

Peptide Array, SARS-Related Coronavirus 2 Spike (S) Glycoprotein

Catalog No. NR-52402

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

Product Description:

The 181-peptide array spans the spike (S) glycoprotein of the USA-WA1/2020 strain of severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2; GenPept: [QHO60594](#)). Peptides are 17- or 13-mers, with 10 amino acid overlaps. **Note: The vial labels for peptides 15 and 49 of lot A5740 are incorrect for arrays shipped before September 1, 2022. A vial for each of these peptides was tested and confirmed to contain the correct peptide by mass spectral analysis. The vial labels have since been corrected.**

Lot: A5740-1 to A5740-181

Manufacturing Date: 12FEB2021

BEI Resources is committed to ensuring digital accessibility for people with disabilities. This Certificate of Analysis contains complex tables and may not be fully accessible. Please let us know if you encounter accessibility barriers and a fully accessible document will be provided: E-mail: Contact@BEIResources.org. We try to respond to feedback within 24 hours.

The following information applies to all peptides:

- Appearance
 - Mass spectral analysis
 - Counter Ion
 - Solubility
- White lyophilized powder
Correct MW by MALDI
Trifluoroacetate
1 mg/mL in 70% acetonitrile in water

Peptide-specific information is shown in the tables and figures below.

Table 1: Peptide Analysis

Peptide	Length	Sequence	Molecular Weight (amu)	Hydrophobicity	Purity by HPLC ¹	Peptide Content ²
1 of 181	17	1-MFVFLVLLPLVSSQCVN-17	1909.40	70.59	96.13%	83%
2 of 181	17	8-LPLVSSQCVNLTTRTQL-24	1873.21	41.18	80.46%	78%
3 of 181	17	15-CVNLTTTRTQLPPAYTNS-31	1879.13	35.29	80.91%	78%
4 of 181	17	22-TQLPPAYTNSFTRGVYY-38	1978.18	41.18	95.10%	79%
5 of 181	17	29-TNSFTRGVYYPDKVFRS-45	2037.26	35.29	80.59%	72%
6 of 181	17	36-VYYPDKVFRSSVLHSTQ-52	2026.68	41.18	93.64%	72%
7 of 181	17	43-FRSSVLHSTQDLFLPFF-59	2041.35	47.06	93.52%	76%
8 of 181	17	50-STQDLFLPFFSNVTWFH-66	2086.34	47.06	81.55%	80%
9 of 181	17	57-PFFSNVTWFHAIHVS-73	1947.19	47.06	80.07%	75%
10 of 181	17	64-WFHAIHVS-80	1973.19	35.29	98.86%	68%
11 of 181	17	71-SGTNGTKRFDNPVLPFN-87	1864.06	23.53	80.12%	74%
12 of 181	17	78-RFDNPVLPFNDGVYFAS-94	1958.16	47.06	99.06%	79%
13 of 181	17	85-PFNDGVYFASTKSNII-101	1902.09	41.18	98.56%	78%
14 of 181	17	92-FASTKSNIRGWIFGT-108	1927.20	41.18	83.84%	75%
15 of 181	17	99-NIRGWIFGTTLDSKTQ-115	1950.23	35.29	90.35%	75%
16 of 181	17	106-FGTTLDSKTQSLIVNN-122	1851.10	35.29	89.28%	78%
17 of 181	17	113-KTQSLIVNNATNVVIK-129	1855.22	47.06	80.39%	74%
18 of 181	17	120-VNNATNVVIKVFCEFC-136	1928.27	58.82	95.26%	79%
19 of 181	17	127-VIKVFCEFCNDPFLGV-143	1958.34	58.82	96.39%	79%
20 of 181	17	134-QFCNDPFLGVYHKNK-150	2087.34	41.18	90.00%	78%
21 of 181	17	141-LGVYHKNKSWMESEF-157	2132.38	41.18	80.55%	78%
22 of 181	17	148-NNKSWMESEFRVYSSAN-164	2049.21	35.29	81.41%	76%
23 of 181	17	155-SEFRVYSSANNCTFEYV-171	2016.17	47.06	89.64%	79%
24 of 181	17	162-SANNCTFEYVSPFLMD-178	1966.18	47.06	84.65%	83%

Table 1: Peptide Analysis (continued)

Peptide	Length	Sequence	Molecular Weight (amu)	Hydrophobicity	Purity by HPLC ¹	Peptide Content ²
25 of 181	17	169-EYVSQPFLMDLEGKQGN-185	1955.18	35.29	85.48%	79%
26 of 181	17	176-LMDLEGKQGNFKNLREF-192	2039.35	35.29	85.75%	72%
27 of 181	17	183-QGNFKNLREFVFNIDG-199	2026.29	35.29	81.02%	72%
28 of 181	17	190-REFVFNIDGYFKIYSK-206	2154.49	47.06	98.66%	70%
29 of 181	17	197-IDGYFKIYSKHTPINLV-213	2008.35	47.06	87.05%	72%
30 of 181	17	204-YSKHTPINLVRLDPQGF-220	1985.28	35.29	83.03%	72%
31 of 181	17	211-NLVRLDPQGFSALEPLV-227	1868.17	47.06	94.88%	78%
32 of 181	17	218-QGFSALEPLVDLPIGIN-234	1783.07	47.06	87.14%	82%
33 of 181	17	225-PLVDLPIGINITRFQTL-241	1910.30	47.06	92.90%	78%
34 of 181	17	232-GINITRFQTLALHRSY-248	2003.34	47.06	97.66%	72%
35 of 181	17	239-QTLLALHRSYLTGPDSS-255	1859.07	35.29	92.09%	74%
36 of 181	17	246-RSYLTGPDSSSGWTAGA-262	1712.79	29.41	97.55%	77%
37 of 181	17	253-DSSSGWTAGAAAYVGY-269	1725.78	52.94	92.19%	81%
38 of 181	17	260-AGAAAYVGYLQPRFTL-276	1861.12	64.71	97.16%	78%
39 of 181	17	267-VGYLQPRFTLLKYNENG-283	2012.29	41.18	80.44%	75%
40 of 181	17	274-TFLLKYNENGTITDAVD-290	1914.10	41.18	80.31%	78%
41 of 181	17	281-ENGTITDAVDCALDPLS-297	1733.88	41.18	88.56%	81%
42 of 181	17	288-AVDCALDPLSEKCTLK-304	1807.13	47.06	89.71%	78%
43 of 181	17	295-PLSEKCTLKSFTEKQ-311	1868.19	29.41	81.12%	70%
44 of 181	17	302-TLKSFTVEKGIYQTSNF-318	1963.22	35.29	96.87%	75%
45 of 181	17	309-EKGIYQTSNFRVQPTES-325	1984.16	23.53	83.23%	75%
46 of 181	17	316-SNFRVQPTESIVRFPNI-332	2004.29	35.29	93.22%	75%
47 of 181	17	323-TESIVRFPNITNLCFPG-339	1908.22	41.18	80.50%	78%
48 of 181	17	330-PNITNLCFGEVFNATR-346	1893.16	41.18	94.05%	78%
49 of 181	17	337-PFGEVFNATRFASVYAW-353	1962.20	58.82	98.59%	79%
50 of 181	17	344-ATRFASVYAWNRKRISN-360	2040.32	47.06	84.29%	69%
51 of 181	17	351-YAWNRKRISNCVADYSV-367	2045.30	52.94	91.77%	72%
52 of 181	17	358-ISNCVADYSVLYNSASF-374	1853.03	58.82	89.33%	83%
53 of 181	17	365-YSVLYNSASFSTFKCYG-381	1937.15	52.94	89.60%	79%
54 of 181	17	372-ASFSTFKCYGVSPTKLN-388	1850.13	41.18	83.49%	74%
55 of 181	17	379-CYGVSPSTKLNDLCFTNV-395	1874.17	47.06	84.43%	78%
56 of 181	17	386-KLNDLCFTNVYADSFVI-402	1962.26	58.82	84.85%	79%
57 of 181	17	393-TNVYADSFVIRGDEVQR-409	1969.15	41.18	83.87%	75%
58 of 181	17	400-FVIRGDEVQRQIAPGQTG-416	1843.08	35.29	82.52%	74%
59 of 181	17	407-VRQIAPGQTGKIADYNY-423	1894.11	41.18	90.27%	74%
60 of 181	17	414-QTGKIADYNYKLPPDFT-430	1989.17	35.29	87.79%	75%
61 of 181	17	421-YNYKLPPDFTGCVIAWN-437	2019.26	52.94	93.25%	79%
62 of 181	17	428-DFTGCVIAWNSNNLDSK-444	1884.06	41.18	95.25%	78%
63 of 181	17	435-AWNSNNLDSKVGNYNY-451	1915.99	35.29	86.32%	79%
64 of 181	17	442-DSKVGNYNYLYRLFRK-458	2093.36	41.18	99.26%	70%
65 of 181	17	449-YNYLYRLFRKSNLKPFE-465	2251.61	47.06	98.30%	71%
66 of 181	17	456-FRKSNLKPFERDISTEI-472	2080.38	29.41	80.54%	69%
67 of 181	17	463-PFERDISTEIQAGSTP-479	1911.06	29.41	86.81%	78%
68 of 181	17	470-TEIQAGSTPCNGVEGF-486	1772.91	35.29	80.31%	82%
69 of 181	17	477-STPCNGVEGFNCYFPLQ-493	1876.10	41.18	81.60%	83%

