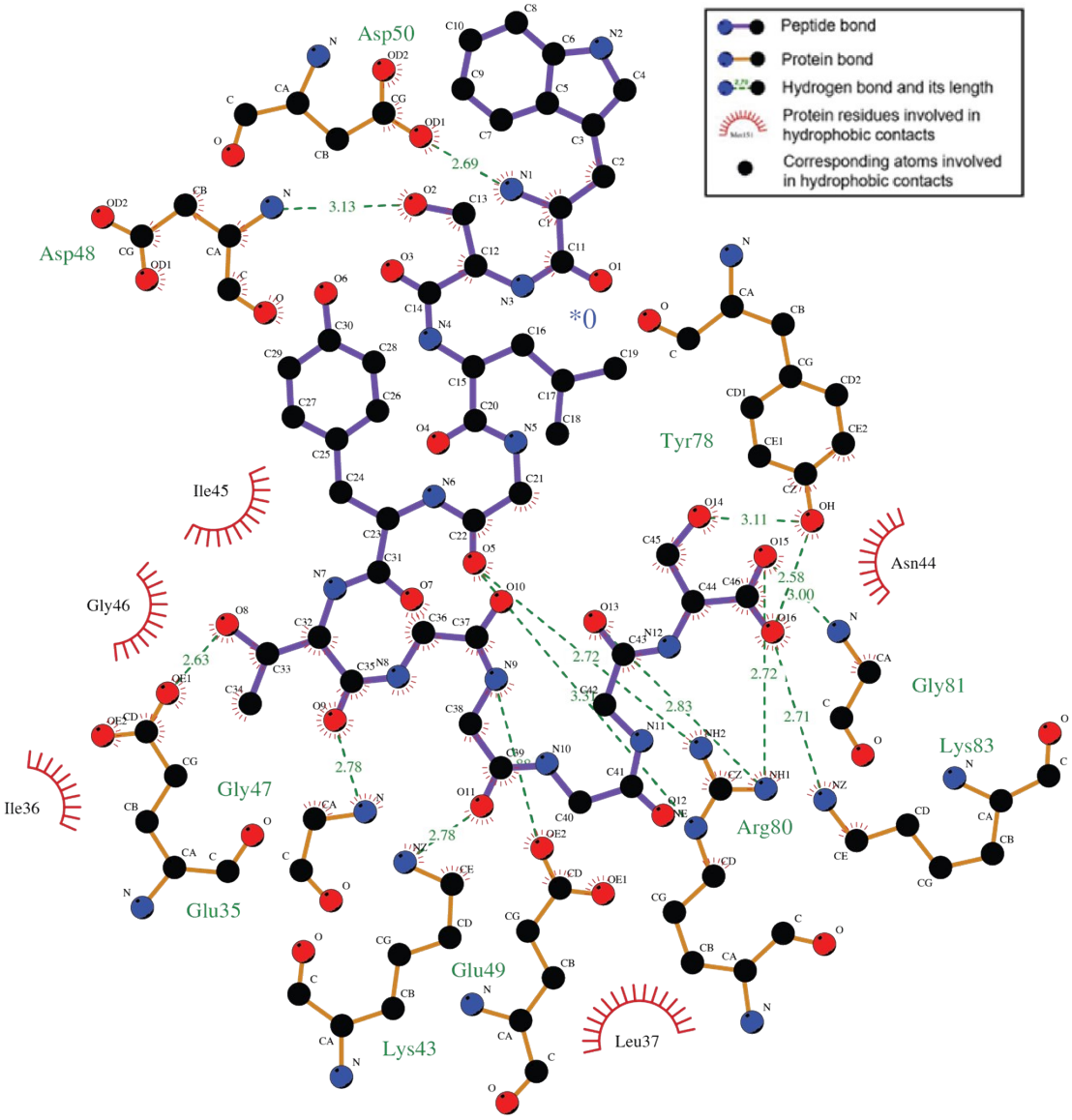


Figure S3. 2-dimensional illustration of peptide 1 and CD3ε interaction (exposed site).

