

**STRATUM Medical**

6199 Cornerstone Court East #111  
San Diego, CA 92121  
619.922.3500  
www.StratumMedical.com

**CERTIFICATE OF ANALYSIS**

September 29, 2021

Advanced BioMatrix, Inc.  
5930 Sea Lion Place  
Carlsbad, CA 92010

Attn: David Bagley

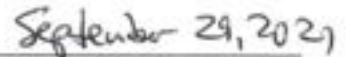
---

Analysis	Page
Protein Content and Composition by Amino Acid Analysis	2
Raw Data Package	Enclosed



---

Timothy I. Malaney  
Director of Quality



---

Date

*Protein Content and Composition by Amino Acid Analysis***Sample Preparation**

Silk fibroin sample aliquots of 100  $\mu$ L were dispensed into vials and the weight recorded. The vials were placed in a vacuum desiccator and 100  $\mu$ L of concentrated hydrochloric acid was added to each sample, and the desiccator was evacuated, and heated at 110 – 120 °C for 16 hours. After acid hydrolysis, the samples were cooled to room temperature, opened, and evaporated to dryness. Samples were reconstituted with 5,000  $\mu$ L of 10 mM hydrochloric acid. Using the Waters AccQ•Tag amino acid analysis method, samples and amino acid standards were derivatized according to the manufacturer's conditions (10  $\mu$ L sample plus 70  $\mu$ L borate buffer plus 20  $\mu$ L AccQ•Fluor Reagent) and analyzed by HPLC using the manufacturer's column and buffer system with fluorescent detection.

**Amino Acid Composition**

Amino acid composition was determined by dividing the peak area of each amino acid by the corresponding peak area of the amino acid standard injected at 100 pmoles per injection to determine pmoles per injection. The pmoles of each amino acid were summed and the total pmoles of all amino acids divided by 100 that was used to divide into the individual amino acid to express each amino acid in mole percent.

<u>Amino Acid</u>	Average Silk Fibroin
	<u>Mole Percent</u> <u>Lot 8407</u>
Asp	1.60
Ser	10.33
Glu	1.15
Gly	46.42
His	0.00
Arg	0.54
Thr	0.84
Ala	29.67
Pro	0.44
Cys	0.00
Tyr	4.86
Val	2.10
Met	0.10
Lys	0.23
Ile	0.56
Leu	0.48
Phe	0.67

**STRATUM Medical**

6199 Cornerstone Court East #111  
San Diego, CA 92121  
619.922.3500  
www.StratumMedical.com

**CERTIFICATE OF ANALYSIS****Protein Content**

Protein content was determined by multiplying the individual pmoles of each amino acid by its molecular weight and summing the individual amino acid weight contribution and then by the dilutions used. Protein content is expressed in mg/mL.

	Silk Fibroin <u>Lot 8407</u>
Sample 1	49.5
Sample 2	49.3
Sample 3	49.5
Average	49.4

# Raw Data Package

## Table of Contents

I. *Amino Acid Analysis*

2 – 11

Amino Acid	AA	Injection 1			Injection 2			Injection 3			Peak Area			Silk Fibroin Lot 8407 #1			Silk Fibroin Lot 84		
		MW												peak area	nmol/inj	mol percent	peak area	nmol/inj	mol percent
Asp	115.09	168001	170951	169820	169591	169820	169591	169820	169591	371364	218.98	25.20	353347	208.35	1.60	353347	208.35	1.60	
Ser	87.08	173956	177286	175270	176171	175270	176171	175270	176171	2492830	1415.01	123.22	2335290	1325.58	10.34	2335290	1325.58	10.34	
Glu	129.11	172434	176773	170638	173282	170638	173282	170638	173282	274110	158.19	20.42	259098	149.52	1.16	259098	149.52	1.16	
Gly	57.05	155645	159846	157878	157790	157878	157790	157878	157790	10024092	6352.82	362.43	9412345	5965.12	46.40	9412345	5965.12	46.40	
His	137.14	173391	174519	171791	173234	171791	173234	171791	173234		0.00	0.00		0.00	0.00		0.00	0.00	
Arg	156.19	190334	181354	189216	186968	189216	186968	189216	186968	139956	74.86	11.69	130468	69.78	0.55	130468	69.78	0.55	
Thr	101.10	181244	191145	184228	185539	184228	185539	184228	185539	213057	114.83	11.61	202559	109.17	0.84	202559	109.17	0.84	
Ala	71.08	157753	157363	157403	157506	157403	157506	157403	157506	6405611	4066.89	289.07	6017499	3820.48	29.70	6017499	3820.48	29.70	
Pro	115.13	165650	165082	166678	165803	166678	165803	166678	165803	100975	60.90	7.01	94613	57.06	0.44	94613	57.06	0.44	
Cys	103.14	142111	144367	142411	142963	142411	142963	142411	142963		0.00	0.00		0.00	0.00		0.00	0.00	
Tyr	163.17	167285	167562	167611	167486	167611	167486	167611	167486	1112655	664.33	108.40	1045874	624.45	4.85	1045874	624.45	4.85	
Val	99.13	158355	159803	158386	158848	158386	158848	158386	158848	454808	286.32	28.38	427900	269.38	2.09	427900	269.38	2.09	
Met	131.20	156533	158064	155267	156621	155267	156621	155267	156621	23186	14.80	1.94	20027	12.79	0.11	20027	12.79	0.11	
Lys	128.17	257653	255752	257909	257105	257909	257105	257909	257105	79709	31.00	3.97	75726	29.45	0.23	75726	29.45	0.23	
Ile	113.16	156137	156028	154789	155651	154789	155651	154789	155651	119166	76.56	8.66	111767	71.81	0.56	111767	71.81	0.56	
Leu	113.16	146787	147966	146497	147083	146497	147083	146497	147083	95488	64.92	7.35	89853	61.09	0.47	89853	61.09	0.47	
Phe	147.18	150523	151054	150978	150852	150978	150852	150978	150852	137204	90.95	13.39	130478	86.49	0.66	130478	86.49	0.66	
Mass Silk Fibroin											103.34								
Vol hydrolysate resuspended											5000								
Vol hydrolysate derivatized											10								
Reaction volume											100								
Injection volume											10								
Residues											100								
Theoretical residues											2970								
nmol total											13691								
nmol 100 residues/sample inj											136.91								
ng fibroin/inj												1022.8							
total ug/hydrolyzed sample												5113.8							
mg fibroin/g sample												49.48							

