

**Peptide Array, Influenza Virus A/Anhui/1/2013 (H7N9) Hemagglutinin Protein**

**Catalog No. NR-44011**

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**Product Description:** The 111-peptide array spans the hemagglutinin protein (HA) of the A/Anhui/1/2013 (H7N9) strain of influenza virus (EPI439507).<sup>1,2</sup> Peptide 1 through Peptide 109 are 17-mers, with 12 amino acid overlaps. Peptide 110 is a 15-mer with a 12 amino acid overlap relative to Peptide 109. Peptide 111 is a 17-mer with a 14 amino acid overlap relative to Peptide 109. Please see Table 1 for length and sequence of individual peptides.

**Lot: T7631-1 to T7631-111**

The following information applies to all peptides:

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

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

Table 1							
Peptide	Date of Mfg.	Length	Sequence	Molecular Weight (amu)	Hydrophilicity	Purity by HPLC <sup>a</sup>	Peptide Content <sup>b</sup>
1 of 111	5/8/2013	17	1 MNTQILVFALIAIPTN 17	1872.32	1.04	Crude	89.1%
2 of 111	5/8/2013	17	6 LVFALIAIPTNADKIC 22	1815.28	0.94	99.2%	88.8%
3 of 111	5/8/2013	17	11 IAIIPTNADKICLGHHA 27	1787.14	0.67	97.0%	79.7%
4 of 111	5/8/2013	17	16 TNADKICLGHHAVSNGT 32	1737.92	0.42	88.7%	79.2%
5 of 111	5/8/2013	17	21 ICLGHHAVSNGTKVNTL 37	1764.03	0.61	97.6%	79.5%
6 of 111	5/8/2013	17	26 HAVSNGTKVNTLTERGV 42	1782.98	0.3	98.6%	79.6%
7 of 111	5/8/2013	17	31 GTKVNTLTERGVEVVNA 47	1787.01	0.33	98.8%	83.9%
8 of 111	5/8/2013	17	36 TLTERGVEVVNATETVE 52	1847.03	0.29	96.4%	89.0%
9 of 111	5/8/2013	17	41 GVEVVNATETVERTNIP 57	1828.02	0.4	92.1%	88.9%
10 of 111	5/8/2013	17	46 NATETVERTNIPRICKS 62	1932.21	0.3	95.8%	80.9%
11 of 111	5/8/2013	17	51 VERTNIPRICKSGKRTV 67	1957.34	0.22	98.6%	74.1%
12 of 111	5/8/2013	17	56 IPRICKSGKRTVDLGQC 72	1874.26	0.33	95.8%	76.7%
13 of 111	5/8/2013	17	61 SKGKRTVDLGQCGLLT 77	1733.02	0.26	89.0%	79.2%
14 of 111	5/8/2013	17	66 TVDLGQCGLLTITGPP 82	1641.90	0.64	86.0%	87.8%
15 of 111	5/8/2013	17	71 QCGLLTITGPPQCDQF 87	1778.03	0.62	88.7%	88.6%
16 of 111	5/8/2013	17	76 GTITGPPQCDQFLEFSA 92	1811.02	0.53	93.1%	88.8%
17 of 111	5/8/2013	17	81 PPQCDQFLEFSADLIE 97	1965.23	0.62	95.6%	89.6%
18 of 111	5/8/2013	17	86 QFLEFSADLIERREGS 102	2010.26	0.35	86.1%	85.5%
19 of 111	5/8/2013	17	91 SADLIERREGSDVCYP 107	1923.15	0.3	96.2%	84.9%
20 of 111	5/8/2013	17	96 IERREGSDVCYPGKFVN 112	1969.21	0.28	82.9%	81.2%
21 of 111	5/8/2013	17	101 GSDVCYPGKFVNNEEALR 117	1884.11	0.35	80.8%	84.6%
22 of 111	5/8/2013	17	106 YPGKFVNNEEALRQILRE 122	2062.38	0.33	86.3%	81.9%
23 of 111	5/8/2013	17	111 VNEEALRQILRESGGID 127	1899.10	0.24	93.8%	84.7%
24 of 111	5/8/2013	17	116 LRQILRESGGIDKEAMG 132	1873.18	0.21	93.6%	80.4%
25 of 111	5/8/2013	17	121 RESGGIDKEAMGFTYSG 137	1804.98	0.15	82.2%	84.1%