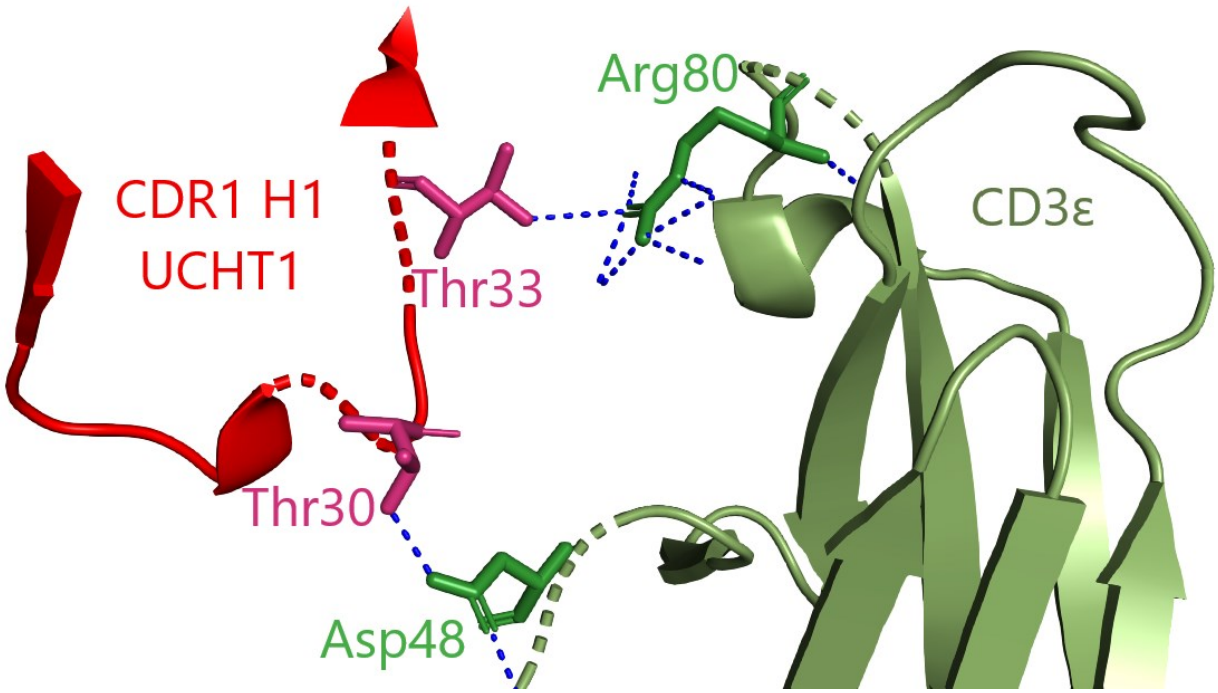
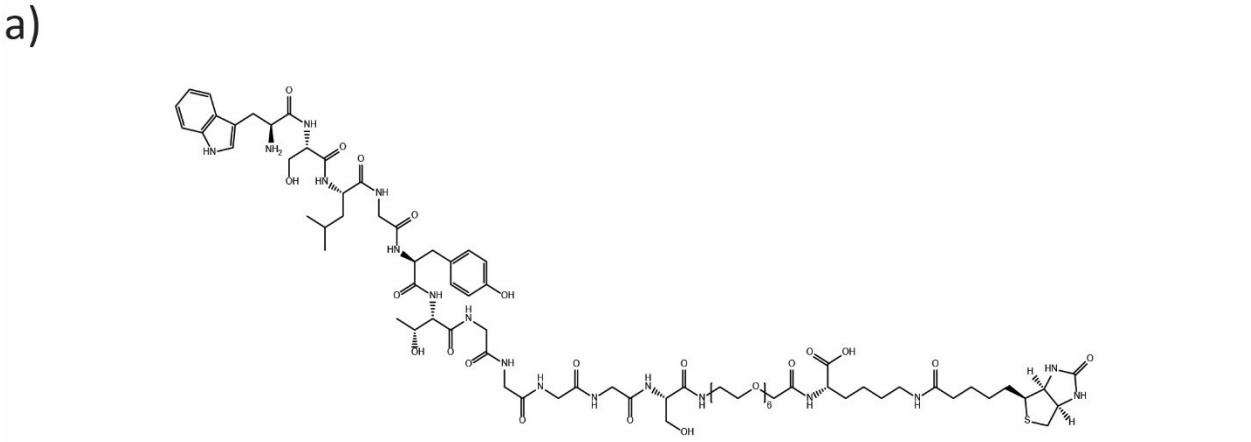


