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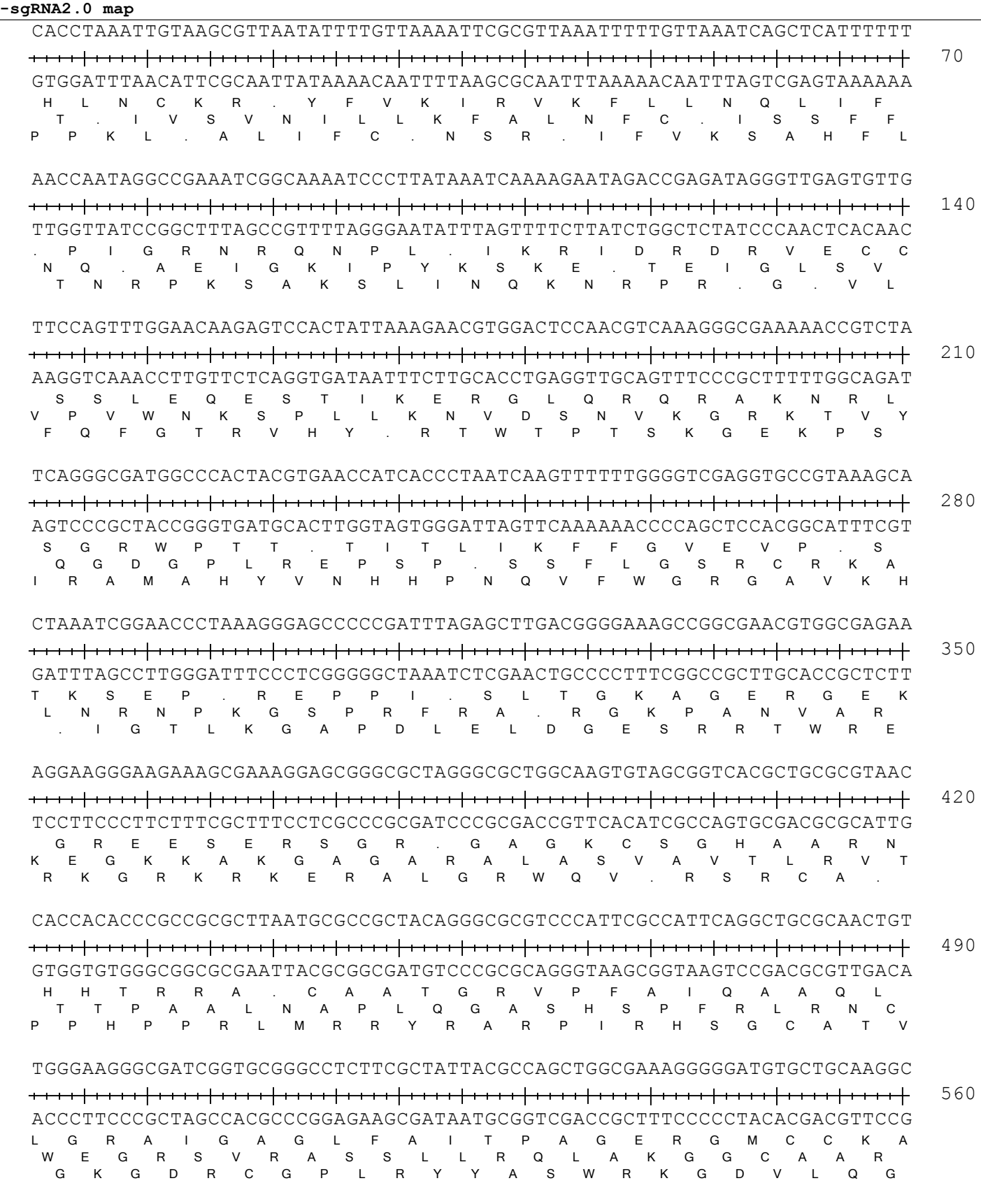

