

PEPTIDE POOLS

Dive into T Cell Activation

Rapidly screen antigens and evaluate antigen-specific T cell responses in vitro. Peptide pools are mixtures of overlapping oligopeptides spanning the entire length of a protein or key immunodominant epitopes that provide a simple, efficient, and cost-effective method for the in vitro stimulation of antigen-specific CD4+ and CD8+ T cells. Use peptide pools for a broad range of applications, including vaccine research, immune cell surveillance, and diagnostic assay development.

For more information, visit www.stemcell.com/peptidepools.



Protocol

Stimulation of Antigen-Specific T Cells Using Peptide Pools

Perform in vitro stimulation and detection of antigen-specific T cells with peptide pools using flow cytometry and ELISpot assays



Technical Bulletin

Dendritic Cell/CD8+ T Cell Co-Culture to Assess Antigen-Specific T Cell Functionality

Set up DC and CD8+ T cell co-culture experiments with peptide pools to generate antigen-specific CD8+ T cells.

Why Use Peptide Pools?

- Detect and quantify CD4+ and CD8+ T cells responsive to specific antigens
- Simplify your workflow with a convenient and effective alternative to proteins or viral/cell lysates for T cell stimulation
- Eliminate the need for potentially infectious biological materials with synthetically produced peptides
- Use for numerous applications, including immune monitoring, vaccine efficacy testing, and quantification of antigen-specific T cell responses
- Save time by screening multiple peptides in parallel

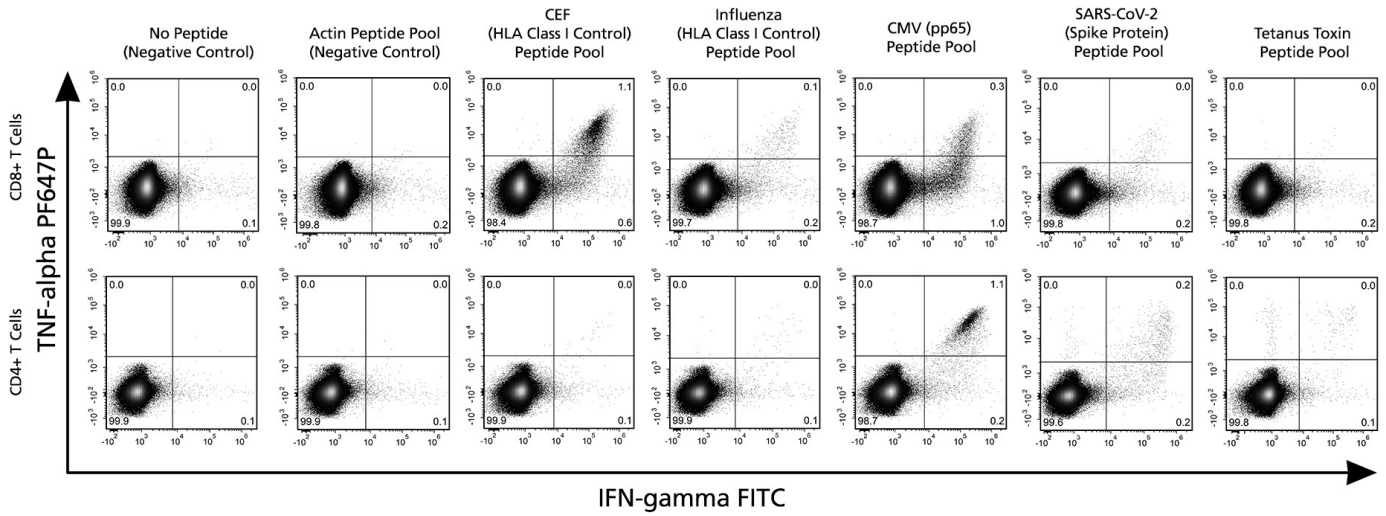


Figure 1. Evaluation of Antigen-Specific T Cell Activation by Peptide Pools Using Intracellular Cytokine Staining of IFN-gamma and TNF-alpha