000002

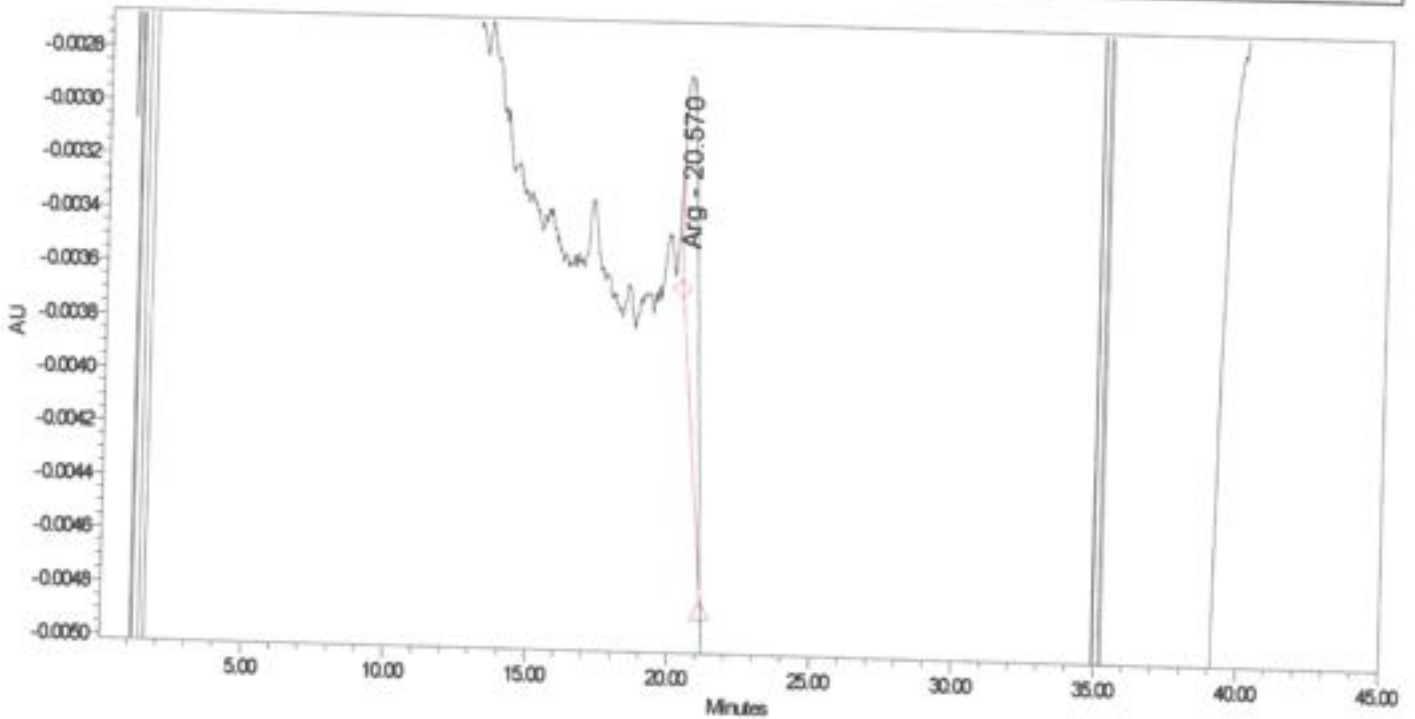
Amino Acid	07 #12		Silk Fibroin Lot 8407 #3						Average	
	mg/inj	mole percent	peak area	pmol/inj	mg/inj	mole percent	pmol/inj	mg/inj	mole percent	mole percent
Asp	23.98	1.62	352466	207.83	23.92	1.59				1.60
Ser	115.43	10.31	2384450	1353.49	117.86	10.35				10.33
Glu	19.31	1.16	258848	149.38	19.29	1.14				1.15
Gly	340.31	46.38	9593951	6080.22	346.88	46.48				46.42
His	0.00	0.00		0.00	0.00	0.00				0.00
Arg	10.90	0.54	129121	69.06	10.79	0.53				0.54
Thr	11.04	0.85	201945	108.84	11.00	0.83				0.84
Ala	271.56	29.71	6100697	3873.30	275.31	29.61				29.67
Pro	6.57	0.44	95265	57.46	6.61	0.44				0.44
Cys	0.00	0.00		0.00	0.00	0.00				0.00
Tyr	101.89	4.86	1065487	636.16	103.80	4.86				4.86
Val	26.70	2.09	436824	274.99	27.26	2.10				2.10
Met	1.68	0.10	21509	13.73	1.80	0.10				0.10
Lys	3.78	0.23	75918	29.53	3.78	0.23				0.23
Ile	8.13	0.56	116626	74.93	8.48	0.57				0.56
Leu	6.91	0.48	94648	64.35	7.28	0.49				0.48
Phe	12.73	0.67	133067	88.21	12.98	0.67				0.67
Mass Silk Fibroin				98.63						
Vol hydrolysate resuspended				5000						
Vol hydrolysate derivatized				10						
Reaction volume				100						
Injection volume				10						
Residues				100						
Theoretical residues				2970						
pmol total				13081						
pmol 100 residues/sample inj				130.81						
ng fibroin/inj	960.9							977.1		
total ug/hydrolyzed sample	4804.5							4885.3		
mg fibroin/g sample	49.13							49.53		
								49.38 Average		
								0.22 Std Dev		
								0.4 %RSD		

