

A

```
1 ATGTCTCTTCTGCCGTATTTGTTAGACGACTCGCACTTTCTAAGACCATCTCGGCTCATAGATCAACATTTTGGTCTGACGTTGGATCCA
1 M S L L P Y L L D D S H F L R P S R L I D Q H F G L T L D P
91 AATGATTTTCTCAACCTTAACGTACCCAGGATGGTAATAAATGTCCGGCAGGATATCTAAGAAATTTGGAGGTCCTCTCGCTCTCAA
31 N D F L Q P L T V P R M V I K C P A G Y L R N W R S S A S Q
181 CAAGACACCGGATCCACTGTCAAATTTGGACAAGGACAAATTCATGCAAGTTTGGACGTACAGCAGTTCAAACCGGAAGAAATACCGTA
61 Q D T G S T V K L D K D K F H A S L D V Q Q F K P E E I T V
271 AAAGTTACTGGAGAAAAATACAATTACAGTGGAGGGTAAGCACGAGGAGAAAGAGGATGAGCACGGCCATATTACAGACATTTTGTGAGG
91 K V T G E N T I T V E G K H E E K E D E H G H I Y R H F V R
361 AAATACGTTTTCGCCAAGAATTGCGATATCAATAAGGTAGAGTCCAAGTTGTCTTCTGATGGAGTTTAACTATTGCCGCTCCGAAGATT
121 K Y V L P K N C D I N K V E S K L S S D G V L T I A A P K I
451 GGAGGCAATGAAATCGAACATAAAGAAGTTCCCATTAACCATACTGGAGAGCCAGTCAAGGCTTTGGAACAACCAAGCAGGAGATAAA
151 G G N E I E H K E V P I T H T G E P V K A L E Q P K A G D K
541 AAGTAA
181 K *
```

B

```
1 ATGGTTGACAGTTGGTATCGACTTGGGAACAACCTACTCCTGTGTAGGCGTGGCAGCATGAAAAAGTGGAAATCATGCCAACGATCAAA
1 M V A V G I D L G T T Y S C V G V W Q H G K V E I I A N D Q
91 GGCAACAGGACGACGCGAGTTATGTTGCATTTACGGACACCGAGCGTCTCTTGGGAGACGCGCAAGAACCAGGTTCGCCATGAACCCC
31 G N R T T P S Y V A F T D T E R L L G D A A K N O V A M N P
181 AGTAACACCGTCTTCGACGCTAAGAGATTGATCGGCCGCAAGTATGACGACTCGAAGATCCAGCAGGACCTCAAAACATTTGGCCTTTTAAA
61 S N T V F D A K R L I G R K Y D D S K I Q Q D L K H W P F K
271 GTTGTGGACGACTCGCGGAAGCCCAAGATACAAGTAATGTACAAGGGTGAAAAGAAGACCTTCGCCCTGAAGAGGTGAGTTCCATGGTG
91 V V D D C G K P K I Q V M Y K G E K K T F A P E V S M V
361 TTGACGAAGATGAAAGAAACCGCGAGGCTTATTTGGGGTCTCCTGTGAAAGATGCAGTCGTTACGGTCCCTGCGTACTTCAATGATTCC
121 L T K M K E T A E A Y L G S P V K D A V V T V P A Y F N D S
451 CAGAGACAAGCTACAAAAGATGCAGGTGTGATAGCAGGTCTAAACGTTCTTAGAATAATCAATGAACCAACAGCGGCAGCTCTGGCTTAC
151 Q R Q A T K D A G V I A G L N V L R I I N E P T A A A L A Y
541 GGTTTGGACAAAACCTTGAAGGGCGAGAGGAATGTGCTTATCTTCGACTTGGGTGGTACATTGATGTGTCTATACTTACGATAGAC
181 G L D K N L K G E R N V L I F D L G G G T F D V S I L T I D
631 GAAGGGTCTTTGTTTGAAGTAAGATCGACAGCAGGCGACACACATCTCGGGGAGAGGACTTTGACAATCGGTTAGTTAATCACTTGCT
211 E G S L F E V R S T A G D T H L G G E D F D N R L V N H L A
721 GATGAATCAAGCGTAAATACAAGAAAGACCTCCGAAGCAACCCGAGGCTCTAAGACGACTGAGAAGTCCGCTGAGAGGGCTAAGAGA
241 D E F K R K Y K K D L R S N P R A L R R L R T A A E R A K R
811 ACGCTCTCTCGAGCACCGAAGCCAGCATCGAGATAGATGCTTTATACGAGGGTATCGATTTCTACACCAAGTTAGCAGAGCGAGGTTTC
271 T L S S S T E A S I E I D A L Y E G I D F Y T K V S R A R F