Table 1: Peptide Analysis (continued)

Peptide	Length	Sequence	Molecular Weight (amu)	Hydrophobicity	Purity by HPLC ¹	Peptide Content ²
70 of 181	17	484-EGFNCYFPLQSYGFQPT-500	1998.20	41.18	83.40%	84%
71 of 181	17	491-PLQSYGFQPTNGVGYQP-507	1853.02	29.41	81.27%	83%
72 of 181	17	498-QPTNGVGYQPYRVVLS-514	1877.13	41.18	84.95%	78%
73 of 181	17	505-YQPYRVVLSFELLHAP-521	2031.38	58.82	87.26%	76%
74 of 181	17	512-VLSFELLHAPATVCGPK-528	1782.15	52.94	82.25%	78%
75 of 181	17	519-HAPATVCGPKSTNLVK-535	1751.09	35.29	83.72%	66%
76 of 181	17	526-GPKKSTNLVKNKCVNFN-542	1891.23	29.41	80.69%	67%
77 of 181	17	533-LVKNKCVNFNFNGLTGT-549	1869.18	41.18	80.01%	74%
78 of 181	17	540-NFNFNGLTGTGVLTESN-556	1784.91	29.41	84.35%	82%
79 of 181	17	547-TGTGVLTESNKKFLPFQ-563	1867.14	29.41	80.54%	74%
80 of 181	17	554-ESNKKFLPFQQFGRDIA-570	2025.30	35.29	99.08%	72%
81 of 181	17	561-PFQQFGRDIADTTDAVR-577	1937.11	35.29	95.76%	75%
82 of 181	17	568-DIADTTDAVRDPQTLEI-584	1873.01	35.29	88.28%	78%
83 of 181	17	575-AVRDPQTLEILDITPCS-591	1871.15	41.18	90.47%	78%
84 of 181	17	582-LEILDITPCSFGGVSVI-598	1763.09	52.94	86.22%	82%
85 of 181	17	589-PCSFGGVSVITPGTNTS-605	1623.81	29.41	80.65%	80%
86 of 181	17	596-SVITPGTNTSNQVAVLY-612	1763.97	41.18	80.02%	82%
87 of 181	17	603-NTSNQVAVLYQDVNCTE-619	1898.04	41.18	94.11%	83%
88 of 181	17	610-VLYQDVNCTEVPVAIHA-626	1871.15	58.82	98.65%	78%
89 of 181	17	617-CTEVPVAIHADQLTPTW-633	1881.15	47.06	97.86%	78%
90 of 181	17	624-IHADQLTPTWRVYSTGS-640	1932.13	35.29	87.73%	75%
91 of 181	17	631-PTWRVYSTGSNVFQTRA-647	1970.18	35.29	98.51%	75%
92 of 181	17	638-TGSNVFQTRAGCLIGAE-654	1723.94	41.18	91.27%	77%
93 of 181	17	645-TRAGCLIGAEHVNSYE-661	1834.00	41.18	98.96%	74%
94 of 181	17	652-GAEHVNSYECDIPIGA-668	1788.92	41.18	86.19%	77%
95 of 181	17	659-SYECDIPIGAGICASYQ-675	1790.00	52.94	85.66%	82%
96 of 181	17	666-IGAGICASYQTQTNSPR-682	1766.95	35.29	85.02%	77%
97 of 181	17	673-SYQTQTNSPRRARSVAS-689	1909.05	23.53	84.17%	71%
98 of 181	17	680-SPRRARSVASQSIIAYT-696	1863.11	41.18	92.18%	70%
99 of 181	17	687-VASQSIIAYTMSLGAEN-703	1754.98	52.94	Crude	82%
100 of 181	17	694-AYTMSLGAENSVAYSNN-710	1791.91	47.06	91.98%	82%
101 of 181	17	701-AENSVAYSNNNSIAIPTN-717	1764.87	41.18	80.96%	82%
102 of 181	17	708-SNNNSIAIPTNFTISVTT-724	1779.97	35.29	88.08%	82%
103 of 181	17	715-PTNFTISVTTTEILPVSM-731	1850.17	41.18	92.57%	83%
104 of 181	17	722-VTTEILPVSMTKTSVDC-738	1824.15	41.18	89.81%	78%
105 of 181	17	729-VSMTKTSVDCTMYICGD-745	1854.18	47.06	81.75%	78%
106 of 181	17	736-VDCTMYICGDSTECNSL-752	1854.09	47.06	87.99%	83%
107 of 181	17	743-CGDSTECNSLLQYGSF-759	1837.02	41.18	84.89%	82%
108 of 181	17	750-SNLLQYGSFCTQLNRA-766	1928.20	47.06	80.20%	79%
109 of 181	17	757-GSFCTQLNRLTGIAVE-773	1780.04	47.06	86.12%	77%
110 of 181	17	764-NRLTGIAVEQDKNTQE-780	1887.05	29.41	97.79%	74%
111 of 181	17	771-AVEQDKNTQEVEFAQVKQ-787	1962.16	35.29	80.41%	75%
112 of 181	17	778-TQEVFAQVKQIKTPPI-794	1990.33	41.18	80.06%	75%
113 of 181	17	785-VKQIKTPPIKDFGGFN-801	1952.29	35.29	83.28%	71%
114 of 181	17	792-PPIKDFGGFNFSQILPD-808	1892.15	35.29	85.32%	78%

Table 1: Peptide Analysis (continued)