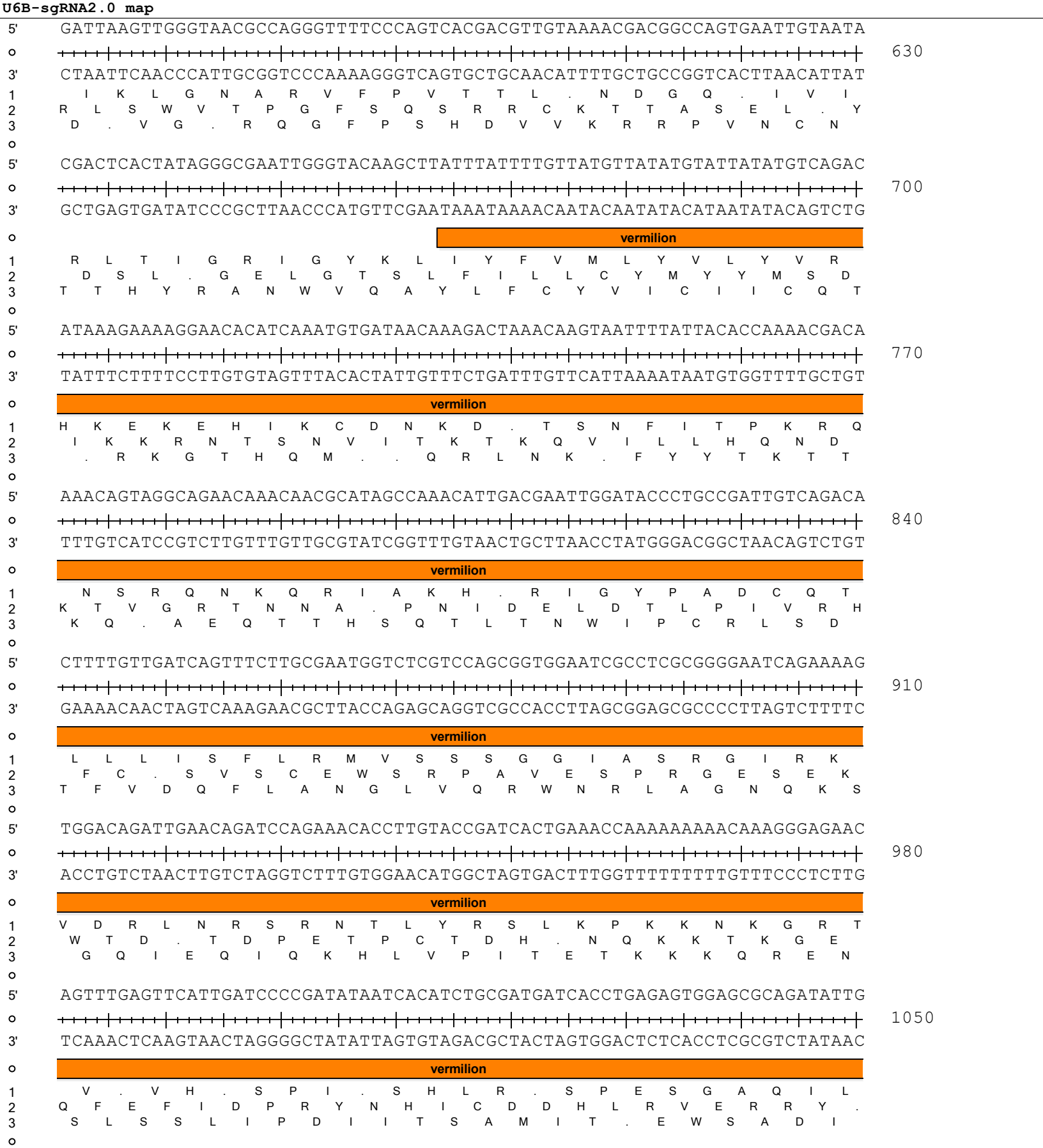
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1 I K L G N A R V F P V T T L . N D G Q . I V I
2 R L S W V T P G F S Q S R R C K T T A S E L . Y
3 D . V G . R Q G F P S H D V V K R R P V N C N
5' CGACTCACTATAGGGCGAATTGGGTACAAGCTTATTTATTTTGTTATGTTATATGTATTATATGTCAGAC
700
3' GCTGAGTGATATCCCGCTTAACCCATGTTCGAATAAATAAAACAATACAATATACATAATATACAGTCTG
vermilion
1 R L T I G R I G Y K L I Y F V M L Y V L Y V R
2 D S L . G E L G T S L F I L L C Y M Y Y M S D
3 T T H Y R A N W V Q A Y L F C Y V I C I I C Q T
5' ATAAAGAAAAGGAACACATCAAATGTGATAACAAAGACTAAACAAGTAATTTTATTACACCAAAACGACA
770
3' TATTTCTTTTCCTTGTGTAGTTTACACTATTGTTTCTGATTTGTTCATTAAAATAATGTGGTTTTGCTGT
vermilion
1 H K E K E H I K C D N K D . T S N F I T P K R Q
2 I K K R N T S N V I T K T K Q V I L L H Q N D
3 . R K G T H Q M . . Q R L N K . F Y Y T K T T
5' AAACAGTAGGCAGAACAAACAACGCATAGCCAAACATTGACGAATTGGATACCCTGCCGATTGTCAGACA
840
3' TTTGTCATCCGTCTTGTTTGTTGCGTATCGGTTTGTAACTGCTTAACCTATGGGACGGCTAACAGTCTGT
vermilion
1 N S R Q N K Q R I A K H . R I G Y P A D C Q T
2 K T V G R T N N A . P N I D E L D T L P I V R H
3 K Q . A E Q T T H S Q T L T N W I P C R L S D
5' CTTTTGTTGATCAGTTTCTTGCGAATGGTCTCGTCCAGCGGTGGAATCGCCTCGCGGGGAATCAGAAAAG
910
3' GAAAACAACTAGTCAAAGAACGCTTACCAGAGCAGGTCGCCACCTTAGCGGAGCGCCCCTTAGTCTTTTC
vermilion
1 L L L I S F L R M V S S S G G I A S R G I R K
2 F C . S V S C E W S R P A V E S P R G E S E K
3 T F V D Q F L A N G L V Q R W N R L A G N Q K S
5' TGGACAGATTGAACAGATCCAGAAACACCTTGTACCGATCACTGAAACCAAAAAAAAACAAAGGGAGAAC
980
3' ACCTGTCTAACTTGTCTAGGTCTTTGTGGAACATGGCTAGTGACTTTGGTTTTTTTTTGTTTCCCTCTTG
vermilion
1 V D R L N R S R N T L Y R S L K P K K N K G R T
2 W T D . T D P E T P C T D H . N Q K K T K G E
3 G Q I E Q I Q K H L V P I T E T K K K Q R E N
5' AGTTTGAGTTCATTGATCCCCGATATAATCACATCTGCGATGATCACCTGAGAGTGGAGCGCAGATATTG
1050
3' TCAAACTCAAGTAACTAGGGGCTATATTAGTGTAGACGCTACTAGTGGACTCTCACCTCGCGTCTATAAC
vermilion
1 V . V H . S P I . S H L R . S P E S G A Q I L
2 Q F E F I D P R Y N H I C D D H L R V E R R Y .
3 S L S S L I P D I I T S A M I T . E W S A D I

```
5'  ATAACCAGACGAGCCACCAGTGCCCAACTGTTGCGATCCAATCATGCGTTGCACCATGATCACGTGATTG
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1120
3'  TATTGGTCTGCTCGGTGGTCACGGGTTGACAACGCTAGGTTAGTACGCAACGTGGTACTAGTGCACTAAC
```

vermilion

```
1    I  T  R  R  A  T  S  A  Q  L  L  R  S  N  H  A  L  H  H  D  H  V  I
2       .  P  D  E  P  P  V  P  N  C  C  D  P  I  M  R  C  T  M  I  T  .  L
3    D  N  Q  T  S  H  Q  C  P  T  V  A  I  Q  S  C  V  A  P  .  S  R  D  C
o
5'  TCTGCGGCGGGAATAGAAAGTATTTGGTTAGGAAAACCAGTCTTAAACATAAGATATATTTATAAAAGAG
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1190
3'  AGACGCCGCCCTTATCTTTCATAAACCAATCCTTTTGGTCAGAATTTGTATTCTATATAAATATTTTCTC
```

vermilion

```
1    V  C  G  G  N  R  K  Y  L  V  R  K  T  S  L  K  H  K  I  Y  L  .  K  S
2       S  A  A  G  I  E  S  I  W  L  G  K  P  V  L  N  I  R  Y  I  Y  K  R
3          L  R  R  E  .  K  V  F  G  .  E  N  Q  S  .  T  .  D  I  F  I  K  E
o
5'  TATCAAAGAATGCAATACTTACATCTCCACTTGGTTATTAACGAGTCGATGTCCATGAGCAGGGTGAGCA
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1260
3'  ATAGTTTCTTACGTTATGAATGTAGAGGTGAACCAATAATTGCTCAGCTACAGGTACTCGTCCCACTCGT
```

vermilion

```
1       I  K  E  C  N  T  Y  I  S  T  W  L  L  T  S  R  C  P  .  A  G  .  A
2    V  S  K  N  A  I  L  T  S  P  L  G  Y  .  R  V  D  V  H  E  Q  G  E  Q
3       Y  Q  R  M  Q  Y  L  H  L  H  L  V  I  N  E  S  M  S  M  S  R  V  S
o
5'  ACTGGTGTGGTTGGCTGAACCTGGGTTCATCCCTATAGAAGGTGATCATGATGGCTCCCTGAAGGGCACG
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1330
3'  TGACCACACCAACCGACTTGGACCCAAGTAGGGATATCTTCCACTAGTACTACCGAGGGACTTCCCGTGC
```

vermilion

```
1    T  G  V  V  G  .  T  W  V  H  P  Y  R  R  .  S  .  W  L  P  E  G  H
2       L  V  W  L  A  E  P  G  F  I  P  I  E  G  D  H  D  G  S  L  K  G  T
3    N  W  C  G  W  L  N  L  G  S  S  L  .  K  V  I  M  M  A  P  .  R  A  R
o
5'  ATGGCTAAACCGGCGATCCCCACGACGCACCAGTGCATCGTGCACTGCCGGATCAAAGATGGAGCGATAC
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1400
3'  TACCGATTTGGCCGCTAGGGGTGCTGCGTGGTCACGTAGCACGTGACGGCCTAGTTTCTACCTCGCTATG
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vermilion

```
1    D  G  .  T  G  D  P  H  D  A  P  V  H  R  A  L  P  D  Q  R  W  S  D  T
2       M  A  K  P  A  I  P  T  T  H  Q  C  I  V  H  C  R  I  K  D  G  A  I
3          W  L  N  R  R  S  P  R  R  T  S  A  S  C  T  A  G  S  K  M  E  R  Y
o
5'  ACCTCGCGTCGCTTCTCAATGTCCATGAGGCGGTAGTTTTTCGCCTTCTCCACGGGCTCCTCCATGGCGC
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1470
3'  TGGAGCGCAGCGAAGAGTTACAGGTACTCCGCCATCAAAAAGCGGAAGAGGTGCCCGAGGAGGTACCGCG
```

vermilion