Peripheral blood mononuclear cells (PBMCs) were cultured in ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981) supplemented with or without (negative control) a variety of peptide pools (as labeled) for 6 hours, in the presence of Brefeldin A (Catalog #73012). Cells were harvested and stained with a GloCell™ Fixable Viability Dye (Catalog #75007) followed by anti-human CD3 (Catalog #60011), CD8a (Catalog #60022PS), and CD4 (Catalog #100-0305) antibodies. Cells were then fixed and stained intracellularly for anti-human IFN-gamma (Catalog #100-1459) and TNF-alpha (Catalog #100-1461). To detect the frequency of IFN-gamma- and TNF-alpha-producing T cells stimulated by peptide pools, cells were analyzed by flow cytometry and gated on viable CD3+CD8+CD4+ (top row) and CD3+CD8+CD4+ (bottom row) cells. Data shown are from a single donor.

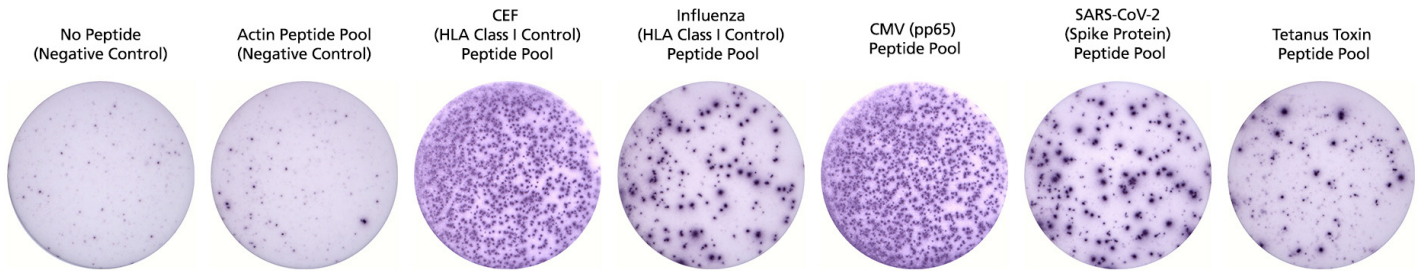


Figure 2. Evaluation of Antigen-Specific T Cell Activation by Peptide Pools Using an IFN-gamma ELISpot Assay

PBMCs were cultured in ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981) supplemented with or without (negative control) a variety of peptide pools (as labeled) for 18 hours on commercially available pre-coated human IFN-gamma ELISpot plates. All wells were seeded at 2.5 x 10⁵ cells/well. Following incubation, plates were processed per the manufacturer's instructions and imaged on an automated ELISpot reader. Each spot represents one antigen-specific T cell secreting IFN-gamma. Data shown are representative wells from a single donor.

Complete Peptide Pool Index

Peptide Pool Type	Product (Peptide Pool)	Number of Peptides	Catalog #
Control Peptide Pools			
Actin (Negative Control Peptide)	Human (Actin)	92	100-1411
Cytomegalovirus, Epstein-Barr Virus, and Influenza Virus (CEF)	CEF (HLA Class I Control)	32	100-0675
Infectious Disease Peptide Pools			
Human Polyomavirus 1 (BKV)	BKV (LT)	171	100-1398
Candida	Candida (MP65)	92	100-1407
Tetanus Toxin	Clostridium (Tetanus Toxin)	326	100-1410
Cytomegalovirus (CMV)	CMV (HLA Class I Control)	14	100-1414
	CMV (IE1)	120	100-1413
	CMV (IE2)	143	100-1412
	CMV (pp65)	138	100-0668
	CMV (UL44)	106	100-1405
Epstein-Barr Virus (EBV)	EBV (HLA Class I Control)	26	100-1391
	EBV (BZLF1)	59	100-0670
	EBV (EBNA-1)	158	100-0669
	EBV (EBNA-3A)	234	100-1386
	EBV (EBNA-3B)	234	100-1387
	EBV (GP350/340)	224	100-1390
	EBV (LMP1)	94	100-1388
	EBV (LMP2)	122	100-0671
	EBV (LMP2A)	27	100-1389
Hepatitis B Virus (HBV)	HBV (HLA Class I Control)	9	100-0673
Human Herpesvirus (HHV)	HHV1 (gD)	96	100-1406
	HHV6 (U54)	112	100-1401
	HHV6 (U90)	267	100-1402
	HHV8 (K8)	57	100-1403
	HHV8 (K8.1)	55	100-1404
Human Immunodeficiency Virus (HIV)	HIV (HLA Class I Control)	22	100-1384
Human Papillomavirus (HPV)	HIV-1 (B Gag)	123	100-1385
	HPV16 (E6)	37	100-1395
	HPV16 (E7)	22	100-1394
	HPV16 (L1)	124	100-1392

