

Peptide Arrays, Control Peptides for MHC Class I & II Epitopes of Influenza Virus A & B Proteins

Catalog No. NR-2666

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Product Description: NR-2666 contains seven peptide arrays. The first peptide array (NRC-244; 35 peptides) consists of Major Histocompatibility Complex (MHC) Class I epitopes of the HA (H1), NA (N1), NP, M1, M2, NS1, PA and PB1 proteins of influenza A virus.¹ The second peptide array (NRC-245; 9 peptides) consists of MHC Class II epitopes of the HA (H3), NP, M1 and NS1 proteins of influenza A virus.¹ The third peptide array (NRC-331; 1 peptide) consists of an MHC Class II epitope of the HA protein of influenza virus A/New Caledonia/20/1999 (H1N1) (GenPept: CAC86622).^{1,2} The fourth peptide array (NRC-332; 1 peptide) consists of an MHC Class II epitope of the HA protein of influenza virus A/New York/384/2005 (H3N2) (GenPept: AAZ79974).^{1,3} The fifth peptide array (NRC-333; 1 peptide) consists of an MHC Class II epitope of the HA protein of influenza virus A/Thailand/4(SP-528)/2004 (H5N1) (GenPept: AAV34704).^{1,4} The sixth peptide array (NRC-246; 3 peptides) consists of MHC Class I epitopes of the NP protein of influenza B virus.¹ The seventh peptide array (NRC-247; 1 peptide) consists of an MHC Class II epitope of the HA protein of influenza B virus.¹ Peptides are 8- to 16-mers. **Note: The expected result was not obtained for the amino acid analysis of Peptide 26 of NRC-244.**

Lot: PB0531

The following information applies to all peptides:

- Appearance White lyophilized powder
- Mass spectral analysis Correct MW by Electrospray
- Counter Ion Trifluoroacetate

Peptide-specific information is shown in the two tables below.

Table 1							
Peptide	Date of Mfg.	Protein	Length	Sequence	Molecular Weight (amu)	Purity by HPLC ^a	Peptide Content ^b
NRC-244: Influenza Virus A MHC Class I Peptides							
1 of 35	04/26/2006	HA (H1)	9	63-GIAPLQLGK-71	896.27	95.77%	70.34%
2 of 35	04/26/2006	HA (H1)	10	149-VTAACSHAGK-158	944.20	95.08%	68.23%
3 of 35	04/26/2006	HA (H1)	11	450-RTLDFHDSNVK-460	1331.47	96.08%	73.17%
4 of 35	04/26/2006	NA (N1)	10	75-SLCPIRGWAI-84	1115.47	98.03%	83.86%
5 of 35	04/26/2006	NA (N1)	9	213-CVNGSCFTV-221	929.00	95.90%	83.99%
6 of 35	04/28/2006	NP	9	44-CTELKLSDY-52	1071.13	95.63%	78.70%
7 of 35	05/05/2006	NP	9	91-KTGGPIYKR-99	1019.27	98.27%	69.06%
8 of 35	05/05/2006	NP	9	146-TTYQRTRAL-154	1109.47	96.97%	37.58%
9 of 35	05/02/2006	NP	11	174-RRSGAAGAAVK-184	1043.40	96.90%	63.93%
10 of 35	04/26/2006	NP	11	188-TMVMELVRMIK-198	1350.60	96.95%	76.25%