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Peptide	Date of Mfg.	Length	Sequence	Molecular Weight (amu)	Hydrophilicity	Purity by HPLC <sup>a</sup>	Peptide Content <sup>b</sup>
26 of 111	5/8/2013	17	126 IDKEAMGFTYSGIRTNG 142	1860.10	0.35	88.2%	84.5%
27 of 111	5/8/2013	17	131 MGFTYSGIRTNGATSAC 147	1736.97	0.48	91.0%	88.4%
28 of 111	5/8/2013	17	136 SGIRTNGATSACRRSGS 152	1680.84	0.11	83.3%	78.7%
29 of 111	5/8/2013	17	141 NGATSACRRSGSSFYAE 157	1763.90	0.19	81.6%	83.8%
30 of 111	5/8/2013	17	146 ACRRSGSSFYAEMKWLL 162	2005.39	0.47	88.6%	81.5%
31 of 111	5/8/2013	17	151 GSSFYAEMKWLLSNTDN 167	1963.18	0.52	81.6%	89.6%
32 of 111	5/8/2013	17	156 AEMKWLLSNTDNAAFQ 172	1936.22	0.54	93.3%	89.5%
33 of 111	5/8/2013	17	161 LLSNTDNAAFQMTKSY 177	1901.16	0.49	83.6%	89.3%
34 of 111	5/8/2013	17	166 DNAAFPQMTKSYKNTRK 182	2000.31	0.12	96.7%	77.8%
35 of 111	5/8/2013	17	171 PQMTKSYKNTRKSPALI 187	1963.37	0.21	96.3%	77.5%
36 of 111	5/8/2013	17	176 SYKNTRKSPALIVWGIH 192	1970.33	0.5	87.6%	77.6%
37 of 111	5/8/2013	17	181 RKSPALIVWGIHHSVST 197	1888.22	0.47	96.3%	76.8%
38 of 111	5/8/2013	17	186 LIVWGIHHSVSTAEQTK 202	1906.19	0.5	92.7%	80.7%
39 of 111	5/8/2013	17	191 IHHSVSTAEQTKLYGSG 207	1814.99	0.21	85.2%	79.9%
40 of 111	5/8/2013	17	196 STAEQTKLYGSGNKLVT 212	1797.02	0.29	97.5%	84.0%
41 of 111	5/8/2013	17	201 TKLYGSGNKLVTVGSSN 217	1724.93	0.45	97.3%	83.5%
42 of 111	5/8/2013	17	206 SGNKLVTVGSSNYQQSF 222	1815.95	0.47	84.6%	88.8%
43 of 111	5/8/2013	17	211 VTVGSSNYQQSFVPSGP 227	1753.88	0.55	95.6%	88.5%
44 of 111	5/8/2013	17	216 SNYQQSFVPSPGARPQV 232	1862.04	0.38	98.1%	89.1%
45 of 111	5/8/2013	17	221 SFVPSPGARPQVNGLSG 237	1669.86	0.34	97.0%	88.0%
46 of 111	5/8/2013	17	226 PGARPQVNGLSGRIDFH 242	1821.03	0.24	97.8%	80.0%
47 of 111	5/8/2013	17	231 QVNGLSGRIDFHWLMLN 247	2000.30	0.63	95.7%	85.4%
48 of 111	5/8/2013	17	236 SGRIDFHWLMLNPNDTV 252	2015.28	0.67	97.3%	85.5%
49 of 111	5/8/2013	17	241 FHWLMLNPNDTVTFN 257	2083.36	0.93	95.8%	90.1%
50 of 111	5/8/2013	17	246 LNPNDTVTFNFGAFIA 262	1828.03	0.76	96.9%	88.9%
51 of 111	5/8/2013	17	251 TVTFNFGAFIAPDRAS 267	1801.03	0.55	96.0%	88.8%
52 of 111	5/8/2013	17	256 FNGAFIAPDRASFLRGK 272	1867.18	0.43	96.9%	80.4%
53 of 111	5/8/2013	17	261 IAPDRASFLRGKSMGIQ 277	1847.20	0.33	97.6%	80.2%
54 of 111	5/8/2013	17	266 ASFLRGKSMGIQSGVQV 282	1765.07	0.39	94.5%	83.8%
55 of 111	5/8/2013	17	271 GKSMGIQSGVQVDANCE 287	1722.91	0.21	89.1%	88.3%
56 of 111	5/8/2013	17	276 IQSGVQVDANCEGDCYH 292	1837.95	0.31	97.1%	89.0%
57 of 111	5/8/2013	17	281 QVDANCEGDCYHSGGTI 297	1768.85	0.27	98.6%	88.6%
58 of 111	5/8/2013	17	286 CEGDCYHSGGTIISNLP 302	1765.93	0.53	98.2%	88.6%
59 of 111	5/8/2013	17	291 YHSGGTIISNLPFQNI 307	1876.05	0.62	95.5%	89.2%
60 of 111	5/8/2013	17	296 TIISNLPFQNIDRAVG 312	1845.09	0.58	96.1%	89.0%
61 of 111	5/8/2013	17	301 LPFQNIDRAVGKCPRY 317	1964.29	0.43	98.6%	81.2%
62 of 111	5/8/2013	17	306 IDRAVGKCPRYVKQRS 322	1963.31	0.1	96.5%	74.2%
63 of 111	5/8/2013	17	311 VGKCPRYVKQRSLLLAT 327	1932.38	0.42	97.7%	77.2%
64 of 111	5/8/2013	17	316 RYVKQRSLLLATGMKNV 332	1977.42	0.39	96.2%	77.6%
65 of 111	5/8/2013	17	321 RLLLATGMKNVPEIPK 337	1867.31	0.4	98.4%	80.4%
66 of 111	5/8/2013	17	326 ATGMKNVPEIPKGRGLF 342	1815.19	0.3	97.8%	79.9%
67 of 111	5/8/2013	17	331 NVPEIPKGRGLFGAIA 347	1696.00	0.4	96.3%	83.2%
68 of 111	5/8/2013	17	336 PKGRGLFGAIAFGIENG 352	1703.98	0.48	98.2%	83.3%
69 of 111	5/8/2013	17	341 LFGAIAFGIENGWEGLI 357	1807.10	0.86	97.7%	88.8%
70 of 111	5/8/2013	17	346 AGFIENGWEGLIDGWY 362	1884.05	0.67	98.2%	89.2%

