**Cbt mutants were generated by p-element excision. Please refer to the added comments for the mapping strategy.**

**>gi|671162316:476220-481000 Drosophila melanogaster chromosome 2L**

ACACTCATCCACTCATCAAGCAAAAAACATTCCACACTCAAGACTTAGTTCAATACCAAAATGGGGCTACATACTTTGCAAATTGTTTCAGTCGGATGAGATTTTTAAAAAGGTAAGCATAAACAATTTGGAATAGGGCTTGTCATTCTAAAAAAAAATTAAGTCACCGCAATAGACTTCTGCCCAATTACGCTTCCCTCCCAATTCATAGAATAACTTTAGTTTTCTTTGGAAAATATGTATATTTTCATTTGTTGAGATTGGAATCGTGCGATGATCCATTATTCTATTTGTTTTCATTTTCTTTTTTTCACATTTAGCAATAAATACAATTGTGTGTGTTTTAGCTTAAGAGAATTACACTGACAACTATGGTACAATAGAAAAGAGTTAAGAAAACTTAAATATCACAGATGTTGGACGCCGAATGCGTCTCTTTATAGTATGTACAAACACTAGGGATATTCAGAATATTAATCTGAAGAAGATCGCTTAGATAAGAAGTGTGCTGTGTGCTCCTGGAAAGAAGTGGCATCTATCCGATTTGGGTATTACGTATTGAATTTGAAGTTGATATATGCACAAAACGGTGACAAGATCTAGCTCCTAACTAAGCTTAAGTCTACACCAGCTACATGAGAGCGAGAAGGCATTTCGAATTTGACTCAGATGTTAATTTGTTTTGAAATTTGGTGGGAATTCATCTCTGTTTAGCTGGCGATACTGTGGGGCTGAGATTGGTTCTGATGCTGCTCGCATTGCTCTTCTCATCGCTGCACTTGAAGCAGGGTTCCGCCGAAGGTGAAACTGCTGGCCTGCTGCTGTAGCCTCAGCAGATCTTGGGCGCTGTAGACTTGCAAGCTGGCGGAACTGATGGGCGAGGAACTAGCGCTGGAGCCCGCCGGTGCTATCGCTCGCAAATGGAGCGAGGCATCGCAGAGGGAAGCCGCTACCGAAGCTGATGTGTTGTTGTTGGCCAGGGAGACATGTCGATTCACTCCGTTCGCCTTGTCCTTGTTGTGCCGTTTGACGTGCTTCGACAGGTGATCGCTTCTCATGAATTTCTTCTGGCAGACGCTGCACTGGAATTTCTTTTCACCGGTGTGGGTCCGTTTGTGTCGGGACAACTCATCGGAACGGGAGAATCGTTTGTCACAGTTCTCCCACTTGCAGATAAAGGGTCGCTCGCCGGTGTGAACCCTCTGGTGGGCCTTCAGATGACTGCTTTTGAAGTAATTCTTGCCGCAATCGGGAAAACTGCACTCGTAGATGCGACTTCTGGTGGCCGCCGCCTGGGCGGCCGTAATTCTGGTTGTTAGTTTCTCCTCGGACATTGTTGGCGTTTTGGGTACGGGTGTGGGGCTCTGTTGGGCGGCCACTGTGCTGAGCAGGATAAGTTGGCTGGCAGACGAAGCTACTGGGCTAACATATATCGGTGTCAGAATAGGTTTTATTTCCTCCTCCTTGATGCATTCCGCTGGAGCAGGTGGCGTTACAAGCTTCGCAACTGGTGTCTCGGGTGTTTGTACTGGGGGTAGTGCCACTTCTGCAGCACGCTTTCTGTTCATTTTGAACTTGAGATTGCGCCACACATTGGCCTCTGGATAGTCGTCCTCCACAGTGGGTGGTACTGAACTTGTACTTGTGTTTGTGTTGGAAGAGGAACTACAGCAGGAGGTGGAACTAGATGAGTTCTCGTCTTGGCTACTAGAAGAGACAGCGCCAGAACTGTTGACCCGCATGATGACGCTAACCCTTTCCGCTTTCTGATCATCGTCCAGCTTTTGATCCGGCGGCGGTGTCATGCTCATAGCAGGTTGTTCCAAACGGGGTTTCTTGTTGGGAACCGCTATTTCGGGAGCCTCGTCTTCCGTGTCCGATGGATTTGGTGTAATAATCCCTCCATTTTTCTGACTCTTTTGGGCCACCAGCTTGAGCTTTGCCTTTAGCAGATTCTCGTTCACCTGTTGTTCGTCCTTGGCGACCTGGAAAAGGAAAGAACAAGTTCAGGGTTAGTCAGAGTTCGTTAACATTGTCGAGTTTATGTTCTGAGGAGTGCATTCACATTCACAGTCCCATTCACTTTTCGCTGACCAGCATTGACCCACAATAACTTTTCCTCGCAATTCGCTAATTACGCCGGCGGCTGACAAGGCCGTTCACCGTTAACCTTCACACACCCTGCAATACCCCGCCCAACCCCAGGTTCAATGCTCCTTCGAAAGGCCAAGGGAACTTTGTTTTTGGCGGTTTTTGAACTCTTTTAAAGGCCGTTTGGGGTGACAGAATATTACTCATTAACTGTTGCTGCCAGCTGTGCTTTAAATTATAGACGTATGTAAATGTTAAAGGTGAATACTGTATTGATGACCACATAAAAGTCTTTAAATTGATGTGCTCCTGACAGAAACAAAAAATGTCTTAAAATTTTAAAAACTGTTCTTAATATGGACTTTTCAAATTTCACTACTTAATTTTTAAGGATGAAAACATGAGCAACTGTTGCGTTTTCGGCGCATATTCTAGAACCATTTAAAAATTGCGCCTAAAAGCATGCAAGGAAAATGCAGCCACACCACCAGTATTATTATGACGTGCCTCAGGTGGGTGATTTCATGGGGAAGGCGAATGCGAGGGGTGTATTATGACTCGTGCGAAGACGTCGAAATCTTTTTATGGGCTCGGCACGTTGCGCTCTAATGTGCGACAGTGTTTGTTTGTTTCTTTCTTGGCCAGATAAAAAACGAGCCAGAAATGTGACATGGTTTTATGGGTTGGGGCTTGGCCTGTTTGCCTAGCTTTTGGCTAGGCCCTCTCTTTCCTCTCACACTCCACCGCTCGCCTACAGTTGCCAATTGGCAACTCACCTTCTCTCTTTTGCTTTTCTGTTGTTTTTTCCTAGTGGTGCCAAGTCCAATGTTCAGCTGCGGCCTCTCGCTCGCACTCACACATCACTCGCTGTGCATGCGGTGTTCACGTGAAAGCGTGTTGGCTGCGTGATCGCATGGCTGTGTGCGAGTGCGAGCGGGACGAGGCACTTTGTTTTTAGAAACGCGGCAAGTGGGAGCGAGAGCGAGCTAAGTACGATTCCGTTTGATTTTCCGCTGCCTTGAATGCACTATCCCCACTCAATAAGCACTAATTACACTAGCGTACACTGTATATATCCACTTTGTAGGTCACTTACGATTTCCAACTTGTTTTCCCTTAGTGGGGGCGTTGCGGGTGGTGAAGGTAGCAAGGTATCCATGTCCATTGCACTTTCAAATTTCAGTTGCACTCTCTTTTTTTTATTGAAGAGTCTGTGTTTGTTTGTTTGTTTTGTTCCGGGGCTAATCACTTGGTTTAATCTCAGTTTGTGTAGATTTTTGCACTTCAGCTAACTTTGCACTGGCGCTTTCAAGTGCCGCTTGCCGTTTTGGAGCGAAGGCGAACCGTTGCGTTCGGAATTCAAGAGACGAATGAAAAAGGCAAAGCCATTCAGCTCCCAGCAGAGCTGCCGCCGCCGACGCCGCTGCCGGCAGAGGCTGTGCAAGTGTGAGTGAGTGGAGCCGCCGACGACGTAATCACTTGGAAACGGGCAAGTGTGTGTGAGCGGGCCATCGTCATCGGCAGTGGAGCAACCAGTGCAATGTAACCCGGACGAACATCAGCCAGCAACGTGGGCAGCACCTCCTCGGCTCCTCTCTCTCGGGCGCAAAAAAGAAAAAGGTCAGGTCTCCTGCTCACTCACCTCTCAGCAACCCACGTGCACCGGACAAAATAGCCCGTAAAGAATGACATCTCTGTTAACTCAATTTTAGACTGTAATGTTGGTTGGCAATAAGTTAAAAGAGATTCAGGTGAACCCAAATCGTTTTTAGTAAACTCTCTAAAAGTGTATGGCTATTTTAAATGTTGCCATCTTTTCCGAGAAGACCCAAAAAATCACCGAAGCGATTTCTTTCTGTGCAGGACACAGACACACAGCCAGTAGGAGAGAGGCCCGCAGAGCACGTAATCAACGCATGGACGTCATCAGCTGTTCACTGCGGGGTCTTGTGTTTGGTGCTATAGAGAACGGGTCAGTAGAGGAGGAGCTGGGGAGGGTGTGGGGCTCCATCGGCTGTCTATTCATGGGCTGTGCATGCCCCAGCCGCGTGCACAGCGCACACCAACCGACACACTCACAGACACACCCCAAAGCCGTGTCTGAGTAGCTGACGTAGTTGTTGCCACGGAAGTCTGTGAATAATCGGCTGAAAAAATACTTTAAAACTGGCTCGAAACCTGGCAGACGCCCCTCAAGCTGAAATCTAAGACCTGGCCGCATATATTTGCATTAACTTTGGAAGTCTGACTTTAAGCAGACACGGATTTCATTAATAAACGAAAGGCATAGTGCGAAAGCAGGAGAGTATGGGAGCTCAACAGTTGACGGGGAGCATTGCCAGGCCCAAGAAACTGGGAGATAACAAAGATGAGTCACGAAAAGCAGGCATTTCAAAATCCTCTTATTCACCACCAGTGAATGCATGTAACTCAATTAAGTCGTCAATTGATTACATTTATTTTGTTTGAAAACCCTCCTAGGACACGGGTAAATTCTACCTGGCAATGCTCGCGTTTCGCCTGTAACAGTTTTCAAAGCAAAAAGGGGCTCGTACACAGAGCACACACACCAAAGAGCGAGCGGCAGAAACAGCTGTGGTTATTGGCGCTCTCTTGCGCAACAACAACGAATAACTAGCACGCCATACCCCACACCAGACTTGTGGGGCGACTGTTCAGGCCGTGTAGGG