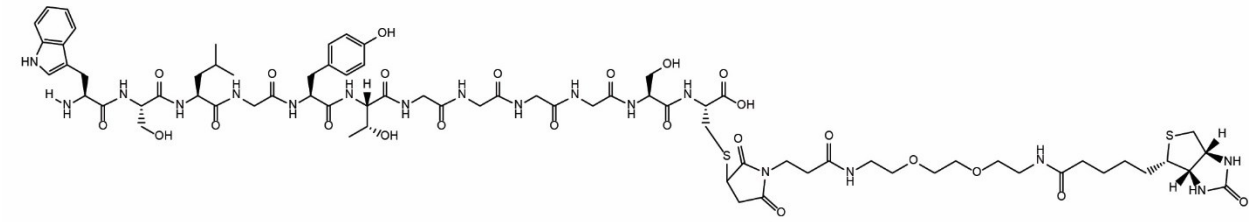
Figure S4. 3-dimensional illustration of the interface of CD3ε chain (green) and CDR1 H1 loop of immunoglobulin heavy chain variable region, UCHT1 (red) (PDB ID: 1XIW).

a)



WSLGYTGGGGS-PEG6-K-Biotin

b)



WSLGYTGGGGSC-maleimide-PEG2-Biotin

Figure S5. Chemical structures of the synthesized peptides for the formation of a) peptide tetramer; b) peptide microbead.