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Peptide	Date of Mfg.	Length	Sequence	Molecular Weight (amu)	Hydrophilicity	Purity by HPLC <sup>a</sup>	Peptide Content <sup>b</sup>
71 of 111	5/8/2013	17	351 NGWEGLIDGWYGFRHQ N 367	2049.19	0.56	97.5%	85.7%
72 of 111	5/8/2013	17	356 LIDGWYGFRHQNAQGE G 372	1948.09	0.39	97.6%	85.1%
73 of 111	5/8/2013	17	361 YGFRHQNAQGEETAAD Y 377	1884.97	0.16	95.4%	84.6%
74 of 111	5/8/2013	17	366 QNAQGEETAADYKSTQ S 382	1755.81	-0.01	93.4%	88.5%
75 of 111	5/8/2013	17	371 EGTAADYKSTQSAIDQI 387	1797.94	0.14	94.5%	88.7%
76 of 111	5/8/2013	17	376 DYKSTQSAIDQITGKLN 392	1882.08	0.21	95.1%	84.6%
77 of 111	5/8/2013	17	381 QSAIDQITGKLNRLIEK 397	1927.25	0.3	97.0%	80.9%
78 of 111	5/8/2013	17	386 QITGKLNRLIEKTNQ QF 402	2031.35	0.37	90.2%	81.7%
79 of 111	5/8/2013	17	391 LNRLIEKTNQFELIDN 407	2088.35	0.47	90.7%	85.9%
80 of 111	5/8/2013	17	396 EKTNQFELIDNEFNEV 412	2097.23	0.33	90.0%	90.2%
81 of 111	5/8/2013	17	401 QFELIDNEFNEVEKQIG 417	2052.23	0.38	96.7%	90.0%
82 of 111	5/8/2013	17	406 DNEFNEVEKQIGNVINW 422	2048.19	0.5	93.3%	90.0%
83 of 111	5/8/2013	17	411 EVEKQIGNVINWTRDSI 427	2001.23	0.43	95.9%	85.4%
84 of 111	5/8/2013	17	416 IGVINWTRDSITEVWS 432	1990.21	0.68	91.8%	89.7%
85 of 111	5/8/2013	17	421 NWTRDSITEVWSYNAEL 437	2084.26	0.53	91.6%	90.1%
86 of 111	5/8/2013	17	426 SITEVWSYNAELLVAME 442	1955.25	0.68	81.5%	89.6%
87 of 111	5/8/2013	17	431 WSYNAELLVAMENQHTI 447	2019.29	0.68	92.2%	89.9%
88 of 111	5/8/2013	17	436 ELLVAMENQHTIDLADS 452	1899.13	0.46	86.2%	89.3%
89 of 111	5/8/2013	17	441 MENQHTIDLADSEMDKL 457	1990.22	0.24	95.5%	85.3%
90 of 111	5/8/2013	17	446 TIDLADSEMDKLYERVK 462	2026.33	0.15	85.8%	81.6%
91 of 111	5/8/2013	17	451 DSEMDKLYERVKRQLRE 467	2195.51	-0.11	92.4%	76.2%
92 of 111	5/8/2013	17	456 KLYERVKRQLRENAEED 472	2176.45	-0.12	90.6%	76.1%
93 of 111	5/8/2013	17	461 VKRQLRENAEEDGTGCF 477	1952.15	0.09	87.2%	81.1%
94 of 111	5/8/2013	17	466 RENAEEDGTGCFEIFHK 482	1982.14	0.17	95.2%	81.3%
95 of 111	5/8/2013	17	471 EDGTGCFEIFHKDDDC 487	1934.07	0.3	87.3%	85.0%
96 of 111	5/8/2013	17	476 CFEIFHKDDDCMASIR 492	2033.37	0.5	94.7%	81.7%
97 of 111	5/8/2013	17	481 HKDDDCMASIRNNTYD 497	2001.17	0.23	91.4%	81.4%
98 of 111	5/8/2013	17	486 DCMASIRNNTYDHSKYR 502	2074.30	0.22	82.3%	78.4%
99 of 111	5/8/2013	17	491 IRNNTYDHSKYREEAMQ 507	2155.36	0.09	85.0%	79.1%
100 of 111	5/8/2013	17	496 YDHSKYREEAMQNRIQI 512	2181.44	0.13	82.3%	79.3%
101 of 111	5/8/2013	17	501 YREEAMQNRIQIDPVKL 517	2103.45	0.28	81.9%	82.2%
102 of 111	5/8/2013	17	506 MQNRIQIDPVKLSSGYK 522	1977.32	0.34	88.6%	81.3%
103 of 111	5/8/2013	17	511 QIDPVKLSSGYKDVILW 527	1961.30	0.56	93.6%	85.2%
104 of 111	5/8/2013	17	516 KLSSGYKDVILWFSFGA 532	1918.25	0.63	93.1%	84.9%
105 of 111	5/8/2013	17	521 YKDVILWFSFGASCFIL 537	2009.42	0.99	97.8%	89.8%
106 of 111	5/8/2013	17	526 LWFSFGASCFILLAIMV 542	1918.42	1.23	92.6%	89.4%
107 of 111	5/8/2013	17	531 GASCFILLAIMGLVFI 547	1767.28	1.17	99.7%	88.6%
108 of 111	5/8/2013	17	536 ILLAIMGLVFCVKNG 552	1803.34	1.1	98.5%	88.8%
109 of 111	5/8/2013	17	541 VMGLVFCVKNGNMRCT 557	1885.35	0.82	86.3%	84.6%
110 of 111	5/8/2013	15	546 FICVKNGNMRCTICI 560	1715.14	0.91	83.2%	83.4%
111 of 111	5/8/2013	17	544 LVFICVKNGNMRCTICI 560	1927.43	0.98	97.1%	84.9%

