

Supplementary Data for “A thermophilic phage endolysin fusion to a *Clostridium perfringens*-specific cell wall binding domain creates an anti-clostridium antimicrobial with improved thermostability”

Recombinant protein 20130729: GAV-CpCWB Mass Spectrometry and BLAST Results

Original Sequence:

MGMKKIFWDKGGSDPGAVANGLQEKNLTHKIVEYATDYLAAHYEGFTQQRVSREGDQSLTLDQRADMANKWGADVFVSVHINAGK
GTGFEIYVHPNASPQSIALQNVLHGEILSAMRQFGNITDRGKKRANYAVLRETKMPAVLTENLFIDSNDAKHLKNEAFLKAVGEAHARGVA
KFLGRYLANAIDPNIPEKEQDYRVCVQRFTNKEDA EKAQQRISNELGYCFAEKI

putative N-acetylmuramoyl-L-alanine amidase [*Geobacillus* virus E2]

Sequence ID: [ref|YP_001285830.1](#) Length: 233; Number of Matches: 1

[Gene-associated gene details](#)

Range 1: 1 to 230 [GenPeptGraphics](#)

Alignment statistics for match #1

Score	Expect	Method	Identities	Positives	Gaps
386 bits(991)	4e-133	Compositional matrix adjust.	193/231(84%)	202/231(87%)	4/231(1%)
Query 3	MKKIFWDKGGSDPGAVANGLQEKNLTHKIVEYATDYLAAHYEGFTQQRVSREGDQSLTTL				62
Sbjct 1	MKKIFWDKGGSDPGAVANGLQEKNLTHKIVEYATDYLAAHYEGFTQQRVSREGDQSLTTL				60
Query 63	DQRADMANKWGADVFVSVHINAGKGTGFEIYVHPNASPQSIALQNVLHGEILSAMRQFGN				122
Sbjct 61	DQRADMANKWGADVFVSVHINAGKGTGFEIYVHPNASPQSIALQNVLHGEILSAMRQFGN				120
Query 123	ITDRGKKRANYAVLRETKMPAVLTENLFIDSNDAKHLKNEAFLKAVGEAHARGVAKFLGR				182
Sbjct 121	ITDRGKKRANYAVLRETKMPAVLTENLFIDSNDAKHLKNEAFLKAVGEAHARGVAKFLGL				180
Query 183	YLANAIDPNI- <u>PLEKEQD</u> --YRVCVQRFTNKEDA EKAQQRISNELGYCFAEKI				232
Sbjct 181	KEKQKAQPEAKPQKPSDKKLYRVQVGFADRENAERLAEELKRK-GYPVY---ITD				233

Mass Spec Sequences:

mgmkkifwdkghggsdpGAVANGLQEKNLTHKIVEYATDYLAAHYEGFTQQRvsrEGDQSLTLDQRadmankwgadvfsvhinagkGTGFEIYVHPNASPQSIALQNVLHGEILSAMRqfgnitdrGKKRANYAVLRETKMPAVLTENLFIDSNDAKHLkNEAFLKAVGEAHARGvakflgrYLANAIDPNIPEKEQDYRvcvqrftnkedaekaqrISNELGYCFAEKilehhhhh

Underlined sequence is *Geobacillus* phage E2 Amidase, while remaining C-terminal sequences are the cell wall binding domain for *Clostridium perfringens*; Sequences in CAPS indicate peptides identified by mass spec.

DATABASE SEARCHING-- Tandem mass spectra were extracted by Sorcerer v3.5 (Sage-N Research, Milpitas CA). Charge state deconvolution and deisotoping were not performed. All MS/MS samples were analyzed using Sequest (Thermo Fisher Scientific, San Jose, CA, USA; version 1.0). Sequest was set up to search the *Clostridium_Seal_decoys_20130729* database assuming the digestion enzyme strict-trypsin. Sequest was searched with a fragment ion mass tolerance of 1.00 Da and a parent ion tolerance of 10.0 PPM. Carbamidomethyl of cysteine was specified in Sequest as a fixed modification. Oxidation of methionine was specified in Sequest as a variable modification.

