

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

Catalog No. NR-15433

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Contributor:

BEI Resources

Manufacturer:

Bio-Synthesis, Inc

Product Description:

The 139-peptide array spans the hemagglutinin protein of the A/California/04/2009 (H1N1)pdm09 strain of influenza virus (GenPept: ACQ76318).¹ Peptides are 14- to 15-mers, with 11 amino acid overlaps. Please see Table 1 for length and sequence of individual peptides. See the Certificate of Analysis for the purity of individual peptides. **Note: Peptides 89, 133, 134, 135 and 136 are provided in crude form.**

Material Provided:

Peptides are provided lyophilized at 1 mg per vial.

Packaging/Storage:

Lyophilized peptides should be placed in a closed dry environment with dessicants and stored at -20°C or colder immediately upon arrival. A frost-free freezer should be avoided, since changes in moisture and temperature may affect peptide stability.

Solubility:

Solubility may vary based on the amino acid content of the individual peptide (see Table 2). Peptides can almost always be dissolved in 100% DMSO.

Reconstitution:

Lyophilized peptides should be warmed to room temperature for 1 hour prior to reconstitution. They should be dissolved at the highest possible concentration, and then diluted with water or buffer to the working concentration. Buffer should be added only after the peptide is completely in solution because salts may cause aggregation.

The most common dissolution process is 1 mg of peptide in 1 mL of sterile, distilled water or 1 mL of 100% DMSO. The DMSO can be slowly diluted to a lower concentration with aqueous medium. Care must be taken to ensure that the peptide does not begin to precipitate out of solution. For cell-based assays, 0.5% DMSO in medium is usually well-tolerated.

Sonication and/or the addition of small amounts of dilute (10%) aqueous acetic acid for basic peptides, aqueous ammonia for acidic peptides or acetonitrile may also help dissolution (see Table 2). These solvents may not be appropriate for certain applications, including cell-based assays.

Storage of Reconstituted Peptides:

The shelf life of peptides in solution is very limited, especially for sequences containing cysteine, methionine, tryptophan, asparagine, glutamine, and N-terminal glutamic acid. In general, peptides may be aliquoted and stored in solution for a few days at -20°C or colder. For long-term storage, peptides should be re-lyophilized and stored at -20°C or colder. If long-term storage in solution is unavoidable, peptide solutions should be buffered to pH 5 to 6, aliquoted and stored at -20°C or colder. Freeze-thaw cycles should be avoided.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Peptide Array, Influenza Virus A/California/04/2009 (H1N1)pdm09 Hemagglutinin Protein, NR-15433."

Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. [Biosafety in Microbiological and Biomedical Laboratories](#). 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmb15/index.htm.

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References:

1. Dawood, F. S., et al. "Emergence of a Novel Swine-Origin Influenza A (H1N1) Virus in Humans." N. Engl. J. Med. 360 (2009): 2605-2615. PubMed: 19423869. Erratum in N. Engl. J. Med. 361 (2009): 102.
2. Garten, R. J., et al. "Antigenic and Genetic Characteristics of Swine-Origin 2009 A(H1N1) Influenza Viruses Circulating in Humans." Science 325 (2009): 197-201. PubMed: 19465683.
3. Itoh, Y., et al. "In Vitro and In Vivo Characterization of New Swine-Origin H1N1 Influenza Viruses." Nature 460 (2009): 1021-1025. PubMed: 19672242.

