

**Peptide Array, Influenza Virus A/California/04/2009 (H1N1)pdm09 Matrix Protein 1**

**Catalog No. NR-18977**

This reagent is the tangible property of the U.S. Government.

**Product Description:** The 61-peptide array spans the matrix protein 1 (M1) of the A/California/04/2009 (H1N1)pdm09 strain of influenza virus (GenPept: ACP44152.1). Peptides are 11- to 16-mers, with 10 to 12 amino acid overlaps.

**Lot: 586086-1**

**Note:** The lot numbers of the individual peptides are shown on the vial labels and in Table 1 below.

The following information applies to all peptides:

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

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

Table 1							
Peptide	Lot #	Date of Mfg.	Length	Sequence	Molecular Weight (amu)	Purity by HPLC	Peptide Content
01 of 61	LS1714	9/2/2010	15	1-MSLLTEVETYVLSII-15	1711	96.97%	76.14%
02 of 61	LS1713	8/18/2010	16	5-TEVETYVLSIIPSGPL-20	1718	99.05%	78.41%
03 of 61	LS1705	8/2/2010	15	9-TYVLSIIPSGPLKAE-23	1588	98.67%	81.21%
04 of 61	LS1704	7/15/2010	15	13-SIIPSGPLKAEIAQR-27	1580	100.00%	77.32%
05 of 61	LS1700	7/15/2010	15	17-SGPLKAEIAQRLESV-31	1598	99.85%	74.85%
06 of 61	LS1699	7/15/2010	15	21-KAEIAQRLESVFAGK-35	1647	96.57%	73.98%
07 of 61	LS1703	8/2/2010	15	25-AQRLESVFAGKNTDL-39	1649	93.87%	73.53%
08 of 61	LS1702	7/19/2010	15	29-ESVFAGKNTDLEALM-43	1625	96.88%	76.38%
09 of 61	LS1701	8/18/2010	15	33-AGKNTDLEALMEWLK-47	1719	93.52%	72.14%
10 of 61	LS1695	7/15/2010	15	37-TDLEALMEWLKTRPI-51	1816	97.23%	81.99%
11 of 61	LS1694	7/15/2010	15	41-ALMEWLKTRPILSPL-55	1768	99.44%	76.82%
12 of 61	LS1693	7/15/2010	15	45-WLKTRPILSPLTKGI-59	1723	99.27%	77.74%
13 of 61	LS1692	7/20/2010	15	49-RPILSPLTKGILGFV-63	1611	99.44%	80.90%
14 of 61	LS1691	7/15/2010	15	53-SPLTKGILGFVFTLT-67	1594	94.55%	79.82%
15 of 61	LS1715	7/19/2010	15	57-KGILGFVFTLTPSE-71	1608	88.10%	81.91%
16 of 61	LS1690	7/19/2010	15	61-GFVFTLTPSERGLQ-75	1651	88.72%	77.12%
17 of 61	LS1698	7/15/2010	15	65-TLTPSERGLQRRRF-79	1816	99.72%	72.70%
18 of 61	LS1697	7/15/2010	15	69-PSERGLQRRRFVQNA-83	1814	99.29%	76.52%
19 of 61	LS1696	7/15/2010	15	73-GLQRRRFVQNALNGN-87	1743	90.75%	77.08%
20 of 61	LS1689	7/15/2010	15	77-RRFVQNALNGNDPN-91	1672	98.50%	78.50%
21 of 61	LS1688	7/27/2010	14	82-NALNGNDPNNMDR-95	1502	97.84%	77.95%
22 of 61	LS1687	8/2/2010	15	85-NGNDPNNMDRAVKL-99	1615	99.71%	73.34%
23 of 61	LS1685	7/15/2010	15	89-DPNNMDRAVKLYKKL-103	1805	99.61%	74.32%
24 of 61	LS1684	7/15/2010	15	93-MDRAVKLYKKLKREI-107	1891	98.34%	72.93%
25 of 61	LS1680	7/19/2010	15	97-VKLYKKLKREITFHG-111	1860	97.98%	76.08%
26 of 61	LS1679	7/21/2010	15	101-KKLYKKLKREITFHGAKEV-115	1784	93.16%	70.81%