CRITERIA FOR PROTEIN IDENTIFICATION-- Scaffold (version Scaffold_4.0.7, Proteome Software Inc., Portland, OR) was used to validate MS/MS based peptide and protein identifications. Peptide identifications were accepted if they could be established at greater than 95.0% probability by the Scaffold Local FDR algorithm. Protein identifications were accepted if they could be established at greater than 95.0% probability and contained at least 5 identified peptides. Protein probabilities were assigned by the Protein Prophet algorithm (Nesvizhskii, Al et al Anal. Chem. 2003;75(17):4646-58). Proteins that contained similar peptides and could not be

differentiated based on MS/MS analysis alone were grouped to satisfy the principles of parsimony. Proteins sharing significant peptide evidence were grouped into clusters. Proteins were annotated with GO terms from NCBI (downloaded Jul 30, 2013). (Ashburner, M et al Nat. Genet. 2000;25(1):25-9).

3369-Seal_20percent_Condensed		Displaying: Protein Identification Probability			
Identified Proteins (1)	Accession Number	Molecular Weight	Protein Grouping	Ambiguity	Quantitative Variance Taxonomy Bio-Sample 1
1	true	Empty	recombinant_protein_20130729	GAV-CpCWB	27 kDa 100%
Index	Peptide	Prob	Exclusive To	Valid	GAV-CpCWB
01	ANYAVLR	67%	recombinant_protein_20130729	true	1.00
02	ANYAVLRETK	13%	recombinant_protein_20130729	true	1.00
03	AVGEAHAR	99%	recombinant_protein_20130729	true	1.00
04	EGDQSLTLDQR	100%	recombinant_protein_20130729	true	1.00
05	EQDYIR	48%	recombinant_protein_20130729	true	1.00
06	FLGRYLANAIDPNIPLEK	14%	recombinant_protein_20130729	true	1.00
07	FTNKEDAEEK	14%	recombinant_protein_20130729	true	1.00
08	GHGGSDPGAVANGLQEK	100%	recombinant_protein_20130729	true	1.00
09	GHGGSDPGAVANGLQEKNLTHK	72%	recombinant_protein_20130729	true	1.00
10	GTGFEIYVHPNASPQSIALQNVLHGEILSAMR	100%	recombinant_protein_20130729	true	1.00
11	GVAKFLGR	11%	recombinant_protein_20130729	true	1.00
12	HLKNEAFLK	76%	recombinant_protein_20130729	true	1.00
13	IFWDK	10%		true	
14	IFWDKGHGGSDPGAVANGLQEK	100%	recombinant_protein_20130729	true	1.00
15	ISNELGYCFAEK	100%	recombinant_protein_20130729	true	1.00
16	IVEYATDYLAAHYEGFTQR	100%	recombinant_protein_20130729	true	1.00
17	IVEYATDYLAAHYEGFTQRVSR	13%	recombinant_protein_20130729	true	1.00
18	KIFWDK	13%	recombinant_protein_20130729	true	1.00
19	MPAVLTENLFIDSNDK	100%	recombinant_protein_20130729	true	1.00
20	NEAFLKAVGEAHAR	100%	recombinant_protein_20130729	true	1.00
21	NLTHKIVEYATDYLAAHYEGFTQR	100%	recombinant_protein_20130729	true	1.00
22	NYAVLR	31%	recombinant_protein_20130729	true	1.00
23	QFGNITDR	13%	recombinant_protein_20130729	true	1.00
24	RANYAVLR	82%	recombinant_protein_20130729	true	1.00
25	WGADVFSVHINAGK	52%	recombinant_protein_20130729	true	1.00
26	YLANAIDPNIPLEK	100%	recombinant_protein_20130729	true	1.00
27	YLANAIDPNIPLEKEQDYIR	100%	recombinant_protein_20130729	true	1.00
28	YLANAIDPNIPLEKEQDYIRVVCVQR	12%	recombinant_protein_20130729	true	1.00