000003

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name:	Reagent Control	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	AccQTag_PDA
Vial:	1	Acq. Method Set:	AccQTag_PDA
Injection #:	1	Injection ID:	12642
Injection Volume:	10.00 ul	Date Acquired:	9/28/2021 12:23:06 PM PST
Run Time:	45.0 Minutes	Date Processed:	9/29/2021 6:08:30 AM PST



### Peak Results

	Name	RT (min)	Area	% Area	Height
1	His	11.200			
2	Asp	12.090			
3	Ser	13.420			
4	Glu	14.490			
5	Gly	15.480			
6	His	16.610			
7	NH3	16.960			
8	Arg	20.570	38618	100.00	1118
9	Thr	20.970			
10	Ala	21.440			
11	Pro	22.510			
12	Cys	25.070			

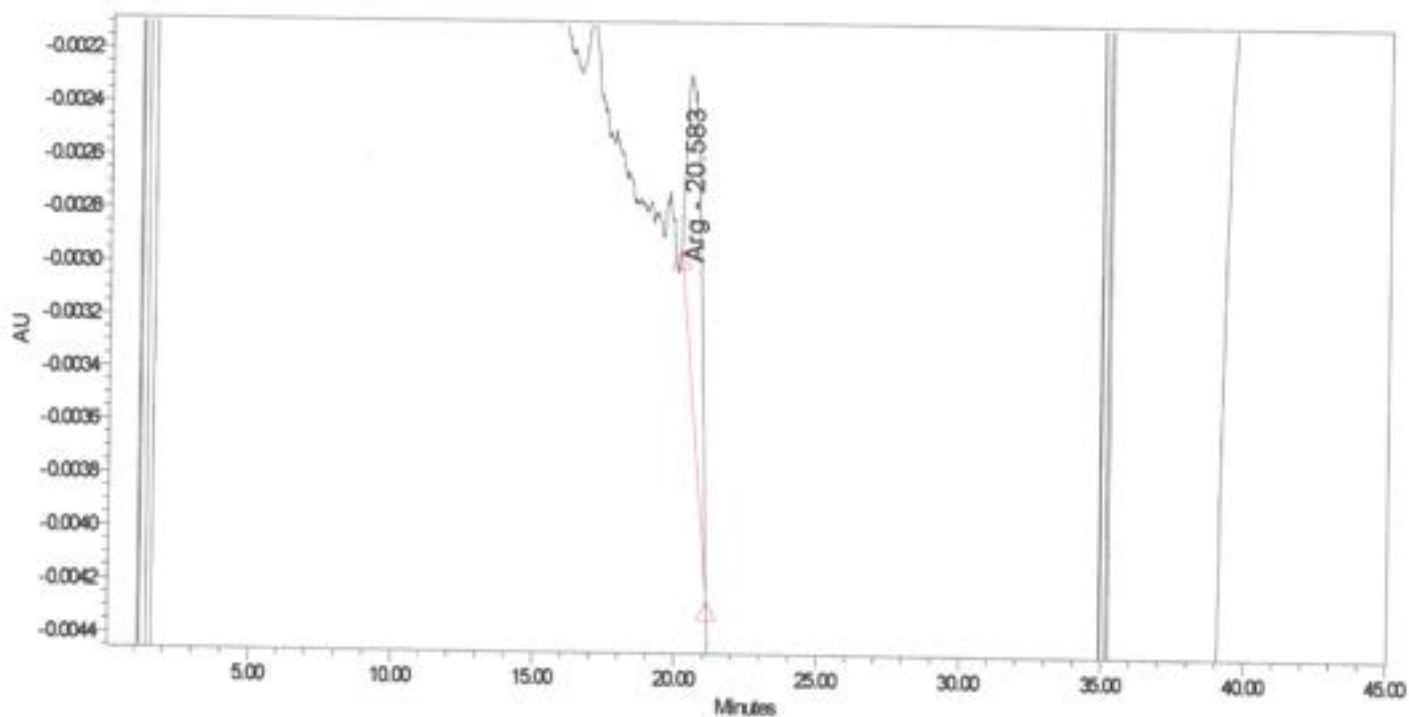
	Name	RT (min)	Area	% Area	Height
13	Tyr	25.370			
14	Val	26.390			
15	Met	26.910			
16	Lys	29.320			
17	Ile	30.290			
18	Leu	30.890			
19	Phe	32.020			

*Handwritten signature*  
000004

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name:	Reagent Control	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	AccQTag_PDA
Vial:	1	Acq. Method Set:	AccQTag_PDA
Injection #:	2	Injection ID:	12645
Injection Volume:	10.00 ul	Date Acquired:	9/28/2021 1:18:44 PM PST
Run Time:	45.0 Minutes	Date Processed:	9/29/2021 6:08:31 AM PST



### Peak Results

	Name	RT (min)	Area	% Area	Height
1	Hyp	11.200			
2	Asp	12.090			
3	Ser	13.420			
4	Glu	14.450			
5	Gly	15.480			
6	His	16.610			
7	NH3	16.960			
8	Arg	20.583	43873	100.00	1158
9	Thr	20.970			
10	Ala	21.440			
11	Pro	22.510			
12	Cys	25.070			

	Name	RT (min)	Area	% Area	Height
13	Ty	25.370			
14	Val	26.380			
15	Met	26.910			
16	Lys	29.320			
17	Ile	30.290			
18	Leu	30.880			
19	Phe	32.020			