```
1       P  R  V  A  S  Q  C  P  .  G  G  S  F  S  P  S  P  R  A  P  P  W  R
2    H  L  A  S  L  L  N  V  H  E  A  V  V  F  R  L  L  H  G  L  L  H  G  A
3       T  S  R  R  F  S  M  S  M  R  R  .  F  F  A  F  S  T  G  S  S  M  A
o
5'  TCTGTACCTGCGCCTCCAGGAATCGATCGACGCTCTCCTGAAACTTGGCCCAGAAGTTGAAGCCACTCTC
o  +----|----|----|----|----|----|----|----|----|----|----|----|----|----|  1540
3'  AGACATGGACGCGGAGGTCCTTAGCTAGCTGCGAGAGGACTTTGAACCGGGTCTTCAACTTCGGTGAGAG
```

vermilion

```
1    S  V  P  A  P  P  G  I  D  R  R  S  P  E  T  W  P  R  S  .  S  H  S
2       L  Y  L  R  L  Q  E  S  I  D  A  L  L  K  L  G  P  E  V  E  A  T  L
3    L  C  T  C  A  S  R  N  R  S  T  L  S  .  N  L  A  Q  K  L  K  P  L  S
o
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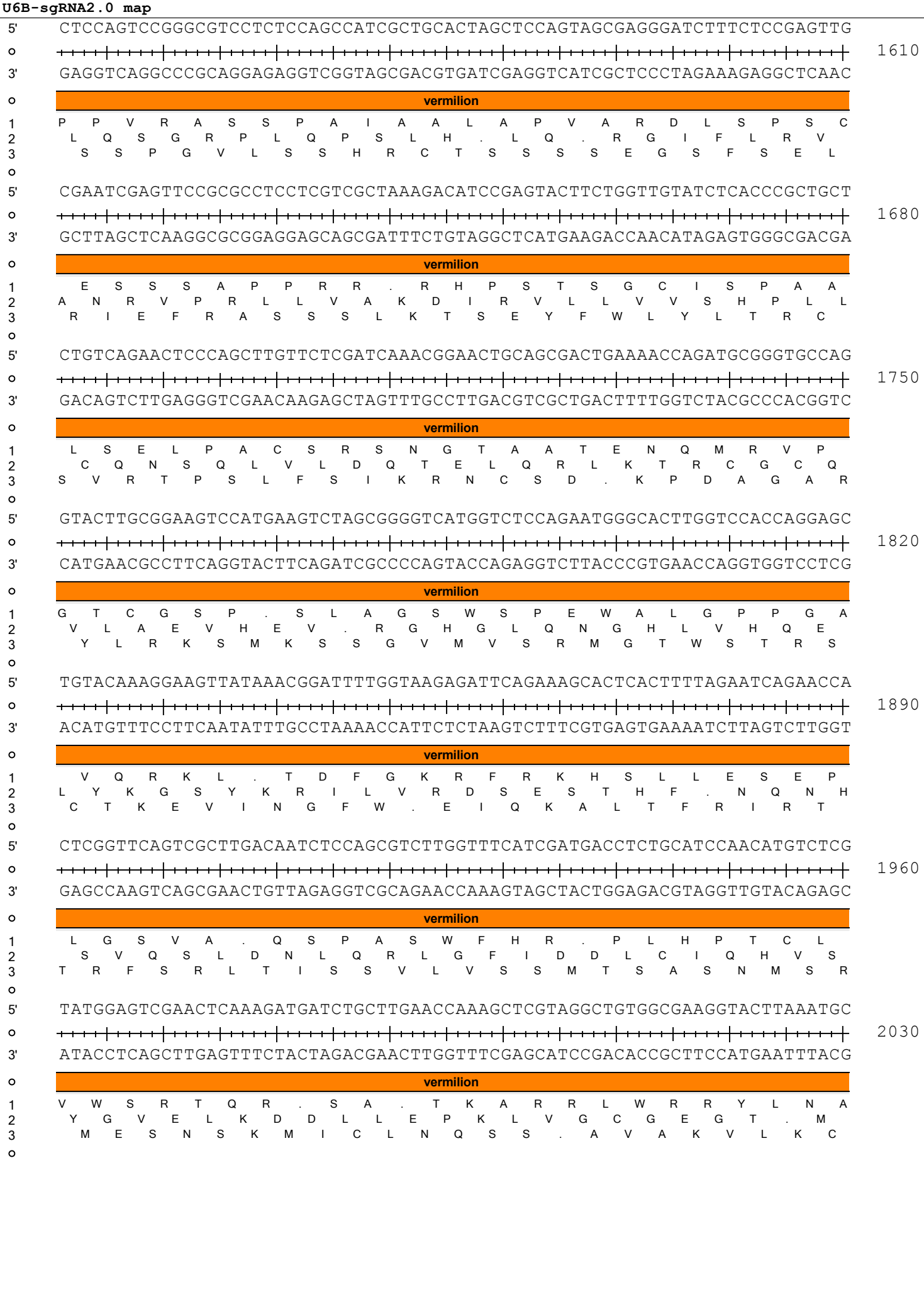
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1610
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vermilion
P P V R A S S P A I A A L A P V A R D L S P S C
L Q S G R P L Q P S L H . L Q . R G I F L R V
S S P G V L S S H R C T S S S S E G S F S E L
5' CGAATCGAGTTCCGCGCCTCCTCGTCGCTAAAGACATCCGAGTACTTCTGGTTGTATCTCACCCGCTGCT
1680
3' GCTTAGCTCAAGGCGCGGAGGAGCAGCGATTTCTGTAGGCTCATGAAGACCAACATAGAGTGGGCGACGA
vermilion
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A N R V P R L L V A K D I R V L L V V S H P L L
R I E F R A S S S L K T S E Y F W L Y L T R C
5' CTGTCAGAACTCCCAGCTTGTTCTCGATCAAACGGAACTGCAGCGACTGAAAACCAGATGCGGGTGCCAG
1750
3' GACAGTCTTGAGGGTCGAACAAGAGCTAGTTTGCCTTGACGTCGCTGACTTTTGGTCTACGCCCACGGTC
vermilion
L S E L P A C S R S N G T A A T E N Q M R V P
C Q N S Q L V L D Q T E L Q R L K T R C G C Q
S V R T P S L F S I K R N C S D . K P D A G A R
5' GTACTTGCGGAAGTCCATGAAGTCTAGCGGGGTCATGGTCTCCAGAATGGGCACTTGGTCCACCAGGAGC
1820
3' CATGAACGCCTTCAGGTACTTCAGATCGCCCCAGTACCAGAGGTCTTACCCGTGAACCAGGTGGTCCTCG
vermilion
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V L A E V H E V . R G H G L Q N G H L V H Q E
Y L R K S M K S S G V M V S R M G T W S T R S
5' TGTACAAAGGAAGTTATAAACGGATTTTGGTAAGAGATTCAGAAAGCACTCACTTTTAGAATCAGAACCA
1890
3' ACATGTTTCCTTCAATATTTGCCTAAAACCATTCTCTAAGTCTTTCGTGAGTGAAAATCTTAGTCTTGGT
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L Y K G S Y K R I L V R D S E S T H F . N Q N H
C T K E V I N G F W . E I Q K A L T F R I R T
5' CTCGGTTCAGTCGCTTGACAATCTCCAGCGTCTTGGTTTCATCGATGACCTCTGCATCCAACATGTCTCG
1960
3' GAGCCAAGTCAGCGAACTGTTAGAGGTCGCAGAACCAAAGTAGCTACTGGAGACGTAGGTTGTACAGAGC
vermilion
L G S V A . Q S P A S W F H R . P L H P T C L
S V Q S L D N L Q R L G F I D D L C I Q H V S
T R F S R L T I S S V L V S S M T S A S N M S R
5' TATGGAGTCGAACTCAAAGATGATCTGCTTGAACCAAAGCTCGTAGGCTGTGGCGAAGGTACTTAAATGC
2030
3' ATACCTCAGCTTGAGTTTCTACTAGACGAACTTGGTTTCGAGCATCCGACACCGCTTCCATGAATTTACG
vermilion
V W S R T Q R . S A . T K A R R L W R R Y L N A
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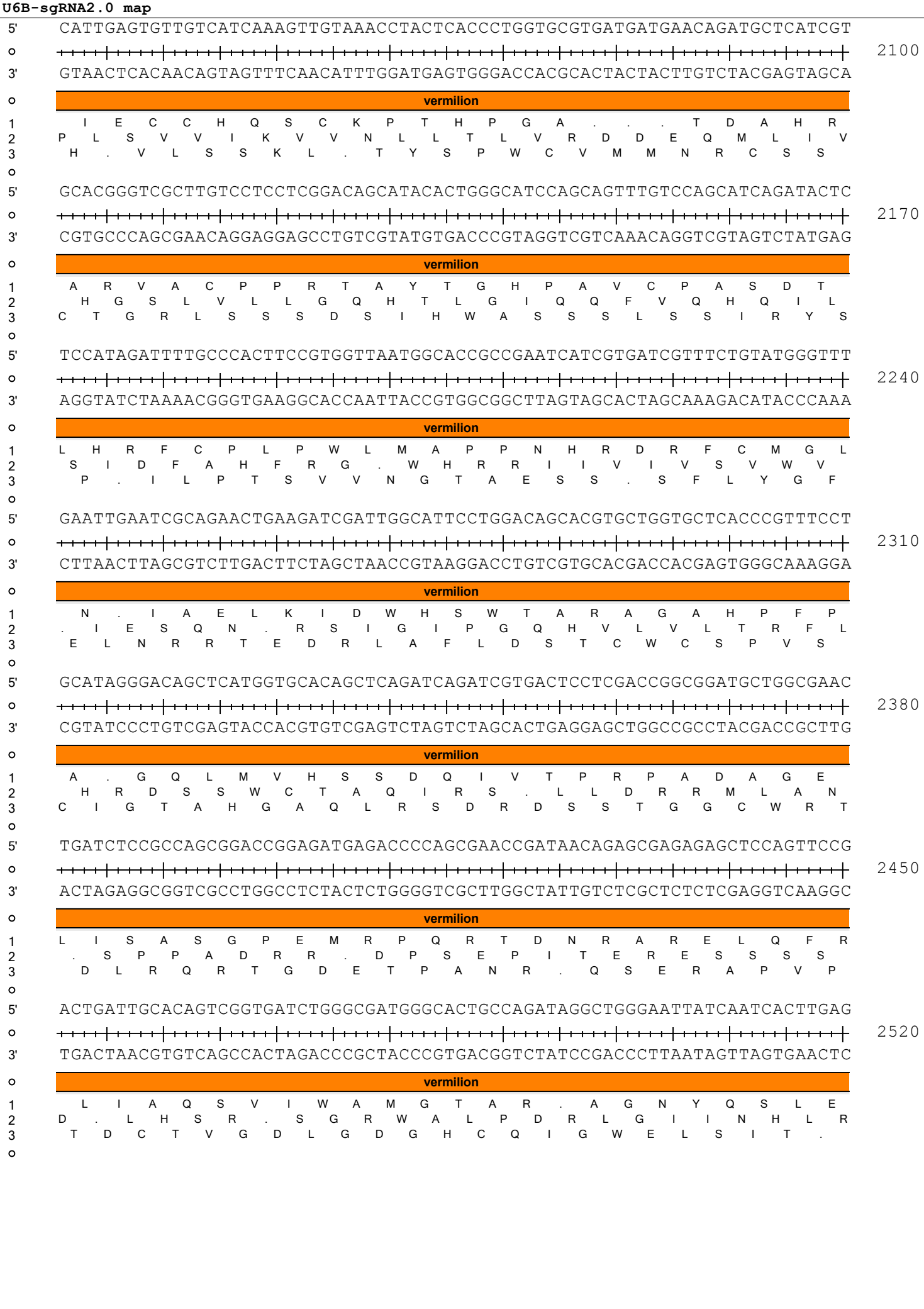
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2100