Experiment name	Biological sample category Number of unique peptides Modifications identified by spectrum	Biological sample name Number of unique peptides Actual peptide mass (AMU)	MS/MS sample name Bio Sample 1	Protein group Number of total spectra Spectrum charge	Protein accession number Spectrum name Actual minus calculated peptide mass (AMU)	Protein name Peptide sequence	Protein identification probability Previous amino acid Next amino acid Actual minus calculated peptide mass (PPM)	Protein percentage of total spectra Peptide identification probability Peptide start index	Protein molecular weight (AMU) SEQUEST XCorr score SEQUEST DcN score Peptide stop index
3369-Seal_20percent_Condensed 29 -2.1	Uncategorized Sample 97 165	Seal_20percent.221.221.2 172	Bio Sample 1	Seal_20percent AVGEAAR K	recombinant_protein_20130729 G	GAV-CpCWB 99.0%	recombinant_protein_20130729 1.95 0.359	100.0% 809.41	1.61% 2 26,812.4 12 -0.0017
3369-Seal_20percent_Condensed 29 -2.2	Uncategorized Sample 97 53	Seal_20percent.2895.2895.2 63	Bio Sample 1	Seal_20percent EGDQSLTDQR R	recombinant_protein_20130729 A	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.68 0.325	100.0% 1,260.59	1.61% 2 26,812.4 12 -0.0027
3369-Seal_20percent_Condensed 29 -2.5	Uncategorized Sample 97 53	Seal_20percent.2549.2549.2 63	Bio Sample 1	Seal_20percent EGDQSLTDQR R	recombinant_protein_20130729 A	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.88 0.326	100.0% 1,260.59	1.61% 2 26,812.4 12 -0.0031
3369-Seal_20percent_Condensed 29 -0.0038	Uncategorized Sample 97 -2.4	Seal_20percent.2277.2277.3 9 25	Bio Sample 1	Seal_20percent GHGSDPGAVANGLQEK K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.21	100.0% 0.298	1.61% 3 26,812.4 12 1,592.75
3369-Seal_20percent_Condensed 29 -0.0020	Uncategorized Sample 97 -1.3	Seal_20percent.2272.2272.2 9 25	Bio Sample 1	Seal_20percent GHGSDPGAVANGLQEK K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.08	100.0% 0.601	1.61% 2 26,812.4 12 1,592.75
3369-Seal_20percent_Condensed 29 -0.013	Uncategorized Sample 97 -3.8	Seal_20percent.9218.9218.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.50	100.0% 0.317	1.61% Oxidation (+16) 4 26,812.4 12 3,464.74
3369-Seal_20percent_Condensed 29 -0.0093	Uncategorized Sample 97 -2.7	Seal_20percent.8558.8558.3 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.38	100.0% 0.339	1.61% Oxidation (+16) 3 26,812.4 12 3,464.74
3369-Seal_20percent_Condensed 29 0.00024	Uncategorized Sample 97 0.068	Seal_20percent.8598.8598.5 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.18	100.0% 0.293	1.61% Oxidation (+16) 5 26,812.4 12 3,464.75
3369-Seal_20percent_Condensed 29 0.98	Uncategorized Sample 97 280	Seal_20percent.8845.8845.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.37	100.0% 0.308	1.61% Oxidation (+16) 4 26,812.4 12 3,465.73
3369-Seal_20percent_Condensed 29 -0.0079	Uncategorized Sample 97 -2.3	Seal_20percent.8936.8936.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.55	100.0% 0.340	1.61% Oxidation (+16) 4 26,812.4 12 3,464.74
3369-Seal_20percent_Condensed 29 -0.0081	Uncategorized Sample 97 -2.4	Seal_20percent.9587.9587.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.76	100.0% 0.353	1.61% 4 26,812.4 12 3,448.75