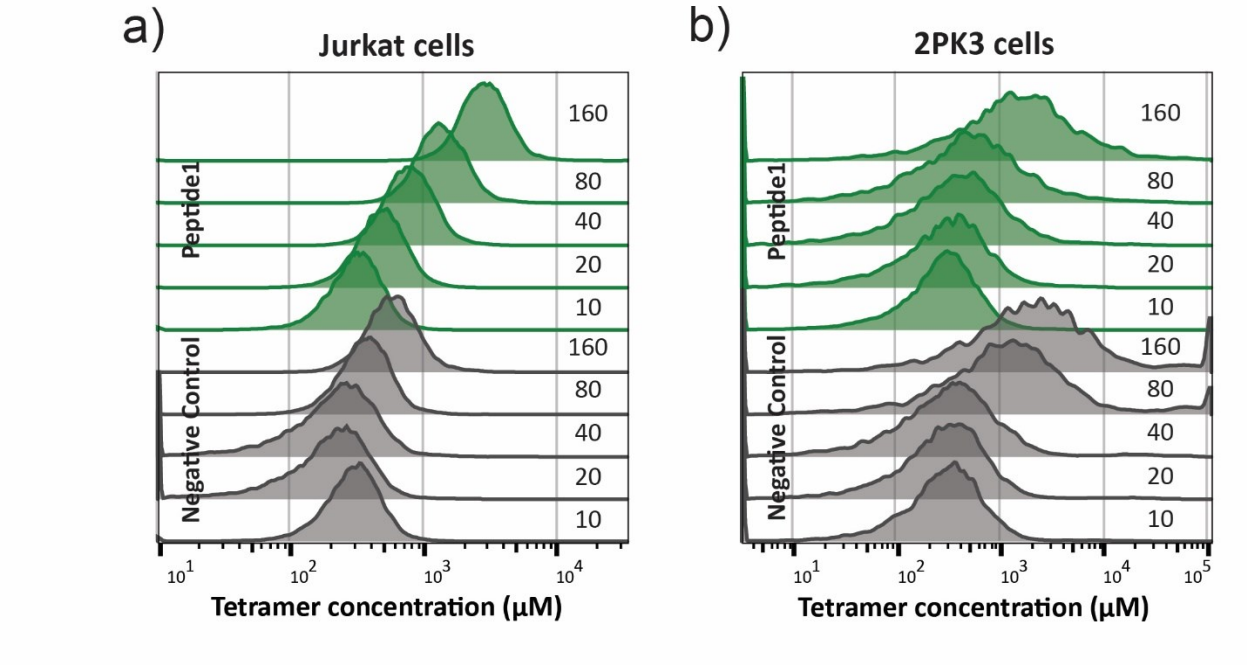


Figure S6. Flow cytometry histograms showing the association of the soluble tetramer of peptide 1 (green) or empty streptavidin (gray) with a) Jurkat cells; and b) 2PK3 cells.