<sup>a</sup>% full-length

<sup>b</sup>Remainder 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)
1 of 111	Expected	2.00		2.00		1.00			4.00	2.00		1.00	1.00	1.00		2.00			1.00
	Actual	1.82		2.17		0.98			2.46 <sup>a</sup>	1.84		1.00	0.97	1.07		2.01			1.02
2 of 111	Expected	3.00		2.00	1.00				4.00	2.00	1.00		1.00	1.00		1.00			1.00
	Actual	2.78		2.13	0.33 <sup>b</sup>				1.90 <sup>a</sup>	1.85	1.15		1.06	1.00		0.93			1.03
3 of 111	Expected	3.00		2.00	1.00		1.00	2.00	4.00	1.00	1.00			1.00		1.00			
	Actual	2.92		2.00	0.22 <sup>b</sup>		0.99	1.82	2.08 <sup>a</sup>	0.95	0.89			0.94		0.84			
4 of 111	Expected	2.00		3.00	1.00		2.00	2.00	1.00	1.00	1.00				1.00	2.00			1.00
	Actual	1.87		2.77	0.26 <sup>b</sup>		2.12	2.06	0.71	1.00	0.80				0.88	1.80			0.95
5 of 111	Expected	1.00		2.00	1.00		2.00	2.00	1.00	2.00	1.00				1.00	2.00			2.00
	Actual	0.93		1.73	0.32 <sup>b</sup>		2.12	2.05	0.73	2.00	0.99				0.99	1.74			1.89
6 of 111	Expected	1.00	1.00	2.00		1.00	2.00	1.00		1.00	1.00				1.00	3.00			3.00
	Actual	0.97	1.02	1.79		1.12	2.21	1.23		1.00	1.00				0.98	2.65			2.85
7 of 111	Expected	1.00	1.00	2.00		2.00	2.00			1.00	1.00					3.00			4.00
	Actual	1.01	1.02	1.81		2.00	2.24			0.87	0.91					2.77			2.41 <sup>a</sup>
8 of 111	Expected	1.00	1.00	1.00		4.00	1.00			1.00						4.00			4.00
	Actual	1.04	0.84	0.98		4.00	1.15			0.88						3.73			2.53 <sup>a</sup>
9 of 111	Expected	1.00	1.00	2.00		3.00	1.00		1.00					1.00		3.00			4.00
	Actual	1.02	0.94	1.97		3.00	1.07		1.02					0.94		2.66			2.33 <sup>a</sup>
10 of 111	Expected	1.00	2.00	2.00	1.00	2.00			2.00		1.00			1.00	1.00	3.00			1.00
	Actual	1.07	1.97	2.00	0.69 <sup>b</sup>	2.17			1.69		1.04			0.90	1.01	2.77			0.81
11 of 111	Expected		3.00	1.00	1.00	1.00	1.00		2.00		2.00			1.00	1.00	2.00			2.00
	Actual		2.77	1.00	0.43 <sup>b</sup>	0.88	1.18		1.98		2.17			0.86	0.98	1.89			1.87
12 of 111	Expected		2.00	1.00	2.00	1.00	2.00		2.00	1.00	2.00			1.00	1.00	1.00			1.00
	Actual		2.04	0.98	0.73 <sup>b</sup>	1.14	2.10		1.96	1.00	1.87			0.92	0.92	0.87			0.88
13 of 111	Expected		1.00	1.00	1.00	1.00	4.00			3.00	2.00				1.00	2.00			1.00
	Actual		0.92	1.00	0.22 <sup>b</sup>	1.10	4.02			2.81	2.04				0.97	1.82			0.90
14 of 111	Expected			1.00	1.00	1.00	4.00		1.00	3.00				2.00		3.00			1.00
	Actual			0.98	0.37 <sup>b</sup>	1.13	4.06		0.90	2.92				2.00		2.83			0.98
15 of 111	Expected			1.00	2.00	3.00	3.00		1.00	2.00			1.00	2.00		2.00			
	Actual			1.04	0.90 <sup>b</sup>	3.00	3.07		0.94	2.01			1.00	2.01		1.70			
16 of 111	Expected	1.00		1.00	1.00	3.00	2.00		1.00	1.00			2.00	2.00	1.00	2.00			
	Actual	1.00		0.98	0.24 <sup>b</sup>	3.03	2.23		0.95	1.01			1.91	1.82	0.73	1.74			
17 of 111	Expected	1.00		2.00	1.00	4.00			2.00	2.00			2.00	2.00	1.00				
	Actual	1.01		1.97	0.49 <sup>b</sup>	4.00			1.29 <sup>a</sup>	1.92			1.80	1.61	0.81				
18 of 111	Expected	1.00	2.00	1.00		4.00	1.00		2.00	2.00			2.00		2.00				
	Actual	1.08	2.05	1.00		3.92	0.95		1.45 <sup>a</sup>	2.01			2.15		1.85				
19 of 111	Expected	1.00	2.00	2.00	1.00	2.00	1.00		2.00	1.00				1.00	2.00			1.00	1.00
	Actual	0.85	2.14	1.75	0.36 <sup>b</sup>	2.08	1.10		1.30 <sup>a</sup>	1.00				0.95	1.70			0.90	0.91
20 of 111	Expected		2.00	2.00	1.00	2.00	2.00		1.00		1.00		1.00	1.00	1.00			1.00	2.00
	Actual		2.04	2.04	0.21 <sup>b</sup>	2.09	2.12		0.91		1.07		0.99	1.00	0.89			0.97	2.00
21 of 111	Expected	1.00	1.00	2.00	1.00	2.00	2.00			1.00	1.00		1.00	1.00	1.00			1.00	2.00
	Actual	1.10	0.99	2.13	0.33 <sup>b</sup>	1.96	2.07			1.11	1.05		1.00	1.02	0.76			0.94	1.97
22 of 111	Expected	1.00	2.00	1.00		4.00	1.00		1.00	2.00	1.00		1.00	1.00				1.00	1.00
	Actual	1.02	2.00	1.01		3.76	0.77		0.77	1.98	1.00		0.74	1.03				1.03	0.97
23 of 111	Expected	1.00	2.00	2.00		4.00	2.00		2.00	2.00					1.00				1.00
	Actual	0.99	1.95	1.98		3.74	2.03		1.90	1.90					0.99				1.00
24 of 111	Expected	1.00	2.00	1.00		3.00	3.00		2.00	2.00	1.00	1.00			1.00				
	Actual	0.98	2.20	0.90		3.09	2.98		1.92	1.68	0.94	1.00			1.03				