3369-Seal_20percent_Condensed 29 -0.016	Uncategorized Sample 97 -4.7	Seal_20percent.9074.9074.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.85	100.0% 0.373	1.61% Oxidation (+16) 4 26,812.4 12 3,464.74
3369-Seal_20percent_Condensed 29 -0.0030	Uncategorized Sample 97 -0.87	Seal_20percent.9430.9430.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.64	100.0% 0.371	1.61% 4 26,812.4 12 3,448.75
3369-Seal_20percent_Condensed 29 0.98	Uncategorized Sample 97 280	Seal_20percent.8987.8987.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.37	100.0% 0.457	1.61% Oxidation (+16) 4 26,812.4 12 3,465.73
3369-Seal_20percent_Condensed 29 0.98	Uncategorized Sample 97 280	Seal_20percent.9650.9650.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.99	100.0% 0.456	1.61% 4 26,812.4 12 3,449.74
3369-Seal_20percent_Condensed 29 0.98	Uncategorized Sample 97 280	Seal_20percent.9641.9641.3 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.78	100.0% 0.467	1.61% 3 26,812.4 12 3,449.73
3369-Seal_20percent_Condensed 29 0.98	Uncategorized Sample 97 280	Seal_20percent.8847.8847.3 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.10	100.0% 0.507	1.61% Oxidation (+16) 3 26,812.4 12 3,465.74
3369-Seal_20percent_Condensed 29 -0.020	Uncategorized Sample 97 -5.8	Seal_20percent.9364.9364.5 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.73	100.0% 0.449	1.61% 5 26,812.4 12 3,448.74
3369-Seal_20percent_Condensed 29 0.0038	Uncategorized Sample 97 1.1	Seal_20percent.9316.9316.3 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.76	100.0% 0.449	1.61% 3 26,812.4 12 3,448.76
3369-Seal_20percent_Condensed 29 -0.00098	Uncategorized Sample 97 -0.28	Seal_20percent.9453.9453.3 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 4.41	100.0% 0.493	1.61% 3 26,812.4 12 3,448.76
3369-Seal_20percent_Condensed 29 -0.0065	Uncategorized Sample 97 -1.9	Seal_20percent.8656.8656.4 85 116	Bio Sample 1	Seal_20percent GTGFEIYVHPNASPQSIQLQNVLHGELISAMR K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 4.93	100.0% 0.559	1.61% Oxidation (+16) 4 26,812.4 12 3,464.74
3369-Seal_20percent_Condensed 29 -0.0073	Uncategorized Sample 97 -3.2	Seal_20percent.4527.4527.4 4 25	Bio Sample 1	Seal_20percent IFWDKGGSDPGAVANGLQEK K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.01	100.0% 0.275	1.61% 4 26,812.4 12 2,282.10
3369-Seal_20percent_Condensed 29 -0.0038	Uncategorized Sample 97 -1.7	Seal_20percent.4530.4530.3 4 25	Bio Sample 1	Seal_20percent IFWDKGGSDPGAVANGLQEK K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.35	100.0% 0.314	1.61% 3 26,812.4 12 2,282.10
3369-Seal_20percent_Condensed 29 0.0018	Uncategorized Sample 97 0.80	Seal_20percent.4564.4564.2 4 25	Bio Sample 1	Seal_20percent IFWDKGGSDPGAVANGLQEK K	recombinant_protein_20130729 K	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.49	100.0% 0.494	1.61% 2 26,812.4 12 2,282.11
3369-Seal_20percent_Condensed 29 0.0017	Uncategorized Sample 97 1.1	Seal_20percent.6429.6429.2 219 231	Bio Sample 1	Seal_20percent ISNELGYYFAEK R	recombinant_protein_20130729 I	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.36 0.396	100.0% Carbamidomethyl (+57)	1.61% 2 26,812.4 12 1,592.72