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Peptide	Length	Sequence
1 of 139	15	1 MKAILVLLYTFATA 15
2 of 139	15	5 LVLLYTFATANADT 19
3 of 139	15	9 LYTFATANADTLCIG 23
4 of 139	15	13 ATANADTLCIGYHAN 27
5 of 139	15	17 ADTLCIGYHANNSTD 31
6 of 139	15	21 CIGYHANNSTDVDT 35
7 of 139	15	25 HANNSTDVDTVLEK 39
8 of 139	15	29 STDVDTVLEKNVTV 43
9 of 139	15	33 VDTVLEKNVTVTHSV 47
10 of 139	15	37 LEKNVTVTHSVNLL 51
11 of 139	15	41 VTVTHSVNLLDKHN 55
12 of 139	15	45 HSVNLLDKHNGKLC 59
13 of 139	15	49 LLEDKHNGKLCCKLRG 63
14 of 139	15	53 KHNGKLCCKLRGVAPL 67
15 of 139	15	57 KLCKLRGVAPLHLGK 71
16 of 139	15	61 LRGVAPLHLGKCNIA 75
17 of 139	15	65 APLHLGKCNIAWIL 79
18 of 139	15	69 LGKCNIAWILGNPE 83
19 of 139	15	73 NIAGWILGNPECESL 87
20 of 139	15	77 WILGNPECESLSTAS 91
21 of 139	15	81 NPECESLSTASSWSY 95
22 of 139	15	85 ESLSTASSWSYIVET 99
23 of 139	15	89 TASSWSYIVETPSSD 103
24 of 139	15	93 WSYIVETPSSDNGTC 107
25 of 139	15	97 VETPSSDNGTCYPGD 111
26 of 139	15	101 SSDNGTCYPGDFIDY 115
27 of 139	15	105 GTCYPGDFIDYEELR 119
28 of 139	15	109 PGDFIDYEELREQLS 123
29 of 139	15	113 IDYEELREQLSSVSS 127
30 of 139	15	117 ELREQLSSVSSFERF 131
31 of 139	15	121 QLSSVSSFERFEIFP 135
32 of 139	15	125 VSSFERFEIFPKTSS 139
33 of 139	15	129 ERFEIFPKTSSWPNH 143
34 of 139	15	133 IFPKTSSWPNHDSNK 147
35 of 139	15	137 TSSWPNHDSNKGVTA 151

Table 1		
Peptide	Length	Sequence
36 of 139	15	141 PNHDSNKGVTAACPH 155
37 of 139	15	145 SNKGVTAACPHAGAK 159
38 of 139	15	149 VTAACPHAGAKSFYK 163
39 of 139	15	153 CPHAGAKSFYKNLIW 167
40 of 139	15	157 GAKSFYKNLIWLWKK 171
41 of 139	15	161 FYKNLIWLWKKGNSY 175
42 of 139	15	165 LIWLWKKGNSYPKLS 179
43 of 139	15	169 VKKGNSYPKLSKSYI 183
44 of 139	15	173 NSYPKLSKSYINDKG 187
45 of 139	15	177 KLSKSYINDKGKEVL 191
46 of 139	15	181 SYINDKGKEVLVLWG 195
47 of 139	15	185 DKGKEVLVLWGIHHP 199
48 of 139	15	189 EVLVLWGIHHPSTSA 203
49 of 139	15	193 LWGIHHPSTSADQQS 207
50 of 139	15	197 HHPSTSADQQSLYQN 211
51 of 139	15	201 TSADQQSLYQNADTY 215
52 of 139	15	205 QQSLYQNADTYVFG 219
53 of 139	15	209 YQNADTYVFGSSRY 223
54 of 139	15	213 DTYVFGSSRYSKFK 227
55 of 139	15	217 FVGSSRYSKFKPEI 231
56 of 139	15	221 SRYSKFKPEIAIRP 235
57 of 139	15	225 KFKPEIAIRPKVRD 239
58 of 139	15	229 PEIAIRPKVRDQEGR 243
59 of 139	15	233 IRPKVRDQEGRMNYY 247
60 of 139	15	237 VRDQEGRMNYYWTLV 251
61 of 139	15	241 EGRMNYYWTLVEPGD 255
62 of 139	15	245 NYYWTLVEPGDKITF 259
63 of 139	15	249 TLVEPGDKITFEATG 263
64 of 139	15	253 PGDKITFEATGNLVV 267
65 of 139	15	257 ITFEATGNLVVPRYA 271
66 of 139	15	261 ATGNLVVPRYAFAME 275
67 of 139	15	265 LVVPRYAFAMERNAG 279
68 of 139	15	269 RYAFAMERNAGSGII 283
69 of 139	15	273 AMERNAGSGIIISDT 287
70 of 139	15	277 NAGSGIIISDTPVHD 291
71 of 139	15	281 GIIISDTPVHDCNTT 295
72 of 139	15	285 SDTPVHDCNTTCQTP 299
73 of 139	15	289 VHDCNTTCQTPKGAI 303
74 of 139	15	293 NTTCQTPKGAINTSL 307
75 of 139	15	297 QTPKGAINTSLPFQN 311
76 of 139	15	301 GAINTSLPFQNIHPI 315
77 of 139	15	305 TSLPFQNIHPITIGK 319
78 of 139	15	309 FQNIHPITIGKCPKY 323
79 of 139	15	313 HPITIGKCPKYVKST 327
80 of 139	15	317 IGKCPKYVKSTKLRL 331
81 of 139	15	321 PKYVKSTKLRLATGL 335
82 of 139	15	325 KSTKLRLATGLRNIP 339
83 of 139	15	329 LRLATGLRNIPSIQS 343
84 of 139	15	333 TGLRNIPSIQSRGLF 347
85 of 139	15	337 NIPSIQSRGLFGAIA 351
86 of 139	15	341 IQSRGLFGAIAGFIE 355
87 of 139	15	345 GLFGAIAGFIEGGWT 359
88 of 139	15	349 AIAGFIEGGWTGMVD 363
89 of 139	15	353 FIEGGWTGMVDGWYG 367
90 of 139	15	357 GWTGMVDGWYGYHHQ 371