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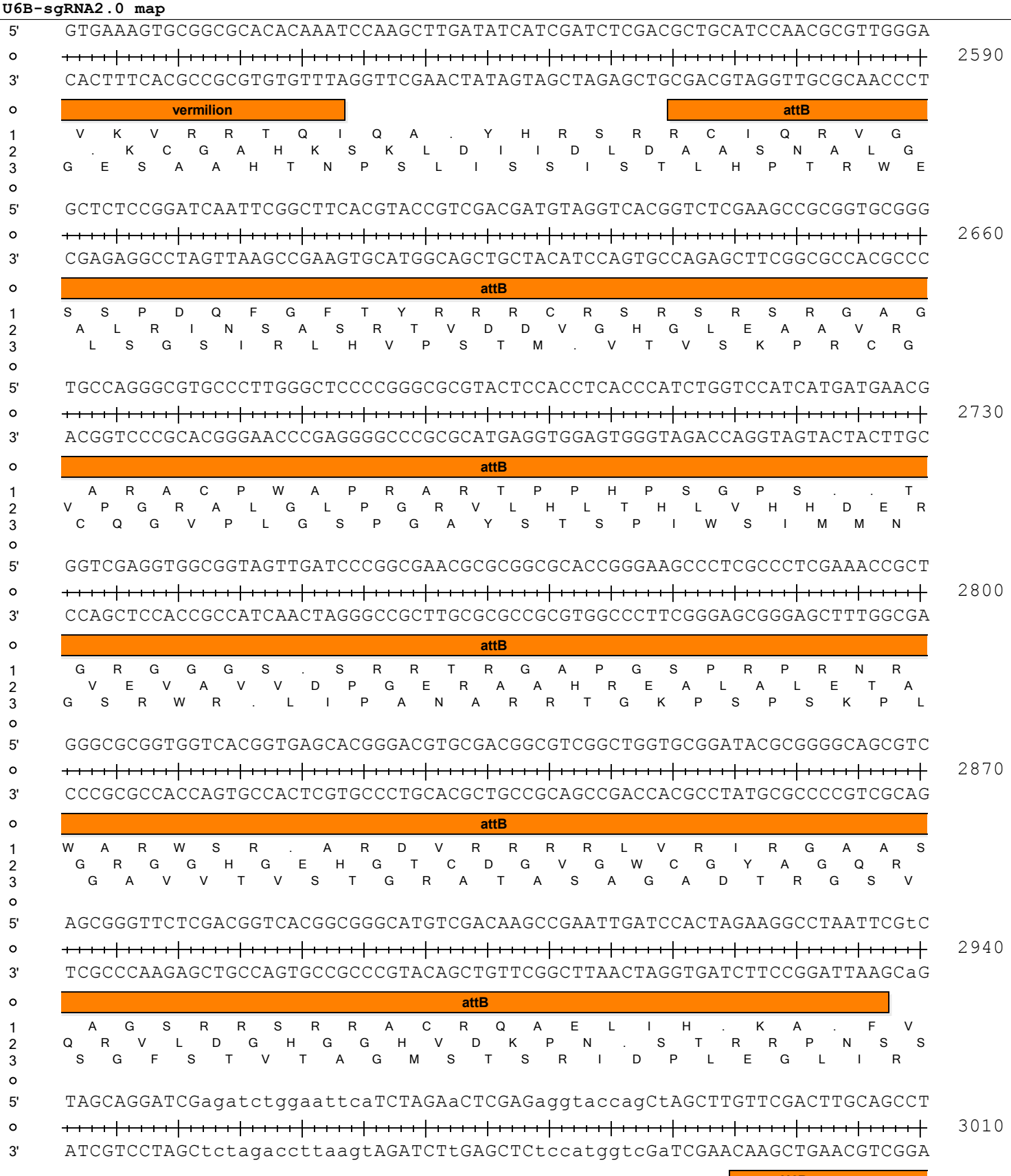
vermilion
I E C C H Q S C K P T H P G A . . . T D A H R
P L S V V I K V V N L L T L V R D D E Q M L I V
H . V L S S K L . T Y S P W C V M M N R C S S
5' GCACGGGTCGCTTGTCCTCCTCGGACAGCATACACTGGGCATCCAGCAGTTTGTCCAGCATCAGATACTC
2170
3' CGTGCCCAGCGAACAGGAGGAGCCTGTCGTATGTGACCCGTAGGTCGTCAAACAGGTCGTAGTCTATGAG
vermilion
A R V A C P P R T A Y T G H P A V C P A S D T
H G S L V L L G Q H T L G I Q Q F V Q H Q I L
C T G R L S S S D S I H W A S S S L S S I R Y S
5' TCCATAGATTTTGCCCACTTCCGTGGTTAATGGCACCGCCGAATCATCGTGATCGTTTCTGTATGGGTTT
2240
3' AGGTATCTAAAACGGGTGAAGGCACCAATTACCGTGGCGGCTTAGTAGCACTAGCAAAGACATACCCAAA
vermilion
L H R F C P L P W L M A P P N H R D R F C M G L
S I D F A H F R G . W H R R I I V I V S V W V
P . I L P T S V V N G T A E S S . S F L Y G F
5' GAATTGAATCGCAGAACTGAAGATCGATTGGCATTCCTGGACAGCACGTGCTGGTGCTCACCCGTTTCCT
2310
3' CTTAACTTAGCGTCTTGACTTCTAGCTAACCGTAAGGACCTGTCGTGCACGACCACGAGTGGGCAAAGGA
vermilion
N . I A E L K I D W H S W T A R A G A H P F P
. I E S Q N . R S I G I P G Q H V L V L T R F L
E L N R R T E D R L A F L D S T C W C S P V S
5' GCATAGGGACAGCTCATGGTGCACAGCTCAGATCAGATCGTGACTCCTCGACCGGCGGATGCTGGCGAAC
2380
3' CGTATCCCTGTCGAGTACCACGTGTCGAGTCTAGTCTAGCACTGAGGAGCTGGCCGCCTACGACCGCTTG
vermilion
A . G Q L M V H S S D Q I V T P R P A D A G E
H R D S S W C T A Q I R S . L L D R R M L A N
C I G T A H G A Q L R S D R D S S T G G C W R T
5' TGATCTCCGCCAGCGGACCGGAGATGAGACCCCAGCGAACCGATAACAGAGCGAGAGAGCTCCAGTTCCG
2450
3' ACTAGAGGCGGTCGCCTGGCCTCTACTCTGGGGTCGCTTGGCTATTGTCTCGCTCTCTCGAGGTCAAGGC
vermilion
L I S A S G P E M R P Q R T D N R A R E L Q F R
. S P P A D R R . D P S E P I T E R E S S S S
D L R Q R T G D E T P A N R . Q S E R A P V P
5' ACTGATTGCACAGTCGGTGATCTGGGCGATGGGCACTGCCAGATAGGCTGGGAATTATCAATCACTTGAG
2520
3' TGACTAACGTGTCAGCCACTAGACCCGCTACCCGTGACGGTCTATCCGACCCTTAATAGTTAGTGAACTC
vermilion
L I A Q S V I W A M G T A R . A G N Y Q S L E
D . L H S R . S G R W A L P D R L G I I N H L R
T D C T V G D L G D G H C Q I G W E L S I T .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2590
3' CACTTTCACGCCGCGTGTGTTTAGGTTCGAACTATAGTAGCTAGAGCTGCGACGTAGGTTGCGCAACCCT
vermilion
attB
V K V R R T Q I Q A . Y H R S R R C I Q R V G
. K C G A H K S K L D I I D L D A A S N A L G
G E S A A H T N P S L I S S I S T L H P T R W E
5' GCTCTCCGGATCAATTCGGCTTCACGTACCGTCGACGATGTAGGTCACGGTCTCGAAGCCGCGGTGCGGG
2660
3' CGAGAGGCCTAGTTAAGCCGAAGTGCATGGCAGCTGCTACATCCAGTGCCAGAGCTTCGGCGCCACGCCC
attB
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A L R I N S A S R T V D D V G H G L E A A V R
L S G S I R L H V P S T M . V T V S K P R C G
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2730
3' ACGGTCCCGCACGGGAACCCGAGGGGCCCGCGCATGAGGTGGAGTGGGTAGACCAGGTAGTACTACTTGC
attB
A R A C P W A P R A R T P P H P S G P S . . T
V P G R A L G L P G R V L H L T H L V H H D E R
C Q G V P L G S P G A Y S T S P I W S I M M N
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2800