Table 1							
Peptide	Date of Mfg.	Protein	Length	Sequence	Molecular Weight (amu)	Purity by HPLC ^a	Peptide Content ^b
NRC-244: Influenza Virus A MHC Class I Peptides							
11 of 35	04/26/2006	NP	10	265-ILRGVAHK-273	980.47	95.71%	65.74%
12 of 35	05/05/2006	NP	9	338-FEDLRVLSF-346	1125.40	96.42%	87.31%
13 of 35	04/28/2006	NP	9	339-EDLRVLSFI-347	1091.33	97.75%	45.17%
14 of 35	04/26/2006	NP	9	379-LELRSRYWA-387	1193.47	96.93%	78.35%
15 of 35	05/02/2006	NP	9	380-ELRSRYWAI-388	1193.40	98.15%	81.48%
16 of 35	05/02/2006	NP	8	381-LRSRYWAI-388	1064.40	96.85%	76.55%
17 of 35	05/05/2006	NP	9	383-SRYWAIRTR-391	1208.27	99.21%	69.60%
18 of 35	05/02/2006	NP	9	418-LPFDRTTVM-426	1079.27	96.28%	90.28%
19 of 35	05/09/2006	NP	9	418-LPFDKPTIM-426	1061.13	97.89%	85.50%
20 of 35	05/12/2006	NP	9	418-LPFDKSTIM-426	1051.13	95.18%	78.23%
21 of 35	05/09/2006	NP	9	418-LPFEKSTVM-426	1051.20	98.27%	70.76%
22 of 35	05/02/2006	NP	10	470-KATSPIVPSL-479	1012.20	98.92%	77.19%
23 of 35	05/12/2006	M1	9	13-SIIPSGPLK-21	911.13	97.81%	73.19%
24 of 35	04/28/2006	M1	9	51-ILSPLTKGI-59	941.27	96.94%	77.34%
25 of 35	05/09/2006	M1	9	58-GILGFVFTL-66	966.07	97.50%	93.91%
26 of 35	05/23/2006	M1	10	59-ILGFVFTLTV-68	1109.07	95.55%	58.10%
27 of 35	05/02/2006	M1	8	128-ASCMGLIY-135	856.80	95.48%	89.36%
28 of 35	04/28/2006	M2	9	7-VETPIRNEW-15	1143.27	98.71%	67.38%
29 of 35	04/28/2006	M2	10	85-DADDSHFVSI-94	1105.13	99.04%	73.68%
30 of 35	05/05/2006	NS1	9	122-AIMDKNIIL-130	1030.13	95.37%	83.52%
31 of 35	04/28/2006	NS1	9	158-GEISPLPSL-166	912.07	95.64%	82.32%
32 of 35	05/18/2006	PA	9	46-FMYSDFHFI-54	1206.07	96.33%	91.11%
33 of 35	05/02/2006	PA	9	225-SLENFRAYV-233	1098.33	96.32%	80.38%
34 of 35	05/12/2006	PB1	9	413-NMLSTVLGV-421	933.07	98.18%	82.35%
35 of 35	05/02/2006	PB1	9	591-VSDGGPNLY-599	921.00	95.23%	88.29%
NRC-245: Influenza Virus A MHC Class II Peptides							
1 of 9	04/28/2006	HA (H3)	16	271-RGYFKMRTGKSSIMRS-286	1402.47	96.61%	79.04%
2 of 9	04/28/2006	HA (H3)	12	322-PKYVKQNTLKL-333	1905.60	97.87%	75.94%
3 of 9	05/05/2006	HA (H3)	13	322-PKYVKQNTLKLAT-334	1503.40	98.14%	81.99%
4 of 9	05/18/2006	HA (H3)	19	322-PKYVKQNTLKLATGMRNVP-340	2158.34	96.96%	84.81%
5 of 9	05/30/2006	NP	16	365-IASNENMDAMESSTL-379	1611.93	76.78%	85.33%
6 of 9	05/02/2006	M1	12	18-GPLKAEIAQRLE-29	1324.47	97.55%	79.75%
7 of 9	05/12/2006	M1	10	234-LENLQAYQKR-243	1262.40	96.13%	63.21%
8 of 9	05/02/2006	M1	12	239-AYQKRMGVQMQR-250	1495.27	96.64%	80.50%
9 of 9	04/26/2006	NS1	9	34-DRLRRDQKS-42	1173.40	97.08%	73.24%
NRC-331: Influenza Virus A/New Caledonia/20/99(H1N1) MHC Class II Peptide							
1 of 1	05/18/2006	HA (H1)	13	320-PKYVRSKLRMVT-332	1548.40	97.81%	70.18%
NRC-332: Influenza Virus A (A/New York/384/2005(H3N2)) MHC Class II Peptide							
1 of 1	05/19/2006	HA (H3)	13	322-PRYVKQNTLKLAT-334	1531.53	99.07%	76.56%
NRC-333: Influenza Virus A (A/Thailand/4(SP-528)/2004(H5N1)) MHC Class II Peptide							
1 of 1	05/18/2006	HA (H5)	13	319-PKYVKSRLVLT-331	1488.76	98.86%	82.44%
NRC-246: Influenza Virus B MHC class I Peptides							
1 of 3	04/26/2006	NP	9	30-RPIIRPATL-38	1036.47	98.47%	81.01%
2 of 3	05/05/2006	NP	10	85-KLGEFYNQMM-94	1620.27	95.88%	80.26%
3 of 3	05/05/2006	NP	9	263-ADRGLLRDI-271	1028.27	96.43%	83.70%
NRC-247: Influenza Virus B MHC Class II Peptide							
1 of 1	05/05/2006	HA	13	308-PYYTGEHAKAIGN-320	1420.20	95.96%	69.13%

