Supplemental Figure 1

(A) 5 ms ETD only

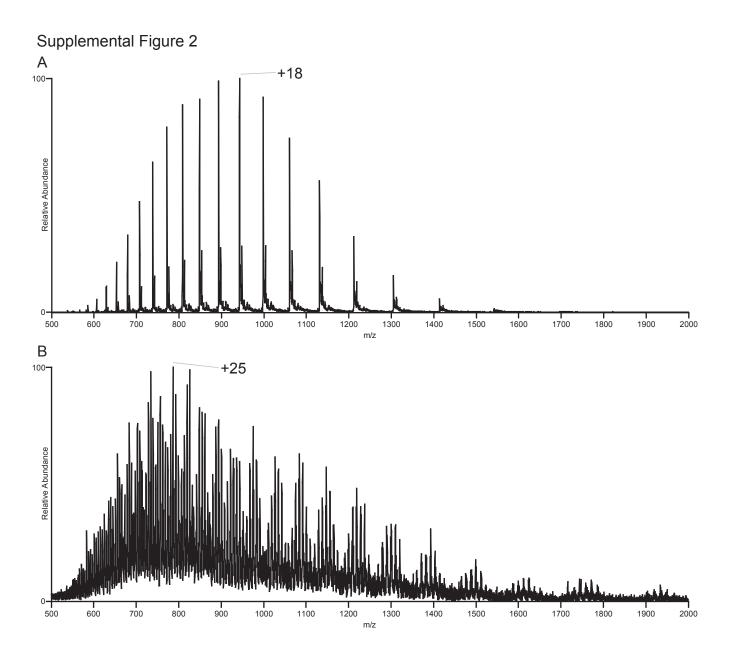
ID/	'Gene	<u>Length</u>	<u>Mass</u>	<u>Mass Diff.</u>	<u>PPM Diff.</u>	<u>C Ions</u>	<u>Z Ions</u>	<u>Total Ions</u>	PDE Score	<u>E-Value</u>	
• >	>sp P68082 MYG_HORSE Myoglobin OS=Equus caballus GN=MB PE=1 SV=2, ; . (Type: basic, Signal Peptide: false, Propep: false)										
	C1 · G t L - S - D - G t E - W t Q - Q - V - L t N - V - W - G - K - V t E - A t D - I - A t G t H t G - Q - E - V t L - I - z124										
	- 13	R7 L - F7	T <mark>ì Gì</mark> H	7 P7 E7 T7	L ì Eì K- Fì	D] K] F	- <mark>7 k</mark> 7 H7	L 7 K 7 T 7 E] A] E] M- K-	A-STETDT 294	
	c61 -	L] K] K]	H-G] T	-V-V]L-	T7A7L-G7	G7 I-L	. 1 K 1 K1	K]G]H] H	ŧ E∃ Aŧ E- L∃	KtPtLtA- z64	
	c 91 -	Qlsiht	A - T - K	₹Ht K ₹ I-	P - I t Kt Y t	L-E-F	t I - St	D + A - I - I	- H L V - L L H 	StKtH-P - z34	
C	<pre>c121 ·GtD-F-G-A-DtAtQtGtA-MtT-KtA-LtE-LtFtRtNtDtI-AtAtK-YtK-E-L-G· z4</pre>										
c151 [F-Q-G- z1											
ID/0	Gene	Length	Mass	Mass Diff	PPM Diff	C Ions	Z Ions	Total Ions	PDE Score	E-Value	
1	1	153	16941	12.9262	762.433	56	44	100	121	6.42E-14	

(B) 5 ms ETD + 20 ms IIPT

ID/G	<u>Gene</u>	<u>Length</u>	Mass	<u>Mass Diff.</u>	PPM Diff.	<u>C Ions</u>	<u>Z Ions</u>	<u>Total Ions</u>	PDE Score	<u>E-Value</u>	
▶ >s	>sp P68082 MYG_HORSE Myoglobin OS=Equus caballus GN=MB PE=1 SV=2, ; . (Type: basic, Signal Peptide: false, Propep: false)										
	☐ · G † L - S ↑ D - G ↑ E - W ↑ Q - Q ↑ V - L ↑ N ↑ V ↑ W ↑ G - K - V ↑ E - A ↑ D - I ↑ A ↑ G ↑ H ↑ G - Q - E - V - L - I - z124										
C	31 -	R7 L - F7	T ∃G -H	- P] E] T] I	L] E] K] F]	D] K] F	: <u>} k} H</u>	L	} A} E} M} K ∙	-A-S}E}D? 294	
C	61 -	L∮K}K}	H-G } T	- V- V7 L7 1	[] A	GJIJL	. } K} K }	K] G [H] H	{ E { A } E } L	 K−P L−A − z64	
C	91 -	QtStHł	AJTFK	}H †K-I-I	P-I{K{Y}	L t E - F	- I - S}	DtA-ItI	- H V - L H	t St K t H - P - z34	
c1	<pre>cl21 ·GtDtF-GtA-DtAtQtGtA-MtTtKtAtLtEtLtFtRtNtDtI-AtAtKtYtK-E-L-G· z4</pre>										
c151 · F - Q 7 G - z1											
ID/Ge	ene	Length	Mass	Mass Diff	PPM Diff	C Ions	Z Ions	Total Ions	PDE Score	E-Value	
1	1	153	16941	12.9262	762.433	67	64	131	124	2.12E-14	

(C) 5 ms ETD + 40 ms IIPT

ID/G	iene	<u>Length</u>	<u>Mass</u>	<u>Mass Diff.</u>	PPM Diff.	<u>C Ions</u>	Z Ions	<u>Total Ions</u>	PDE Score	<u>E-Value</u>	
>st	>sp P68082 MYG_HORSE Myoglobin OS=Equus caballus GN=MB PE=1 SV=2, ; . (Type: basic, Signal Peptide: false, Propep: false)										
(☐ · G † L - S ↑ D - G ↑ E - W ↑ Q - Q - V - L ↑ N - V ↑ W ↑ G - K - V ↑ E ↑ A ↑ D - I ↑ A ↑ G ↑ H - G - Q - E ↑ V - L - I - z124										
Ċ	31 - F	R7 L - F7	T <mark>ł G</mark> ł H	- P - E] T] I	. 7 E 7 K 7 F 7	D <u></u> {K}F	: <u></u>] K] H]	L	∤ A] E] M] K ·	A-S{E{D} 294	
d	61 L	. {K}K	H <mark>ł G</mark> ł T	-V-VłLł1	ſ <mark>łAłLł</mark> Gł	GlIl	. } K} K }	K }G}H}H	{ E	K-P-L-A- z64	
d	91 (}ts}H }	A-T}K	łH−KłIł F	ν−I}K}Y }	L}E}F	- I t S t	D	ŧH ₹V -LŧH†	s i k i H - P - z34	
cl	c121 · GtDtF-G-A-DtAtQtG-A-M-TtKtAtLtEtLtFtRtNtDtI-AtAtKtYtK-E-L-G· z4										
c151 · F - Q } G - z1											
ID/Ge	ine	Length	Mass	Mass Diff	PPM Diff	C Ions	Z Ions	Total Ions	PDE Score	E-Value	
1	1	153	16941	12.9262	762.433	77	73	150	145	4.01E-24	



Supplemental Figure Legends

Supplemental Figure 1 – Apomyoglobin sequence coverage determined by analysis of ETD and ETD/IIPT MS/MS spectra with ProSight PC[™] software. (A) Sequence coverage from 5 msec of ETD only. (B) Sequence coverage from 5 msec of ETD & 20 msec of IIPT. (C) Sequence coverage from 5 msec of ETD & 40 msec of IIPT. Searches were performed by using ProSightPC 3.0 (Thermo Fisher Scientific). Fragment mass tolerance was set to 2 Da.

Supplemental Figure 2 – Electrospray Ionization mass spectra of unmodified and modified apomyoglobin. Distribution of charge states observed for (A) apomyoglobin, and (B) apomyoglobin derivatized with aminoethylbenzimidazole.