# Certificate of Analysis for NR-18977

Peptide	Lot #	Date of Mfg.	Length	Sequence	Molecular Weight (amu)	Purity by HPLC	Peptide Content
27 of 61	LS1712	7/16/2010	15	105-REITFHGAKEVLSYSY-119	1737	99.18%	70.47%
28 of 61	LS1678	7/16/2010	15	109-FHGAKEVLSYSTGA-123	1554	92.90%	79.13%
29 of 61	LS1677	9/7/2010	15	113-KEVLSYSTGALASC-127	1516	88.34%	54.47%
30 of 61	A4663	8/10/2010	15	117-LSYSTGALASCMGLI-131	1487	99.30%	83.15%
31 of 61	LS1682	8/10/2010	15	121-TGALASCMGLIYNRM-135	1601	92.65%	76.49%
32 of 61	LS1676	7/20/2010	15	125-ASCMGLIYNRMGTVT-139	1617	95.84%	77.08%
33 of 61	LS1681	7/19/2010	15	129-GLIYNRMGTVTTEAA-143	1597	88.68%	80.63%
34 of 61	LS1675	7/27/2010	15	133-NRMGTVTTEAAFGLV-147	1567	89.67%	79.93%
35 of 61	2088-19/42	9/20/2010	15	137-TVTEAAFGLVCATC-151	1487	Crude	80.42%
36 of 61	PR3446	9/20/2010	15	141-EAAFGLVCATCEQIA-155	1526	Crude	66.11%
37 of 61	LS1669	9/20/2010	15	145-GLVCATCEQIADSQH-159	1575	97.71%	80.59%
38 of 61	LS1668	7/19/2010	15	149-ATCEQIADSQHRSHR-163	1739	97.76%	72.02%
39 of 61	LS1667	7/16/2010	14	154-IADSQHRSHRQMAT-167	1638	99.29%	66.61%
40 of 61	LS1666	7/16/2010	16	157-SQHRSHRQMATTNPL-172	1865	98.81%	72.30%
41 of 61	LS1665	8/2/2010	15	161-SHRQMATTNPLIRH-175	1763	98.43%	80.59%
42 of 61	LS1711	9/2/2010	15	165-MATTNPLIRHENRM-179	1785	98.83%	82.03%
43 of 61	LS1664	7/27/2010	15	169-TNPLIRHENRMVLAS-183	1751	99.62%	79.72%
44 of 61	LS1660	7/27/2010	15	173-IRHENRMVLASTTAK-187	1727	98.85%	73.84%
45 of 61	LS1659	8/10/2010	15	177-NRMVLASTTAKAMEQ-191	1651	85.31%	79.66%
46 of 61	LS1663	7/21/2010	15	181-LASTTAKAMEQMAGS-195	1497	99.24%	79.13%
47 of 61	LS1658	7/19/2010	15	185-TAKAMEQMAGSSEQA-199	1540	98.66%	76.71%
48 of 61	LS1662	7/27/2010	15	189-MEQMAGSSEQAAEAM-203	1571	91.21%	78.12%
49 of 61	LS1661	8/10/2010	15	193-AGSSEQAAEAMEVAN-207	1465	95.05%	79.39%
50 of 61	LS1655	7/21/2010	15	197-EQAAEAMEVANQTRQ-211	1676	80.32%	67.58%
51 of 61	LS1657	8/10/2010	15	201-EAMEVANQTRQMVHA-215	1715	82.24%	78.42%
52 of 61	LS1656	8/18/2010	15	205-VANQTRQMVHAMRTI-219	1756	97.25%	58.48%
53 of 61	LS1650	7/21/2010	16	209-TRQMVHAMRTIGTHPS-224	1823	98.60%	63.41%
54 of 61	LS1649	7/27/2010	15	213-VHAMRTIGTHPSSSA-227	1552	98.32%	76.80%
55 of 61	LS1648	7/21/2010	15	217-RTIGTHPSSSAGLKD-231	1527	91.93%	70.67%
56 of 61	LS1647	7/20/2010	15	221-THPSSSAGLKDDLLE-235	1570	90.28%	75.76%
57 of 61	LS1646	7/19/2010	15	225-SSAGLKDDLLENLQA-239	1574	87.53%	76.78%
58 of 61	LS1674	7/16/2010	15	229-LKDDLLENLQAYQKR-243	1847	96.01%	75.80%
59 of 61	LS1673	7/16/2010	15	233-LLENLQAYQKRMGVQ-247	1791	91.15%	79.91%
60 of 61	LS1654	7/19/2010	15	237-LQAYQKRMGVQMQR-251	1884	95.75%	77.82%
61 of 61	LS1653	7/19/2010	11	242-KRMGVQMQRFK-252	1409	84.83%	63.94%