Cbt-5A: 5’-TGGTTGCTCCACTGCCGATGACG-3’ Tm=71.8

Cbt-3A: 5’-TATCACAGATGTTGGACGCCGAATG-3’ Tm=67.9 product=3221bp

Cbt-3B: 5’-CCACTCATCAAGCAAAAAACATTCC-3’ Tm=64.2 product=3618bp

Cbt-5c: 5’- ATTGGACTTGGCACCACTAGGAA-3’ Tm=62.6 product=2185bp

Cbt-3c: 5’- GAGATTGGTTCTGATGCTGCTCG-3’ Tm=63.7

Cbt-5D: 5’- ATACCTTGCTACCTTCACCACCC-3’ Tm=61.4 product=1870bp

Cbt-3D: 5’-CACTGTGCTGAGCAGGATAAGTT-3’ Tm=59.0

**CbtD41-sequencing result:**

1. **Primers used for genomic PCR**

 Cbt-5c: 5’- ATTGGACTTGGCACCACTAGGAA-3’

 Cbt-3D: 5’-CACTGTGCTGAGCAGGATAAGTT-3’

1. **PCR product was inserted into pJET1.2 vector for sequencing**

 **3. CbtD41 sequencing map (**deleted region 477963…478864**)**

CACTGTGCTGAGCAGGATAAGTTGGCTGGCAGACGAAGCTACTGGGCTAACATATATCGGTGTCAGAATAGGTTTTATTTCCTCCTCCTTGATGCATTCCGCTGGAGCAGGTGGCGTTACAAGCTTCGCAACTGGTGTCTCGGGTGTTTGTACTGGGGGTAGTGCCACTTCTGCAGCACGCTTTCTGTTCATTTTGAACTTGAGATTGCGCCACACATTGGCCTCTGGATAGTCGTCCTCCACAGTGGGTGGTACTGAACTTGTACTTGTGTTTGTGTTGGAAGAGGAACTACAGCAGGAGGTGGAACTAGATGAGTTCTCGTCTTGGCTACTAGAAGAGACAGCGCCAGAACTGTTGACCCGCATGA**TGACGCTAACCCTTTCCGCTTTCTGATCATCGTCCAGCTTTTGATCCGGCGGCGGTGTCATGCTCATAGCAGGTTGTTCCAAACGGGGTTTCTTGTTGGGAACCGCTATTTCGGGAGCCTCGTCTTCCGTGTCCGATGGATTTGGTGTAATAATCCCTCCATTTTTCTGACTCTTTTGGGCCACCAGCTTGAGCTTTGCCTTTAGCAGATTCTCGTTCACCTGTTGTTCGTCCTTGGCGAC**CTGGAAAAGGAAAGAACAAGTTCAGGGTTAGTCAGAGTTCGTTAACATTGTCGAGTTTATGTTCTGAGGAGTGCATTCACATTCACAGTCCCATTCACTTTTCGCTGACCAGCATTGACCCACAATAACTTTTCCTCGCAATTCGCTAATTACGCCGGCGGCTGACAAGGCCGTTCACCGTTAACCTTCACACACCCTGCAATACCCCGCCCAACCCCAGGTTCAATGCTCCTTCGAAAGGCCAAGGGAACTTTGTTTTTGGCGGTTTTTGAACTCTTTTAAAGGCCGTTTGGGGTGACAGAATATTACTCATTAACTGTTGCTGCCAGCTGTGCTTTAAATTATAGACGTATGTAAATGTTAAAGGTGAATACTGTATTGATGACCACATAAAAGTCTTTAAATTGATGTGCTCCTGACAGAAACAAAAAATGTCTTAAAATTTTAAAAACTGTTCTTAATATGGACTTTTCAAATTTCACTACTTAATTTTTAAGGATGAAAACATGAGCAACTGTTGCGTTTTCGGCGCATATTCTAGAACCATTTAAAAATTGCGCCTAAAAGCATGCAAGGAAAATGCAGCCACACCACCAGTATTATTATGACGTGCCTCAGGTGGGTGATTTCATGGGGAAGGCGAATGCGAGGGGTGTATT**GATGAAATAAT**ATGACTCGTGCGAAGACGTCGAAATCTTTTTATGGGCTCGGCACGTTGCGCTCTAATGTGCGACAGTGTTTGTTTGTTTCTTTCTTGGCCAGATAAAAAACGAGCCAGAAATGTGACATGGTTTTATGGGTTGGGGCTTGGCCTGTTTGCCTAGCTTTTGGCTAGGCCCTCTCTTTCCTCTCACACTCCACCGCTCGCCTACAGTTGCCAATTGGCAACTCACCTTCTCTCTTTTGCTTTTCTGTTGTTTTTTCCTAGTGGTGCCAAGTCCAATGTTCAGCTGCGGCCTCTCGCTCGCACTCACACATCACTCGCTGTGCATGCGGTGTTCACGTGAAAGCGTGTTGGCTGCGTGATCGCATGGCTGTGTGCGAGTGCGAGCGGGACGAGGCACTTTGTTTTTAGAAACGCGGCAAGTGGGAGCGAGAGCGAGCTAAGTACGATTCCGTTTGATTTTCCGCTGCCTTGAATGCACTATCCCCACTCAATAAGCACTAATTACACTAGCGTACACTGTATATATCCACTTTGTAGGTCACTTAC**GATTTCCAACTTGTTTTCCCTTAGTGGGGGCGTTGCGGGTGGTGAAGGTAGCAAGGTATCCATGTCCAT**TGCACTTTCAAATTTCAGTTGCACTCTCTTTTTTTTATTGAAGAGTCTGTGTTTGTTTGTTTGTTTTGTTCCGGGGCTAATCACTTGGTTTAATCTCAGTTTGTGTAGATTTTTGCACTTCAGCTAACTTTGCACTGGCGCTTTCAAGTGCCGCTTGCCGTTTTGGAGCGAAGGCGAACCGTTGCGTTCGGAATTCAAGAGACGAATGAAAAA