Peptide	Length	Sequence	Molecular Weight (amu)	Hydrophobicity	Purity by HPLC ¹	Peptide Content ²
115 of 181	17	799-GFNFSQILPDPSKPSKR-815	1918.19	23.53	86.00%	71%
116 of 181	17	806-LPDPSKPSKRSFIEDLL-822	1942.25	29.41	80.16%	71%
117 of 181	17	813-SKRSFIEDLLFNKVTLA-829	1981.33	47.06	80.61%	72%
118 of 181	17	820-DLLFNKVTLADAGFIKQ-836	1893.22	52.94	94.66%	74%
119 of 181	17	827-TLADAGFIKQYGDCLGD-843	1786.98	47.06	94.26%	77%
120 of 181	17	834-IKQYGDCLGDIAARDLI-850	1864.16	52.94	89.24%	74%
121 of 181	17	841-LGDIAARDLICAQKFNG-857	1805.10	52.94	80.03%	78%
122 of 181	17	848-DLICAQKFNGTLVLPPL-864	1842.24	52.94	96.69%	78%
123 of 181	17	855-FNGLTVLPPLLTDEMI-871	1844.21	52.94	80.42%	82%
124 of 181	17	862-PPLLTDEMIQYTSALL-878	1876.20	52.94	81.13%	83%
125 of 181	17	869-MIAQYTSALLAGTITSG-885	1697.97	52.94	86.01%	81%
126 of 181	17	876-ALLAGTITSGWTFGAGA-892	1593.81	52.94	97.86%	80%
127 of 181	17	883-TSGWTFGAGAALQIPFA-899	1694.92	52.94	80.87%	81%
128 of 181	17	890-AGAALQIPFAMQMAYRF-906	1886.27	70.59	90.66%	78%
129 of 181	17	897-PFAMQMAYRFNGIGVTQ-913	1931.27	52.94	87.25%	79%
130 of 181	17	904-YRFNGIGVTQNVLYENQ-920	2015.21	41.18	86.99%	79%
131 of 181	17	911-VTQNVLYENQKLIANQF-927	2022.29	47.06	84.57%	79%
132 of 181	17	918-ENQKLIANQFNLSAIGKI-934	1888.16	41.18	80.12%	74%
133 of 181	17	925-NQFNLSAIGKIQDSLSS-941	1809.96	29.41	86.63%	78%
134 of 181	17	932-GKIQDSLSSSTASALGKL-948	1675.91	35.29	80.35%	72%
135 of 181	17	939-SSTASALGKLQDVVNQN-955	1731.89	35.29	80.38%	77%
136 of 181	17	946-GKLQDVVNQNAQALNTL-962	1826.05	41.18	89.67%	78%
137 of 181	17	953-NQNAQALNTLVKQLSSN-969	1843.04	35.29	99.44%	78%
138 of 181	17	960-NTLVKQLSSNFGAIVSV-976	1765.00	41.18	95.83%	77%
139 of 181	17	967-SSNFGAIVSVLNDILSR-983	1779.98	41.18	95.94%	77%
140 of 181	17	974-SSVLNDILSRDKVEAE-990	1888.12	41.18	88.79%	74%
141 of 181	17	981-LSRLDKVEAEVQIDRLI-997	1997.33	47.06	96.75%	72%
142 of 181	17	988-EAEVQIDRLITGRLQSL-1004	1941.23	41.18	87.27%	75%
143 of 181	17	995-RLITGRLQSLQTYVTQQ-1011	2005.31	35.29	85.96%	75%
144 of 181	17	1002-QSLQTYVTQQILIRAAEI-1018	1962.24	47.06	80.63%	79%
145 of 181	17	1009-TQQLIRAAEIRASANLA-1025	1826.10	52.94	98.71%	74%
146 of 181	17	1016-AEIRASANLAATKMSEC-1032	1766.04	52.94	84.27%	78%
147 of 181	17	1023-NLAATKMSECVLGQSKR-1039	1836.17	41.18	93.60%	70%
148 of 181	17	1030-SECVLGQSKRVDFCGKG-1046	1813.10	35.29	96.47%	70%
149 of 181	17	1037-SKRVDFCGKGHYLMSFP-1053	1972.32	41.18	93.52%	68%
150 of 181	17	1044-GKGYHLSFQPASPHGV-1060	1813.07	35.29	80.37%	70%
151 of 181	17	1051-SFPQASPHGVVFLHVTY-1067	1886.14	47.06	82.16%	74%
152 of 181	17	1058-HGVVFLHVTYVPAQEK-1074	1938.22	47.06	95.96%	71%
153 of 181	17	1065-VTVVPAQEKNTTAPAI-1081	1850.10	47.06	87.63%	78%
154 of 181	17	1072-EKNFTTAPAICHGKAH-1088	1840.06	35.29	84.05%	67%
155 of 181	17	1079-PAICHGKAHFPREGVF-1095	1881.16	41.18	96.63%	67%
156 of 181	17	1086-KAHFPREGVFVSNQTHW-1102	1969.22	35.29	97.95%	68%
157 of 181	17	1093-GVFVSNQTHWFVTQRNF-1109	1996.22	41.18	80.26%	75%
158 of 181	17	1100-THWFVTQRNFYEPQIIT-1116	2180.45	41.18	98.16%	77%
159 of 181	17	1107-RNFYEPQIITDNTFVS-1123	2045.24	35.29	87.53%	80%

Table 1: Peptide Analysis (continued)

Peptide	Length	Sequence	Molecular Weight (amu)	Hydrophobicity	Purity by HPLC ¹	Peptide Content ²
160 of 181	17	1114-IITDNTFVSGNCDVVI-1130	1811.05	47.06	84.97%	82%
161 of 181	17	1121-FVSGNCDVIGIVNNTV-1137	1750.01	52.94	Crude	82%
162 of 181	17	1128-VVIGIVNNTVYDPLQPE-1144	1870.14	47.06	93.86%	83%
163 of 181	17	1135-NTVYDPLQPELDSFKEE-1151	2024.17	29.41	97.59%	79%
164 of 181	17	1142-QPELDSFKEELDKYFKN-1158	2130.34	29.41	90.58%	78%
165 of 181	17	1149-KEELDKYFKNHTSPDVD-1165	2065.23	23.53	80.02%	69%
166 of 181	17	1156-FKNHTSPDVDLGDISGI-1172	1814.98	29.41	83.34%	78%
167 of 181	17	1163-DVDLGDIGINASVVNI-1179	1700.87	47.06	93.14%	81%
168 of 181	17	1170-SGINASVVNIQKEIDRL-1186	1856.12	41.18	82.65%	74%
169 of 181	17	1177-VNIQKEIDRLNEVAKNL-1193	1996.31	41.18	98.04%	72%
170 of 181	17	1184-DRLNEVAKNLSLIDL-1200	1956.19	41.18	82.74%	75%
171 of 181	17	1191-KNLNLSLIDLQELGKYE-1207	2006.24	35.29	97.52%	75%
172 of 181	17	1198-IDLQELGKYEQYIKWPW-1214	2209.53	47.06	86.58%	77%
173 of 181	17	1205-KYEQYIKWPWYIWLGF-1221	2333.75	64.71	80.51%	78%
174 of 181	17	1212-WPWYIWLGFIAGLIAIV-1228	2018.48	82.35	87.27%	84%
175 of 181	17	1219-GFIAGLIAIVMTIMLC-1235	1765.33	82.35	90.12%	82%
176 of 181	17	1226-AIVMTIMLCMTSCCS-1242	1809.38	76.47	87.25%	82%
177 of 181	17	1233-MLCCMTSCCSCLKGCCS-1249	1776.31	64.71	92.23%	77%
178 of 181	17	1240-CCSCLKGCCSCGSCCKF-1256	1735.20	58.82	90.33%	73%
179 of 181	17	1247-CCSCGSCCKFDEDDSEP-1263	1827.99	35.29	84.55%	78%
180 of 181	17	1254-CKFDEDDSEPVCLKGVKL-1270	1922.20	35.29	80.09%	71%
181 of 181	13	1261-SEPVCLKGVKLHYT-1273	1470.73	38.46	95.04%	65%

¹Percent full length

²Remainder is salt and water

Figure 1: Amino Acid Analysis^{3,4,5}

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 181	Expected			1.0	1.0	1.0				4.0		1.0	2.0	1.0	2.0				4.0
	Actual			1.2	0.0	1.0				4.0		1.0	1.8	1.0	1.8				3.9
2 of 181	Expected		1.0	1.0	1.0	2.0				4.0				1.0	2.0	3.0			2.0
	Actual		1.0	1.0	0.0	2.0				4.0				1.0	2.0	3.1			2.0
3 of 181	Expected	1.0	1.0	2.0	1.0	1.0				2.0				2.0	1.0	4.0		1.0	1.0
	Actual	1.0	1.0	1.8	0.0	1.0				2.0				1.9	1.0	4.0		1.0	1.2
4 of 181	Expected	1.0	1.0	1.0		1.0	1.0			1.0			1.0	2.0	1.0	3.0		3.0	1.0
	Actual	1.0	1.0	1.0		0.9	1.0			1.0			1.0	2.0	0.8	2.9		2.9	1.0
5 of 181	Expected		2.0	2.0			1.0				1.0		2.0	1.0	2.0	2.0		2.0	2.0
	Actual		2.0	2.0			1.0				1.1		2.0	1.0	1.7	1.9		1.9	2.0
6 of 181	Expected		1.0	1.0		1.0		1.0		1.0	1.0		1.0	1.0	3.0	1.0		2.0	3.0
	Actual		1.1	0.9		1.0		1.1		1.0	1.0		1.0	1.1	2.7	1.0		1.8	3.0
7 of 181	Expected		1.0	1.0		1.0		1.0		3.0			4.0	1.0	3.0	1.0			1.0
	Actual		1.0	1.0		0.9		1.0		3.0			4.0	1.0	3.0	1.0			1.1
8 of 181	Expected			2.0		1.0		1.0		2.0			4.0	1.0	2.0	2.0	1.0		1.0
	Actual			1.9		0.9		1.1		1.9			3.9	1.0	1.8	1.9	0.0		1.1
9 of 181	Expected	1.0		1.0			1.0	2.0	1.0				3.0	1.0	2.0	2.0	1.0		2.0
	Actual	1.1		1.1			1.0	1.9	0.9				3.3	1.1	2.1	2.1	0.0		2.1
10 of 181	Expected	1.0	1.0	2.0			2.0	2.0	1.0		1.0		2.0		1.0	2.0	1.0		1.0
	Actual	1.0	1.1	2.1			2.2	1.9	0.8		1.1		2.2		0.8	1.9	0.0		1.2
11 of 181	Expected		1.0	4.0			2.0			1.0	1.0		2.0	2.0	1.0	2.0			1.0
	Actual		1.0	4.0			1.9			1.1	1.0		2.0	2.0	0.9	1.8			1.0
12 of 181	Expected	1.0	1.0	4.0			1.0			1.0			3.0	2.0	1.0			1.0	2.0
	Actual	1.0	1.1	3.8			1.1			0.7			3.1	2.0	1.0			1.1	2.0
13 of 181	Expected	1.0		3.0		1.0	1.0		2.0		1.0		2.0	1.0	2.0	1.0		1.0	1.0
	Actual	1.1		3.0		1.1	1.0		2.0		1.2		2.0	1.0	1.7	1.1		0.9	0.8