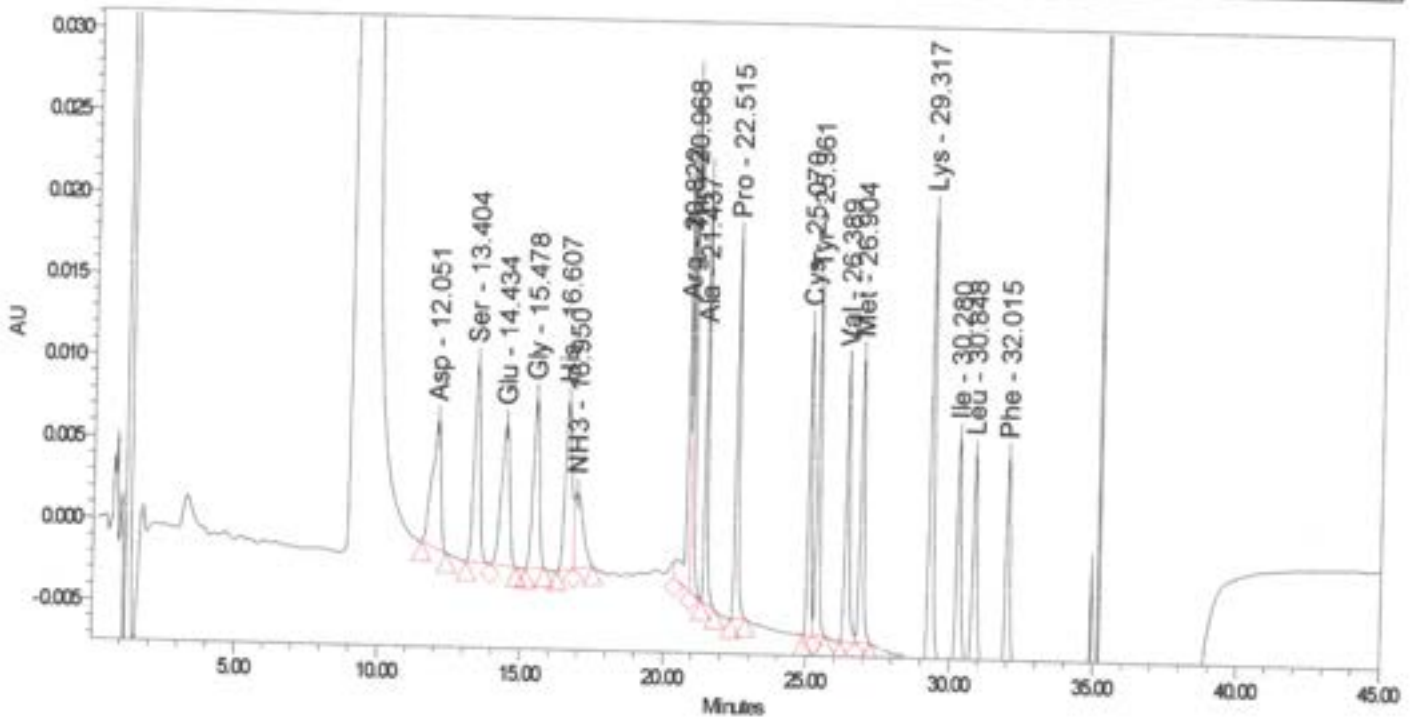


# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name: Amino Acid Standard  
 Sample Type: Unknown  
 Vial: 2  
 Injection #: 1  
 Injection Volume: 10.00 ul  
 Run Time: 45.0 Minutes

Acquired By: System  
 Sample Set Name: AccQTag\_PDA  
 Acq. Method Set: AccQTag\_PDA  
 Injection ID: 12652  
 Date Acquired: 9/28/2021 2:14:29 PM PST  
 Date Processed: 9/29/2021 6:08:32 AM PST



**Peak Results**

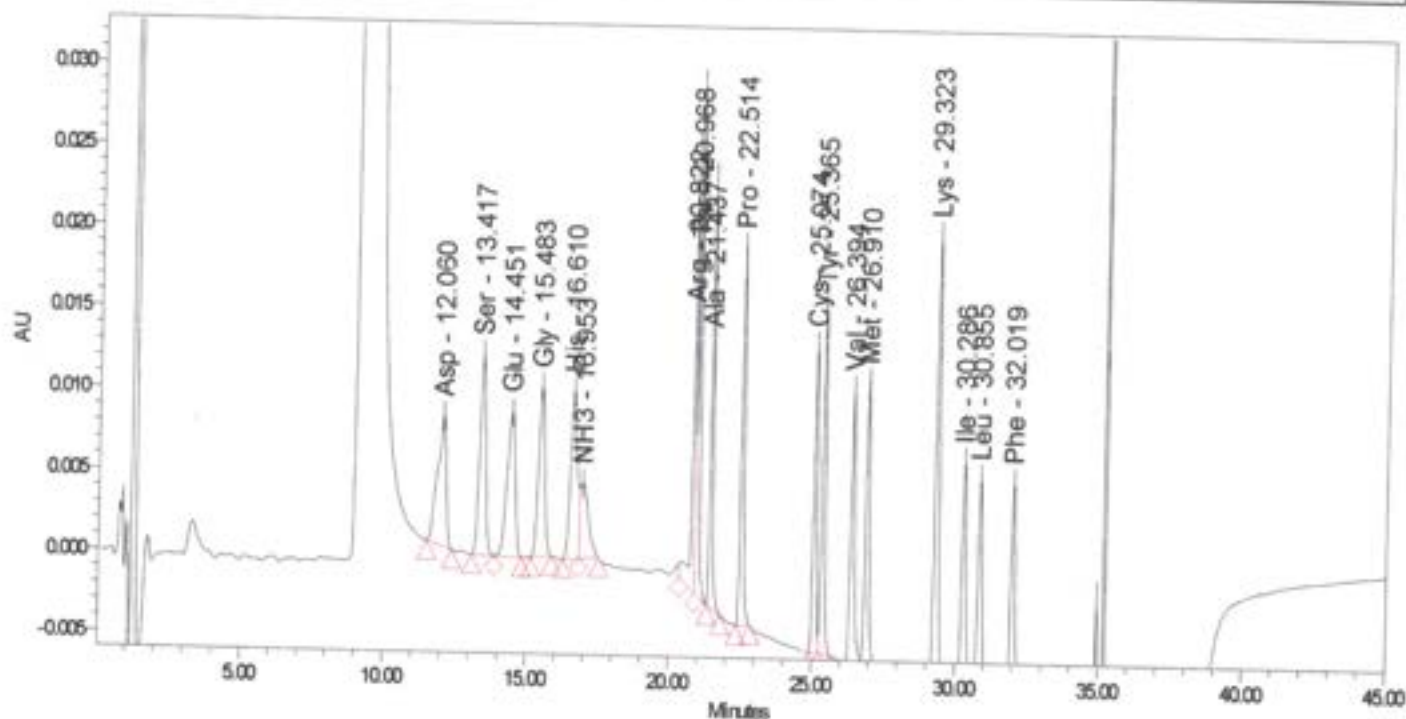
	Name	RT (min)	Area	% Area	Height
1	Hyp	11.200			
2	Asp	12.051	168001	5.65	7828
3	Ser	13.404	175956	5.92	12217
4	Glu	14.434	172434	5.80	8520
5	Gly	15.478	155945	5.24	10341
6	His	16.607	173391	5.83	10267
7	NH3	16.950	97247	3.27	4808
8	Arg	20.822	190334	6.40	27390
9	Thr	20.968	181244	6.10	31237
10	Ala	21.437	157753	5.31	26419
11	Pro	22.515	165650	5.57	23480
12	Cys	25.070	142111	4.78	18993