**CbtD41\_sequencing result (please also see the attached 11AH70.seq file):**

CACTGTGCTGAGCAGGATAAGTTGGCTGGCAGACGAAGCTACTGGGCTAACATATATCGGTGTTAGAATAGGTTTTATTTCCTCCTCCTTGATGCATTCCGCTGGAGCAGGTGGCGCTACAAGCTTCGCAACTGGTGTCTCGGGTGTTTGTACTGGGGGTAGTGCCACTTCTGCAGCACGCTTTCTGTTCATTTTGAACTTGAGATTGCGCCACACATTGGCCTCTGGATAGTCGTCCTCCACAGTGGGTGGTACTGAACTTGTACTTGTGTTTGTGTTGGAAGAGGAACTACAGCAGGAGGTGGAACTAGATGAGTTCTCGTCTTGGCTGCTAGAAGAGACAGCGCCAGAACTGTTGACCCGCATGAATTATTTCATCATGACTCGTGCGAAGACGTCGAAATCTTTTTATGGGCTCGGCACGTTGCGCTCTAATGTGCGACAGTGTTTGTTTGTTTCTTTCTTGGCCAGATAAAAAACGAGCCAGAAATGTGACATGGTTTTATGGGTTGGGGCTTGGCCTGTTTGCCTAGCTTTTGGCTAGGCCCTCTCTTTCCTCTCACACTCCACCGCTCGCCTACAGTTGCCAATTGGCAACTCACCTTCTCTCTTTTGCTTTTCTGTTGTTTTTTCCTAGTGGTGCCAAGTCCAAT

**CbtD41-sequencing result\_reverse complement:**

ATTGGACTTGGCACCACTAGGAAAAAACAACAGAAAAGCAAAAGAGAGAAGGTGAGTTGCCAATTGGCAACTGTAGGCGAGCGGTGGAGTGTGAGAGGAAAGAGAGGGCCTAGCCAAAAGCTAGGCAAACAGGCCAAGCCCCAACCCATAAAACCATGTCACATTTCTGGCTCGTTTTTTATCTGGCCAAGAAAGAAACAAACAAACACTGTCGCACATTAGAGCGCAACGTGCCGAGCCCATAAAAAGATTTCGACGTCTTCGCACGAGTCATGATGAAATAATTCATGCGGGTCAACAGTTCTGGCGCTGTCTCTTCTAGCAGCCAAGACGAGAACTCATCTAGTTCCACCTCCTGCTGTAGTTCCTCTTCCAACACAAACACAAGTACAAGTTCAGTACCACCCACTGTGGAGGACGACTATCCAGAGGCCAATGTGTGGCGCAATCTCAAGTTCAAAATGAACAGAAAGCGTGCTGCAGAAGTGGCACTACCCCCAGTACAAACACCCGAGACACCAGTTGCGAAGCTTGTAGCGCCACCTGCTCCAGCGGAATGCATCAAGGAGGAGGAAATAAAACCTATTCTAACACCGATATATGTTAGCCCAGTAGCTTCGTCTGCCAGCCAACTTATCCTGCTCAGCACAGTG

>2L:476446..479688 (reverse complemented)