^a% full-length

^bRemainder is salt and water

Table 2 - Amino Acid Analysis

Peptide		Ala (A)	Arg (R)	Asx (N,D)	Cys (C)	Glx (Q,E)	Gly (G)	His (H)	Ile (I)	Leu (L)	Lys (K)	Met (M)	Phe (F)	Pro (P)	Ser (S)	Thr (T)	Trp (W)	Tyr (Y)	Val (V)
NRC-244: Influenza Virus A MHC Class I Peptides																			
1 of 35	Expected	1.00				1.00	2.00		1.00	2.00	1.00			1.00					
	Actual	0.99				0.97	1.97		0.95	2.04	0.97			1.12					
2 of 35	Expected	3.00			1.00		1.00	1.00			1.00				1.00	1.00			1.00
	Actual	3.11			0.00 ^a		1.07	1.04			1.04			0.49 ^a	1.00	0.93			1.02
3 of 35	Expected		1.00	3.00				1.00		1.00	1.00		1.00		1.00	1.00			1.00
	Actual		1.06	3.09				1.02		1.03	1.00		1.04		0.96	0.94			1.04
4 of 35	Expected	1.00	1.00		1.00		1.00		2.00	1.00				1.00	1.00		1.00		
	Actual	1.00	1.02		0.00 ^a		1.00		1.95	1.01				1.50 ^a	0.98		0.00 ^p		
5 of 35	Expected			1.00	2.00		1.00						1.00		1.00	1.00			2.00
	Actual			1.00	0.00 ^a		1.00						1.04	1.69 ^a	0.59	0.97			2.06
6 of 35	Expected			1.00	1.00	1.00				2.00	1.00				1.00	1.00		1.00	
	Actual			1.01	0.00 ^a	1.03				2.10	0.99			0.60 ^a	0.98	0.97		1.11	
7 of 35	Expected		1.00				2.00		1.00		2.00			1.00		1.00		1.00	
	Actual		1.02				2.03		0.97		1.99			1.02		1.01		1.02	
8 of 35	Expected	1.00	2.00			1.00				1.00						3.00		1.00	
	Actual	1.03	2.10			1.02				1.01						3.06		0.92	
9 of 35	Expected	4.00	2.00				2.00				1.00				1.00				1.00
	Actual	3.99	2.03				2.00				0.96				0.86				1.02
10 of 35	Expected		1.00			1.00			1.00	1.00	1.00	3.00				1.00			2.00
	Actual		1.02			1.01			0.96	1.03	0.96	3.05				1.01			2.09
11 of 35	Expected	1.00	1.00				1.00	1.00	1.00	1.00	1.00				1.00				1.00
	Actual	1.01	1.04				1.02	1.01	0.96	1.04	0.99				0.97				1.03
12 of 35	Expected		1.00	1.00		1.00				2.00			2.00		1.00				1.00
	Actual		1.02	1.00		1.01				2.05			2.06		0.98				1.03
13 of 35	Expected		1.00	1.00		1.00			1.00	2.00			1.00		1.00				1.00
	Actual		1.02	1.01		1.01			0.95	2.07			1.05		1.00				1.03
14 of 35	Expected	1.00	2.00			1.00				2.00					1.00		1.00	1.00	1.00
	Actual	1.01	2.08			1.00				2.09					0.99		0.00 ^b	1.01	
15 of 35	Expected	1.00	2.00			1.00			1.00	1.00					1.00		1.00	1.00	1.00
	Actual	1.01	2.10			1.01			1.00	1.04					0.98		0.00 ^p	1.00	
16 of 35	Expected	1.00	2.00						1.00	1.00					1.00		1.00	1.00	1.00
	Actual	0.94	2.06						1.00	1.02					1.03		0.00 ^b	1.08	
17 of 35	Expected	1.00	3.00						1.00						1.00	1.00	1.00	1.00	1.00
	Actual	1.00	3.13						1.00						1.01	1.01	0.00 ^p	1.07	
18 of 35	Expected		1.00	1.00						1.00		1.00	1.00	1.00		2.00			1.00
	Actual		1.01	0.99						0.98		0.97	1.02	1.11		1.92			1.01
19 of 35	Expected			1.00					1.00	1.00	1.00	1.00	1.00	2.00		1.00			
	Actual			1.01					0.99	1.02	1.00	1.00	1.05	1.97		0.98			
20 of 35	Expected			1.00					1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
	Actual			0.97					0.99	1.02	1.02	1.09	1.05	1.01	1.01	0.99			
21 of 35	Expected					1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00
	Actual					0.94				1.03	0.99	1.08	1.11	0.93	1.03	1.01			1.02
22 of 35	Expected	1.00							1.00	1.00	1.00			2.00	2.00	1.00			1.00
	Actual	1.05							0.83 ^c	1.08	1.09			2.03	2.01	1.01			0.88 ^c
23 of 35	Expected						1.00		2.00	1.00	1.00			2.00	2.00				
	Actual						1.07		1.71 ^c	1.08	1.10			1.98	1.99				
24 of 35	Expected						1.00		2.00	2.00	1.00			1.00	1.00	1.00			
	Actual						1.05		1.95	2.06	1.06			0.99	1.03	1.02			
25 of 35	Expected						2.00		1.00	2.00			2.00			1.00			1.00
	Actual						1.97		0.96	1.99			1.92			1.09			1.06