3' CCAGCTCCACCGCCATCAACTAGGGCCGCTTGCGCGCCGCGTGGCCCTTCGGGAGCGGGAGCTTTGGCGA
attB
G R G G G S . S R R T R G A P G S P R P R N R
V E V A V V D P G E R A A H R E A L A L E T A
G S R W R . L I P A N A R R T G K P S P S K P L
5' GGGCGCGGTGGTCACGGTGAGCACGGGACGTGCGACGGCGTCGGCTGGTGCGGATACGCGGGGCAGCGTC
2870
3' CCCGCGCCACCAGTGCCACTCGTGCCCTGCACGCTGCCGCAGCCGACCACGCCTATGCGCCCCGTCGCAG
attB
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G R G G H G E H G T C D G V G W C G Y A G Q R
G A V V T V S T G R A T A S A G A D T R G S V
5' AGCGGGTTCTCGACGGTCACGGCGGGCATGTCGACAAGCCGAATTGATCCACTAGAAGGCCTAATTCGtC
2940
3' TCGCCCAAGAGCTGCCAGTGCCGCCCGTACAGCTGTTCGGCTTAACTAGGTGATCTTCCGGATTAAGCaG
attB
A G S R R S R R A C R Q A E L I H . K A . F V
Q R V L D G H G G H V D K P N . S T R R P N S S
S G F S T V T A G M S T S R I D P L E G L I R
5' TAGCAGGATCGagatctggaattcaTCTAGAaCTCGAGaggtaccagCtAGCTTGTTCGACTTGCAGCCT
3010
3' ATCGTCCTAGCtctagaccttaagtAGATCTtGAGCTCtccatggtcGaTCGAACAAGCTGAACGTCGGA
U6B promotor
. Q D R D L E F I . N S R G T S . L V R L A A
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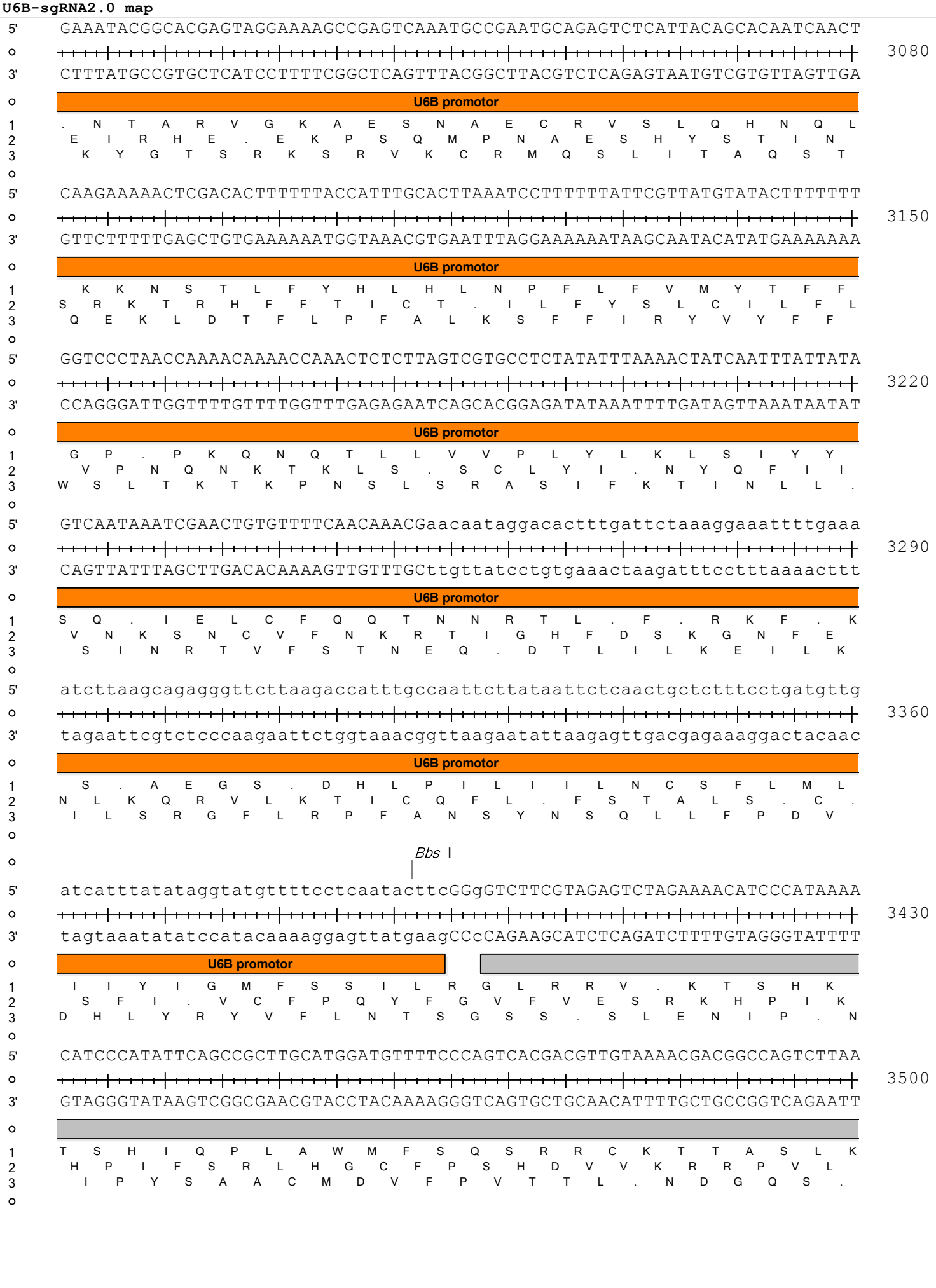
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3080
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U6B promotor
. N T A R V G K A E S N A E C R V S L Q H N Q L
E I R H E . E K P S Q M P N A E S H Y S T I N
K Y G T S R K S R V K C R M Q S L I T A Q S T
5' CAAGAAAAACTCGACACTTTTTTACCATTTGCACTTAAATCCTTTTTTATTCGTTATGTATACTTTTTTT
3150
3' GTTCTTTTTGAGCTGTGAAAAAATGGTAAACGTGAATTTAGGAAAAAATAAGCAATACATATGAAAAAAA
U6B promotor
K K N S T L F Y H L H L N P F L F V M Y T F F
S R K T R H F F T I C T . I L F Y S L C I L F L
Q E K L D T F L P F A L K S F F I R Y V Y F F
5' GGTCCCTAACCAAAACAAAACCAAACTCTCTTAGTCGTGCCTCTATATTTAAAACTATCAATTTATTATA
3220
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U6B promotor
G P . P K Q N Q T L L V V P L Y L K L S I Y Y
V P N Q N K T K L S . S C L Y I . N Y Q F I I
W S L T K T K P N S L S R A S I F K T I N L L .
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3290
3' CAGTTATTTAGCTTGACACAAAAGTTGTTTGCttgttatcctgtgaaactaagatttcctttaaaacttt
U6B promotor
S Q . I E L C F Q Q T N N R T L . F . R K F . K
V N K S N C V F N K R T I G H F D S K G N F E
S I N R T V F S T N E Q . D T L I L K E I L K
5' atcttaagcagagggttcttaagaccatttgccaattcttataattctcaactgctctttcctgatgttg
3360
3' tagaattcgtctcccaagaattctggtaaacggttaagaatattaagagttgacgagaaaggactacaac
U6B promotor
S . A E G S . D H L P I L I I L N C S F L M L
N L K Q R V L K T I C Q F L . F S T A L S . C .
I L S R G F L R P F A N S Y N S Q L L F P D V
Bbs I
5' atcatttatataggtatgttttcctcaatacttcGGgGTCTTCGTAGAGTCTAGAAAACATCCCATAAAA
3430
3' tagtaaatatatccatacaaaaggagttatgaagCCcCAGAAGCATCTCAGATCTTTTGTAGGGTATTTT
U6B promotor
I I Y I G M F S S I L R G L R R V . K T S H K
S F I . V C F P Q Y F G V F V E S R K H P I K
D H L Y R Y V F L N T S G S S . S L E N I P . N
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3500
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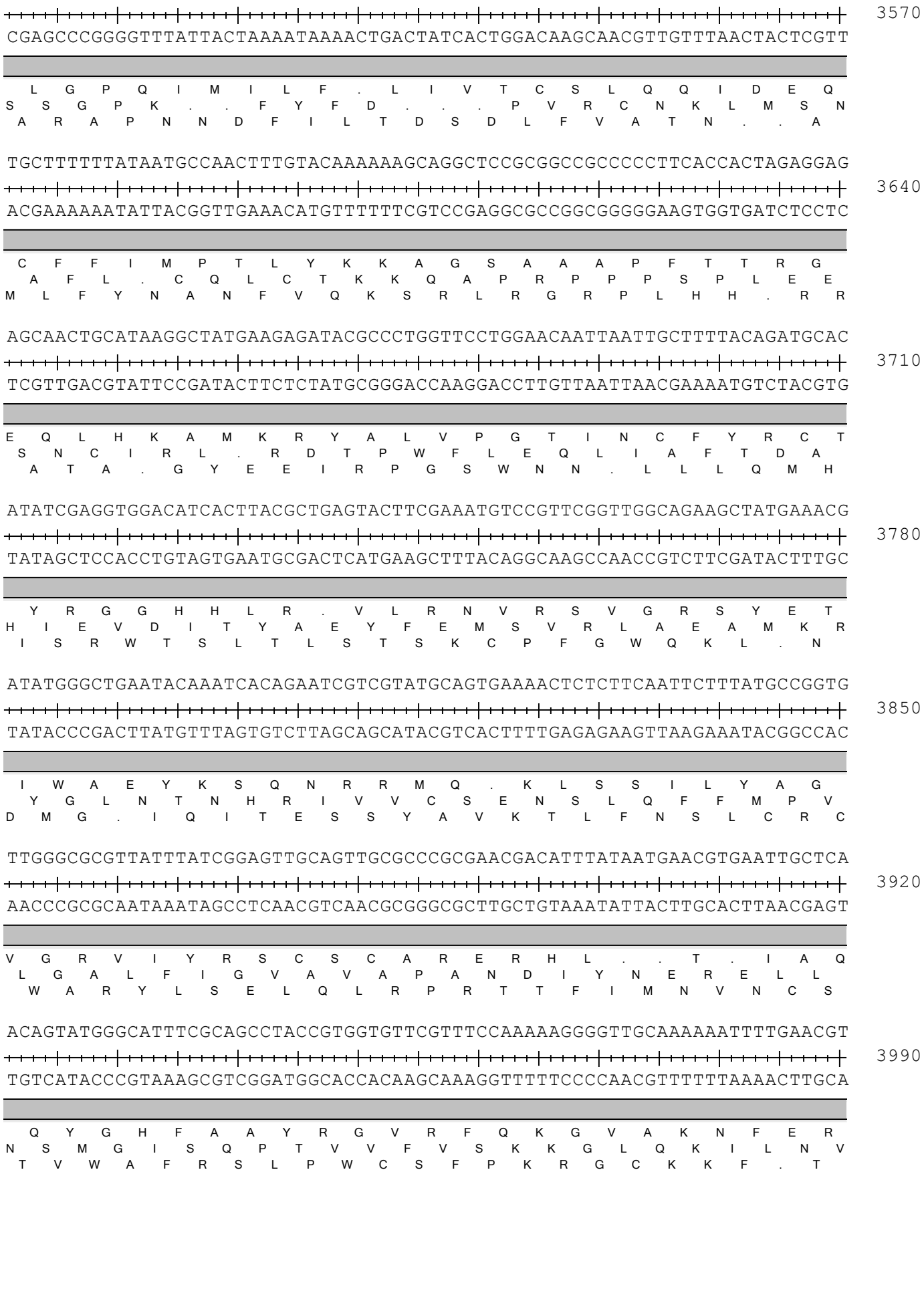