3369-Seal_20percent_Condensed 29 -0.0049	Uncategorized Sample 97 -3.1	Bio Sample 1 Seal_20percent.5382.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.35 0.438	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.71	12 2
3369-Seal_20percent_Condensed 29 0.0013	Uncategorized Sample 97 0.83	Bio Sample 1 Seal_20percent.6289.6289.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 2.73 0.467	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.72	12 2
3369-Seal_20percent_Condensed 29 0.99	Uncategorized Sample 97 620	Bio Sample 1 Seal_20percent.5708.5708.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 4.05 0.392	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,593.71	12 2
3369-Seal_20percent_Condensed 29 0.0023	Uncategorized Sample 97 1.4	Bio Sample 1 Seal_20percent.6154.6154.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.06 0.451	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.72	12 2
3369-Seal_20percent_Condensed 29 0.0097	Uncategorized Sample 97 6.1	Bio Sample 1 Seal_20percent.5860.5860.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.99 0.443	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.73	12 2
3369-Seal_20percent_Condensed 29 -0.0037	Uncategorized Sample 97 -2.3	Bio Sample 1 Seal_20percent.5497.5497.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 4.39 0.424	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.71	12 2
3369-Seal_20percent_Condensed 29 -1.00	Uncategorized Sample 97 -630	Bio Sample 1 Seal_20percent.6191.6191.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 4.35 0.520	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,591.72	12 2
3369-Seal_20percent_Condensed 29 0.0022	Uncategorized Sample 97 1.4	Bio Sample 1 Seal_20percent.5993.5993.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.45 0.566	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.72	12 2
3369-Seal_20percent_Condensed 29 -0.0032	Uncategorized Sample 97 -2.0	Bio Sample 1 Seal_20percent.5647.5647.2 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 4.72 0.478	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.71	12 2
3369-Seal_20percent_Condensed 29 -0.0040	Uncategorized Sample 97 -2.5	Bio Sample 1 Seal_20percent.5573.5573.3 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.99 0.500	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.71	12 3
3369-Seal_20percent_Condensed 29 -0.0029	Uncategorized Sample 97 -1.8	Bio Sample 1 Seal_20percent.5433.5433.3 219	Seal_20percent ISNELGYCFAEK	recombinant_protein_20130729 R I	GAV-CpCWB 99.7%	recombinant_protein_20130729 3.91 0.547	100.0% Carbamidomethyl (+57)	1.61%	26,812.4 1,592.72	12 3
3369-Seal_20percent_Condensed 29 -0.017	Uncategorized Sample 97 -7.6	Bio Sample 1 Seal_20percent.7247.7247.2 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.88 0.378	100.0% 0.378	1.61%	26,812.4 2,246.05	12 2
3369-Seal_20percent_Condensed 29 -0.0066	Uncategorized Sample 97 -2.9	Bio Sample 1 Seal_20percent.8282.8282.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 1.95 0.444	100.0% 0.444	1.61%	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0024	Uncategorized Sample 97 -1.1	Bio Sample 1 Seal_20percent.5913.5913.2 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.86 0.516	100.0% 0.516	1.61%	26,812.4 2,246.06	12 2
3369-Seal_20percent_Condensed 29 0.000079	Uncategorized Sample 97 0.035	Bio Sample 1 Seal_20percent.7126.7126.2 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.55 0.556	100.0% 0.556	1.61%	26,812.4 2,246.06	12 2
3369-Seal_20percent_Condensed 29 -0.0066	Uncategorized Sample 97 -2.9	Bio Sample 1 Seal_20percent.6788.6788.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.99 0.410	100.0% 0.410	1.61%	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0031	Uncategorized Sample 97 -1.4	Bio Sample 1 Seal_20percent.7312.7312.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.28 0.479	100.0% 0.479	1.61%	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0046	Uncategorized Sample 97 -2.0	Bio Sample 1 Seal_20percent.7185.7185.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 3.68 0.383	100.0% 0.383	1.61%	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0055	Uncategorized Sample 97 -2.5	Bio Sample 1 Seal_20percent.6794.6794.2 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 3.26 0.523	100.0% 0.523	1.61%	26,812.4 2,246.06	12 2
3369-Seal_20percent_Condensed 29 -0.0055	Uncategorized Sample 97 -2.4	Bio Sample 1 Seal_20percent.8149.8149.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.50 0.472	100.0% 0.472	1.61%	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0065	Uncategorized Sample 97 -2.9	Bio Sample 1 Seal_20percent.6294.6294.2 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 3.07 0.598	100.0% 0.598	1.61%	26,812.4 2,246.06	12 2
3369-Seal_20percent_Condensed 29 -0.0057	Uncategorized Sample 97 -2.5	Bio Sample 1 Seal_20percent.6947.6947.4 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 4.01 0.428	100.0% 0.428	1.61%	26,812.4 2,246.06	12 4
3369-Seal_20percent_Condensed 29 -0.0068	Uncategorized Sample 97 -3.0	Bio Sample 1 Seal_20percent.6997.6997.2 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 4.00 0.585	100.0% 0.585	1.61%	26,812.4 2,246.06	12 2
3369-Seal_20percent_Condensed 29 -0.0027	Uncategorized Sample 97 -1.2	Bio Sample 1 Seal_20percent.7063.7063.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 2.97 0.518	100.0% 0.518	1.61%	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0013	Uncategorized Sample 97 -0.57	Bio Sample 1 Seal_20percent.6802.6802.4 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 4.25 0.480	100.0% 0.480	1.61%	26,812.4 2,246.06	12 4
3369-Seal_20percent_Condensed 29 -0.0024	Uncategorized Sample 97 -1.1	Bio Sample 1 Seal_20percent.6311.6311.3 31	Seal_20percent IVEYATDYLAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V 99.7%	recombinant_protein_20130729 3.70 0.595	100.0% 0.595	1.61%	26,812.4 2,246.06	12 3