901 GAAGAATTGTGCTCTGATCTATTAGAGGAACCTCTACAACCCGTAGAAAAAGCTCTGATGGACGCCAAGATGGACAAAGGCCAAATACAC
301 E A T L C S D L F R G T L Q V E K A L M D A K M D K G O I H
991 GACGTGGTGTCTGTGGGCGGCTCCACTAGAATCCCGAAGATCCAACAACCTCTCCAGCATTACTTTAACGGAACCCGTTGAACCTGTCC
331 D V V L V G G S T R I P K I Q Q L L Q H Y F N G K P L N L S
1081 ATCAACCCGACGAAGCTGTAGCCTATGGTGCCGAGTCCAAGCCGCGTACTTACCGGAGAACTGATTCTAAATCCAAGACGTCTTA
361 I N P D E A V A Y G A A V Q A A V L T G E T D S K I Q D V L
1171 CTGGTTGACGTAACCTCTTCTTTGGGTATTGAAACCGCAGGTGGCGTCATGACGAAGATCATTGAACGTAACGCGAGGATCCCTGC
391 L V D V T P L S L G I E T A C G G V M T K I I E R N A R I P C
1261 AAGCAAACCTCAAGTCTTCACGAGTACGCCGACAACCAACCGGCGTTACCGTGCAGGTATTCGAGGGTGAGAGGGCTATGACGAAAGAT
421 K Q T Q V F T T Y A D N Q P A V T V Q V F E G E R A M T K D
1351 AATAACTTGCTTGGAACTTCGATCTCACCGGAATACCTTGGCTCCTAGAGGGTTCCTCAAGATAGAAGTACCTTCGATCTAGACGCT
451 N N L L G T F D L T G I P L A P R G V P K I E V T F D L D A
1441 AACGGAATTCTCAACGTATCTGCTAAAGACACCGGCTCCGGAAGAGTACTAACATCACCATCAAGAACAATAAAGGCAGATTATCACAG
481 N G I L N V S A K D T G S G K S T N I T I K N N K G R L S Q
1531 CAGGATATAGACAGAATGGTGTTCGAGGCGGAGAGGTACAAGGAGGAAGACGACAAAGGGAAGAAATCTCGGCCCGTAATCAGCTG
511 Q D I D R M V F E A E R Y K E E D E R Q R E R I S A R N Q L
1621 GAGGGCTATATCTTCCAAGTGAAGCAAGCTATTTCTGACTGTGCCGACAAGCTTAGTGCGGAAGACAAAGCTAAATTCGAGAGTGAATGT
541 E G Y I F Q V K Q A I S D C A D K L S A E D K A K I E S E C
1711 GACGACTGCCTGAGATGGCTGGACGGCAACTCGTTGGCCGAGAAGGAAGAGTACGAAGAGAAGCGGAAGCACTTGACGAGTGTCTGAGT
571 D D C L R W L D G N S L A E K E E Y E E K R K H L T S V C S
1801 CCTATTATGGCCAAGTTTACGAGAACGGGCTCAGAACGGTCAATTTGGAAGTGGTACCGCTAGTGAATGCCTGGTGAAGTTGCGGC
601 P I A M G A K L L Y Q N G P Q N G Q F G S G T A S G M P G G S C G
1891 CAGCAAGCGGGAGGATTTACAGGTGGTCTAGTGGGCCAAGCATAGAAGAAGTAGACTAA
631 Q Q A G G F T G G H S G P T I E E V D *
```

C

1 ATGCTTGAAGAAAACCAAAATGGTGAAGTTGAAACCTTTGCCTTCCAGGCAGAAAATTGCCAGTTGATGAGTTTGATCATCAACACTTTTC
1 M P E E N Q N G E V E T F A F Q A E I A Q L M S L I I N T F
91 TACTCGAACAAGGAAATTTCTGCGAGAAGTATTTCCAACTCTTCAGATGCTCTGGATAAAATCCGTTACCAAGTCGCTCACAATCCA
31 Y S N K E I F L R E L I S N S S D A L D K I R Y Q S L T N P
181 TCATGTTTGGACAGCGGCAAGGATCTTCATATTAATAATCATCCCAACAAAAATGAGGGCACACTTACCATTATTGATACTGGTATTGGT
61 S C L D S G K D L H I K I I P N K N E G T L T I I D T G I G
271 ATGACTAAGGCAGATCTGGTCAACAACCTGGGTACCATCGCAAAATCTGGAACATAAGCTTTTATGGAAGCGTTGCAAGCAGGCGCAGAT
91 M T K A D L V N N L G T I A K S G T K A F M E A L Q A G A D