Figure 1: Amino Acid Analysis (continued)^{3,4,5}

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)
14 of 181	Expected	1.0	1.0	1.0		1.0	2.0		3.0		1.0		2.0		2.0	2.0	1.0		
	Actual	1.0	1.1	1.1		0.9	2.1		2.7		1.1		2.0		1.7	1.9	0.0		
15 of 181	Expected		1.0	2.0		1.0	2.0		3.0	1.0	1.0		1.0		1.0	3.0	1.0		
	Actual		1.0	2.0		1.0	2.1		2.8	1.0	1.0		1.1		0.8	2.8	0.0		
16 of 181	Expected			3.0		1.0	1.0		1.0	3.0	1.0		1.0		2.0	3.0			1.0
	Actual			3.1		1.0	1.0		0.7	3.1	1.0		0.9		1.9	2.6			0.8
17 of 181	Expected	1.0		3.0		1.0			2.0	2.0	2.0				1.0	2.0			3.0
	Actual	1.1		3.2		0.9			1.6	1.9	2.1				0.8	1.9			2.9
18 of 181	Expected	1.0		3.0	2.0	2.0			1.0		1.0		2.0			1.0			4.0
	Actual	1.0		2.9	0.0	2.0			0.9		1.0		2.1			1.0			4.0
19 of 181	Expected			2.0	2.0	2.0	1.0		1.0	1.0	1.0		3.0	1.0					3.0
	Actual			2.1	0.0	2.0	1.1		1.2	1.1	0.9		2.8	1.1					2.9
20 of 181	Expected			4.0	1.0	1.0	1.0	1.0		1.0	2.0		2.0	1.0				2.0	1.0
	Actual			4.0	0.0	1.0	1.0	1.0		1.0	2.0		2.0	1.0				1.9	1.0
21 of 181	Expected			2.0		2.0	1.0	1.0		1.0	2.0	1.0	1.0		2.0		1.0	2.0	1.0
	Actual			1.8		1.7	1.0	1.1		1.0	2.0	1.0	1.1		1.7		0.0	2.0	1.0
22 of 181	Expected	1.0	1.0	3.0		2.0					1.0	1.0	1.0		4.0		1.0	1.0	1.0
	Actual	1.0	1.0	2.7		2.0					0.9	1.0	1.1		3.8		0.0	1.0	1.1
23 of 181	Expected	1.0	1.0	2.0	1.0	2.0							2.0		3.0	1.0		2.0	2.0
	Actual	1.2	1.2	2.1	0.0	2.1							1.6		2.9	0.8		1.7	1.9
24 of 181	Expected	1.0		3.0	1.0	2.0				1.0		1.0	2.0	1.0	2.0	1.0		1.0	1.0
	Actual	0.9		3.0	0.0	1.8				1.0		1.0	2.1	1.0	2.0	0.9		1.0	1.1
25 of 181	Expected			2.0		4.0	2.0			2.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0
	Actual			1.8		3.7	2.1			2.0	0.9	1.0	1.1	1.0	0.9			1.1	1.0
26 of 181	Expected		1.0	3.0		3.0	2.0			3.0	2.0	1.0	2.0						
	Actual		1.0	2.8		2.9	2.2			3.2	2.0	1.1	1.7						
27 of 181	Expected		1.0	4.0		2.0	2.0		1.0	1.0	2.0		3.0						1.0
	Actual		1.0	4.2		2.0	2.1		1.0	1.0	2.0		2.8						1.0
28 of 181	Expected		1.0	2.0		1.0	1.0		2.0		3.0		3.0		1.0			2.0	1.0
	Actual		1.1	2.0		1.0	1.1		1.8		3.0		3.4		0.9			2.2	1.0
29 of 181	Expected			2.0			1.0	1.0	3.0	1.0	2.0		1.0	1.0	1.0	1.0		2.0	1.0
	Actual			2.0			1.0	1.0	2.8	1.1	2.0		1.0	1.0	0.9	1.0		1.9	1.1
30 of 181	Expected		1.0	2.0		1.0	1.0	1.0	1.0	2.0	1.0		1.0	2.0	1.0	1.0		1.0	1.0
	Actual		0.9	2.1		1.0	1.0	1.0	1.0	2.0	1.1		1.0	2.0	0.8	0.9		1.0	1.0
31 of 181	Expected	1.0	1.0	2.0		2.0	1.0			4.0			1.0	2.0	1.0				2.0
	Actual	1.0	1.0	1.8		1.8	1.1			3.8			1.2	2.1	0.9				2.1
32 of 181	Expected	1.0		2.0		2.0	2.0		2.0	3.0			1.0	2.0	1.0				1.0
	Actual	1.0		2.0		1.9	2.0		2.0	3.0			1.0	2.0	0.8				1.1
33 of 181	Expected		1.0	2.0		1.0	1.0		3.0	3.0			1.0	2.0		2.0			1.0
	Actual		1.1	1.9		1.0	1.0		2.6	2.9			1.1	2.0		1.9			1.0
34 of 181	Expected	1.0	2.0	1.0		1.0	1.0	1.0	2.0	3.0			1.0		1.0	2.0		1.0	
	Actual	1.0	2.1	1.0		1.0	1.0	1.0	1.8	3.0			1.1		0.9	2.0		1.0	
35 of 181	Expected	1.0	1.0	1.0		1.0	1.0	1.0		4.0				1.0	3.0	2.0		1.0	
	Actual	1.0	1.0	1.1		1.0	1.0	1.0		4.0				1.0	2.7	1.9		1.0	
36 of 181	Expected	2.0	1.0	1.0			3.0			1.0				1.0	4.0	2.0	1.0	1.0	
	Actual	1.8	1.1	0.9			3.1			1.0				1.0	3.8	1.9	0.0	1.1	
37 of 181	Expected	4.0		1.0			3.0								3.0	1.0	1.0	3.0	1.0
	Actual	3.8		1.0			2.9								3.0	1.0	0.0	2.8	1.1
38 of 181	Expected	4.0	1.0			1.0	2.0			2.0			1.0	1.0		1.0		3.0	1.0
	Actual	3.9	1.1			0.9	2.0			2.1			1.1	1.1		1.0		2.9	0.9
39 of 181	Expected		1.0	2.0		2.0	2.0			3.0	1.0		1.0	1.0		1.0		2.0	1.0
	Actual		1.0	2.2		2.0	2.1			2.9	1.0		1.0	1.0		0.9		1.9	1.0
40 of 181	Expected	1.0		4.0		1.0	1.0		1.0	2.0	1.0		1.0			3.0		1.0	1.0
	Actual	1.0		4.0		1.0	1.0		1.0	2.0	1.0		1.0			2.7		1.0	1.1
41 of 181	Expected	2.0		4.0	1.0	1.0	1.0		1.0	2.0				1.0	1.0	2.0			1.0
	Actual	1.9		3.9	0.0	1.0	1.0		1.0	2.0				1.0	0.9	2.0			1.1
42 of 181	Expected	2.0		2.0	2.0	1.0				3.0	2.0			1.0	1.0	2.0			1.0
	Actual	2.0		1.9	0.0	0.9				3.0	2.2			1.1	0.9	1.9			1.1
43 of 181	Expected				1.0	2.0	1.0			2.0	3.0		1.0	1.0	2.0	3.0			1.0
	Actual				1.0	1.8	1.0			2.0	3.0		1.1	1.0	1.9	2.7			1.1