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3570
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L G P Q I M I L F . L I V T C S L Q Q I D E Q
S S G P K . . F Y F D . . . P V R C N K L M S N
A R A P N N D F I L T D S D L F V A T N . . A
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3640
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C F F I M P T L Y K K A G S A A A P F T T R G
A F L . C Q L C T K K Q A P R P P P S P L E E
M L F Y N A N F V Q K S R L R G R P L H H . R R
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3710
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E Q L H K A M K R Y A L V P G T I N C F Y R C T
S N C I R L . R D T P W F L E Q L I A F T D A
A T A . G Y E E I R P G S W N N . L L L Q M H
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3780
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Y R G G H H L R . V L R N V R S V G R S Y E T
H I E V D I T Y A E Y F E M S V R L A E A M K R
I S R W T S L T L S T S K C P F G W Q K L . N
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3850
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I W A E Y K S Q N R R M Q . K L S S I L Y A G
Y G L N T N H R I V V C S E N S L Q F F M P V
D M G . I Q I T E S S Y A V K T L F N S L C R C
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W A R Y L S E L Q L R P R T T F I M N V N C S
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3990
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Q Y G H F A A Y R G V R F Q K G V A K N F E R
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A K K A P N H P K N Y Y H G F . N G L P G I S
Q K K L P I I Q K I I I M D S K T D Y Q G F Q
C K K S S Q S S K K L L S W I L K R I T R D F S
Bbs I
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4130
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S M . I G E D L F . S . A N M R I T H V C R A
R C E L E K T C F R A R P T . G S P M S A G P
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gRNA core
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. Q V K I R L V R Y Q L G Q H E D H P C L Q G Q
S K L K . G . S V I N L A N M R I T H V C R A
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4270
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gRNA core
U6B 3'UTR
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V A P S R C F F C S P V I A P T Q I Q K H Q I
K W H R V G A F F A H L . L L L L K Y K N I K F
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F C Q . S I F I Y I Y F T G K N Y . R N I . T
S V N K A Y L F I F I L Q E R I T S V I Y R Q
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G F P L T Y I H L T C V Y L D I I V M F S H L
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W F S V D V H T S D V C L F R H N S Y V F T S
5' TTTAATGTTCGCTTAATGCGTATGCATACAAAATTTTTAATTTTCAACACAGTTGTTTTTGTTTTCATCA
4480
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L M F A . C V C I Q N F . F S T Q L F L F S S
F . C S L N A Y A Y K I F N F Q H S C F C F H H