Peptide Pool Type	Product (Peptide Pool)	Number of Peptides	Catalog #
Human Papillomavirus (HPV)	HPV16 (L2)	116	100-1393
	HPV18 (L1)	140	100-1396
	HPV18 (L2)	113	100-1397
Human Polyomavirus 2 (JCV)	JCV (LT)	170	100-1399
	JCV (VP1)	86	100-1400
Influenza Virus	Influenza (HLA Class I Control)	17	100-0672
Respiratory Syncytial Virus (RSV)	RSV (HLA Class I Control)	28	100-0674
SARS-CoV-2	SARS-CoV-2 (NS7b)	8	100-0662
	SARS-CoV-2 (NS8)	28	100-0663
	SARS-CoV-2 (Nucleocapsid Protein)	102	100-0647
	SARS-CoV-2 (ORF3a)	66	100-0649
	SARS-CoV-2 (Spike Protein)	158 and 158 (two subpools)	100-0676
	SARS-CoV-2 (VME1)	53	100-0648
	SARS-CoV-2 (Spike Protein) Delta/B.1.617.2 Mutation	27	100-1380
	SARS-CoV-2 (Spike Protein) Delta/B.1.617.2 WT Reference	27	100-1381
	SARS-CoV-2 (Spike Protein) Omicron BA.4/BA.5	158 and 157 (two subpools)	100-1421
	SARS-CoV-2 (Spike Protein) Omicron XBB.1.5.X	158 and 157 (two subpools)	100-1422
	SARS-CoV-2 (Spike Protein) Omicron/B.1.1.529	158 and 157 (two subpools)	100-1420
	SARS-CoV-2 (Spike Protein) Omicron/B.1.1.529 Mutation	80	100-1382
SARS-CoV-2 (Spike Protein) Omicron/B.1.1.529 WT Reference	82	100-1383	
Varicella Zoster Virus (VZV)	VZV (gE)	153	100-1408
	VZV (IE63)	67	100-1409

HLA class I controls include a mixture of peptides 8 - 12 amino acids in length that consist of defined HLA class I-restricted T cell epitopes and have a purity of $\geq 95\%$. All remaining peptide pools are protein-spanning antigen source pools consisting of 15-mer peptides with 11-amino-acid overlaps and have a purity of $\geq 70\%$. One vial (i.e. ~25 - 30 μg /peptide) is sufficient for stimulating 2.5×10^8 cells when used at the recommended concentration of 1 $\mu\text{g}/\text{mL}$ per peptide. For more details, refer to the product information sheet linked on the product webpage.

Copyright © 2024 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, Scientists Helping Scientists, ImmunoCult, and GloCell are trademarks of STEMCELL Technologies Canada Inc.

UNLESS OTHERWISE STATED, PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES. FOR PRODUCT-SPECIFIC COMPLIANCE AND INTENDED USE INFORMATION, REFER TO THE PRODUCT INFORMATION SHEET. GENERAL INFORMATION ON QUALITY AT STEMCELL MAY BE FOUND AT WWW.STEMCELL.COM/COMPLIANCE.