Table 2 - Amino Acid Analysis

Peptide		Ala (A)	Arg (R)	Asx (N,D)	Cys (C)	Glx (Q,E)	Gly (G)	His (H)	Ile (I)	Leu (L)	Lys (K)	Met (M)	Phe (F)	Pro (P)	Ser (S)	Thr (T)	Trp (W)	Tyr (Y)	Val (V)
NRC-244: Influenza Virus A MHC Class I Peptides																			
26 of 35	Expected						1.00		1.00	2.00			2.00			2.00			2.00
	Actual	0.58		1.15		0.83	0.94		1.09	2.16		0.89	1.85		1.31	2.18			1.86
27 of 35	Expected	1.00			1.00		1.00		1.00	1.00		1.00			1.00				1.00
	Actual	0.94			0.00 ^a		1.02		0.96	1.03		1.06		0.19 ^a	0.59				1.00
28 of 35	Expected		1.00	1.00		2.00			1.00					1.00		1.00	1.00		1.00
	Actual		1.03	1.00		1.93			0.99					1.02		1.01	0.00 ^b		1.03
29 of 35	Expected	1.00		3.00				1.00	1.00					1.00		2.00			1.00
	Actual	0.94		2.94				1.06	1.02					1.07		1.91			1.07
30 of 35	Expected	1.00		2.00					3.00	1.00	1.00	1.00							
	Actual	1.04		1.94					2.57 ^c	1.07	1.04	1.02							
31 of 35	Expected					1.00	1.00		1.00	2.00				2.00	2.00				
	Actual					1.02	1.03		1.00	2.14				1.97	1.96				
32 of 35	Expected			1.00				1.00	1.00				1.00	3.00	1.00				1.00
	Actual			0.98				1.01	1.02				1.07	2.88	1.03				1.02
33 of 35	Expected	1.00	1.00	1.00		1.00				1.00			1.00		1.00				1.00
	Actual	1.01	1.04	0.97		1.00				1.01			1.03		0.95				1.01
34 of 35	Expected			1.00					1.00						1.00	1.00			2.00
	Actual			0.99					0.99						1.01	0.99			2.17
35 of 35	Expected			2.00						1.00				1.00	1.00				1.00
	Actual			1.87						1.89				1.00	0.88				1.05
NRC-245: Influenza Virus A MHC Class II Peptides																			
1 of 9	Expected		3.00				2.00		1.00		2.00	2.00	1.00		3.00	1.00			1.00
	Actual		3.08				1.82		1.08		2.08	1.82	1.08		2.74	0.96			1.04
2 of 9	Expected	1.00		1.00		1.00				2.00	3.00			1.00		1.00			1.00
	Actual	0.96		0.95		0.97				2.07	3.16			1.01		0.98			1.05
3 of 9	Expected	1.00		1.00		1.00				2.00	3.00			1.00		2.00			1.00
	Actual	0.99		0.97		0.98				2.11	3.10			0.90		1.94			1.07
4 of 9	Expected	1.00	1.00	2.00		1.00	1.00			2.00	3.00	1.00		2.00		2.00			1.00
	Actual	1.04	1.04	1.91		0.98	1.08			2.02	2.78	1.09		1.86		2.03			0.98
5 of 9	Expected	2.00		3.00		2.00			1.00	1.00		2.00			3.00	1.00			
	Actual	2.06		2.86		2.00			1.07	1.14		1.86			2.95	1.04			
6 of 9	Expected	2.00	1.00			3.00	1.00		1.00	2.00	1.00			1.00					
	Actual	1.77	1.08			2.86	0.92		0.99	2.09	1.08			1.04					
