

## Genomic Signatures of Human versus Avian Influenza A Viruses

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Appendix Figure 1. Entropy plot for all 11 influenza proteins for human (top) versus avian (bottom). In each aligned position, we have a consensus residue for 95 avian strains displayed on top, and a consensus residue for 306 human strains at the bottom. Completely conserved amino acid positions are filled with white, while less conserved amino acids are filled in various gray shadings. Positions where one single residue dominates over 90%, less than 90% but greater than 75%, and less than 75% are labeled with red, yellow, and green letters, respectively. Yellow rectangles indicate that both human and avian flu are completely conserved to the same residue, while rectangles in magenta indicate that avian and human flu each completely conserves to a different residue Additional plots for HA, NA, NS1 and NS2, for using different counts of human or avian strains are detailed as individual captions to these plots.



EntropyPlot v1.0



	M E R I K E L R D L M S Q S R T T R E I L T K T T V D H M A I I I K K Y T S G R Q E K N P A L R M K W M M M A M K Y P I T A D
	M E R I K E L R N L M S Q S R T T R E I L T K T T V D H M A I I I K K Y T S G R Q E K N P S L R M K W M M M A M K Y P I T A D
61	K R I I I E M I P E R N E Q G Q T L W S K T N D A G S D R V M V S P L A V T W W N R N G P T T S T V H Y P K V Y K T Y F E K R I T E M V P E R N E Q G Q T L W S K M S D A G S D R V M V S P L A V T W W N R N G P V T S T V H Y P K V Y K T Y F D
121	K V E R L K H G T F G P V H F R N Q V K I R R R V D I N P G H A D L S A K E A Q D V I M E V V F P N E V G A R I L T S E K V E R L K H G T F G P V H F R N Q V K I R R R V D I N P G H A D L S A K E A Q D V I M E V V F P N E V G A R I L T S E
181	S Q L T I T K E K K E E L Q D C K I A P L M V A Y M L E R E L V R K T R F L P V A G G T S S V Y I E V L H L T Q G T C W S Q L T I T K E K K E E L R D C K I S P L M V A Y M L E R E L V R K T R F L P V A G G T S S I Y I E V L H L T Q G T C W
241	E Q M Y T P G G E V R N D D V D Q S L I I A A R N I V R R A T V S A D P L A S L L E M C H S T Q I G G I R M V D I L R Q E Q M Y T P G G E V R N D D V D Q S L I I A A R N I V R R A A V S A D P L A S L L E M C H S T Q I G G T R M V D I L R Q
301	N P T E E Q A V D I C K A A M G L R I S S S F S F G G F T F K R T S G S S V K K E E E V L T G N L Q T L K I R V H E G Y N P T E E Q A V D I C K A A M G L R I S S S F S F G G F T F K R T S G S S V K R E E E V L T G N L Q T L K I R V H E G Y
361	E E F T M V G R R A T A I L R K A T R R L I Q L I V S G R D E Q S I A E A I I V A M V F S Q E D C M I K A V R G D L N F E E F T M V G K R A T A I L R K A T R R L V Q L I V S G R D E Q S I A E A I I V A M V F S Q E D C M I K A V R G D L N F
421	V N R A N Q R L N P M H Q L L R H F Q K D A K V L F Q N W G I E P I D N V M G M I G I L P D M T P S T E M S L R G V R V V N R A N Q R L N P M H Q L L R H F Q K D A K V L F Q N W G I E H I D S V M G M V G V L P D M T P S T E M S M R G I R V
481	S K M G V D E Y S S T E R V V V S I D R F L R V R D Q R G N V L L S P E E V S E T Q G T E K L T I T Y S S S M M W E I N S K M G V D E Y S S T E R V V V S I D R F L R V R D Q R G N V L L S P E E V S E T Q G T E R L T I T Y S S S M M W E I N
541	G P E S V L V N T Y Q W I I R N W E T V K I Q W S Q D P T M L Y N K M E F E P F Q S L V P K A A R G Q Y S G F V R T L F G P E S V L V N T Y Q W I I R N W E A V K I Q W S Q N P A M L Y N K M E F E P F Q S L V P K A I R G Q Y S G F V R T L F
601	Q Q M R D V L G T F D T V Q I I I K L L P F A A A P P E Q S R M Q F S S L T V N V R G S G M R I L V R G N S P V F N Y N K Q Q M R D V L G T F D T T Q I I I K L L P F A A A P P K Q S R M Q F S S L T V N V R G S G M R I L V R G N S P V F N Y N K
661	A T K R L T V L G K D A G A L T E D P D E G T A G V E S A V L R G F L I I L G K E D K R Y G P A L S I N E L S N L A K G E T T K R L T V L G K D A G T L I E D P D E S T S G V E S A V L R G F L I I I G K E D R R Y G P A L S I N E L S N L A K G E
721	K A N V L I G Q G D V V L V M K R K R D S S I L T D S Q T A T K R I R M A I N K A N V L I G Q G D V V L V M K R K R D S S I L T D S Q T A T K R I R M A I N