3369-Seal_20percent_Condensed 29 -0.0024	Uncategorized Sample 97 -1.1	Bio Sample 1 Seal_20percent.6924.6924.3 49	Seal_20percent IVEVATDYLAHHYEGFTQR K	recombinant_protein_20130729	GAV-CpCWB V	recombinant_protein_20130729 99.7% 3.78	100.0% 0.601	1.61% Oxidation (+16)	26,812.4 2,246.06	12 3
3369-Seal_20percent_Condensed 29 -0.0065	Uncategorized Sample 97 -3.4	Bio Sample 1 Seal_20percent.6351.6351.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 1.88	100.0% 0.398	1.61% Oxidation (+16)	26,812.4 1,892.91	12 2
3369-Seal_20percent_Condensed 29 -0.0038	Uncategorized Sample 97 -2.0	Bio Sample 1 Seal_20percent.6636.6636.3 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.99	100.0% 0.156	1.61% Oxidation (+16)	26,812.4 1,892.92	12 3
3369-Seal_20percent_Condensed 29 0.0021	Uncategorized Sample 97 1.1	Bio Sample 1 Seal_20percent.6189.6189.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.32	100.0% 0.334	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 -0.0051	Uncategorized Sample 97 -2.7	Bio Sample 1 Seal_20percent.7332.7332.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.87	100.0% 0.289	1.61% Oxidation (+16)	26,812.4 1,892.91	12 2
3369-Seal_20percent_Condensed 29 0.99	Uncategorized Sample 97 530	Bio Sample 1 Seal_20percent.7399.7399.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.85	100.0% 0.396	1.61% Oxidation (+16)	26,812.4 1,877.91	12 2
3369-Seal_20percent_Condensed 29 -0.0076	Uncategorized Sample 97 -4.0	Bio Sample 1 Seal_20percent.7870.7870.3 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.72	100.0% 0.235	1.61% Oxidation (+16)	26,812.4 1,876.92	12 3
3369-Seal_20percent_Condensed 29 -0.0063	Uncategorized Sample 97 -3.3	Bio Sample 1 Seal_20percent.7592.7592.3 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.94	100.0% 0.228	1.61% Oxidation (+16)	26,812.4 1,876.92	12 3
3369-Seal_20percent_Condensed 29 -0.0030	Uncategorized Sample 97 -1.6	Bio Sample 1 Seal_20percent.8099.8099.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.11	100.0% 0.345	1.61% Oxidation (+16)	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0032	Uncategorized Sample 97 -1.7	Bio Sample 1 Seal_20percent.7471.7471.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.96	100.0% 0.398	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 -0.0033	Uncategorized Sample 97 -1.7	Bio Sample 1 Seal_20percent.6776.6776.3 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.94	100.0% 0.267	1.61% Oxidation (+16)	26,812.4 1,892.92	12 3
3369-Seal_20percent_Condensed 29 -0.0017	Uncategorized Sample 97 -0.90	Bio Sample 1 Seal_20percent.7177.7177.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.62	100.0% 0.472	1.61% Oxidation (+16)	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0032	Uncategorized Sample 97 -1.7	Bio Sample 1 Seal_20percent.8225.8225.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.40	100.0% 0.505	1.61% Oxidation (+16)	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0021	Uncategorized Sample 97 -1.1	Bio Sample 1 Seal_20percent.7386.7386.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 2.78	100.0% 0.517	1.61% Oxidation (+16)	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0019	Uncategorized Sample 97 -0.98	Bio Sample 1 Seal_20percent.6945.6945.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 4.43	100.0% 0.429	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 -0.0065	Uncategorized Sample 97 -3.4	Bio Sample 1 Seal_20percent.6482.6482.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.63	100.0% 0.502	1.61% Oxidation (+16)	26,812.4 1,892.91	12 2
3369-Seal_20percent_Condensed 29 0.000100	Uncategorized Sample 97 0.053	Bio Sample 1 Seal_20percent.7601.7601.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 4.08	100.0% 0.498	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 -0.0017	Uncategorized Sample 97 -0.90	Bio Sample 1 Seal_20percent.7518.7518.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 4.48	100.0% 0.480	1.61% Oxidation (+16)	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0055	Uncategorized Sample 97 -3.0	Bio Sample 1 Seal_20percent.7709.7709.3 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 5.04	100.0% 0.365	1.61% Oxidation (+16)	26,812.4 1,876.92	12 3
3369-Seal_20percent_Condensed 29 0.99	Uncategorized Sample 97 520	Bio Sample 1 Seal_20percent.6874.6874.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 4.72	100.0% 0.527	1.61% Oxidation (+16)	26,812.4 1,893.91	12 2
3369-Seal_20percent_Condensed 29 -0.0050	Uncategorized Sample 97 -2.7	Bio Sample 1 Seal_20percent.7728.7728.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 3.76	100.0% 0.566	1.61% Oxidation (+16)	26,812.4 1,892.91	12 2
3369-Seal_20percent_Condensed 29 0.0051	Uncategorized Sample 97 2.7	Bio Sample 1 Seal_20percent.7076.7076.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 4.10	100.0% 0.538	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 -0.0034	Uncategorized Sample 97 -1.8	Bio Sample 1 Seal_20percent.7200.7200.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 4.05	100.0% 0.556	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 0.99	Uncategorized Sample 97 530	Bio Sample 1 Seal_20percent.7781.7781.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 5.90	100.0% 0.500	1.61% Oxidation (+16)	26,812.4 1,877.91	12 2
3369-Seal_20percent_Condensed 29 -0.0043	Uncategorized Sample 97 -2.3	Bio Sample 1 Seal_20percent.7869.7869.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 5.13	100.0% 0.519	1.61% Oxidation (+16)	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0020	Uncategorized Sample 97 -1.0	Bio Sample 1 Seal_20percent.6805.6805.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK K	recombinant_protein_20130729	GAV-CpCWB H	recombinant_protein_20130729 99.7% 5.17	100.0% 0.549	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2