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)
01 of 61	Expected					2.00			2.00	3.00		1.00			2.00	2.00		1.00	2.00
	Actual					2.01			1.75	3.13		1.00			1.88	2.01		1.06	2.15
02 of 61	Expected					2.00	1.00		2.00	2.00				2.00	2.00	2.00		1.00	2.00
	Actual					1.94	1.03		1.82	2.10				2.12	2.04	2.05		1.04	2.08
03 of 61	Expected	1.00				1.00	1.00		2.00	2.00	1.00			2.00	2.00	1.00		1.00	1.00
	Actual	1.03				0.93	1.04		1.73	2.10	1.05			1.99	2.10	1.03		1.04	1.06
04 of 61	Expected	2.00	1.00			2.00	1.00		3.00	1.00	1.00			2.00	2.00				
	Actual	1.99	1.00			2.03	1.05		2.76	1.09	1.02			2.07	1.93				
05 of 61	Expected	2.00	1.00			3.00	1.00		1.00	2.00	1.00			1.00	2.00				1.00
	Actual	1.95	0.98			3.04	0.96		1.01	2.06	1.00			1.01	1.83				1.03
06 of 61	Expected	3.00	1.00			3.00	1.00		1.00	1.00	2.00		1.00		1.00				1.00
	Actual	3.03	0.97			3.05	1.00		1.00	1.03	2.04		1.07		0.96				1.02