361 ATCAGTATGATTGGTCAGTTTGGTGTAGGCTTCTACTCTGCTACTTGTATTGCCGATCGAGTCACGGTAATCTCTAAAAACAATGATGAC
121 I S M I G Q F G V G F Y S A Y L I A D R V T V I S K N N D D
451 GAGCAGTACATCTGGGAGTCTTCTGCTGGCGGAAGCTTCACCATCCGCCCTGATCATGGAGAACCCTGGGTCTGGTACAAAAATCCCTT
151 E Q Y I W E S S A G G S F T I R P D H G E P L G R G T K I L
541 CTACACATCAAGGAAGATCAAACTGAATTCCTAGAAAGAAATAAGATTAAGGAAATCGTTAAGAAACATTTCGCAGTTTATCGGATACCCA
181 L H I K E D Q T E F L E E N K I K E I V K K H S Q F I G Y P
631 ATTAACTCTTGGTAGAGAAAGAGAGGGAAGGAACGTAGCGATGATGAGGCTGAAGAGGAAAGAAGGATGAGGAGGACACCGATAAA
211 I K L L V E K E R E K E L S D D E A E E E K K D E E D T D K
721 CCAAAAATGAGGATGTAGGAGAAGTGAAGACGAGGACAAGAACGAAAAAGAAAGAAAGAACGATTAAGAGAGATACACT
241 P K I E D V G E D E D E D K K D E K K K K K K T I K E K Y T
811 GAAGCAAGAATAAATAAGACGAAACCCATCTGGACCAGAAATCCAGACGATATCAGTCAAGAAGAATATGGTGAATTTTCAAAATCG
271 E D E E L N K T K P I W T R N P D D I S Q E E Y G F Y K S
901 CTACCAATGACTGGGAAGATCATCTGGCTGTAAACATTTTCAGCGTAGAAGGTGAGTGGAAATTCCTGCTCTTCTGTTGTACCACT
301 L T N D W E D H L A V K H F S V E G Q L E F R A L L F V P R
991 CGTGTGCCATTGATCTCTCGAAAAACAAGAACGAAAAATAACGTCAAATTTGATGTACGCCGTATTCTATTTGGACAACTGCGAA
1081 R V P F D L F E N K K R K N N V K L Y V R R V F I M D N C E
361 GACATCATCCAGAATCTCACTTCATTAAGGGTGTGTAGATTTCCGAAGATTTGCCTCTAAACATTTCTCGTGAATGTTGCAACAG
1171 D I I P E Y L N F I K G V V D S E D L P L N I S R E M L Q Q
391 AACAAATCTCAAGTCATCCGTAAGAACTTAGTCAAGAAATGTTTGAAGTCTTCGAAGAATTGTCAGATGATAAGGATGGCTACAAG
1261 N K I L K V I R K N L V K K C L E L F E E L S D D K D K D Y K
421 AAGTTCTATGAACAGTTCTCGAAGAACCTCAAGTTGGGTATCCATGAAGACTCGCAGAACAGGGCCAAATTTGGCAGATTTACTACGCTAC
1351 K F Y E Q F S K N L K L G I H E D S Q N R A K L A D L L R Y
451 CACACTTCTGCCAGTGGAGACGAAGCTGCTCGCTCAAGGATTATGTACGCCGATGAAGGAGAACCAGAAGCAGCTCTACTATATCAG
1441 H T S A S G D E A C S L K D Y V S R M K E N Q K H V Y Y I T
481 GCGGAAAGCAAGAACAGTAGCGCACTCGGCCTTTGTCAACGTGTCAAGAAACGTGGCTTCGAGGTAGTCTACATGACCGAACCCATC
1531 G E S K E Q V A H S A F V E R N V K K R G F E V V Y M T E P I
511 GACGAGTATGTTGTTCAACAGCTAAAGGAATACGACGGTAAATCCTTAGTTTCCGTAACCAAGAAGGTTTGGAGTTGCCGGAAGATGAT
1621 D E Y V V Q Q L K E Y D G K S L V S V T K E G L E L P E D D
541 GAAGAAAAGAAGAACGTCAGGAGGATAAGGCCAAATTTGAAGGCCGTGCAAGTCATGAAGACCATTTTGGACAAATAGGTGGAAAAA
1711 E E K K K R E E D K A K F E G L C K V M K T I L D N K V E K
571 GTAGTTGTATCCAATCGTCTAGTCAATCTCCATGTTGCATCGTAACATCCCAATATGGTTGGTCGGCCAAATGGAACGTATCATGAAA
1801 V V V S N R L V E S P C C I V T S Q Y G W S A N M E R I M K
601 GCTCAGGCCCTCTGTCGACTTCCACCATGGGTTACATGGCTGCCAAGAAACATCTCGAAATCAATCCAGATCATCTATCGTTGAGAAT