PB2



EntropyPlot v1.0



PB1



EntropyPlot v1.0



61

M	E	Q	G	Q	D	T	P	W	T	Q	S	T	E	H	T	N	I	Q	K	R	G	S	G	Q	Q	T	Q	R	L	E	H	P	N	S	T	R	L	M	D	H	Y	L	R	I	M	S	P	V	G	M	H	K	Q	I	V	Y	W	K	Q
M	E	Q	E	Q	G	T	P	W	T	Q	S	T	E	H	T	N	I	Q	K	R	G	S	G	R	Q	I	Q	K	L	G	H	P	N	S	T	Q	L	M	D	H	Y	L	R	I	M	S	Q	V	D	M	H	K	Q	T	V	S	W	R	L
W	L	S	L	K	N	P	T	Q	G	S	L	K	T	R	V	L	K	R	W	K	L	F	N	K	Q	E	W	I	N	W	P	S	L	K	N	P	T	Q	G	S	L	R	T	H	A	L	K	Q	W	K	S	F	N	K	Q	G	W	T	N

PB1-F2



EntropyPlot v1.0



PA

# EntropyPlot v1.0



HA – based on 95 avian and 306 human (10 H1, 3 H2 and 293 H3)

# EntropyPlot v1.0



HA – based on 95 avian and 10 human H1