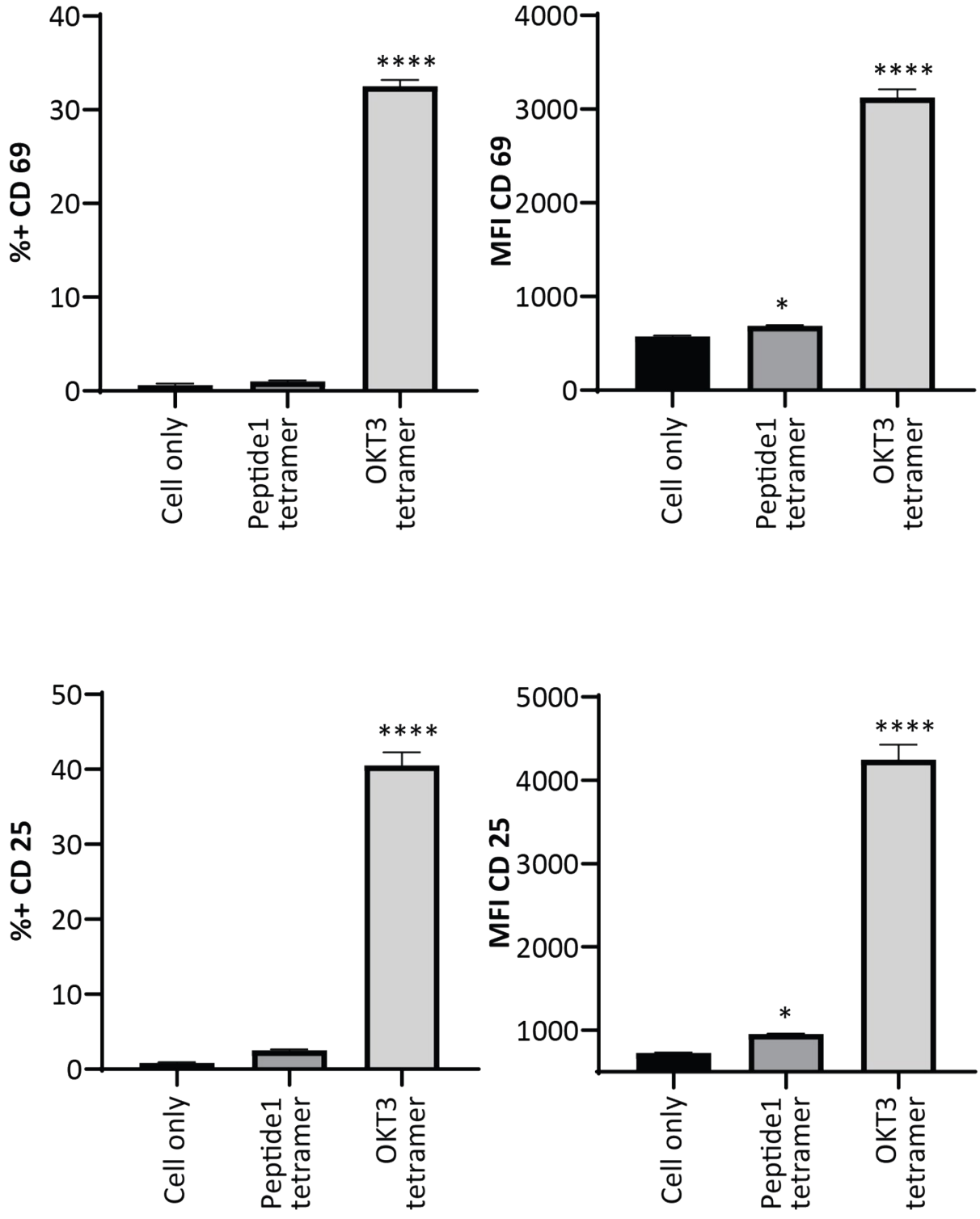


Figure S7. Expression of a) CD25 and b) CD69, T cell activation markers on Jurkat cells after incubation for 12 hours.

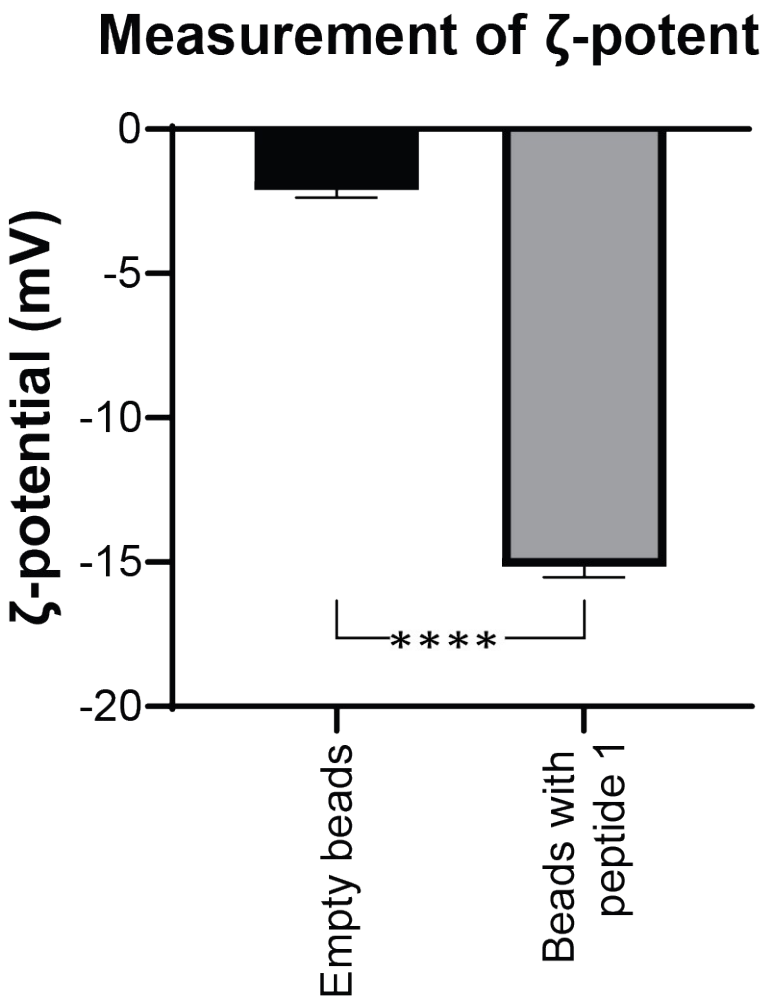


Figure S8: Z-potential of the beads before and after incubation with biotinylated peptide 1