1891 A Q A L R D T S T M G Y M A A K K H L E I N P D H P I V E N
631 CTACGTCAGAAAGCCGAAGCTGATAAAACGATAAGGCTGTCAAAGATTTGGTTATTCTCTCTTTGAAACCCGCTCTACTTAGCTCTGGA
1981 L R Q K A E A D K N D K A V K D L V I L L F E T A L L S S G
661 TTCACCTAGACGAACCTCAAGTCCATGCTTCTAGGATCTACAGGATGATTAAGCTGGGTCTGGGTATTGACGAGGAAGAAGCTATGGTT
2071 F T L D E P Q V H A S R I Y R M I K L G L G I D E E E A M V
691 ACGGATGAAGCTCCAGCAGGGGATGCCCCACAGCAGAGGCTGGTGATGCTGAGGATGCTTCCCGCATGGAAGAAGTTGATTAA
T D E A P A G D A P T A E A G D A E D A S R M E E V D *

D

```

1   ATGAAGCAGTACATATTTTATTCATAGGTTTATTATCTTATAGGTACCACACAAGCGAGTGAAGCTGGGGGATCAGAAAAATGTTGAA
1   M K Q Y I F L F I G L F I L I G T T Q A S E A G G S E N V E
91  ACTGTGATATAGACTTGGGGCCAGCAGGGAAGGTTCAAGAACAGATGACGAAGTTGTTAAACGTGAAGAGGAGGCAATTAAGCTCGAT
31  T V D I D L G A S R E G S R T D D E V V K R E E E A I K L D
181 GGCCCTCAATGTGGCTCAGCTTAAGGAGCTTCGTGAGAAATCTGAGAAATTCGCATTCCAGACCGAAGTTAACAGGATGATGAAACTCATT
61  G L N V A Q L K E L R E K S E K F A F Q T E V N R M M K L I
271 ATTAATTCCTTTATAGGAATAAAGAAATCTTCTTGAGGGAATTGATCTCAAATGCCTCCGACGCTTGGATAAGATCCGTATGTTATCT
91  I N S L Y R N K E I F L R E L I S N A S D A L D K I R M L S
361 CTCACGGACAGAAGTGTCTGGATGTTCAACAGAGCTGAACATTCGAATAAAAAGCGGATAAAGACTCGGGAATGCTGCATATCACGGAC
121 L T D R S V L D V Q P E L N I R I K A D K D S G M L H I T D
451 ACAGGCATAGGTATGACGAAACAGGACCTTGTCAACAACCTGGGTACTATAGCAAAGTCTGGAACCTGCCGAGTTCCTCAGTAAGATGCAG
151 T G I G M T K Q D L V N N L G T I A K S G T A E F L S K M Q
541 AATGCGGAGTCGTCTCAAGATATGAATGATATGATCGGACAGTTTGGTGTGGTTTCTACTCTGCCTTCTTGGTAGCCGATAGGTCATT
181 N A E S S Q D M N D M I G Q F G V G F Y S A F L V A D K V I
631 GTCACATCTAAGCACACGATGATAAACAGTATATTTGGGAGTCTGACTCGGCAACCTTCAGTATCGTGAAGATCCTAGAGTGACAGT
211 V T S K H N D D K Q Y I W E S D S A T F S I V E D P R G D S
721 TTGAAGAGAGGTACCACTGTGAGTTTGGAACTGAAACAGAGGCAAGGATTTCTTGAACACGATACCTCCGCACCTTAGTCAAGAAA
241 L K R G T T V S L E L K P E A K D F L E H D T V R T L V K K
811 TACTCACAGTTTATTAACTTCCCGATTTCTGTGGACCACTCACACGGAACTGTAGAGGAACCAAGTTGAAGAGGAAGTAGCAGAGGAA
271 Y S Q F I N F P I Y L W T S H T E T V E E P V E E E V A E E
901 AAACCGGAACTGCCGATGAAGAAGATGCTGCTGTCGAGGAAGAGAAAGAGGACGAGAAACCAAGACCAAGAAGGTTGAGAAGACGGTT
301 K P E T A D E E D A A V E E K E D E K P K T K K V E S K M V
991 TGGGATTTGGGAGCTTCTGAATGACAGCAAGCCGATTTGGACTAGGAAGCCTTCAGAAATCGAAGATAAGGAGTACGACGCAATTCACAAA
331 W D W E L L N D S K P I W T R K P S E I E D K E Y D E F Y K
1081 GCCCTAACCAAGGACACCAATTCGCCTTTGACCAAAATTCATTTGTAGCCGAGGGCGAAGTCACTTTCAGGCCCTATTGTGACGAGGCC