Table 1		
Peptide	Length	Sequence
91 of 139	15	361 MVDGWYGYHHQNEQG 375
92 of 139	15	365 WYGYHHQNEQGSYA 379
93 of 139	15	369 HHQNEQGSYAADLK 383
94 of 139	15	373 EQGSYAADLKSTQN 387
95 of 139	15	377 GYAADLKSTQNAIDE 391
96 of 139	15	381 DLKSTQNAIDEITNK 395
97 of 139	15	385 TQNAIDEITNKVNSV 399
98 of 139	15	389 IDEITNKVNSVIEKM 403
99 of 139	15	393 TNKVNSVIEKMNTQF 407
100 of 139	15	397 NSVIEKMNTQFTAVG 411
101 of 139	15	401 EKMNTQFTAVGKEFN 415
102 of 139	15	405 TQFTAVGKEFNHLEK 419
103 of 139	15	409 AVGKEFNHLEKRIEN 423
104 of 139	15	413 EFNHLEKRIENLNKK 427
105 of 139	15	417 LEKRIENLNKKVDDG 431
106 of 139	15	421 IENLNKKVDDGFLDI 435
107 of 139	15	425 NKKVDDGFLDIWTYN 439
108 of 139	15	429 DDGFLDIWTYNAELL 443
109 of 139	15	433 LDIWTYNAELLVLE 447
110 of 139	15	437 TYNAELLVLENERT 451
111 of 139	15	441 ELLVLENERTLDYH 455
112 of 139	15	445 LENERTLDYHDSNV 459
113 of 139	15	449 ERTLDYHDSNVKNLY 463
114 of 139	15	453 DYHDSNVKNLYEKVR 467
115 of 139	15	457 SNVKNLYEKVRSQLK 471
116 of 139	15	461 NLYEKVRSQLKNNAK 475
117 of 139	15	465 KVRSQLKNNAKEIGN 479
118 of 139	15	469 QLKNNAKEIGNGCFE 483
119 of 139	15	473 NAKEIGNGCFEFYHK 487
120 of 139	15	477 IGNCFEFYHKCDNT 491
121 of 139	15	481 CFEFYHKCDNTCMES 495
122 of 139	15	485 YHKCDNTCMESVKNG 499
123 of 139	15	489 DNTCMESVKNGTYDY 503
124 of 139	15	493 MESVKNGTYDYPKYS 507
125 of 139	15	497 KNGTYDYPKYSEEAK 511
126 of 139	15	501 YDYPKYSEEAKLNRE 515
127 of 139	15	505 KYSEEAKLNREEIDG 519
128 of 139	15	509 EAKLNREEIDGVKLE 523
129 of 139	15	513 NREEIDGVKLESTRI 527
130 of 139	15	517 IDGVKLESTRIYQIL 531
131 of 139	15	521 KLESTRIYQILAIYS 535
132 of 139	15	525 TRIYQILAIYSTVAS 539
133 of 139	15	529 QILAIYSTVASSLVL 543
134 of 139	15	533 IYSTVASSLVLVSL 547
135 of 139	15	537 VASSLVLVSLGAIS 551
136 of 139	15	541 LVLVSLGAISFWMC 555
137 of 139	15	545 VSLGAISFWMCSNGS 559
138 of 139	15	549 AISFWMCSNGSLQCR 563
139 of 139	14	553 WMCSNGSLQCRICI 566