Figure 1: Amino Acid Analysis (continued)^{3,4,5}

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)
44 of 181	Expected			1.0		2.0	1.0		1.0	1.0	2.0		2.0		2.0	3.0		1.0	1.0
	Actual			1.1		1.9	1.0		0.8	1.2	2.0		2.1		1.9	2.9		0.9	1.0
45 of 181	Expected		1.0	1.0		4.0	1.0		1.0		1.0		1.0	1.0	2.0	2.0		1.0	1.0
	Actual		1.0	1.2		3.8	1.0		0.9		1.0		1.0	1.0	1.7	1.8		0.9	1.1
46 of 181	Expected		2.0	2.0		2.0			2.0				2.0	2.0	2.0	1.0			2.0
	Actual		2.0	2.0		1.8			1.8				2.1	2.1	1.9	1.0			1.7
47 of 181	Expected		1.0	2.0	1.0	1.0	1.0		2.0	1.0			2.0	2.0	1.0	2.0			1.0
	Actual		1.0	1.9	0.0	0.9	1.1		1.8	1.0			2.0	2.0	0.8	1.8			0.8
48 of 181	Expected	1.0	1.0	3.0	1.0	1.0	1.0		1.0	1.0			2.0	2.0		2.0			1.0
	Actual	1.0	1.0	3.0	0.0	0.9	1.1		1.0	1.0			1.9	2.1		1.9			1.0
49 of 181	Expected	3.0	1.0	1.0		1.0	1.0						3.0	1.0	1.0	1.0	1.0	1.0	2.0
	Actual	3.0	1.2	1.0		0.9	1.0						3.0	0.9	0.9	1.1	0.0	1.0	2.0
50 of 181	Expected	3.0	3.0	2.0					1.0		1.0		1.0		2.0	1.0	1.0	1.0	1.0
	Actual	2.9	2.9	2.0					1.0		1.0		1.0		2.0	0.9	0.0	1.0	1.0
51 of 181	Expected	2.0	2.0	3.0	1.0				1.0		1.0				2.0		1.0	2.0	2.0
	Actual	2.0	2.1	2.8	0.0				0.9		1.0				1.8		0.0	2.2	2.2
52 of 181	Expected	2.0		3.0	1.0				1.0	1.0			1.0		4.0			2.0	2.0
	Actual	2.1		2.8	0.0				0.9	0.9			1.1		3.7			2.1	2.0
53 of 181	Expected	1.0		1.0	1.0		1.0			1.0	1.0		2.0		4.0	1.0		3.0	1.0
	Actual	1.0		1.0	0.0		1.1			0.8	1.1		2.2		3.8	1.0		2.8	0.9
54 of 181	Expected	1.0		1.0	1.0		1.0			1.0	2.0		2.0	1.0	3.0	2.0		1.0	1.0
	Actual	0.9		0.9	0.0		1.0			1.0	1.9		2.1	1.0	3.0	1.9		1.1	1.1
55 of 181	Expected			3.0	2.0		1.0			2.0	1.0		1.0	1.0	1.0	2.0		1.0	2.0
	Actual			3.0	0.0		0.9			2.0	1.0		1.1	1.0	0.8	1.9		1.0	2.2
56 of 181	Expected	1.0		4.0	1.0				1.0	2.0	1.0		2.0		1.0	1.0		1.0	2.0
	Actual	1.0		3.8	0.0				0.7	2.1	1.0		2.0		0.8	1.0		1.1	1.7
57 of 181	Expected	1.0	2.0	3.0		2.0	1.0		1.0				1.0		1.0	1.0		1.0	3.0
	Actual	1.0	2.0	3.1		1.8	1.1		0.7				1.1		0.9	0.9		1.0	2.8
58 of 181	Expected	1.0	2.0	1.0		3.0	3.0		2.0				1.0	1.0		1.0			2.0
	Actual	1.0	1.9	1.0		3.0	3.0		1.7				1.0	1.1		1.0			2.0
59 of 181	Expected	2.0	1.0	2.0		2.0	2.0		2.0		1.0			1.0		1.0		2.0	1.0
	Actual	2.0	0.9	2.1		2.0	2.2		2.0		1.0			1.1		1.0		2.1	0.9
60 of 181	Expected	1.0		4.0		1.0	1.0		1.0	1.0	2.0		1.0	1.0		2.0		2.0	
	Actual	1.0		4.0		0.9	1.0		0.9	1.0	2.0		1.2	1.1		1.9		2.0	
61 of 181	Expected	1.0		4.0	1.0		1.0		1.0	1.0	1.0		1.0	1.0		1.0	1.0	2.0	1.0
	Actual	1.0		3.9	0.0		1.0		0.7	1.0	1.0		1.0	1.0		1.0	0.0	2.0	0.7
62 of 181	Expected	1.0		5.0	1.0		1.0		1.0	1.0	1.0		1.0		2.0	1.0	1.0		1.0
	Actual	0.7		4.6	0.0		1.1		0.7	1.1	1.0		1.2		1.7	0.9	0.0		0.7
63 of 181	Expected	1.0		6.0			2.0			1.0	1.0				2.0		1.0	2.0	1.0
	Actual	0.8		5.8			2.1			1.0	0.9				1.7		0.0	2.2	1.2
64 of 181	Expected		2.0	3.0			2.0			2.0	2.0		1.0		1.0			3.0	1.0
	Actual		2.1	2.7			2.1			2.0	1.9		1.1		0.7			3.0	1.0
65 of 181	Expected		2.0	2.0		1.0				3.0	2.0		2.0	1.0	1.0			3.0	
	Actual		2.0	2.0		0.9				3.0	2.1		2.0	1.1	0.9			2.9	
66 of 181	Expected		2.0	2.0		2.0			2.0	1.0	2.0		2.0	1.0	2.0	1.0			
	Actual		1.9	2.1		2.1			1.8	1.0	1.9		2.1	1.1	1.8	1.0			
67 of 181	Expected	1.0	1.0	1.0		3.0	1.0		2.0				1.0	2.0	2.0	2.0		1.0	
	Actual	1.2	0.8	0.9		2.9	1.2		1.8				0.9	2.0	2.0	2.0		1.1	
68 of 181	Expected	1.0		1.0	1.0	3.0	3.0		1.0				1.0	1.0	1.0	2.0		1.0	1.0
	Actual	1.1		1.2	0.0	3.0	3.0		0.8				1.0	1.0	0.8	1.8		0.9	1.1
69 of 181	Expected			2.0	2.0	2.0	2.0			1.0			2.0	2.0	1.0	1.0		1.0	1.0
	Actual			2.0	0.0	1.9	2.0			1.0			2.1	2.0	0.8	0.9		1.0	1.0
70 of 181	Expected			1.0	1.0	3.0	2.0			1.0			3.0	2.0	1.0	1.0		2.0	
	Actual			0.9	0.0	2.7	2.1			1.0			3.3	2.1	0.8	1.0		2.0	
71 of 181	Expected			1.0		3.0	3.0			1.0			1.0	3.0	1.0	1.0		2.0	1.0
	Actual			1.1		2.7	3.0			1.0			1.0	3.1	0.7	1.0		2.0	1.1
72 of 181	Expected		1.0	1.0		2.0	2.0			1.0				2.0	1.0	1.0		2.0	4.0
	Actual		1.0	1.0		2.0	2.0			1.0				2.0	0.9	0.9		2.0	4.0
73 of 181	Expected	1.0	1.0			2.0		1.0		3.0			1.0	2.0	1.0			2.0	3.0
	Actual	1.1	0.9			1.9		1.0		2.9			1.1	2.1	0.8			1.9	2.8