	Name	RT (min)	Area	% Area	Height
13	Tyr	25.361	167285	5.63	21503
14	Val	25.396	158355	5.33	17025
15	Met	26.904	156533	5.27	17581
16	Lys	29.317	257653	8.67	27766
17	Ile	30.280	156137	5.25	14327
18	Leu	30.848	146787	4.94	13348
19	Phe	32.015	150523	5.05	13834

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name:	Amino Acid Standard	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	AccQTag_PDA
Vial:	2	Acq. Method Set:	AccQTag_PDA
Injection #:	2	Injection ID:	12654
Injection Volume:	10.00 ul	Date Acquired:	9/28/2021 3:10:09 PM PST
Run Time:	45.0 Minutes	Date Processed:	9/29/2021 6:08:33 AM PST



**Peak Results**

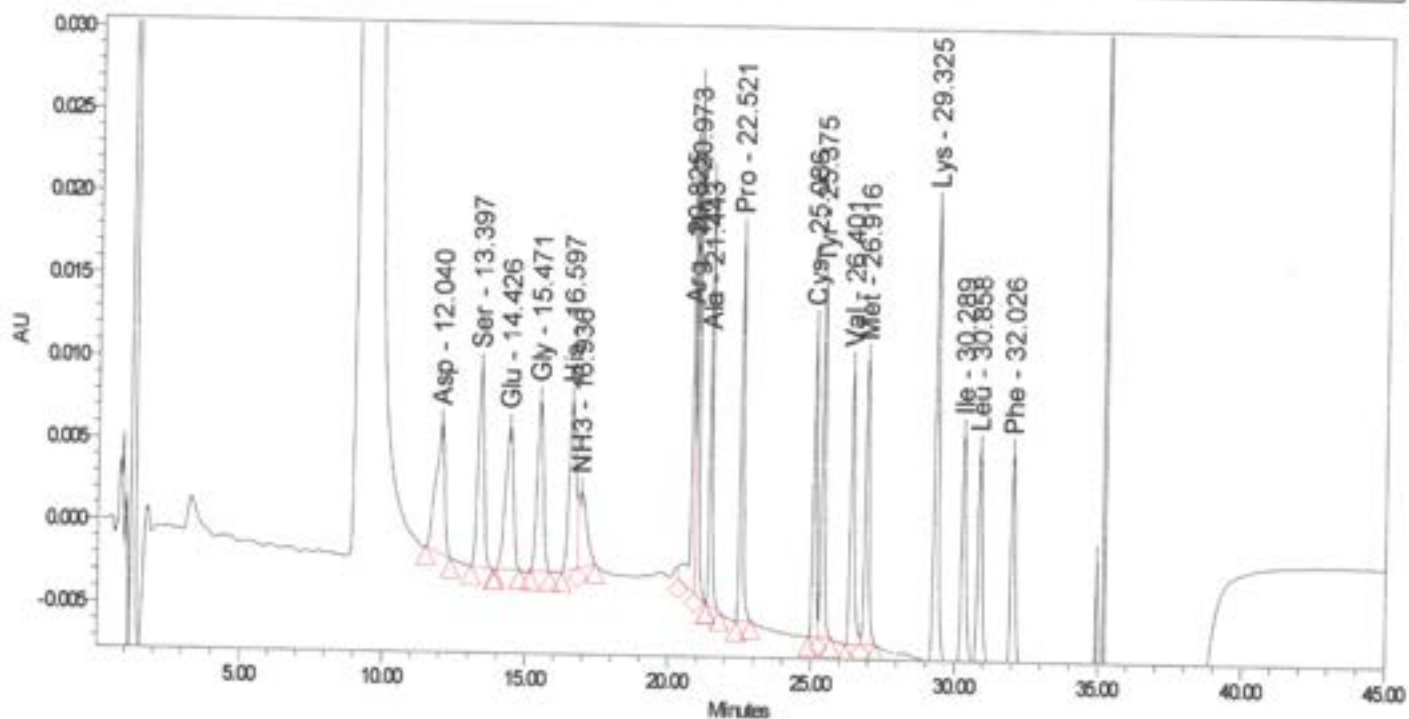
	Name	RT (min)	Area	% Area	Height
1	Hyp	11.200			
2	Asp	12.080	170951	5.71	8029
3	Ser	13.417	177286	5.93	12346
4	Glu	14.451	175773	5.91	8946
5	Gly	15.483	159846	5.34	10456
6	His	16.610	174519	5.83	10318
7	NH3	16.953	98638	3.24	4056
8	Arg	20.822	181354	6.06	27324
9	Thr	20.988	191145	6.36	31370
10	Ala	21.437	157363	5.26	26266
11	Pro	22.514	165082	5.52	23346
12	Cys	25.074	144367	4.82	18977