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)
25 of 111	Expected	1.00	1.00	1.00		2.00	4.00		1.00		1.00	1.00	1.00		2.00	1.00		1.00	
	Actual	0.94	0.98	0.94		1.80	3.95		0.94		0.77	1.01	0.92		2.00	1.05		0.93	
26 of 111	Expected	1.00	1.00	2.00		1.00	3.00		2.00		1.00	1.00	1.00		1.00	2.00		1.00	
	Actual	0.87	1.03	1.72		0.90	3.05		2.11		1.10	0.90	1.08		0.93	1.74		1.00	
27 of 111	Expected	2.00	1.00	1.00	1.00		3.00		1.00			1.00	1.00		2.00	3.00		1.00	
	Actual	1.82	1.06	0.82	0.33 <sup>b</sup>		3.02		0.88			1.00	1.16		1.93	2.96		1.16	
28 of 111	Expected	2.00	3.00	1.00	1.00		3.00		1.00						4.00	2.00			
	Actual	2.04	2.89	0.98	0.34 <sup>b</sup>		3.08		0.98						4.14	2.00			
29 of 111	Expected	3.00	2.00	1.00	1.00	1.00	2.00						1.00		4.00	1.00		1.00	
	Actual	3.18	2.00	0.91	0.32 <sup>b</sup>	0.77	2.14						1.14		3.93	0.86		1.15	
30 of 111	Expected	2.00	2.00		1.00	1.00	1.00			2.00	1.00	1.00	1.00		3.00		1.00	1.00	
	Actual	2.06	1.91		0.53 <sup>b</sup>	0.92	0.95			2.00	1.04	0.98	0.99		3.05		0.00 <sup>c</sup>	0.98	
31 of 111	Expected	1.00		3.00		1.00	1.00			2.00	1.00	1.00	1.00		3.00	1.00	1.00	1.00	
	Actual	0.90		3.00		1.09	1.23			1.95	0.86	0.88	0.93		2.99	0.91	0.00 <sup>c</sup>	0.92	
32 of 111	Expected	3.00		3.00		2.00				2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Actual	2.97		2.97		1.88				1.99	0.92	1.00	1.14	1.00	0.97	0.90	0.00 <sup>c</sup>		
33 of 111	Expected	2.00		3.00		1.00				2.00	1.00	1.00	1.00	1.00	2.00	2.00		1.00	
	Actual	1.78		3.00		0.97				1.78	0.89	0.82	1.04	0.90	2.02	1.71		0.98	
34 of 111	Expected	2.00	1.00	3.00		1.00					3.00	1.00	1.00	1.00	1.00	2.00		1.00	
	Actual	2.08	1.11	3.00		0.90					2.86	1.02	1.09	1.07	0.95	2.03		1.16	
35 of 111	Expected	1.00	1.00	1.00		1.00			1.00	1.00	3.00	1.00		2.00	2.00	2.00		1.00	
	Actual	1.14	1.05	0.98		0.98			0.89	0.98	3.10	0.91		2.00	1.60	1.90		1.04	
36 of 111	Expected	1.00	1.00	1.00			1.00	1.00	2.00	1.00	2.00			1.00	2.00	1.00	1.00	1.00	1.00
	Actual	1.04	0.98	1.07			1.12	1.03	0.68 <sup>a</sup>	0.94	2.01			1.00	1.99	0.99	0.00 <sup>c</sup>	1.04	0.34 <sup>a</sup>
37 of 111	Expected	1.00	1.00				1.00	2.00	2.00	1.00	1.00			1.00	3.00	1.00	1.00		2.00
	Actual	0.97	1.02				1.09	1.68	0.71 <sup>a</sup>	0.94	1.00			0.98	2.93	1.05	0.00 <sup>c</sup>		1.28 <sup>a</sup>
38 of 111	Expected	1.00				2.00	1.00	2.00	2.00	1.00	1.00				2.00	2.00	1.00		2.00
	Actual	1.00				1.95	1.00	1.82	1.54 <sup>a</sup>	1.02	1.10				1.89	1.96	0.00 <sup>c</sup>		1.77 <sup>a</sup>
39 of 111	Expected	1.00				2.00	2.00	2.00	1.00	1.00	1.00				3.00	2.00		1.00	1.00
	Actual	1.06				1.89	1.97	1.99	0.78	1.00	1.14				2.85	1.79		0.89	0.96
40 of 111	Expected	1.00		1.00		2.00	2.00			2.00	2.00				2.00	3.00		1.00	1.00
	Actual	0.93		0.99		1.93	2.00			1.90	2.09				2.03	2.74		0.88	1.17
41 of 111	Expected			2.00			3.00			2.00	2.00				3.00	2.00		1.00	2.00
	Actual			1.71			3.00			1.65	2.07				2.82	1.87		1.00	1.79
42 of 111	Expected			2.00		2.00	2.00			1.00	1.00		1.00		4.00	1.00		1.00	2.00
	Actual			2.14		1.95	2.00			0.81	1.04		0.88		3.62	0.95		1.03	2.00
43 of 111	Expected			1.00		2.00	2.00						1.00	2.00	4.00	1.00		1.00	3.00
	Actual			0.86		1.90	2.25						1.12	2.00	3.84	0.72		0.92	2.77
44 of 111	Expected	1.00	1.00	1.00		3.00	1.00						1.00	3.00	3.00			1.00	2.00
	Actual	0.93	0.99	0.86		2.89	1.02						1.17	3.00	2.81			0.98	1.91
45 of 111	Expected	1.00	1.00	1.00		1.00	3.00			1.00			1.00	3.00	3.00				2.00
	Actual	0.92	1.07	0.73		0.92	2.98			1.00			1.11	2.95	2.74				1.81
46 of 111	Expected	1.00	2.00	2.00		1.00	3.00	1.00	1.00	1.00			1.00	2.00	1.00				1.00
	Actual	0.84	2.14	1.82		0.89	2.97	1.09	0.76	1.00			1.11	1.81	0.84				0.94
47 of 111	Expected		1.00	3.00		1.00	2.00	1.00	1.00	3.00		1.00	1.00		1.00		1.00		1.00
	Actual		1.00	2.85		0.79	1.95	1.12	0.77	2.80		0.97	1.16		0.78		0.00 <sup>c</sup>		0.78
48 of 111	Expected		1.00	4.00			1.00	1.00	1.00	2.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
	Actual		0.97	3.87			1.02	1.15	0.85	2.00		0.99	1.10	0.94	0.90	0.88	0.00 <sup>c</sup>		0.92