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4550
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2 L A . Y I D N G F P L T Y I H L T C V Y L D I
3 . R N I . T M V F R . R T Y I . R V F I . T .
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4620
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3 . L C F H I F L M F A . C V C I Q N F . F S T
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4690
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5040
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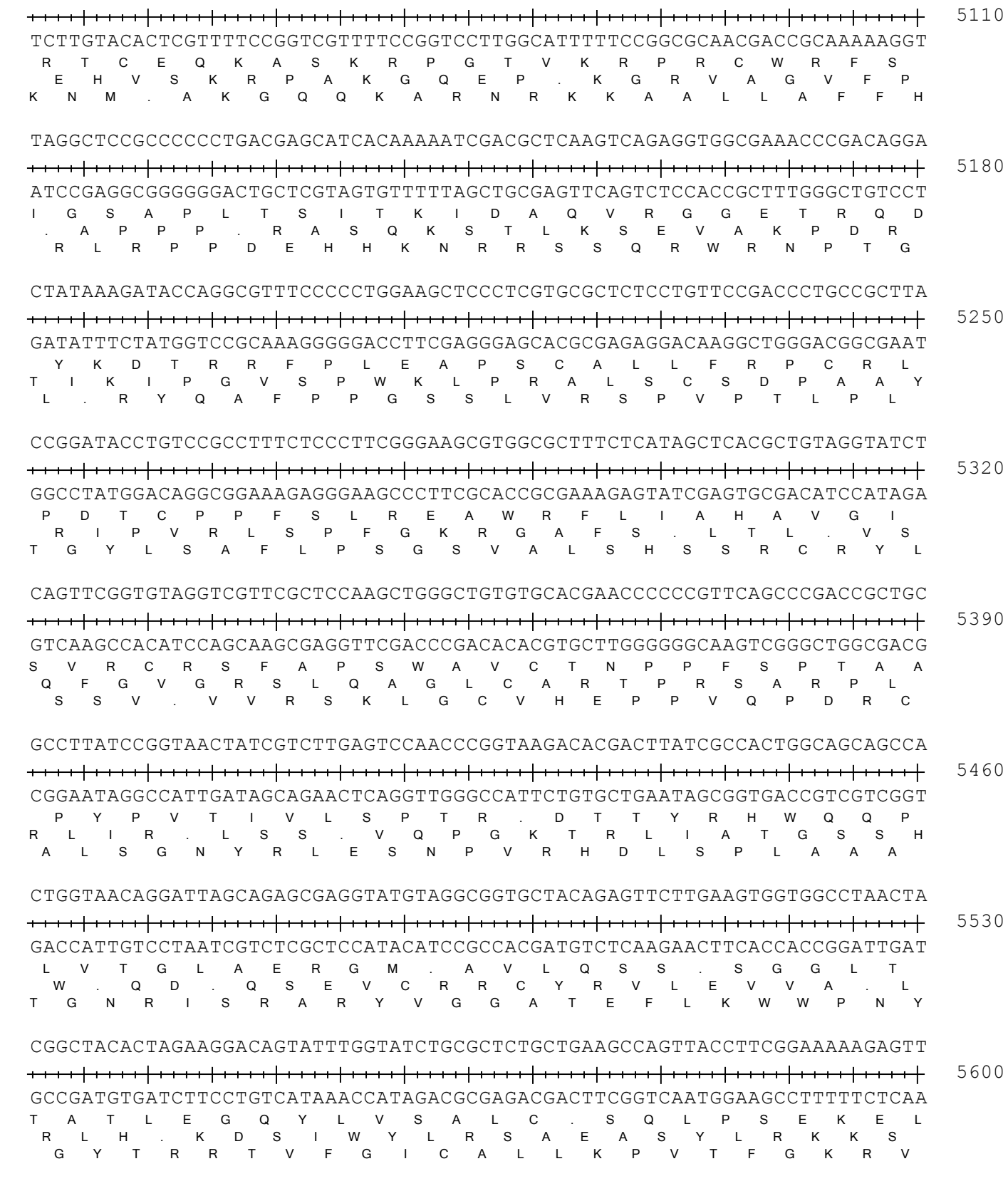
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2  W  .  L  L  I  R  Q  T  N  H  R  W  .  R  W  F  F  C  L  Q  A  A  D  Y
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o