	Name	RT (min)	Area	% Area	Height
13	Ty	25.365	167562	5.60	21636
14	Val	26.394	159802	5.34	16963
15	Met	26.910	158064	5.28	17567
16	Lys	29.323	256752	8.55	27786
17	Ile	30.286	158028	5.22	14378
18	Leu	30.855	147066	4.95	13475
19	Phe	32.019	151054	5.05	13886

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name:	Amino Acid Standard	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	AccQTag_PDA
Vial:	2	Acq. Method Set:	AccQTag_PDA
Injection #:	3	Injection ID:	12658
Injection Volume:	10.00 ul	Date Acquired:	9/28/2021 4:05:45 PM PST
Run Time:	45.0 Minutes	Date Processed:	9/29/2021 6:08:33 AM PST



### Peak Results

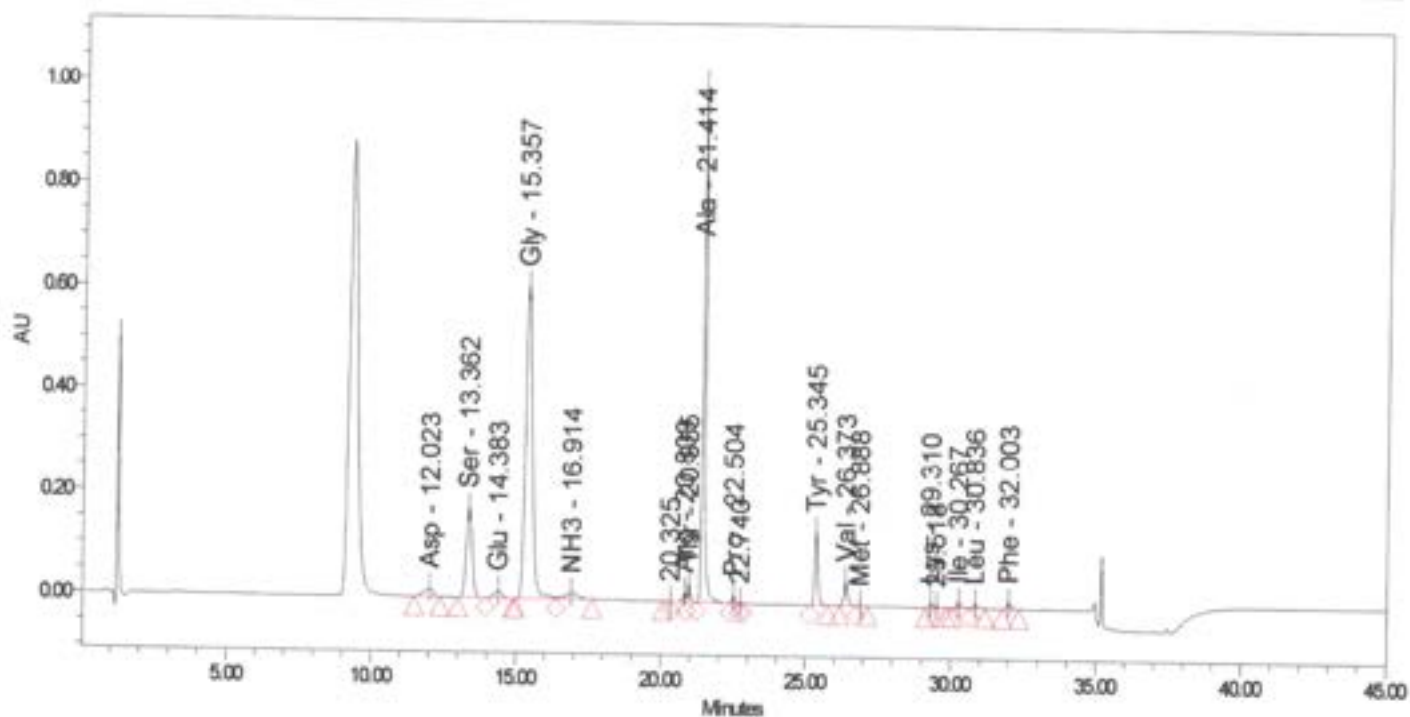
	Name	RT (min)	Area	% Area	Height
1	Hyp	11.200			
2	Asp	12.040	169820	5.72	7505
3	Ser	13.397	175270	5.91	12191
4	Glu	14.426	170838	5.75	8534
5	Gly	15.471	157878	5.32	10391
6	His	16.597	171791	5.79	10293
7	NH3	16.936	90447	3.05	4567
8	Arg	20.825	189216	6.38	27172
9	Thr	20.973	184228	6.21	31130
10	Ala	21.443	157403	5.30	26296
11	Pro	22.521	186678	5.62	23486
12	Cys	25.086	142411	4.80	18922