7 of 9	Expected	1.00	1.00	1.00		3.00				2.00	1.00								1.00
	Actual	0.93	1.10	0.92		2.74				2.05	1.07								1.05
8 of 9	Expected	1.00	2.00			3.00	1.00				1.00	2.00							1.00
	Actual	0.92	2.14			2.84	0.95				1.10	1.73							1.07
9 of 9	Expected		3.00	2.00		1.00				1.00	1.00				1.00				
	Actual		3.09	2.03		1.01				1.03	1.01				1.00				
NRC-331: Influenza Virus A (A/New Caledonia/20/99(H1N1)) MHC Class II Peptide																			
1 of 1	Expected	1.00	2.00							1.00	2.00	1.00		1.00	1.00	1.00			1.00
	Actual	1.00	2.08							1.03	2.00	0.76		1.20	1.03	1.00			0.99
NRC-332: Influenza Virus A (A/New York/384/2005(H3N2)) MHC Class II Peptide																			
1 of 1	Expected	1.00	1.00	1.00		1.00				2.00	2.00			1.00		2.00			1.00
	Actual	1.03	1.00	1.00		1.02				2.05	2.01			0.87		2.08			1.02
NRC-333: Influenza Virus A (A/Thailand/4(SP-528)/2004(H5N1)), MHC Class II Peptide																			
1 of 1	Expected	1.00	1.00	1.00						2.00	2.00			1.00	1.00	1.00			1.00
	Actual	1.00	1.02	1.01						2.04	1.98			1.07	0.98	0.98			1.05

Table 2 - Amino Acid Analysis																			
Peptide		Ala (A)	Arg (R)	Asx (N,D)	Cys (C)	Glx (Q,E)	Gly (G)	His (H)	Ile (I)	Leu (L)	Lys (K)	Met (M)	Phe (F)	Pro (P)	Ser (S)	Thr (T)	Trp (W)	Tyr (Y)	Val (V)
NRC-246: Influenza Virus B MHC Class I Peptides																			
1 of 3	Expected	1.00	2.00						2.00	1.00				2.00		1.00			
	Actual	1.00	2.05						1.84 ^c	1.03				2.09		1.03			
2 of 3	Expected			1.00		2.00	1.00			1.00	1.00	2.00	1.00						1.00
	Actual			0.99		2.01	0.99			0.99	0.96	1.56	1.04						1.02
3 of 3	Expected	1.00	2.00	2.00					1.00	2.00									
	Actual	0.98	2.03	2.00					1.01	2.07									
NRC-247: Influenza Virus B MHC Class II Peptide																			
1 of 1	Actual	2.00		1.00		1.00	2.00	1.00	1.00		1.00			1.00		1.00			2.00
	Expected	2.02		1.01		1.02	2.04	1.00	1.00		0.99			0.99		0.97			2.10
^a Cys was partially destroyed during hydrolysis and Cys degradation products co-elute with Pro ^b Trp was completely destroyed during hydrolysis ^c Val-Ile, Val-Val, Ile-Ile and/or Ile-Val bonds were partially destroyed during hydrolysis																			

Date: 17 JUN 2014

Signature: *Dorothy C. Young*

Title: Technical Manager, BEI Authentication or designee

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