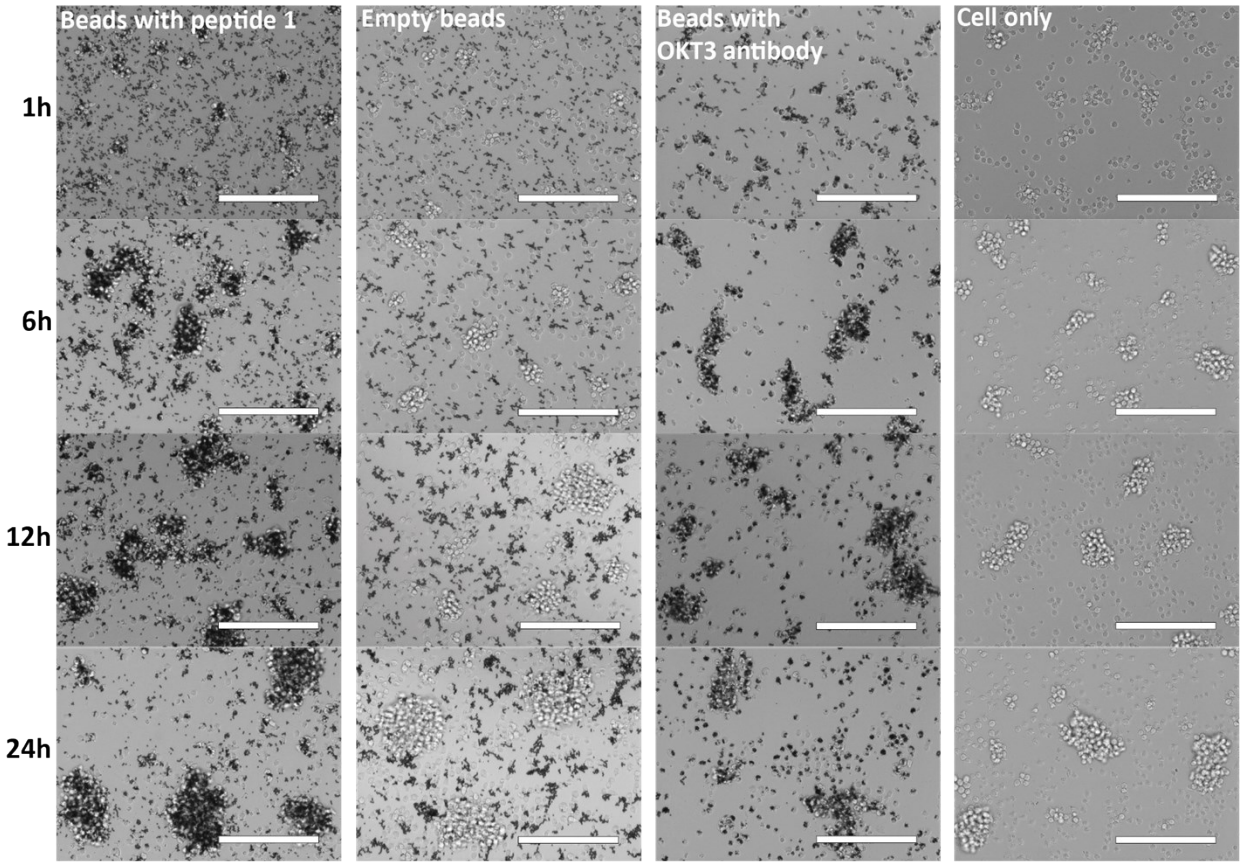


Figure S9. Collection of optical microscope images showing the association of Jurkat cells with the corresponding microbeads over varying amount of incubation time. The scale bars represent 200 μm.