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)
49 of 111	Expected			4.00				1.00		2.00		1.00	3.00	1.00	1.00	2.00	1.00		1.00
	Actual			4.01				0.87		2.00		1.07	2.94	0.91	0.93	1.94	0.00 <sup>c</sup>		0.76
50 of 111	Expected	2.00		4.00			1.00		1.00	1.00			3.00	1.00	1.00	2.00			1.00
	Actual	1.95		3.78			1.14		0.82	1.00			2.99	1.00	0.92	1.72			0.72
51 of 111	Expected	3.00	1.00	2.00			1.00		1.00				3.00	1.00	2.00	2.00			1.00
	Actual	2.96	1.09	1.86			1.10		0.86				3.11	1.00	2.08	1.88			0.83
52 of 111	Expected	3.00	2.00	2.00			2.00		1.00	1.00	1.00		3.00	1.00	1.00				
	Actual	2.77	2.18	1.92			2.21		0.82	0.93	1.01		3.10	1.00	0.97				
53 of 111	Expected	2.00	2.00	1.00		1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00				
	Actual	1.70	2.04	0.84		1.00	2.05	1.69	0.99	0.84	0.98	1.16	0.93	1.84					
54 of 111	Expected	1.00	1.00			2.00	3.00	1.00	1.00	1.00	1.00	1.00			3.00				2.00
	Actual	0.93	1.02			1.78	2.90		0.81	0.96	0.86	1.00	1.12		2.64				1.69
55 of 111	Expected	1.00		2.00	1.00	3.00	3.00		1.00		1.00	1.00			2.00				2.00
	Actual	1.06		1.94	0.25 <sup>b</sup>	3.00	3.03		0.85		0.82	1.04			1.73				2.09
56 of 111	Expected	1.00		3.00	2.00	3.00	2.00	1.00	1.00						1.00			1.00	2.00
	Actual	1.12		3.00	1.96 <sup>b</sup>	2.65	2.06	1.05	0.89						0.90			0.92	2.05
57 of 111	Expected	1.00		3.00	2.00	2.00	3.00	1.00	1.00						1.00	1.00		1.00	1.00
	Actual	0.92		2.99	0.67 <sup>b</sup>	1.89	2.90	1.02	1.00						0.86	0.72		1.17	1.03
58 of 111	Expected			2.00	2.00	1.00	3.00	1.00	2.00	1.00				1.00	2.00	1.00		1.00	
	Actual			1.72	0.66 <sup>b</sup>	0.88	3.07	0.99	1.12 <sup>a</sup>	1.00				0.99	1.72	0.87		1.07	
59 of 111	Expected			3.00		1.00	2.00	1.00	3.00	1.00			1.00	1.00	2.00	1.00		1.00	
	Actual			2.84		0.90	1.95	1.13	1.84 <sup>a</sup>	0.97			1.08	0.89	1.77	1.01		1.00	
60 of 111	Expected	1.00	1.00	3.00		1.00	1.00		3.00	1.00			1.00	1.00	2.00	1.00			1.00
	Actual	0.88	1.03	3.01		0.93	1.11		1.92 <sup>a</sup>	1.00			1.06	0.90	1.74	0.68			1.17
61 of 111	Expected	1.00	2.00	2.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	2.00	1.00			1.00	1.00
	Actual	0.97	1.95	1.84	0.22 <sup>b</sup>	1.12	1.18		0.97	1.04	0.92		1.16	1.99	0.89			1.10	1.00
62 of 111	Expected	1.00	3.00	1.00	1.00	1.00	1.00		1.00		2.00			1.00	2.00			1.00	2.00
	Actual	0.83	3.03	0.83	0.30 <sup>b</sup>	0.96	1.08		0.86		1.78			1.05	1.75			1.00	1.73
63 of 111	Expected	1.00	2.00		1.00	1.00	1.00			3.00	2.00			1.00	1.00	1.00		1.00	2.00
	Actual	0.94	2.10		0.30 <sup>b</sup>	0.89	1.14			3.16	1.78			1.00	0.95	1.18		1.08	1.79
64 of 111	Expected	1.00	2.00	1.00		1.00	1.00			3.00	2.00	1.00			1.00	1.00		1.00	2.00
	Actual	0.98	1.80	0.94		0.72	1.10			3.17	1.84	0.89			1.00	1.14		0.87	1.88
65 of 111	Expected	1.00	1.00	1.00		1.00	1.00		1.00	3.00	2.00	1.00		2.00	1.00	1.00			1.00
	Actual	0.98	1.19	0.94		1.00	1.02		0.96	3.04	1.99	1.12		2.00	1.02	1.18			0.97
66 of 111	Expected	1.00	1.00	1.00		1.00	3.00		1.00	1.00	2.00	1.00	1.00	2.00		1.00			1.00
	Actual	0.99	0.96	0.95		1.00	2.93		0.94	1.07	1.95	0.97	1.06	1.87		1.15			0.96
67 of 111	Expected	2.00	1.00	1.00		1.00	4.00		2.00	1.00	1.00		1.00	2.00					1.00
	Actual	2.06	1.16	1.00		0.96	3.82		1.93	1.15	1.00		1.04	2.02					0.96
68 of 111	Expected	2.00	1.00	1.00		1.00	5.00		2.00	1.00	1.00		2.00	1.00					
	Actual	2.00	1.02	0.94		1.00	4.96		2.09	1.14	0.95		1.80	0.82					
69 of 111	Expected	2.00		1.00		2.00	4.00		3.00	2.00			2.00					1.00	
	Actual	1.99		1.00		2.05	4.08		2.60	2.04			2.14					0.00 <sup>c</sup>	
70 of 111	Expected	1.00		2.00		2.00	5.00		2.00	1.00			1.00					2.00	1.00
	Actual	1.00		1.78		1.91	4.98		2.06	0.97			0.95					0.00 <sup>c</sup>	0.88
71 of 111	Expected		1.00	3.00		2.00	4.00	1.00	1.00	1.00			1.00					2.00	1.00
	Actual		1.00	2.79		1.76	4.06	1.08	0.90	0.91			1.06					0.00 <sup>c</sup>	1.11
72 of 111	Expected	1.00	1.00	2.00		3.00	4.00	1.00	1.00	1.00			1.00					1.00	1.00
	Actual	0.79	1.00	1.90		2.73	3.81	1.02	0.66	0.78			0.98					0.00 <sup>c</sup>	1.00