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)
07 of 61	Expected	2.00	1.00	2.00		2.00	1.00			2.00	1.00		1.00		1.00	1.00			1.00
	Actual	2.07	0.99	2.06		2.00	0.98			2.11	0.98		1.01		1.02	1.03			1.01
08 of 61	Expected	2.00		2.00		2.00	1.00			2.00	1.00	1.00	1.00		1.00	1.00			1.00
	Actual	1.99		2.01		1.91	0.99			2.11	1.02	0.96	1.05		0.92	1.01			1.01
09 of 61	Expected	2.00		2.00		2.00	1.00			3.00	2.00	1.00				1.00	1.00		
	Actual	1.92		2.04		1.92	0.99			3.16	2.06	0.98				1.06	0.00 <sup>a</sup>		
10 of 61	Expected	1.00	1.00	1.00		2.00			1.00	3.00	1.00	1.00		1.00		2.00	1.00		
	Actual	0.98	0.99	1.00		1.90			1.01	3.06	1.04	1.00		1.03		2.05	0.00 <sup>a</sup>		
11 of 61	Expected	1.00	1.00			1.00			1.00	4.00	1.00	1.00		2.00	1.00	1.00	1.00		
	Actual	1.01	1.01			0.92			1.06	4.30	1.02	0.93		1.98	0.96	1.06	0.00 <sup>a</sup>		
12 of 61	Expected		1.00				1.00		2.00	3.00	2.00			2.00	1.00	2.00	1.00		
	Actual		1.01				0.98		2.01	3.11	2.03			1.98	1.00	2.03	0.00 <sup>a</sup>		
13 of 61	Expected		1.00				2.00		2.00	3.00	1.00		1.00	2.00	1.00	1.00			1.00
	Actual		1.01				2.02		1.98	3.06	1.05		1.01	1.89	1.09	1.00			1.02
14 of 61	Expected						2.00	Expected	1.00	3.00	1.00		2.00	1.00	1.00	3.00			1.00
	Actual						2.00		1.00	3.05	1.03		2.04	1.03	1.06	3.01			0.99
15 of 61	Expected					1.00	2.00		1.00	2.00	1.00		2.00	1.00	1.00	2.00			2.00
	Actual					0.96	2.08		1.02	2.15	1.07		2.18	0.94	0.97	1.96			2.00
16 of 61	Expected		1.00			2.00	2.00			2.00			2.00	1.00	1.00	2.00			2.00
	Actual		1.00			1.94	2.10			2.00			2.16	1.02	0.96	2.02			2.08
17 of 61	Expected		4.00			2.00	1.00			2.00			1.00	1.00	1.00	2.00			1.00
	Actual		3.94			2.00	1.00			2.10			1.10	1.02	0.95	2.00			1.04
18 of 61	Expected	1.00	4.00	1.00		3.00	1.00			1.00			1.00	1.00	1.00				1.00
	Actual	1.10	3.81	0.98		2.97	0.97			1.01			1.03	1.08	0.99				0.98
19 of 61	Expected	1.00	3.00	3.00		2.00	2.00			2.00			1.00						1.00
	Actual	1.02	2.95	2.89		1.91	1.94			2.07			1.06						1.01
20 of 61	Expected	1.00	2.00	5.00		1.00	2.00			1.00			1.00	1.00					1.00
	Actual	1.02	1.88	4.94		0.96	2.01			1.04			1.05	1.00					0.99