Table 2		
Peptide	Solubility	Solvent
1 of 139	1 mg/mL	100% DMSO
2 of 139	1 mg/mL	100% DMSO
3 of 139	1 mg/mL	100% DMSO
4 of 139	1 mg/mL	100% DMSO
5 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
6 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
7 of 139	1 mg/mL	70% acetonitrile in water
8 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
9 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
10 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
11 of 139	1 mg/mL	70% acetonitrile in water
12 of 139	1 mg/mL	70% acetonitrile in water
13 of 139	1 mg/mL	70% acetonitrile in water
14 of 139	1 mg/mL	70% acetonitrile in water
15 of 139	1 mg/mL	70% acetonitrile in water
16 of 139	1 mg/mL	70% acetonitrile in water
17 of 139	1 mg/mL	70% acetonitrile in water
18 of 139	1 mg/mL	70% acetonitrile in water
19 of 139	1 mg/mL	50% acetic acid in water
20 of 139	1 mg/mL	30% acetonitrile and 30% acetic acid in water
21 of 139	1 mg/mL	50% acetic acid in water
22 of 139	1 mg/mL	100% DMSO
23 of 139	1 mg/mL	100% DMSO
24 of 139	1 mg/mL	10% acetonitrile in water
25 of 139	1 mg/mL	6 M guanidine-HCl
26 of 139	1 mg/mL	100% DMSO
27 of 139	1 mg/mL	6 M guanidine-HCl
28 of 139	1 mg/mL	70% acetonitrile in water
29 of 139	1 mg/mL	100% DMSO
30 of 139	1 mg/mL	100% DMSO
31 of 139	1 mg/mL	100% DMSO
32 of 139	1 mg/mL	70% acetonitrile in water
33 of 139	1 mg/mL	6 M guanidine-HCl
34 of 139	1 mg/mL	6 M guanidine-HCl
35 of 139	1 mg/mL	6 M guanidine-HCl
36 of 139	1 mg/mL	Water
37 of 139	1 mg/mL	Water
38 of 139	1 mg/mL	Water
39 of 139	1 mg/mL	50% acetic acid in water
40 of 139	1 mg/mL	50% acetic acid in water
41 of 139	1 mg/mL	50% acetic acid in water
42 of 139	1 mg/mL	70% acetonitrile in water
43 of 139	1 mg/mL	70% acetonitrile in water
44 of 139	1 mg/mL	70% acetonitrile in water
45 of 139	1 mg/mL	70% acetonitrile in water
46 of 139	1 mg/mL	70% acetonitrile in water
47 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
48 of 139	1 mg/mL	70% acetonitrile in water
49 of 139	1 mg/mL	70% acetonitrile in water
50 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
51 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
52 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
53 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
54 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
55 of 139	1 mg/mL	30% acetonitrile and 30% acetic acid in water