3369-Seal_20percent_Condensed 29 -0.0022	Uncategorized Sample 97 -1.2	Bio Sample 1 Seal_20percent.6619.6619.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK	recombinant_protein_20130729 K	GAV-CpCWB H	recombinant_protein_20130729 5.63	100.0% 0.527	1.61% Oxidation (+16)	26,812.4 1,892.92	12 2
3369-Seal_20percent_Condensed 29 -0.0013	Uncategorized Sample 97 -0.70	Bio Sample 1 Seal_20percent.7983.7983.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK	recombinant_protein_20130729 K	GAV-CpCWB H	recombinant_protein_20130729 4.65	100.0% 0.605	1.61%	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -0.0019	Uncategorized Sample 97 -1.0	Bio Sample 1 Seal_20percent.7658.7658.2 139 155	Seal_20percent MPAVLTENLFIDSNDAK	recombinant_protein_20130729 K	GAV-CpCWB H	recombinant_protein_20130729 5.63	100.0% 0.600	1.61%	26,812.4 1,876.92	12 2
3369-Seal_20percent_Condensed 29 -2.1	Uncategorized Sample 97 159	Bio Sample 1 Seal_20percent.3760.3760.3 172	Seal_20percent NEAFKAVGEAHAR	recombinant_protein_20130729 K G	GAV-CpCWB H	recombinant_protein_20130729 1.96 0.364	100.0% 0.600	1.61% 1,511.78	26,812.4 3	12 -0.0032
3369-Seal_20percent_Condensed 29 -0.0049	Uncategorized Sample 97 -1.7	Bio Sample 1 Seal_20percent.9195.9195.4 26 49	Seal_20percent NLTHKIVEYATDYLAAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V	recombinant_protein_20130729 3.06	100.0% 0.212	1.61%	26,812.4 2,839.39	12 4
3369-Seal_20percent_Condensed 29 -0.018	Uncategorized Sample 97 -6.4	Bio Sample 1 Seal_20percent.9334.9334.4 26 49	Seal_20percent NLTHKIVEYATDYLAAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V	recombinant_protein_20130729 4.03	100.0% 0.539	1.61%	26,812.4 2,839.37	12 4
3369-Seal_20percent_Condensed 29 0.0045	Uncategorized Sample 97 1.6	Bio Sample 1 Seal_20percent.9247.9247.3 26 49	Seal_20percent NLTHKIVEYATDYLAAHYEGFTQR	recombinant_protein_20130729 K	GAV-CpCWB V	recombinant_protein_20130729 3.80	100.0% 0.564	1.61%	26,812.4 2,839.40	12 3
3369-Seal_20percent_Condensed 29 0.36	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.6645.6645.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 2.78 0.256	100.0% 0.256	1.61% 1,569.84	26,812.4 2	12 0.00057
3369-Seal_20percent_Condensed 29 -2.1	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.5875.5875.3 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 3.78 0.224	100.0% 0.224	1.61% 1,569.84	26,812.4 3	12 -0.0034
3369-Seal_20percent_Condensed 29 -1.5	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.6783.6783.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 2.73 0.376	100.0% 0.376	1.61% 1,569.84	26,812.4 2	12 -0.0024