21 of 61	Expected	1.00	1.00	7.00			2.00			1.00		1.00		1.00					
	Actual	1.02	0.98	6.90			1.99			1.05		1.00		0.97					
22 of 61	Expected	1.00	1.00	6.00			2.00			1.00	1.00	1.00		1.00					1.00
	Actual	0.97	1.02	5.89			1.87			1.06	0.94	1.03		1.02					1.03
23 of 61	Expected	1.00	1.00	4.00						2.00	3.00	1.00		1.00				1.00	1.00
	Actual	0.99	0.98	3.98						2.09	2.93	1.04		0.97				1.00	1.01
24 of 61	Expected	1.00	2.00	1.00		1.00			1.00	2.00	4.00	1.00						1.00	1.00
	Actual	0.98	1.99	1.01		0.97			1.01	2.05	4.18	0.95						1.01	1.00
25 of 61	Expected		1.00			1.00	1.00	1.00	1.00	2.00	4.00		1.00			1.00		1.00	1.00
	Actual		0.98			1.00	1.03	1.04	1.02	1.99	4.00		1.05			1.04		0.96	0.94
26 of 61	Expected	1.00	1.00			2.00	1.00	1.00	1.00	1.00	4.00		1.00			1.00			1.00
	Actual	0.98	0.95			2.06	1.00	1.03	0.99	1.04	4.09		1.02			1.02			0.96
27 of 61	Expected	1.00	1.00			2.00	1.00	1.00	1.00	1.00	1.00		1.00		2.00	1.00		1.00	1.00
	Actual	1.01	0.98			2.10	0.99	0.98	1.00	1.06	1.04		1.07		1.89	0.97		1.06	0.97
28 of 61	Expected	2.00				1.00	2.00	1.00		1.00	1.00		1.00		3.00	1.00		1.00	1.00
	Actual	2.16				1.00	1.95	1.01		1.03	1.04		1.02		2.99	0.95		1.01	1.02
29 of 61	Expected	2.00			1.00	1.00	1.00			2.00	1.00				4.00	1.00		1.00	1.00
	Actual	2.07			0.00 <sup>c</sup>	0.95	1.01			2.18	0.92				4.12	1.04		1.04	0.95
30 of 61	Expected	2.00			1.00		2.00		1.00	3.00		1.00			3.00	1.00		1.00	
	Actual	2.02			0.00 <sup>c</sup>		2.08		1.06	3.11		1.07			2.89	0.97		0.94	
31 of 61	Expected	2.00	1.00	1.00		1.00	2.00		1.00	2.00		2.00			1.00	1.00		1.00	
	Actual	2.02	0.99	1.04	0.00 <sup>c</sup>		2.02		1.00	2.05		2.02			1.01	1.04		1.01	
32 of 61	Expected	1.00	1.00	1.00	1.00		2.00		1.00	1.00		2.00			1.00	2.00		1.00	1.00
	Actual	1.02	0.99	1.03	0.00 <sup>c</sup>		2.04		1.00	1.03		2.02			0.98	2.04		1.01	1.03
33 of 61	Expected	2.00	1.00	1.00		1.00	2.00		1.00	1.00		1.00				3.00		1.00	1.00
	Actual	1.91	1.01	1.05		0.94	2.03		1.02	1.05		1.01				2.92		1.03	1.00
34 of 61	Expected	2.00	1.00	1.00		1.00	2.00			1.00		1.00	1.00			3.00			2.00
	Actual	2.10	0.95	0.92		0.97	2.05			1.08		0.98	0.99			3.05			2.10