361 A L T K D T N S P L T K I H F V A E G E V T F K A L Y V P
1171 ACCGTCCAACCGTCTGAGAGCTTCAACAAATATGGCACCAAAACAGACAATATAAAATTATATGTTTCGTCGCGTATTTCATCACTGACGAA
391 T V Q P S E S F N K Y G T K T D N I K L Y V R R V F I T D E
1261 TTTAACGCATGATGCCTTCACTTGAACCTTTGTGAGAGGAGTTGTGGACTCGGACGACCTACCTTTGAACGTATCTCGTGAAACCTTG
421 F N D M M P S Y L N F V R G V V D S D D L P L N V S R E T L
1351 CAACAACACAACTTATCAAGTGATCAAGAAAAGTTGGTCCGTAAAGTACTGGACATGCTCAAGAAGCTTCTGAGGAGGACTTTGAG
451 Q Q H K L I K V I K K K L V R K V L D M L K K L P E E D F E
1441 AAGTTTGAAGGAATTCCTCCACAAATCAAGCTGGGAGTTATCGAGGATCCAACAAATCGCTCCAGATTGGCCAAACTTCTTCATTTTC
481 K F W K E F S T N I K L G V I E D P T N R S R L A K L L H F
1531 TTCTCCTCAATGACAAATAACAGACTGGCTTAGCAGAATATGTGAGCCGATGAAGCCCAACAGACAAAATCTTCTACATCGCAGGA
511 F S S N D N K Q T G L A E Y V S R M K P K Q D K I F Y I A G
1621 GCCTCGAAAGCCGAGGTGCAAAAGTCACCTTTTGTGAACGGCTGTTCGCTAAGGGATACGAAGTCTTGTACCTGGTAGAAGCGGTCGAT
541 A S K A E V Q K S P F V E R L L R K G Y E V L Y L V E A V D
1711 GAATATACTATTTCGCCCTTCCTGAATTTGAAGGCAAGAAATTCAGAACGTTGCCAAGGAAGGGTTCTCCTTAACCGAAAAGTGAAGGA
571 E Y T I S A L P E F E G K K F Q N V A K E G F S L T E S E G
1801 GGCAAGGACCAATTGGATCAGTTGAAGACCACTTTTGAGCCCCCTACCAAAATGGTTGTGCGAAAACGCTCTGAAGGATCAGTTGCCAAA
601 G K D O L D O L K T T F E P L T K W L S E N A L K D H V A K
1891 GCTATGGTATCCGAAAGATTGTGAGATTCCCTTGTGCTCTAGTAGCAAGCTTGTTCGGCTGGACCGGAAACATGGAAGACTTGCCGTT
631 A M V S E R L L S D S P C A L V A S L F G W T G N M E R L A V
1981 TCCAATGCCATCAAAAATCAGATGATCCTCAGAGGTCCTACTATTGAACCAAAAGAACCTTGAGATCAATCCAGACACCCGCTG
661 S N A H Q K S D D P Q R S Y Y L N Q K K T L E I N P R H P L
2071 ATGCGAGAGTTATTGAAGAGGTTAACGATGATGCGGATGACCCGACAGCGAAGACATGGCACTGATGATGTTGAGAACGGCAACTCTG
691 M R E L L K R V N D A D D P T A K D M A L M M F R T A T L
2161 AGATCTGGGTACATGCTGAAAGATACATCCGATTTTGCCAGTCCATCGAAGTTATGATGAGAAAGACGCTAGGGGTTCTCTGGACGAG
721 R S G Y M L K D T S D F A Q S I E V M M R K T L G V P L D E
2251 CAAGTGGAGGAAGAGGAAGATGTTCCCGAGGATGGCATTCAGAGGACGAGAAATGGAGATATTAAGGATGAGGAGGAGAGAGCAAGAG
751 Q V E E E D V P E D G I P E D E N G D I K D E E E R D E E
2341 CATGACGAACGTAA
781 H D E L *

```

Figure S1 The coding sequences and their deduced amino acid sequences for AglaHsp20.43, AglaHsp71.18, AglaHsp82.09, and AglaHsp89.76. The signal peptide sites and protein conserved domains are marked with black and red underscores, respectively. The signature sequences and subcellular localization motifs are marked with gray and red backgrounds, respectively.