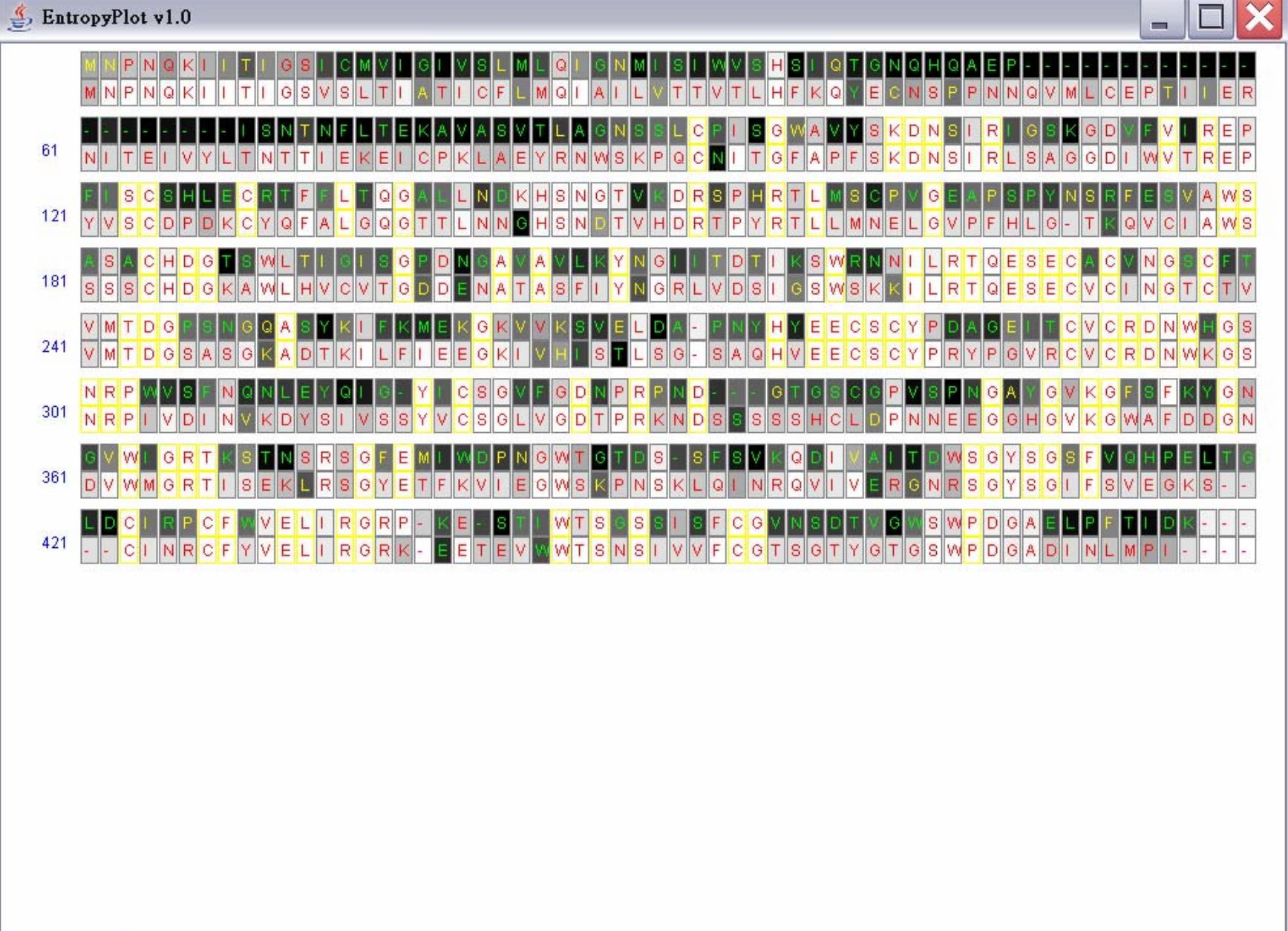
HA – based on 95 avian and 3 human H2



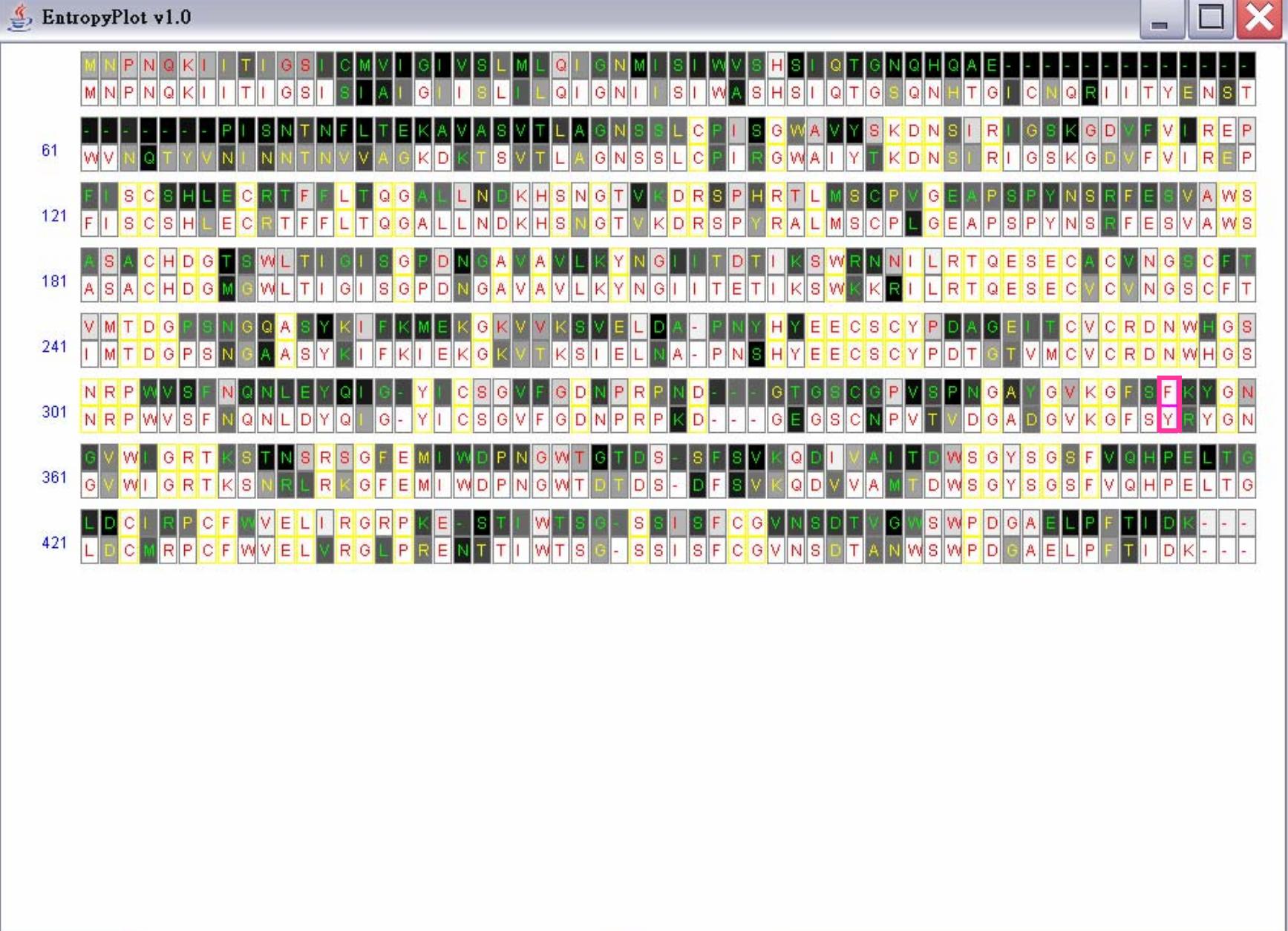
HA – based on 95 avian and 293 human H3

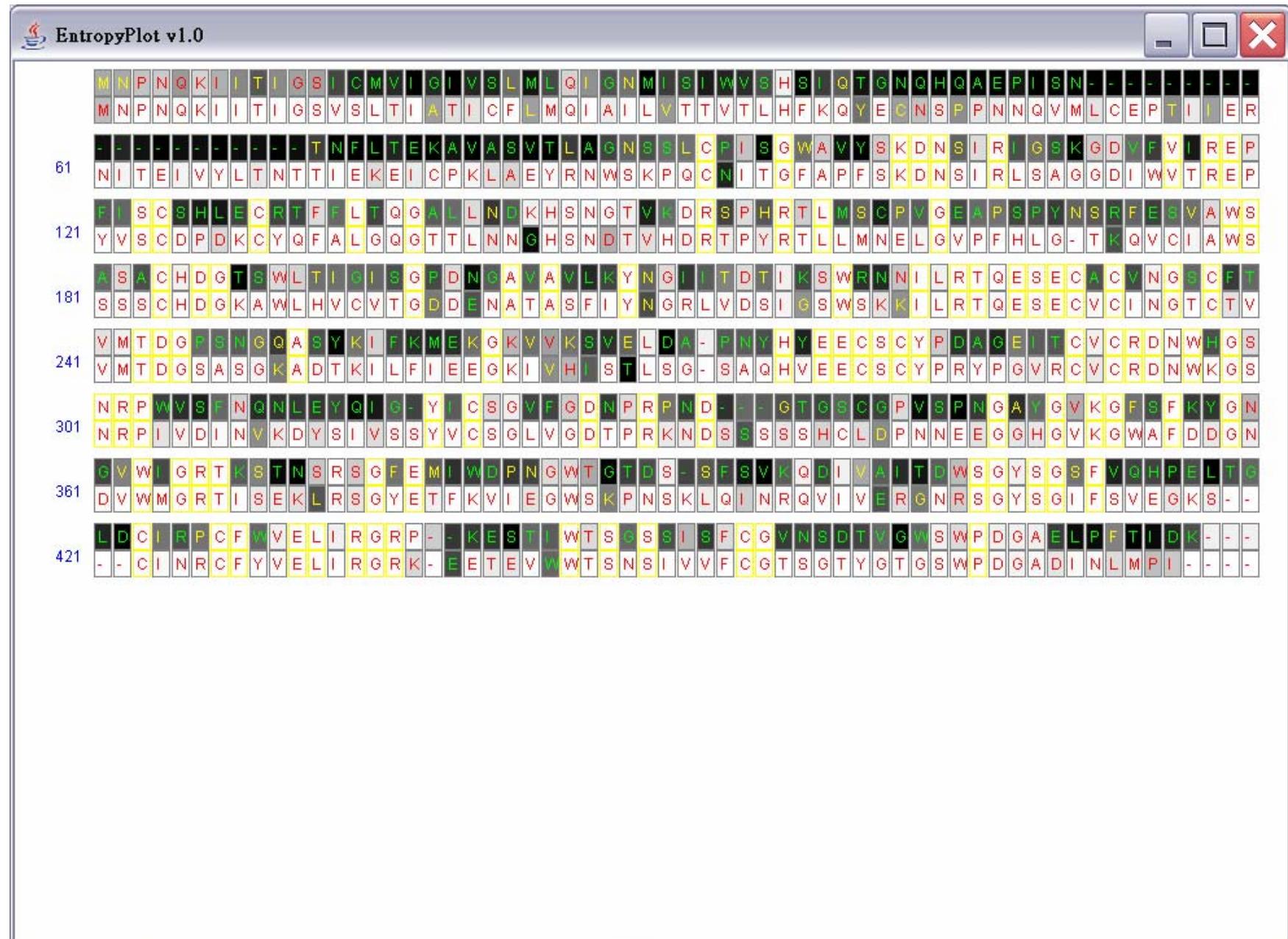


NP



NA – based on 95 avian and 306 human (8 N1 and 298 N2)