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)
73 of 111	Expected	3.00	1.00	2.00		3.00	3.00	1.00					1.00			1.00		2.00	
	Actual	2.91	1.00	1.95		2.90	2.94	1.19					0.96			0.87		2.17	
74 of 111	Expected	3.00		2.00		4.00	2.00				1.00				2.00	2.00		1.00	
	Actual	3.19		1.95		3.83	1.99				1.00				1.74	2.03		0.95	
75 of 111	Expected	3.00		2.00		3.00	1.00		2.00		1.00				2.00	2.00		1.00	
	Actual	3.05		1.73		3.25	1.10		2.00		0.92				1.95	1.77		1.07	
76 of 111	Expected	1.00		3.00		2.00	1.00		2.00	1.00	2.00				2.00	2.00		1.00	
	Actual	0.91		2.74		1.93	0.95		1.86	1.03	2.00				1.91	2.00		1.02	
77 of 111	Expected	1.00	1.00	2.00		3.00	1.00		3.00	2.00	2.00	a			1.00	1.00			
	Actual	0.90	1.00	1.75		2.80	0.96		2.80	2.00	1.73				0.81	0.91			
78 of 111	Expected		1.00	2.00		4.00	1.00		2.00	2.00	2.00		1.00			2.00			
	Actual		0.91	2.07		3.99	1.11		1.88	2.00	1.98		0.97			1.94			
79 of 111	Expected		1.00	4.00		4.00			2.00	3.00	1.00		1.00			1.00			
	Actual		1.04	3.95		4.17			1.83	2.90	1.00		0.84			0.94			
80 of 111	Expected			4.00		6.00			1.00	1.00	1.00		2.00			1.00			1.00
	Actual			3.84		5.79			1.02	1.08	0.95		2.00			0.92			0.98
81 of 111	Expected			3.00		6.00	1.00		2.00	1.00	1.00		2.00						1.00
	Actual			3.00		5.84	1.01		1.91	1.13	0.84		1.86						0.89
82 of 111	Expected			5.00		4.00	1.00		2.00		1.00		1.00				1.00		2.00
	Actual			4.81		3.95	1.10		1.77 <sup>a</sup>		1.00		0.95				0.00 <sup>c</sup>		1.86 <sup>a</sup>
83 of 111	Expected		1.00	3.00		3.00	1.00		3.00		1.00				1.00	1.00	1.00		2.00
	Actual		1.00	2.81		3.06	0.99		2.42 <sup>a</sup>		1.07				1.00	1.00	0.00 <sup>c</sup>		1.20 <sup>a</sup>
84 of 111	Expected		1.00	3.00		1.00	1.00		3.00						2.00	2.00	2.00		2.00
	Actual		0.97	2.97		0.98	1.03		2.70 <sup>a</sup>						1.98	2.00	0.00 <sup>c</sup>		1.35 <sup>a</sup>
85 of 111	Expected	1.00	1.00	3.00		2.00			1.00	1.00					2.00	2.00	2.00	1.00	1.00
	Actual	1.03	0.80	2.85		1.97			0.82	1.05					1.78	2.03	0.00 <sup>c</sup>	1.00	0.95
86 of 111	Expected	2.00		1.00		3.00			1.00	2.00		1.00			2.00	1.00	1.00	1.00	2.00
	Actual	1.90		0.84		3.00			1.01	1.93		1.18			1.86	0.73	0.00 <sup>c</sup>	0.97	1.84
87 of 111	Expected	2.00		2.00		3.00		1.00	1.00	2.00		1.00			1.00	1.00	1.00	1.00	1.00
	Actual	1.93		1.78		3.00		1.15	0.85	1.87		1.04			0.95	0.85	0.00 <sup>c</sup>	1.06	0.73
88 of 111	Expected	2.00		3.00		3.00		1.00	1.00	3.00		1.00			1.00	1.00			1.00
	Actual	1.86		2.72		3.19		1.19	0.74	3.00		1.01			0.97	0.69			0.78
89 of 111	Expected	1.00		4.00		3.00		1.00	1.00	2.00	1.00	2.00			1.00	1.00			
	Actual	0.94		3.90		3.09		1.10	0.75	2.00	0.84	1.95			0.91	0.75			
90 of 111	Expected	1.00	1.00	3.00		2.00			1.00	2.00	2.00	1.00			1.00	1.00		1.00	1.00
	Actual	0.87	1.00	2.92		2.13			0.77	1.83	1.79	0.92			0.88	0.82		1.15	0.71
91 of 111	Expected		3.00	2.00		4.00				2.00	2.00	1.00			1.00			1.00	1.00
	Actual		2.99	1.75		4.00				1.73	1.81	0.93			0.85			1.03	0.76
92 of 111	Expected	1.00	3.00	2.00		5.00				2.00	2.00							1.00	1.00
	Actual	0.87	3.06	1.72		5.00				1.79	1.81							1.03	0.89
93 of 111	Expected	1.00	2.00	2.00	1.00	4.00	2.00			1.00	1.00		1.00			1.00			1.00
	Actual	0.88	2.00	1.74	0.27 <sup>b</sup>	3.85	2.01			0.92	0.81		1.16			1.00			0.89
94 of 111	Expected	1.00	1.00	2.00	1.00	4.00	2.00	1.00	1.00		1.00		2.00			1.00			
	Actual	0.89	1.00	1.99	0.38 <sup>b</sup>	3.96	2.04	1.03	0.72		0.85		1.98			0.98			
95 of 111	Expected			4.00	3.00	2.00	2.00	1.00	1.00		1.00		2.00			1.00			
	Actual			3.73	0.71 <sup>b</sup>	2.03	1.99	1.03	0.71		0.86		2.00			0.90			
96 of 111	Expected	1.00	1.00	3.00	3.00	1.00			1.00	2.00		1.00	1.00	2.00		1.00			
	Actual	0.96	0.89	2.85	1.84 <sup>b</sup>	0.85			1.00	1.84		0.93	1.01	2.10		0.87			