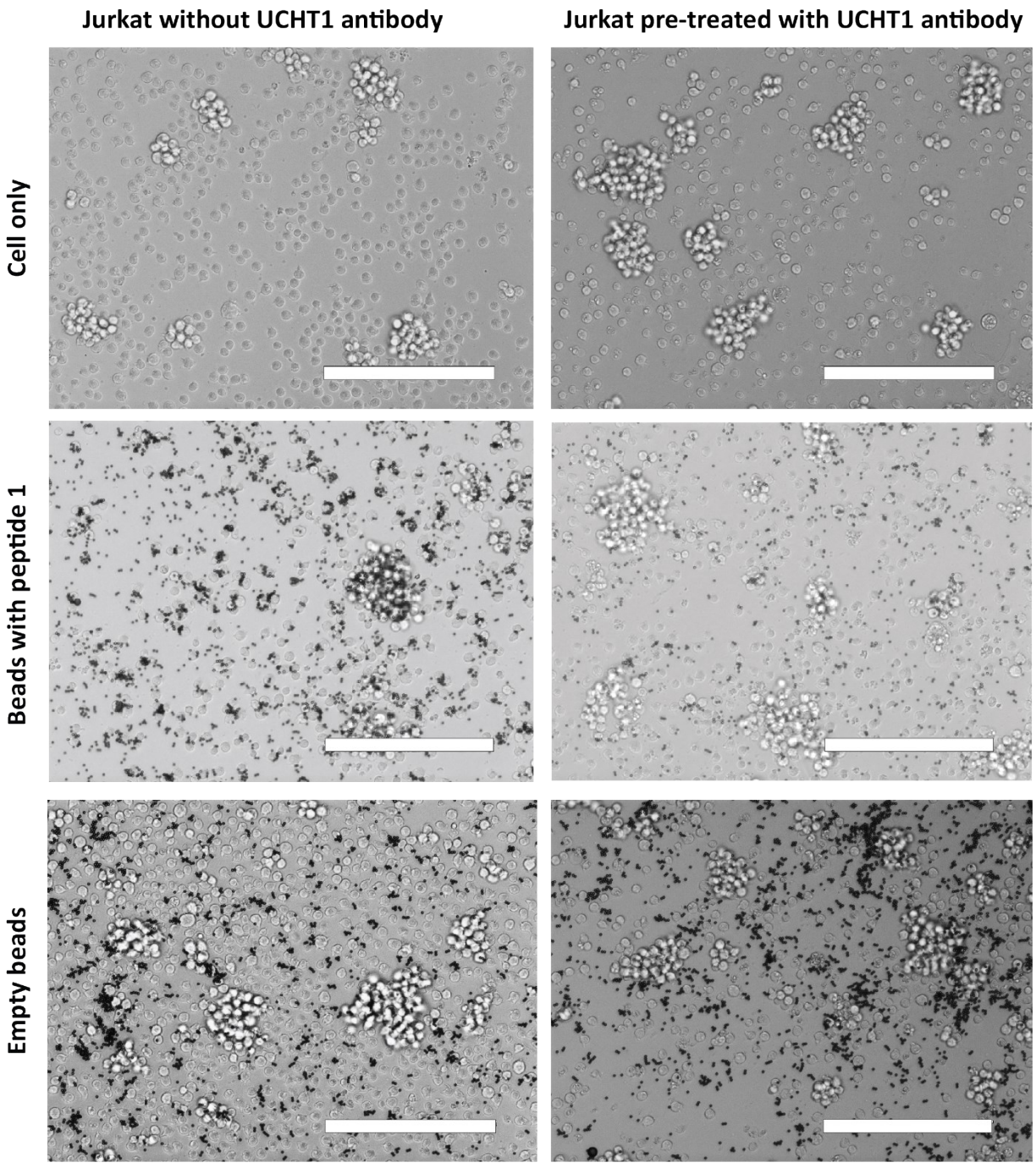


Figure S10: Interactions between Jurkat Cells and the microbeads coated with peptide 1 with or without the pre-treatment of UCHT1 anti-CD3 antibody. The scale bars represent 200 μm.