NA – based on 95 avian and 298 human N2



EntropyPlot v1.0



MSLLT EVET YVLSII P S GPL KAE I A Q R LED V F AGK NT D LE AL ME WL K T R PI L S PL T KG I L  
MSLLT EVET YVLSIV P S GPL KAE I A Q R LED V F AGK NT D LE AL ME WL K T R PI L S PL T KG I L

61 G F V F T L T V P S E R G L Q R R R F V Q N A L N G N G D P N N M D R A V K L Y K K L K R E I T F H G A K E E V A L S Y S  
G F V F T L T V P S E R G L Q R R R F V Q N A L N G N G D P N N M D K A V K L Y R K L K R E I T F H G A K E I A L S Y S

121 T G A L A S C M G L I Y N R M G T V T T E V A F G L V C A T C E Q I A D S Q H R S H R Q M A T I T N P L I R H E N R M V  
A G A L A S C M G L I Y N R M G A V T T E V A F G L V C A T C E Q I A D S Q H R S H R Q M V A T T N P L I K H E N R M V

181 L A S T T A K A M E Q M A G S S E Q A A E A M E V A N Q A R Q M V Q A M R T I G T H P N S S A G L R D N L L E N L Q A Y  
L A S T T A K A M E Q M A G S S E Q A A E A M E I A S Q A R Q M V Q A M R T V G T H P S S S T G L R D D L L E N L Q T Y

241 Q K R M G V Q M Q R F K  
Q K R M G V Q M Q R F K

M1



EntropyPlot v1.0



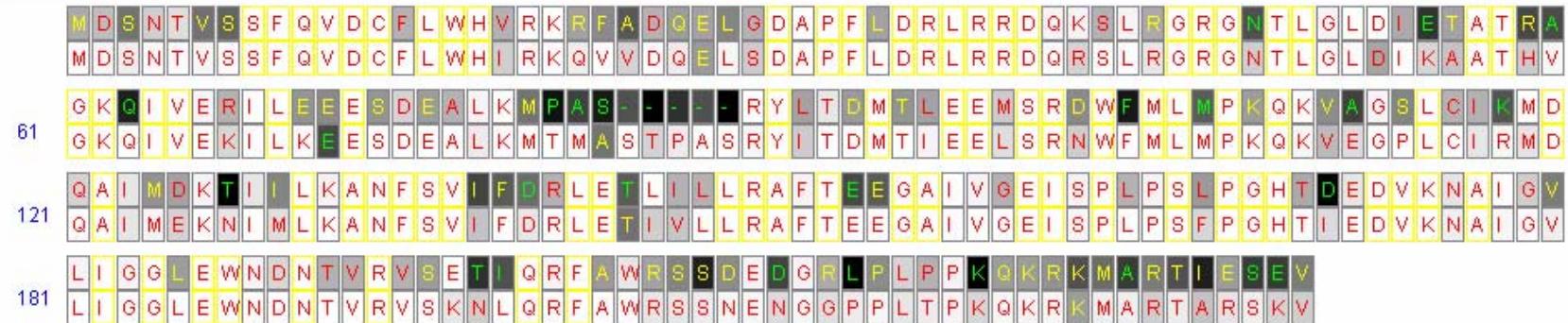
61

M	S	L	L	T	E	V	E	T	P	T	R	N	E	W	E	C	R	C	S	D	S	S	D	P	L	V	V	A	A	S	I	I	G	I	L	H	L	I	L	W	I	L	D	R	L	F	F	K	C	I	Y	R	R	L	K	Y	G	L	K
M	S	L	L	T	E	V	E	T	P	I	R	N	E	W	G	C	R	C	N	D	S	S	D	P	L	V	V	A	A	S	I	I	G	I	L	H	L	I	L	W	I	L	D	R	L	F	F	K	C	I	Y	R	L	F	K	H	G	L	K
R	G	P	S	T	E	G	V	P	E	S	M	R	E	E	Y	R	Q	E	Q	Q	B	A	V	D	V	D	D	G	H	F	V	N	I	E	L	E																							
R	G	P	S	T	E	G	V	P	E	S	M	R	E	E	Y	R	K	E	Q	Q	Q	N	A	V	D	A	D	D	S	H	F	V	S	I	E	L	E																						