Figure 1: Amino Acid Analysis (continued)^{3,4,5}

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)
74 of 181	Expected	2.0			1.0	1.0	1.0	1.0		3.0	1.0		1.0	2.0	1.0	1.0			2.0
	Actual	1.9			0.0	0.9	1.0	1.1		3.0	1.0		1.1	1.9	0.8	0.9			2.0
75 of 181	Expected	2.0		1.0	1.0		1.0	1.0		1.0	3.0			2.0	1.0	2.0			2.0
	Actual	1.8		1.1	0.0		1.0	0.9		1.1	3.0			2.0	0.8	1.9			2.1
76 of 181	Expected			4.0	1.0		1.0			1.0	4.0		1.0	1.0	1.0	1.0			2.0
	Actual			4.0	0.0		0.9			1.0	3.7		1.2	0.9	0.8	0.9			2.1
77 of 181	Expected			4.0	1.0		2.0			2.0	2.0		2.0			2.0			2.0
	Actual			3.8	0.0		1.9			2.1	2.0		2.1			2.0			2.1
78 of 181	Expected			4.0		1.0	3.0			2.0			2.0		1.0	3.0			1.0
	Actual			3.7		0.8	2.9			2.1			2.4		0.9	2.8			1.1
79 of 181	Expected			1.0		2.0	2.0			2.0	2.0		2.0	1.0	1.0	3.0			1.0
	Actual			1.0		1.7	2.1			2.1	1.9		2.1	1.1	0.9	2.8			1.0
80 of 181	Expected	1.0	1.0	2.0		3.0	1.0		1.0	1.0	2.0		3.0	1.0	1.0				
	Actual	1.0	1.0	1.9		2.9	1.0		1.0	1.1	2.0		2.9	1.1	0.9				
81 of 181	Expected	2.0	2.0	3.0		2.0	1.0		1.0				2.0	1.0		2.0			1.0
	Actual	2.2	2.0	3.1		2.1	1.0		0.8				1.9	1.1		2.0			0.9
82 of 181	Expected	2.0	1.0	4.0		2.0			2.0	1.0				1.0		3.0			1.0
	Actual	1.9	1.0	3.9		2.0			1.8	1.1				1.1		2.9			1.0
83 of 181	Expected	1.0	1.0	2.0	1.0	2.0			2.0	2.0				2.0	1.0	2.0			1.0
	Actual	1.1	0.9	1.9	0.0	2.1			1.9	2.1				2.0	0.9	1.9			1.0
84 of 181	Expected			1.0	1.0	1.0	2.0		3.0	2.0			1.0	1.0	2.0	1.0			2.0
	Actual			0.9	0.0	0.9	2.1		2.6	2.0			1.1	1.0	1.7	0.8			1.8
85 of 181	Expected			1.0	1.0		3.0		1.0				1.0	2.0	3.0	3.0			2.0
	Actual			1.1	0.0		2.9		0.7				1.0	1.9	2.7	2.8			1.7
86 of 181	Expected	1.0		2.0		1.0	1.0		1.0	1.0				1.0	2.0	3.0		1.0	3.0
	Actual	1.0		2.0		1.0	1.0		0.7	1.0				0.9	2.1	2.8		1.1	2.9
87 of 181	Expected	1.0		4.0	1.0	3.0				1.0					1.0	2.0		1.0	3.0
	Actual	1.0		4.0	0.0	2.9				0.9					0.7	1.9		1.0	3.2
88 of 181	Expected	2.0		2.0	1.0	2.0		1.0	1.0	1.0				1.0		1.0		1.0	4.0
	Actual	2.0		2.1	0.0	2.0		0.8	0.8	1.0				1.1		1.1		1.1	4.0
89 of 181	Expected	2.0		1.0	1.0	2.0		1.0	1.0	1.0				2.0		3.0	1.0		2.0
	Actual	2.1		1.1	0.0	2.0		0.9	0.9	1.1				2.2		2.9	0.0		1.9
90 of 181	Expected	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0				1.0	2.0	3.0	1.0	1.0	1.0
	Actual	1.0	1.0	1.1		1.0	1.0	0.9	0.8	1.0				1.1	1.6	2.9	0.0	1.0	1.1
91 of 181	Expected	1.0	2.0	1.0		1.0	1.0						1.0	1.0	2.0	3.0	1.0	1.0	2.0
	Actual	1.0	2.1	1.1		1.0	1.1						0.9	1.1	1.9	3.0	0.0	0.9	1.9
92 of 181	Expected	2.0	1.0	1.0	1.0	2.0	3.0		1.0	1.0			1.0		1.0	2.0			1.0
	Actual	2.1	1.1	1.1	0.0	1.9	3.1		1.0	1.1			0.9		0.7	1.9			0.9
93 of 181	Expected	2.0	1.0	2.0	1.0	2.0	2.0	1.0	1.0	1.0					1.0	1.0		1.0	1.0
	Actual	2.1	1.0	2.2	0.0	2.0	2.0	0.9	1.0	1.0					0.7	0.9		1.0	1.0
94 of 181	Expected	2.0		3.0	1.0	2.0	2.0	1.0	2.0					1.0	1.0			1.0	1.0
	Actual	1.9		2.9	0.0	1.9	2.1	1.0	2.0					1.0	0.8			1.1	1.0
95 of 181	Expected	2.0		1.0	2.0	2.0	2.0		3.0					1.0	2.0			2.0	
	Actual	2.1		1.1	0.0	1.7	2.1		2.8					1.1	1.8			1.9	
96 of 181	Expected	2.0	1.0	1.0	1.0	2.0	2.0		2.0					1.0	2.0	2.0		1.0	
	Actual	1.9	1.1	1.2	0.0	1.9	1.7		1.8					1.0	1.8	2.0		1.1	
97 of 181	Expected	2.0	3.0	1.0		2.0								1.0	4.0	2.0		1.0	1.0
	Actual	2.0	3.2	1.0		1.6								1.0	3.7	1.8		1.0	1.2
98 of 181	Expected	3.0	3.0			1.0			2.0					1.0	4.0	1.0		1.0	1.0
	Actual	2.8	3.0			0.9			1.7					1.0	3.7	1.2		1.2	1.1
99 of 181	Expected	3.0		1.0		2.0	1.0		2.0	1.0		1.0			3.0	1.0		1.0	1.0
	Actual	3.0		1.1		1.6	1.1		1.8	1.2		1.1			2.7	1.0		1.1	0.7
100 of 181	Expected	3.0		3.0		1.0	1.0			1.0		1.0			3.0	1.0		2.0	1.0
	Actual	3.1		2.8		0.8	1.0			1.1		1.0			2.8	0.7		2.0	1.2
101 of 181	Expected	3.0		4.0		1.0			2.0					1.0	3.0	1.0		1.0	1.0
	Actual	2.9		3.8		0.9			1.9					1.1	3.0	1.1		1.1	1.1
102 of 181	Expected	1.0		3.0					3.0				1.0	1.0	3.0	4.0			1.0
	Actual	1.1		3.2					2.9				1.1	1.0	3.1	4.1			0.8
103 of 181	Expected			1.0		1.0			2.0	1.0		1.0	1.0	2.0	2.0	4.0			2.0
	Actual			0.9		1.0			1.7	1.0		1.1	1.1	2.1	1.9	3.8			2.1