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o

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2     K  L  T  L  R  D  F  G  H  E  I  I  K  K  D  L  H  L  D  P  F  K  L
3     N  S  R  .  G  I  L  V  M  R  L  S  K  R  I  F  T  .  I  L  L  N  .
o

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o                                                          <--AmpR
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2  K  M  K  F  .  I  N  L  K  Y  I  .  V  N  L  V  .  Q  L  P  M  L  N  Q
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o

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o

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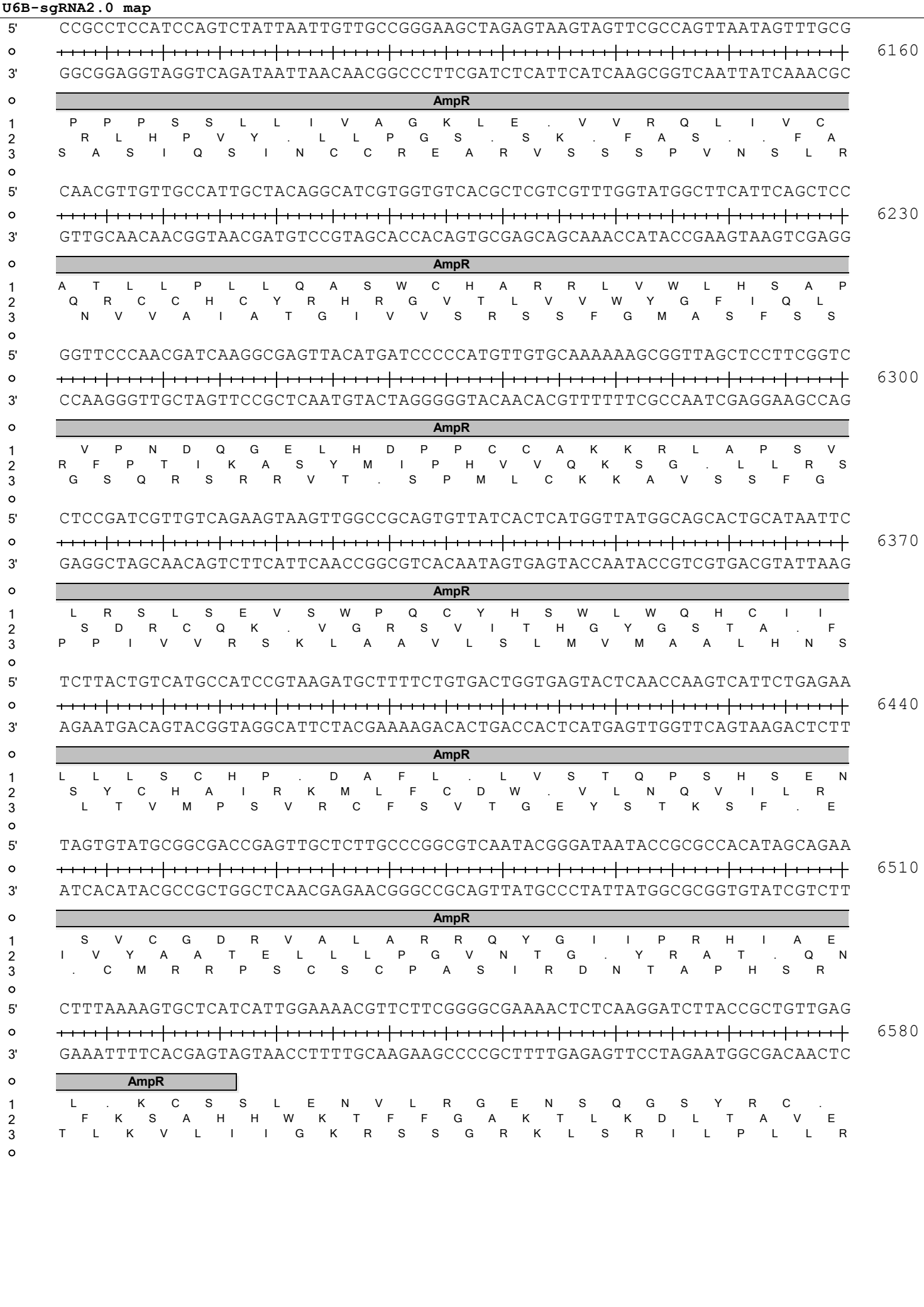
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6230
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5'  ATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCT
o  |....|....|....|....|....|....|....|....|....|....|....|....|....|....|  6650
3'  TAGGTCAAGCTACATTGGGTGAGCACGTGGGTTGACTAGAAGTCGTAGAAAATGAAAGTGGTCGCAAAGA
1   D  P  V  R  C  N  P  L  V  H  P  T  D  L  Q  H  L  L  L  S  P  A  F  L
2    I  Q  F  D  V  T  H  S  C  T  Q  L  I  F  S  I  F  Y  F  H  Q  R  F
3     S  S  S  M  .  P  T  R  A  P  N  .  S  S  A  S  F  T  F  T  S  V  S
o

5'  GGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATAC
o  |....|....|....|....|....|....|....|....|....|....|....|....|....|....|  6720
3'  CCCACTCGTTTTTGTCCTTCCGTTTTACGGCGTTTTTTCCCTTATTCCCGCTGTGCCTTTACAACTTATG
1     G  E  Q  K  Q  E  G  K  M  P  Q  K  R  E  .  G  R  H  G  N  V  E  Y
2   W  V  S  K  N  R  K  A  K  C  R  K  K  G  N  K  G  D  T  E  M  L  N  T
3     G  .  A  K  T  G  R  Q  N  A  A  K  K  G  I  R  A  T  R  K  C  .  I
o

5'  TCATACTCTTCCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATT
o  |....|....|....|....|....|....|....|....|....|....|....|....|....|....|  6790
3'  AGTATGAGAAGGAAAAAGTTATAATAACTTCGTAAATAGTCCCAATAACAGAGTACTCGCCTATGTATAA
1    S  Y  S  S  F  F  N  I  I  E  A  F  I  R  V  I  V  S  .  A  D  T  Y
2     H  T  L  P  F  S  I  L  L  K  H  L  S  G  L  L  S  H  E  R  I  H  I
3   L  I  L  F  L  F  Q  Y  Y  .  S  I  Y  Q  G  Y  C  L  M  S  G  Y  I  F
o

5'  TGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCCGAAAAGTGC
o  |....|....|....|....|....|....|....|....|....|....|....|....|  6849
3'  ACTTACATAAATCTTTTTATTTGTTTATCCCCAAGGCGCGTGTAAAGGGGCTTTTCACG
1   L  N  V  F  R  K  I  N  K  .  G  F  R  A  H  F  P  E  K  C
2    .  M  Y  L  E  K  .  T  N  R  G  S  A  H  I  S  P  K  S  A
3     E  C  I  .  K  N  K  Q  I  G  V  P  R  T  F  P  R  K  V
o
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