Table 2		
Peptide	Solubility	Solvent
56 of 139	1 mg/mL	70% acetonitrile in water
57 of 139	1 mg/mL	70% acetonitrile in water
58 of 139	1 mg/mL	70% acetonitrile in water
59 of 139	1 mg/mL	Water
60 of 139	1 mg/mL	30% acetonitrile and 30% acetic acid in water
61 of 139	1 mg/mL	50% acetic acid in water
62 of 139	1 mg/mL	70% acetonitrile in water
63 of 139	1 mg/mL	70% acetonitrile in water
64 of 139	1 mg/mL	70% acetonitrile in water
65 of 139	1 mg/mL	70% acetonitrile in water
66 of 139	1 mg/mL	Water
67 of 139	1 mg/mL	Water
68 of 139	1 mg/mL	30% acetonitrile and 30% acetic acid in water
69 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
70 of 139	1 mg/mL	70% acetonitrile in water
71 of 139	1 mg/mL	70% acetonitrile in water
72 of 139	1 mg/mL	70% acetonitrile in water
73 of 139	1 mg/mL	70% acetonitrile in water
74 of 139	1 mg/mL	70% acetonitrile in water
75 of 139	1 mg/mL	6 M guanidine-HCl
76 of 139	1 mg/mL	70% acetonitrile in water
77 of 139	1 mg/mL	50% acetic acid in water
78 of 139	1 mg/mL	Water
79 of 139	1 mg/mL	20% acetonitrile in water
80 of 139	1 mg/mL	Water
81 of 139	1 mg/mL	50% acetic acid in water
82 of 139	1 mg/mL	Water
83 of 139	1 mg/mL	70% acetonitrile in water
84 of 139	1 mg/mL	70% acetonitrile in water
85 of 139	1 mg/mL	70% acetonitrile in water
86 of 139	1 mg/mL	70% acetonitrile in water
87 of 139	1 mg/mL	100% DMSO
88 of 139	1 mg/mL	100% DMSO
89 of 139	1 mg/mL	100% DMSO
90 of 139	1 mg/mL	10% acetonitrile in water
91 of 139	1 mg/mL	6 M guanidine-HCl
92 of 139	1 mg/mL	6 M guanidine-HCl
93 of 139	1 mg/mL	70% acetonitrile in water
94 of 139	1 mg/mL	100% DMSO
95 of 139	1 mg/mL	70% acetonitrile in water
96 of 139	1 mg/mL	70% acetonitrile in water
97 of 139	1 mg/mL	100% DMSO
98 of 139	1 mg/mL	100% DMSO
99 of 139	1 mg/mL	50% acetic acid in water
100 of 139	1 mg/mL	100% DMSO
101 of 139	1 mg/mL	6 M guanidine-HCl
102 of 139	1 mg/mL	70% acetonitrile in water
103 of 139	1 mg/mL	70% acetonitrile in water
104 of 139	1 mg/mL	70% acetonitrile in water
105 of 139	1 mg/mL	70% acetonitrile in water
106 of 139	1 mg/mL	100% DMSO
107 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
108 of 139	1 mg/mL	70% acetonitrile and 30% formic acid in water
109 of 139	1 mg/mL	100% DMSO
110 of 139	1 mg/mL	70% acetonitrile in water

Table 2		
Peptide	Solubility	Solvent
111 of 139	1 mg/mL	100% DMSO
112 of 139	1 mg/mL	70% acetonitrile in water
113 of 139	1 mg/mL	70% acetonitrile in water
114 of 139	1 mg/mL	70% acetonitrile in water
115 of 139	1 mg/mL	70% acetonitrile in water
116 of 139	1 mg/mL	70% acetonitrile in water
117 of 139	1 mg/mL	Water
118 of 139	1 mg/mL	6 M guanidine-HCl
119 of 139	1 mg/mL	70% acetonitrile in water
120 of 139	1 mg/mL	6 M guanidine-HCl
121 of 139	1 mg/mL	100% DMSO
122 of 139	1 mg/mL	50% acetic acid in water
123 of 139	1 mg/mL	6 M guanidine-HCl
124 of 139	1 mg/mL	Water
125 of 139	1 mg/mL	70% acetonitrile in water
126 of 139	1 mg/mL	70% acetonitrile in water
127 of 139	1 mg/mL	70% acetonitrile in water
128 of 139	1 mg/mL	70% acetonitrile in water
129 of 139	1 mg/mL	70% acetonitrile in water
130 of 139	1 mg/mL	70% acetonitrile in water
131 of 139	1 mg/mL	100% DMSO
132 of 139	1 mg/mL	100% DMSO
133 of 139	1 mg/mL	100% DMSO
134 of 139	1 mg/mL	100% DMSO
135 of 139	1 mg/mL	100% DMSO
136 of 139	1 mg/mL	100% DMSO
137 of 139	1 mg/mL	100% DMSO
138 of 139	1 mg/mL	100% DMSO
139 of 139	1 mg/mL	100% DMSO