Figure 1: Amino Acid Analysis (continued)^{3,4,5}

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)
104 of 181	Expected			1.0	1.0	1.0			1.0	1.0	1.0	1.0		1.0	2.0	4.0			3.0
	Actual			1.0	0.0	1.1			0.8	1.0	1.1	1.1		0.9	2.0	3.8			2.8
105 of 181	Expected			2.0	2.0		1.0		1.0		1.0	2.0			2.0	3.0		1.0	2.0
	Actual			2.1	0.0		1.0		0.9		1.1	1.9			1.9	3.1		1.1	2.0
106 of 181	Expected			3.0	3.0	1.0	1.0		1.0	1.0		1.0			2.0	2.0		1.0	1.0
	Actual			2.8	0.0	1.2	1.1		0.8	0.9		1.0			1.9	2.2		1.2	0.8
107 of 181	Expected			2.0	2.0	2.0	2.0			3.0			1.0		3.0	1.0		1.0	
	Actual			2.0	0.0	1.8	2.1			3.0			1.1		3.1	1.0		1.0	
108 of 181	Expected	1.0	1.0	2.0	1.0	2.0	1.0			4.0			1.0		2.0	1.0		1.0	
	Actual	1.0	1.1	1.7	0.0	1.7	1.1			3.9			1.1		2.0	1.0		1.1	
109 of 181	Expected	2.0	1.0	1.0	1.0	2.0	2.0		1.0	2.0			1.0		1.0	2.0			1.0
	Actual	2.0	1.0	1.0	0.0	1.9	2.0		1.0	2.0			1.0		0.8	1.9			1.1
110 of 181	Expected	2.0	1.0	3.0		4.0	1.0		1.0	1.0	1.0					2.0			1.0
	Actual	1.9	0.9	2.9		3.8	1.0		1.0	1.0	1.1					1.9			1.0
111 of 181	Expected	2.0		2.0		6.0					2.0		1.0			1.0			3.0
	Actual	1.9		1.7		6.1					1.9		1.2			1.0			3.3
112 of 181	Expected	1.0				4.0			2.0		2.0		1.0	2.0		2.0		1.0	2.0
	Actual	0.9				4.0			1.9		1.9		1.0	2.1		1.8		1.1	2.0
113 of 181	Expected			2.0		1.0	2.0		2.0		3.0		2.0	2.0		1.0		1.0	1.0
	Actual			2.1		0.9	2.3		1.9		2.7		2.1	2.0		0.9		1.0	1.0
114 of 181	Expected			3.0		1.0	2.0		2.0	1.0	1.0		3.0	3.0	1.0				
	Actual			3.1		1.0	2.1		1.9	1.1	0.9		3.2	2.8	0.9				
115 of 181	Expected		1.0	2.0		1.0	1.0		1.0	1.0	2.0		2.0	3.0	3.0				
	Actual		1.1	2.0		0.9	1.0		1.0	1.0	2.2		1.9	3.1	3.0				
116 of 181	Expected		1.0	2.0		1.0			1.0	3.0	2.0		1.0	3.0	3.0				
	Actual		1.1	1.9		1.0			1.0	3.0	1.9		1.1	2.8	2.7				
117 of 181	Expected	1.0	1.0	2.0		1.0			1.0	3.0	2.0		2.0		2.0	1.0			1.0
	Actual	1.0	1.0	2.0		1.1			1.0	3.0	1.9		2.1		1.8	1.0			1.1
118 of 181	Expected	2.0		3.0		1.0	1.0		1.0	3.0	2.0		2.0			1.0			1.0
	Actual	2.1		3.0		1.3	1.0		0.9	2.8	1.8		2.1			1.2			0.9
119 of 181	Expected	2.0		3.0	1.0	1.0	3.0		1.0	2.0	1.0		1.0			1.0		1.0	
	Actual	1.9		3.0	0.0	1.1	3.1		0.9	2.0	1.0		1.0			0.7		1.1	
120 of 181	Expected	2.0	1.0	3.0	1.0	1.0	2.0		3.0	2.0	1.0							1.0	
	Actual	2.2	1.2	3.0	0.0	0.6	2.2		2.8	2.3	0.9							1.1	
121 of 181	Expected	3.0	1.0	3.0	1.0	1.0	2.0		2.0	2.0	1.0		1.0						
	Actual	3.0	1.1	2.9	0.0	1.0	2.1		1.7	1.9	1.0		1.1						
122 of 181	Expected	1.0		2.0	1.0	1.0	1.0		1.0	4.0	1.0		1.0	2.0		1.0			1.0
	Actual	1.0		2.0	0.0	1.0	1.2		0.6	3.7	1.0		1.2	2.0		1.1			1.1
123 of 181	Expected	1.0		2.0		1.0	1.0		1.0	4.0		1.0	1.0	2.0		2.0			1.0
	Actual	1.1		2.0		1.0	1.0		1.0	3.9		0.9	1.0	2.0		1.9			1.0
124 of 181	Expected	2.0		1.0		2.0			1.0	4.0		1.0		2.0	1.0	2.0		1.0	
	Actual	2.1		1.0		2.0			1.1	4.0		0.9		1.9	0.9	1.9		1.0	
125 of 181	Expected	3.0				1.0	2.0		2.0	2.0		1.0			2.0	3.0		1.0	
	Actual	3.0				0.9	2.0		2.1	2.1		1.0			1.9	3.0		1.0	
126 of 181	Expected	4.0					4.0		1.0	2.0			1.0		1.0	3.0	1.0		
	Actual	3.7					3.9		1.1	2.0			1.1		0.9	2.8	0.0		
127 of 181	Expected	4.0				1.0	3.0		1.0	1.0			2.0	1.0	1.0	2.0	1.0		
	Actual	3.8				0.9	2.7		1.0	1.1			2.2	1.0	0.7	1.8	0.0		
128 of 181	Expected	5.0	1.0			2.0	1.0		1.0	1.0		2.0	2.0	1.0				1.0	
	Actual	4.8	1.1			2.0	1.0		0.9	1.0		2.0	2.1	1.0				1.0	
129 of 181	Expected	2.0	1.0	1.0		2.0	2.0		1.0			2.0	2.0	1.0		1.0		1.0	1.0
	Actual	1.9	1.1	1.0		1.7	2.2		1.0			2.0	2.2	1.0		0.9		1.1	1.0
130 of 181	Expected		1.0	3.0		3.0	2.0		1.0	1.0			1.0			1.0		2.0	2.0
	Actual		1.0	3.0		3.0	2.0		1.0	1.0			1.0			0.9		2.0	2.1
131 of 181	Expected	1.0		3.0		4.0			1.0	2.0	1.0		1.0			1.0		1.0	2.0
	Actual	1.1		2.7		3.7			1.0	2.0	0.9		1.2			0.7		1.1	1.8
132 of 181	Expected	2.0		3.0		3.0	1.0		3.0	1.0	2.0		1.0		1.0				
	Actual	2.0		2.8		2.7	0.9		3.0	1.1	1.9		1.2		0.8				
133 of 181	Expected	1.0		3.0		2.0	1.0		2.0	1.0	1.0		1.0		4.0	1.0			
	Actual	1.1		2.7		1.7	0.9		2.2	1.2	1.0		1.0		4.0	1.1			