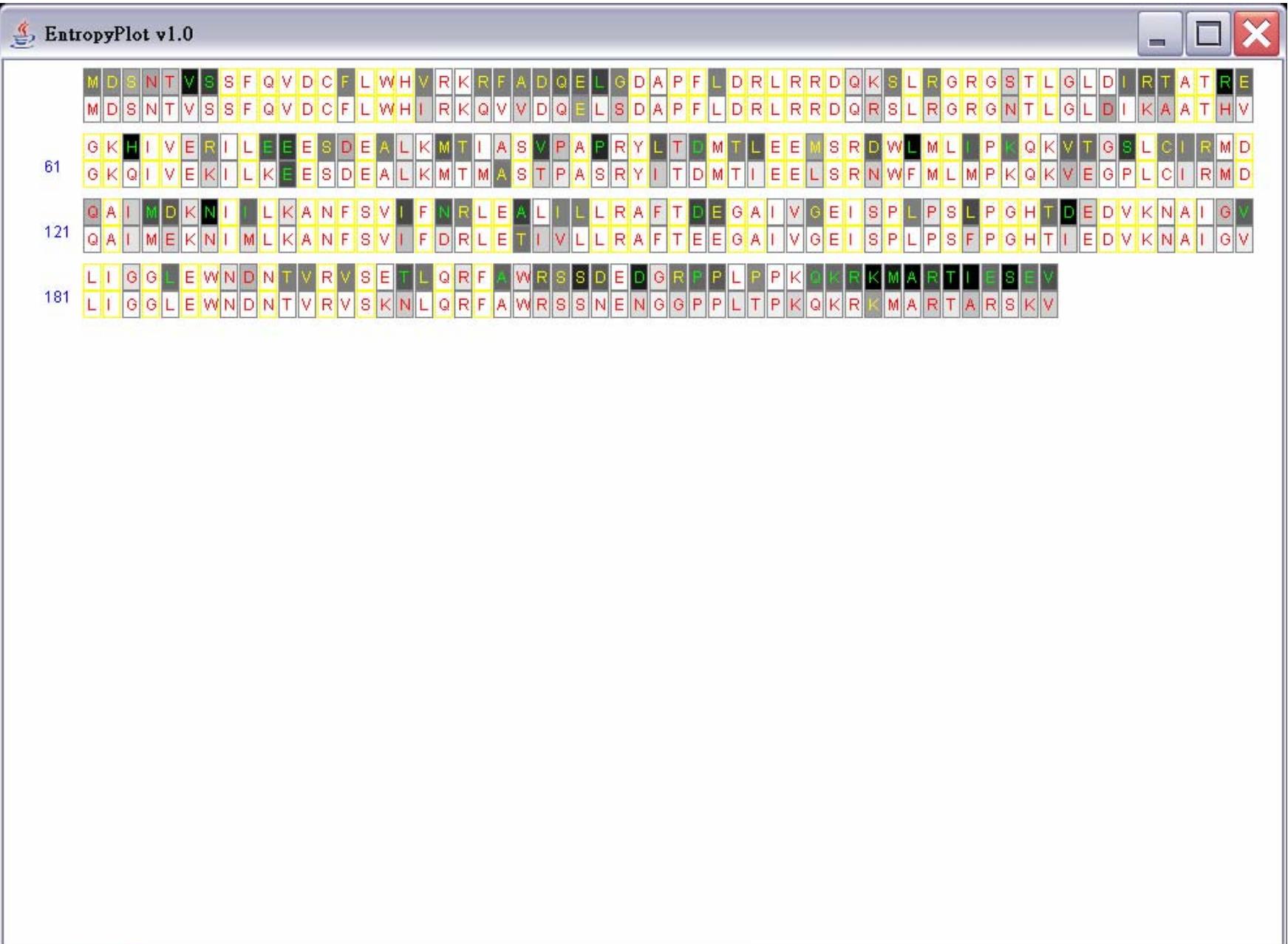
M2



EntropyPlot v1.0



NS1 – based on 95 avian and 306 human



NS1 – based on 43 avian (allele A) and 306 human



NS1 – based on 52 avian (allele B) and 306 human



NS2 – based on 95 avian and 306 human



NS2 – based on 43 avian (allele A) and 306 human



NS2 – based on 52 avian (allele B) and 306 human