	Name	RT (min)	Area	% Area	Height
13	Ty	25.375	167611	5.65	21708
14	Val	26.401	158386	5.34	16954
15	Met	26.916	155267	5.23	17436
16	Lys	29.325	257908	8.66	27753
17	Ile	30.286	154786	5.22	14294
18	Leu	30.856	146487	4.94	13334
19	Phe	32.026	150978	5.08	13785

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name:	Silk Fibroin Lot 8407 #1	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	AccQTag_PDA
Vial:	3	Acq. Method Set:	AccQTag_PDA
Injection #:	1	Injection ID:	12665
Injection Volume:	10.00 ul	Date Acquired:	9/28/2021 5:01:30 PM PST
Run Time:	45.0 Minutes	Date Processed:	9/29/2021 6:08:34 AM PST



**Peak Results**

	Name	RT (min)	Area	% Area	Height
1	His	11.200			
2	Asp	12.023	371384	1.65	17461
3	Ser	13.362	246283	11.08	174471
4	Glu	14.383	274110	1.22	14627
5	Gly	15.357	1002482	44.60	609135
6	His	16.610			
7	NH3	16.914	378275	1.68	12031
8		20.325	8702	0.04	1026
9	Arg	20.806	139856	0.62	18816
10	Thr	20.965	213057	0.95	35314
11	Ala	21.414	6405611	28.50	1018756
12	Pro	22.504	100875	0.45	14195

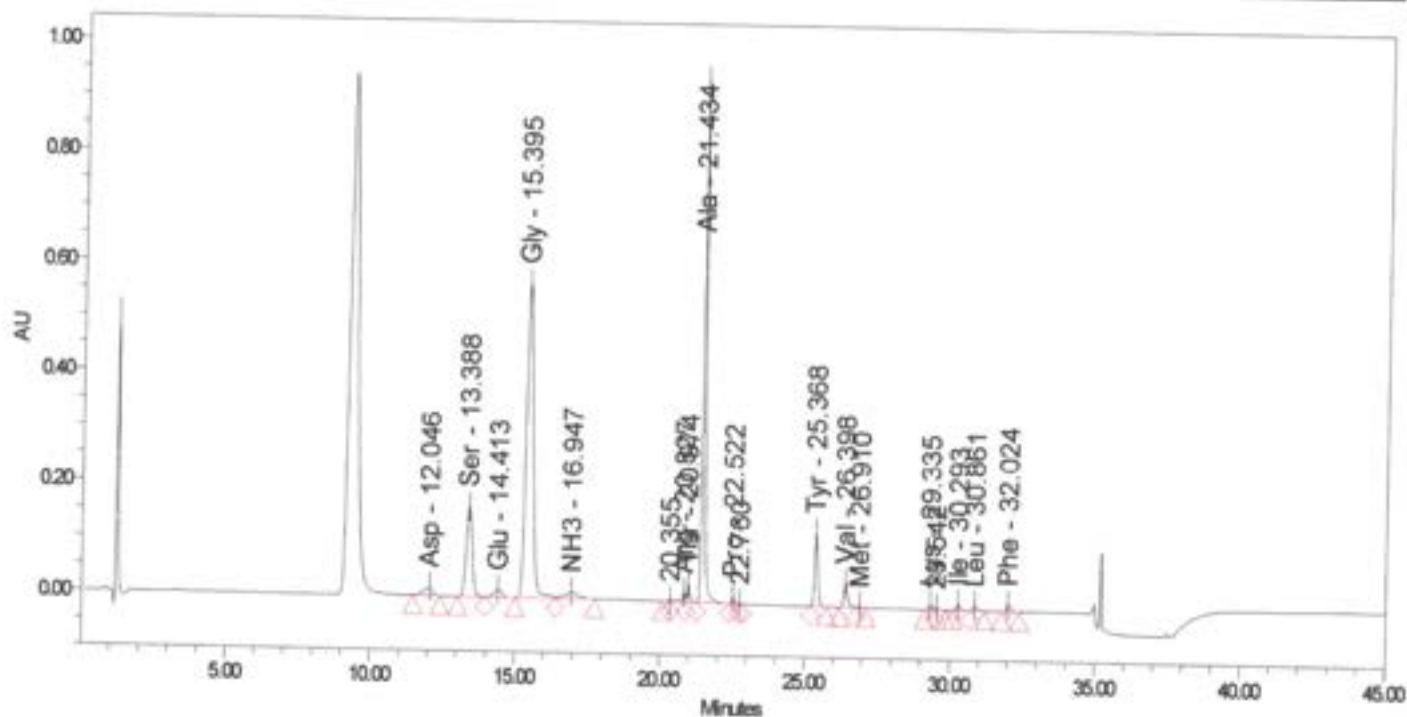
	Name	RT (min)	Area	% Area	Height
13		22.740	7228	0.03	1100
14	Cys	25.070			
15	Tyr	25.345	1112655	4.95	143573
16	Val	26.373	454808	2.02	48010
17	Met	26.888	23186	0.10	2300
18	Lys	29.310	79709	0.35	8764
19		29.518	36264	0.17	3246
20	Ile	30.257	119166	0.53	11237
21	Leu	30.836	95488	0.42	8812
22	Phe	32.003	137204	0.61	12801

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name: Silk Fibroin Lot 8407 #2  
 Sample Type: Unknown  
 Vial: 4  
 Injection #: 1  
 Injection Volume: 10.00 ul  
 Run Time: 45.0 Minutes

Acquired By: System  
 Sample Set Name: AccQTag\_PDA  
 Acq. Method Set: AccQTag\_PDA  
 Injection ID: 12670  
 Date Acquired: 9/28/2021 5:57:14 PM PST  
 Date Processed: 9/29/2021 6:08:34 AM PST