3369-Seal_20percent_Condensed 29 -4.6	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.6505.6505.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 3.05 0.357	100.0% 0.357	1.61% 1,569.83	26,812.4 2	12 -0.0072
3369-Seal_20percent_Condensed 29 -1.8	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.6377.6377.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 3.35 0.334	100.0% 0.334	1.61% 1,569.84	26,812.4 2	12 -0.0029
3369-Seal_20percent_Condensed 29 -0.57	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.6099.6099.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 3.74 0.333	100.0% 0.333	1.61% 1,569.84	26,812.4 2	12 -0.00090
3369-Seal_20percent_Condensed 29 -1.6	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.6236.6236.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 3.63 0.372	100.0% 0.372	1.61% 1,569.84	26,812.4 2	12 -0.0025
3369-Seal_20percent_Condensed 29 -2.6	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.5759.5759.3 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 3.83 0.318	100.0% 0.318	1.61% 1,569.84	26,812.4 3	12 -0.0041
3369-Seal_20percent_Condensed 29 -1.6	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.5756.5756.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 4.24 0.385	100.0% 0.385	1.61% 1,569.84	26,812.4 2	12 -0.0025
3369-Seal_20percent_Condensed 29 -1.7	Uncategorized Sample 97 181	Bio Sample 1 Seal_20percent.5872.5872.2 194	Seal_20percent YLANAIDPNIPLEK	recombinant_protein_20130729 R E	GAV-CpCWB H	recombinant_protein_20130729 4.28 0.415	100.0% 0.415	1.61% 1,569.84	26,812.4 2	12 -0.0027
3369-Seal_20percent_Condensed 29 -0.0032	Uncategorized Sample 97 -1.3	Bio Sample 1 Seal_20percent.6225.6225.3 181 200	Seal_20percent YLANAIDPNIPLEKEQDYVR	recombinant_protein_20130729 R	GAV-CpCWB V	recombinant_protein_20130729 3.12	100.0% 0.257	1.61%	26,812.4 2,424.19	12 3
3369-Seal_20percent_Condensed 29 -0.0083	Uncategorized Sample 97 -3.4	Bio Sample 1 Seal_20percent.6230.6230.2 181 200	Seal_20percent YLANAIDPNIPLEKEQDYVR	recombinant_protein_20130729 R	GAV-CpCWB V	recombinant_protein_20130729 2.58	100.0% 0.440	1.61%	26,812.4 2,424.19	12 2
3369-Seal_20percent_Condensed 29 -0.0025	Uncategorized Sample 97 -1.0	Bio Sample 1 Seal_20percent.6085.6085.3 181 200	Seal_20percent YLANAIDPNIPLEKEQDYVR	recombinant_protein_20130729 R	GAV-CpCWB V	recombinant_protein_20130729 3.39	100.0% 0.384	1.61%	26,812.4 2,424.19	12 3