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)
97 of 111	Expected	1.00	1.00	6.00	2.00			1.00	1.00		1.00	1.00			1.00	1.00		1.00	
	Actual	0.94	1.05	5.77	0.82 <sup>b</sup>			1.00	0.96		1.01	1.10			0.88	0.97		1.03	
98 of 111	Expected	1.00	2.00	4.00	1.00			1.00	1.00		1.00	1.00			2.00	1.00		2.00	
	Actual	0.89	2.14	3.85	0.30 <sup>b</sup>			0.89	1.09		1.04	0.91			1.77	0.99		2.00	
99 of 111	Expected	1.00	2.00	3.00		3.00		1.00	1.00		1.00	1.00			1.00	1.00		2.00	
	Actual	0.88	1.88	3.01		2.95		1.00	1.05		1.08	0.85			0.79	0.97		2.04	
100 of 111	Expected	1.00	2.00	2.00		4.00		1.00	2.00		1.00	1.00			1.00			2.00	
	Actual	0.87	2.02	1.80		3.86		1.00	1.91		0.94	0.88			0.84			2.11	
101 of 111	Expected	1.00	2.00	2.00		4.00			2.00	1.00	1.00	1.00		1.00				1.00	1.00
	Actual	0.90	2.18	1.89		3.79			1.95	1.02	0.95	0.91		1.00				0.95	0.95
102 of 111	Expected		1.00	2.00		2.00	1.00		2.00	1.00	2.00	1.00		1.00	2.00			1.00	1.00
	Actual		1.05	1.86		1.84	1.00		1.92	1.01	2.04	0.93		1.00	1.80			1.10	0.87
103 of 111	Expected			2.00		1.00	1.00		2.00	2.00	2.00			1.00	2.00		1.00	1.00	2.00
	Actual			1.80		0.93	1.06		1.25 <sup>a</sup>	1.90	1.83			1.13	2.00		0.00 <sup>c</sup>	1.15	0.98 <sup>a</sup>
104 of 111	Expected	1.00		1.00			2.00		1.00	2.00	2.00		2.00		3.00		1.00	1.00	1.00
	Actual	1.01		0.89			1.97		0.16 <sup>a</sup>	1.68	1.99		1.99		3.00		0.00 <sup>c</sup>	1.00	0.26 <sup>a</sup>
105 of 111	Expected	1.00		1.00	1.00		1.00		2.00	2.00	1.00		3.00		2.00		1.00	1.00	1.00
	Actual	1.00		0.85	0.38 <sup>b</sup>		0.96		0.84 <sup>a</sup>	1.93	0.81		2.95		1.81		0.00 <sup>c</sup>	0.84	0.26 <sup>a</sup>
106 of 111	Expected	2.00			1.00		1.00		2.00	3.00		1.00	3.00		2.00		1.00		1.00
	Actual	1.78			0.41 <sup>b</sup>		1.01		0.41 <sup>a</sup>	2.98		0.80	3.00		2.19		0.00 <sup>c</sup>		0.52 <sup>a</sup>
107 of 111	Expected	2.00			1.00		2.00		3.00	3.00		1.00	2.00		1.00				2.00
	Actual	2.00			0.22 <sup>b</sup>		1.94		1.37 <sup>a</sup>	2.81		1.04	1.88		0.70				0.56 <sup>a</sup>
108 of 111	Expected	1.00		1.00	1.00		2.00		3.00	3.00	1.00	1.00	1.00						3.00
	Actual	0.83		1.00	0.16 <sup>b</sup>		2.26		1.76 <sup>a</sup>	3.01	0.83	0.77	0.99						1.94 <sup>a</sup>
109 of 111	Expected		1.00	2.00	2.00		2.00		1.00	1.00	1.00	2.00	1.00			1.00			3.00
	Actual		1.16	1.87	0.42 <sup>b</sup>		2.11		0.87	1.00	0.88	2.01	0.86			1.04			2.98
110 of 111	Expected		1.00	2.00	3.00		1.00		3.00		1.00	1.00	1.00			1.00			1.00
	Actual		1.13	1.91	1.32 <sup>b</sup>		1.00		2.85		1.01	1.00	0.80			0.81			0.96
111 of 111	Expected		1.00	2.00	3.00		1.00		3.00	1.00	1.00	1.00	1.00			1.00			2.00
	Actual		1.08	2.00	1.19 <sup>b</sup>		1.16		3.01	0.87	1.15	0.98	1.09			0.86			2.06

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

<sup>b</sup>Cys was partially destroyed during hydrolysis

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

Date: 28 OCT 2013

Signature: *Dorothy C. Young*

Title: Technical Manager, BEI Authentication or designee

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