Figure 1: Amino Acid Analysis (continued)^{3,4,5}

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)
134 of 181	Expected	2.0		1.0		1.0	2.0		1.0	3.0	2.0				4.0	1.0			
	Actual	1.9		1.2		1.0	1.9		1.2	3.0	1.8				4.1	1.2			
135 of 181	Expected	2.0		3.0		2.0	1.0			2.0	1.0				3.0	1.0			2.0
	Actual	2.1		2.9		1.8	1.0			2.1	1.0				2.9	0.9			2.0
136 of 181	Expected	2.0		4.0		3.0	1.0			3.0	1.0					1.0			2.0
	Actual	2.1		3.9		2.8	1.0			3.3	1.0					1.0			1.9
137 of 181	Expected	2.0		4.0		3.0				3.0	1.0				2.0	1.0			1.0
	Actual	2.3		3.9		2.7				3.0	0.9				1.8	0.9			1.0
138 of 181	Expected	1.0		2.0		1.0	1.0		1.0	2.0	1.0		1.0		4.0	1.0			2.0
	Actual	1.1		2.0		0.9	1.0		1.1	2.0	0.8		1.1		4.2	0.9			2.1
139 of 181	Expected	1.0	1.0	3.0			1.0		2.0	2.0			1.0		5.0				1.0
	Actual	1.0	1.1	2.9			1.0		1.9	1.7			1.0		4.8				0.9
140 of 181	Expected	1.0	1.0	3.0		2.0			1.0	3.0	1.0				3.0				2.0
	Actual	1.1	1.0	2.9		1.9			1.0	2.9	1.0				2.9				2.1
141 of 181	Expected	1.0	2.0	2.0		3.0			2.0	3.0	1.0				1.0				2.0
	Actual	1.0	2.1	1.9		2.9			2.1	2.9	0.9				0.7				2.1
142 of 181	Expected	1.0	2.0	1.0		4.0	1.0		2.0	3.0					1.0	1.0			1.0
	Actual	0.9	2.1	1.0		3.9	1.1		1.9	3.1					0.8	0.9			1.0
143 of 181	Expected		2.0			4.0	1.0		1.0	3.0					1.0	3.0		1.0	1.0
	Actual		2.0			3.8	1.0		1.0	3.0					0.8	2.7		1.0	1.1
144 of 181	Expected	2.0	1.0			5.0			2.0	2.0					1.0	2.0		1.0	1.0
	Actual	2.0	0.9			4.7			2.1	2.0					0.7	1.7		1.0	1.1
145 of 181	Expected	5.0	2.0	1.0		3.0			2.0	2.0					1.0	1.0			
	Actual	5.2	2.0	1.0		2.8			1.9	2.1					0.8	1.0			
146 of 181	Expected	5.0	1.0	1.0	1.0	2.0			1.0	1.0	1.0	1.0			2.0	1.0			
	Actual	5.1	1.0	1.2	0.0	1.6			1.0	0.8	1.2	1.1			2.4	0.9			
147 of 181	Expected	2.0	1.0	1.0	1.0	2.0	1.0			2.0	2.0	1.0			2.0	1.0			1.0
	Actual	2.0	1.1	0.9	0.0	1.6	1.1			2.1	2.0	1.0			1.7	0.9			1.1
148 of 181	Expected		1.0	1.0	2.0	2.0	3.0			1.0	2.0		1.0		2.0				2.0
	Actual		1.2	1.0	0.0	1.7	3.4			1.2	2.2		1.4		2.2				2.3
149 of 181	Expected		1.0	1.0	1.0		2.0	1.0		1.0	2.0	1.0	2.0	1.0	2.0			1.0	1.0
	Actual		1.0	1.0	0.1		2.2	1.1		1.2	2.1	1.1	2.2	1.2	1.7			1.1	1.0
150 of 181	Expected	1.0				1.0	3.0	2.0		1.0	1.0	1.0	1.0	2.0	2.0			1.0	1.0
	Actual	1.0				1.3	3.3	2.2		1.1	1.1	1.1	0.7	1.9	2.1			0.8	0.7
151 of 181	Expected	1.0				1.0	1.0	2.0		1.0			2.0	2.0	2.0	1.0		1.0	3.0
	Actual	1.0				0.8	1.0	2.0		1.0			2.0	2.1	1.7	1.0		1.1	2.7
152 of 181	Expected	1.0		1.0		2.0	1.0	2.0		1.0	1.0		1.0	1.0		1.0		1.0	4.0
	Actual	1.0		1.0		1.6	1.0	2.1		1.0	1.0		1.1	1.1		0.9		1.1	3.7
153 of 181	Expected	3.0		1.0		2.0			1.0		1.0		1.0	2.0		3.0		1.0	2.0
	Actual	2.9		1.0		1.8			1.1		1.0		1.1	2.1		2.7		1.0	2.0
154 of 181	Expected	3.0		2.0	1.0	1.0	1.0	2.0	1.0		2.0		1.0	1.0		2.0			
	Actual	3.0		2.0	0.0	0.9	1.2	1.8	0.8		2.0		1.2	1.1		1.9			
155 of 181	Expected	2.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0		1.0		2.0	2.0					1.0
	Actual	1.9	1.1	1.1	0.0	0.9	2.1	1.9	0.8		1.1		2.1	2.1					1.0
156 of 181	Expected	1.0	1.0	1.0		1.0	2.0	2.0			1.0		2.0	1.0	1.0	1.0	1.0		2.0
	Actual	0.8	1.1	1.1		0.8	2.4	2.2			0.9		2.2	1.0	0.9	1.1	0.0		1.7
157 of 181	Expected		1.0	2.0		1.0	2.0	1.0					3.0		1.0	2.0	1.0		3.0
	Actual		1.1	2.0		0.8	2.0	1.1					3.1		0.7	1.7	0.0		3.0
158 of 181	Expected		1.0	1.0		3.0		1.0	2.0				2.0	1.0		3.0	1.0	1.0	1.0
	Actual		1.0	0.9		2.9		1.1	1.8				2.1	0.9		2.7	0.0	1.1	1.1
159 of 181	Expected		1.0	3.0		2.0			2.0				2.0	1.0	1.0	3.0		1.0	1.0
	Actual		1.0	3.0		1.7			1.8				2.1	1.0	0.8	2.6		1.0	1.2
160 of 181	Expected			4.0	1.0		1.0		3.0				1.0		1.0	3.0			3.0
	Actual			3.6	0.0		1.1		2.6				1.0		0.8	2.7			2.8
161 of 181	Expected			4.0	1.0		2.0		2.0				1.0		1.0	1.0			5.0
	Actual			3.6	0.3		2.2		1.8				1.0		0.8	1.0			4.6
162 of 181	Expected			3.0		2.0	1.0		2.0	1.0				2.0		1.0		1.0	4.0
	Actual			3.0		2.0	1.0		1.8	1.0				2.1		0.9		1.0	3.7
163 of 181	Expected			3.0		4.0				2.0	1.0		1.0	2.0	1.0	1.0		1.0	1.0
	Actual			3.1		3.9				2.1	0.9		1.0	2.0	1.0	1.0		0.9	1.1

Figure 1: Amino Acid Analysis (continued)^{3,4,5}

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)
164 of 181	Expected			3.0		4.0				2.0	3.0		2.0	1.0	1.0			1.0	
	Actual			3.1		3.9				2.1	3.4		2.1	1.1	0.7			1.1	
165 of 181	Expected			4.0		2.0		1.0		1.0	3.0		1.0	1.0	1.0	1.0		1.0	1.0
	Actual			4.1		1.7		1.1		1.0	2.8		1.0	1.1	1.0	0.9		1.0	1.1
166 of 181	Expected			4.0			2.0	1.0	2.0	1.0	1.0		1.0	1.0	2.0	1.0			1.0
	Actual			3.7			2.1	1.0	2.1	1.0	1.0		1.0	1.0	1.7	0.9			1.1
167 of 181	Expected	1.0		5.0			2.0		3.0	1.0					2.0				3.0
	Actual	1.3		4.6			1.8		3.1	0.9					1.6				2.9
168 of 181	Expected	1.0	1.0	3.0		2.0	1.0		3.0	1.0	1.0				2.0				2.0
	Actual	1.0	0.8	3.3		1.9	1.0		2.9	1.3	1.0				1.6				1.6
169 of 181	Expected	1.0	1.0	4.0		3.0			2.0	2.0	2.0								2.0
	Actual	1.0	1.1	3.8		2.6			2.0	2.1	2.0								2.2
170 of 181	Expected	1.0	1.0	5.0		2.0			1.0	4.0	1.0				1.0				1.0
	Actual	1.0	1.1	5.0		1.7			1.1	4.1	0.9				0.8				1.2
171 of 181	Expected			3.0		4.0	1.0		1.0	4.0	2.0				1.0			1.0	
	Actual			2.8		4.0	1.1		1.0	4.0	1.9				0.7			1.0	
172 of 181	Expected			1.0		4.0	1.0		2.0	2.0	2.0			1.0			2.0	2.0	
	Actual			1.0		3.6	1.1		2.1	2.1	2.0			1.1			0.0	2.2	
173 of 181	Expected					2.0	1.0		3.0	1.0	2.0		1.0	1.0			3.0	3.0	
	Actual					2.0	1.1		2.9	1.0	1.8		1.1	1.0			0.0	3.0	
174 of 181	Expected	2.0					2.0		4.0	2.0			1.0	1.0			3.0	1.0	1.0
	Actual	2.0					2.1		3.8	2.0			1.0	1.0			0.0	1.0	1.1
175 of 181	Expected	2.0			1.0		2.0		4.0	2.0		2.0	1.0			1.0			2.0
	Actual	1.6			0.0		2.1		3.9	2.0		2.2	1.1			1.0			1.9
176 of 181	Expected	1.0			4.0				2.0	1.0		3.0			2.0	2.0			2.0
	Actual	0.8			0.0				2.1	1.1		2.6			1.9	1.8			1.9
177 of 181	Expected				7.0		1.0			2.0	1.0	2.0			3.0	1.0			
	Actual				0.0		0.8			2.2	1.1	2.0			2.7	0.9			
178 of 181	Expected				8.0		2.0			1.0	2.0		1.0		3.0				
	Actual				0.0		2.0			0.9	1.9		1.1		2.6				
179 of 181	Expected			3.0	5.0	2.0	1.0				1.0		1.0	1.0	3.0				
	Actual			3.0	0.0	1.9	1.0				1.3		1.1	1.1	2.7				
180 of 181	Expected			3.0	1.0	2.0	1.0			2.0	3.0		1.0	1.0	1.0				2.0
	Actual			2.9	1.0	1.6	1.1			2.1	2.9		1.1	1.1	0.8				2.0
181 of 181	Expected					1.0	1.0	1.0		2.0	2.0			1.0	1.0	1.0		1.0	2.0
	Actual					0.8	1.0	1.1		2.0	2.0			1.1	0.8	1.0		1.1	2.0

³Cysteine (C) was partially or completely destroyed during hydrolysis.

⁴Tryptophan (W) was completely destroyed during hydrolysis.

⁵Val-Ile, Val-Val, Ile-Ile and/or Ile-Val bonds were only partially destroyed during hydrolysis.

/Sonia Bjorun Brower/

Sonia Bjorun Brower

15 NOV 2022

Technical Manager or designee, ATCC Federal Solutions

ATCC®, 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's knowledge.

ATCC® 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.