# Certificate of Analysis for NR-18977

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)
35 of 61	Expected	3.00			2.00	1.00	1.00			1.00			1.00			4.00			2.00
	Actual	2.72			0.00 <sup>c</sup>	1.03	1.01			1.09			1.08			3.98			1.87
36 of 61	Expected	4.00			2.00	3.00	1.00		1.00	1.00			1.00			1.00			1.00
	Actual	4.10			0.00 <sup>c</sup>	2.81	1.02		0.96	1.10			1.06			0.93			1.00
37 of 61	Expected	2.00		1.00	2.00	3.00	1.00	1.00	1.00	1.00					1.00	1.00			1.00
	Actual	1.96		1.05	0.00 <sup>c</sup>	3.19	0.98	1.03	1.02	1.03					1.02	0.94			1.02
38 of 61	Expected	2.00	2.00	1.00	1.00	3.00		2.00	1.00						2.00	1.00			
	Actual	2.00	2.03	1.05	0.00 <sup>c</sup>	3.05		2.08	1.05						2.01	1.00			
39 of 61	Expected	2.00	2.00	1.00		2.00		2.00	1.00			1.00			2.00	1.00			
	Actual	2.01	2.05	1.04		2.04		2.09	1.04			0.92			2.05	1.06			
40 of 61	Expected	1.00	2.00	1.00		2.00		2.00		1.00		1.00		1.00	2.00	3.00			
	Actual	0.99	1.99	1.03		2.12		2.03		1.06		0.95		1.05	1.95	3.02			
41 of 61	Expected	1.00	2.00	1.00		1.00		2.00	1.00	1.00		1.00		1.00	1.00	3.00			
	Actual	1.00	1.98	1.05		1.04		2.05	0.98	1.02		1.01		1.01	0.91	3.03			
42 of 61	Expected	1.00	2.00	2.00		1.00		1.00	1.00	1.00		2.00		1.00		3.00			
	Actual	1.00	1.94	2.04		0.98		1.02	0.96	1.05		0.98		1.03		3.08			
43 of 61	Expected	1.00	2.00	2.00		1.00		1.00	1.00	2.00		1.00		1.00	1.00	1.00			1.00
	Actual	1.00	1.97	2.06		1.04		1.01	0.98	2.08		0.98		1.03	1.00	1.03			1.02
44 of 61	Expected	2.00	2.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00			1.00	2.00			1.00
	Actual	2.07	1.89	1.04		1.03		1.00	0.91	1.07	1.02	1.01			0.99	2.06			1.05
45 of 61	Expected	3.00	1.00	1.00		2.00				1.00	1.00	2.00			1.00	2.00			1.00
	Actual	3.14	0.96	1.02		2.17				1.07	0.98	1.91			0.94	2.08			1.04
46 of 61	Expected	4.00				2.00	1.00			1.00	1.00	2.00			2.00	2.00			
	Actual	4.10				2.08	1.02			1.07	1.03	1.95			1.93	2.01			
47 of 61	Expected	4.00				4.00	1.00				1.00	2.00			2.00	1.00			
	Actual	4.07				4.27	1.07				1.05	1.87			2.12	0.99			
48 of 61	Expected	4.00				5.00	1.00					3.00			2.00				
	Actual	4.05				5.21	1.01					3.20			1.92				
49 of 61	Expected	5.00		1.00		4.00	1.00					1.00			2.00				1.00
	Actual	5.24		1.05		3.92	0.96					1.04			1.90				1.06
50 of 61	Expected	4.00	1.00	1.00		6.00						1.00				1.00			1.00
	Actual	4.07	1.01	1.03		5.72						0.97				1.02			1.05
51 of 61	Expected	3.00	1.00	1.00		4.00		1.00				2.00				1.00			2.00
	Actual	3.09	0.99	1.02		3.96		0.95				2.07				1.02			2.03
52 of 61	Expected	2.00	2.00	1.00		2.00		1.00	1.00			2.00				2.00			2.00
	Actual	1.95	1.97	1.05		1.97		1.01	1.02			1.98				2.08			1.99
53 of 61	Expected	1.00	2.00			1.00	1.00	2.00	1.00			2.00		1.00	1.00	3.00			1.00
	Actual	1.03	2.05			0.98	1.04	2.02	1.06			1.85		1.04	0.92	3.07			0.99
54 of 61	Expected	2.00	1.00				1.00	2.00	1.00			1.00		1.00	3.00	2.00			1.00
	Actual	2.06	1.04				1.04	1.94	1.05			0.92		1.08	3.01	2.06			0.90
55 of 61	Expected	1.00	1.00	1.00			2.00	1.00	1.00	1.00	1.00			1.00	3.00	2.00			
	Actual	1.04	0.94	1.09			2.03	1.00	0.96	1.08	1.07			0.96	2.85	1.89			
56 of 61	Expected	1.00		2.00		1.00	1.00	1.00		3.00	1.00			1.00	3.00	1.00			
	Actual	0.97		2.07		1.04	1.01	0.98		3.23	1.06			0.99	3.02	0.98			
57 of 61	Expected	2.00		3.00		2.00	1.00			4.00	1.00				2.00				
	Actual	2.00		3.05		2.05	1.00			4.28	1.01				2.01				
58 of 61	Expected	1.00	1.00	3.00		3.00				4.00	2.00							1.00	
	Actual	1.00	0.98	3.05		2.93				4.15	2.01							0.98	
59 of 61	Expected	1.00	1.00	1.00		4.00	1.00			3.00	1.00	1.00						1.00	1.00
	Actual	1.02	0.97	0.99		3.79	1.04			3.09	0.98	1.04						0.97	1.01
60 of 61	Expected	1.00	2.00			4.00	1.00			1.00	1.00	2.00	1.00					1.00	1.00
	Actual	1.00	1.96			3.81	1.02			0.99	0.98	2.06	1.05					0.98	1.02
61 of 61	Expected		2.00			2.00	1.00				2.00	2.00	1.00						1.00
	Actual		1.99			1.93	1.01				2.01	1.86	1.08						1.02

\*Crude peptides may show AAA variability

<sup>a</sup>Trp was completely destroyed during hydrolysis

<sup>b</sup>Val-Ile, Val-Val, Ile-Ile and/or Ile-Val bonds were only partially destroyed during hydrolysis

<sup>c</sup>Cys was completely destroyed during hydrolysis

**Date:** 22 MAY 2013

**Signature:** *Dorothy C. Young*

**Title:** Technical Manager, BEI Authentication or designee

ATCC<sup>®</sup>, on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected by the vendor to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC<sup>®</sup>'s knowledge.

ATCC<sup>®</sup> is a trademark of the American Type Culture Collection.

You are authorized to use this product for research use only. It is not intended for human use.