### Peak Results

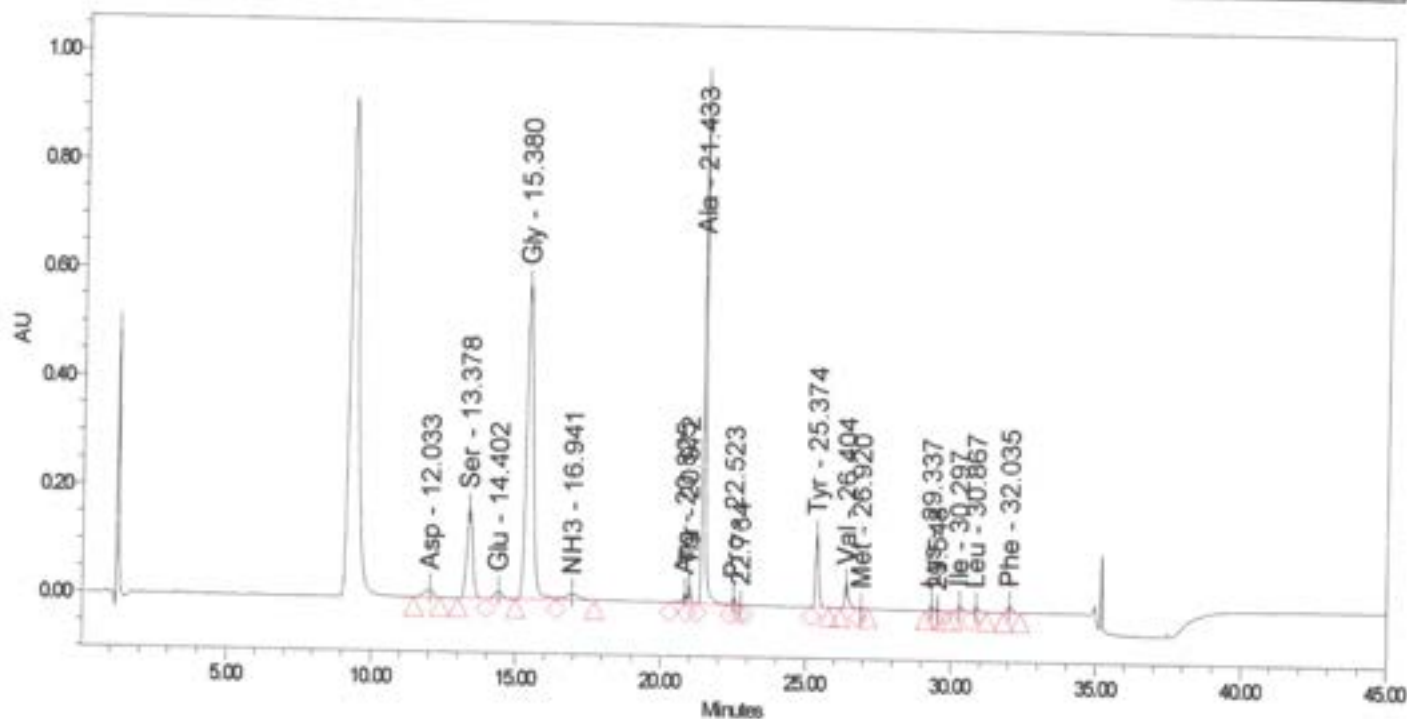
	Name	RT (min)	Area	% Area	Height
1	Hyp	11.200			
2	Asp	12.046	353347	1.67	16519
3	Ser	13.388	2335290	11.05	162758
4	Glu	14.413	256098	1.23	13667
5	Gly	15.395	9412345	44.53	571576
6	His	16.610			
7	NH3	16.947	381570	1.81	11796
8		20.355	9105	0.04	1057
9	Arg	20.827	130468	0.62	17690
10	Thr	20.974	202566	0.96	33172
11	Ala	21.434	6017499	28.47	948172
12	Pro	22.522	94613	0.45	13421

	Name	RT (min)	Area	% Area	Height
13		22.760	6751	0.03	1018
14	Cys	25.070			
15	Tyr	25.368	1045874	4.95	134144
16	Val	26.398	427900	2.02	44944
17	Met	26.910	20027	0.09	2128
18	Lys	29.335	75726	0.36	8216
19		29.542	34530	0.16	3082
20	Ile	30.293	111767	0.53	10557
21	Leu	30.861	89653	0.43	8348
22	Phe	32.024	130478	0.62	11916

# Stratum Medical Corporation

## SAMPLE INFORMATION

Sample Name:	Silk Fibroin Lot 8407 #3	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	AccQTag_PDA
Vial:	5	Acq. Method Set:	AccQTag_PDA
Injection #:	1	Injection ID:	12675
Injection Volume:	10.00 ul	Date Acquired:	9/28/2021 6:52:57 PM PST
Run Time:	45.0 Minutes	Date Processed:	9/29/2021 6:08:35 AM PST



### Peak Results

	Name	RT (min)	Area	% Area	Height
1	Hyp	11.200			
2	Asp	12.033	352466	1.64	16686
3	Ser	13.378	2384450	11.10	167000
4	Glu	14.402	258848	1.21	14088
5	Gly	15.380	9563651	44.67	580900
6	His	16.610			
7	NH3	16.941	372771	1.74	11533
8	Arg	20.825	129121	0.60	17844
9	Tyr	20.972	201945	0.94	33576
10	Ala	21.433	6100897	28.41	963867
11	Pro	22.523	95285	0.44	13805
12		22.764	7187	0.03	1038

	Name	RT (min)	Area	% Area	Height
13	Cys	25.070			
14	Ty	25.374	1085487	4.98	136928
15	Val	26.404	436624	2.03	46666
16	Met	26.920	21506	0.10	2221
17	Lys	29.337	75918	0.35	8342
18		29.548	34541	0.16	3047
19	Ile	30.297	116626	0.54	10740
20	Leu	30.867	94648	0.44	6545
21	Phe	32.035	133057	0.62	12179