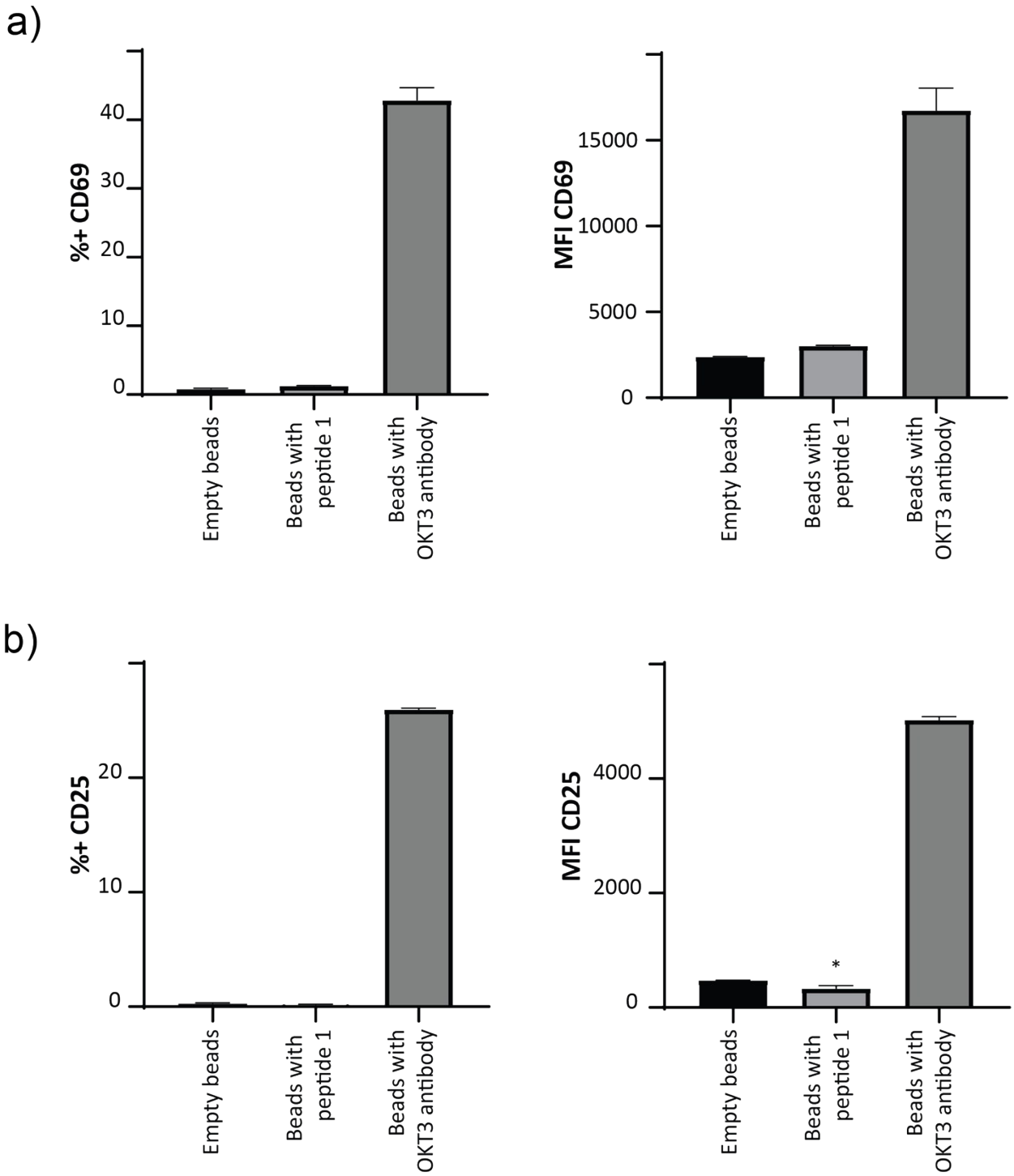


Figure S11. Expression of a) CD25; and b) CD69, the T cell activation markers on Jurkat cells incubated with the microbeadss for 24 hours.