TTTTTCATTCGTCTCTTGAATTCCGAACGCAACGGTTCGCCTTCGCTCCAAAACGGCAAGCGGCACTTGAAAGCGCCAGTGCAAAGTTAGCTGAAGTGCAAAAATCTACACAAACTGAGATTAAACCAAGTGATTAGCCCCGGAACAAAACAAACAAACAAACACAGACTCTTCAATAAAAAAAAGAGAGTGCAACTGAAATTTGAAAGTGCAATGGACATGGATACCTTGCTACCTTCACCACCCGCAACGCCCCCACTAAGGGAAAACAAGTTGGAAATCGTAAGTGACCTACAAAGTGGATATATACAGTGTACGCTAGTGTAATTAGTGCTTATTGAGTGGGGATAGTGCATTCAAGGCAGCGGAAAATCAAACGGAATCGTACTTAGCTCGCTCTCGCTCCCACTTGCCGCGTTTCTAAAAACAAAGTGCCTCGTCCCGCTCGCACTCGCACACAGCCATGCGATCACGCAGCCAACACGCTTTCACGTGAACACCGCATGCACAGCGAGTGATGTGTGAGTGCGAGCGAGAGGCCGCAGCTGAACATTGGACTTGGCACCACTAGGAAAAAACAACAGAAAAGCAAAAGAGAGAAGGTGAGTTGCCAATTGGCAACTGTAGGCGAGCGGTGGAGTGTGAGAGGAAAGAGAGGGCCTAGCCAAAAGCTAGGCAAACAGGCCAAGCCCCAACCCATAAAACCATGTCACATTTCTGGCTCGTTTTTTATCTGGCCAAGAAAGAAACAAACAAACACTGTCGCACATTAGAGCGCAACGTGCCGAGCCCATAAAAAGATTTCGACGTCTTCGCACGAGTCAT**GATGAAATAAT**AATACACCCCTCGCATTCGCCTTCCCCATGAAATCACCCACCTGAGGCACGTCATAATAATACTGGTGGTGTGGCTGCATTTTCCTTGCATGCTTTTAGGCGCAATTTTTAAATGGTTCTAGAATATGCGCCGAAAACGCAACAGTTGCTCATGTTTTCATCCTTAAAAATTAAGTAGTGAAATTTGAAAAGTCCATATTAAGAACAGTTTTTAAAATTTTAAGACATTTTTTGTTTCTGTCAGGAGCACATCAATTTAAAGACTTTTATGTGGTCATCAATACAGTATTCACCTTTAACATTTACATACGTCTATAATTTAAAGCACAGCTGGCAGCAACAGTTAATGAGTAATATTCTGTCACCCCAAACGGCCTTTAAAAGAGTTCAAAAACCGCCAAAAACAAAGTTCCCTTGGCCTTTCGAAGGAGCATTGAACCTGGGGTTGGGCGGGGTATTGCAGGGTGTGTGAAGGTTAACGGTGAACGGCCTTGTCAGCCGCCGGCGTAATTAGCGAATTGCGAGGAAAAGTTATTGTGGGTCAATGCTGGTCAGCGAAAAGTGAATGGGACTGTGAATGTGAATGCACTCCTCAGAACATAAACTCGACAATGTTAACGAACTCTGACTAACCCTGAACTTGTTCTTTCCTTTTCCAGGTCGCCAAGGACGAACAACAGGTGAACGAGAATCTGCTAAAGGCAAAGCTCAAGCTGGTGGCCCAAAAGAGTCAGAAAAATGGAGGGATTATTACACCAAATCCATCGGACACGGAAGACGAGGCTCCCGAAATAGCGGTTCCCAACAAGAAACCCCGTTTGGAACAACCTGCTATGAGCATGACACCGCCGCCGGATCAAAAGCTGGACGATGATCAGAAAGCGGAAAGGGTTAGCGTCATCATGCGGGTCAACAGTTCTGGCGCTGTCTCTTCTAGTAGCCAAGACGAGAACTCATCTAGTTCCACCTCCTGCTGTAGTTCCTCTTCCAACACAAACACAAGTACAAGTTCAGTACCACCCACTGTGGAGGACGACTATCCAGAGGCCAATGTGTGGCGCAATCTCAAGTTCAAAATGAACAGAAAGCGTGCTGCAGAAGTGGCACTACCCCCAGTACAAACACCCGAGACACCAGTTGCGAAGCTTGTAACGCCACCTGCTCCAGCGGAATGCATCAAGGAGGAGGAAATAAAACCTATTCTGACACCGATATATGTTAGCCCAGTAGCTTCGTCTGCCAGCCAACTTATCCTGCTCAGCACAGTGGCCGCCCAACAGAGCCCCACACCCGTACCCAAAACGCCAACAATGTCCGAGGAGAAACTAACAACCAGAATTACGGCCGCCCAGGCGGCGGCCACCAGAAGTCGCATCTACGAGTGCAGTTTTCCCGATTGCGGCAAGAATTACTTCAAAAGCAGTCATCTGAAGGCCCACCAGAGGGTTCACACCGGCGAGCGACCCTTTATCTGCAAGTGGGAGAACTGTGACAAACGATTCTCCCGTTCCGATGAGTTGTCCCGACACAAACGGACCCACACCGGTGAAAAGAAATTCCAGTGCAGCGTCTGCCAGAAGAAATTCATGAGAAGCGATCACCTGTCGAAGCACGTCAAACGGCACAACAAGGACAAGGCGAACGGAGTGAATCGACATGTCTCCCTGGCCAACAACAACACATCAGCTTCGGTAGCGGCTTCCCTCTGCGATGCCTCGCTCCATTTGCGAGCGATAGCACCGGCGGGCTCCAGCGCTAGTTCCTCGCCCATCAGTTCCGCCAGCTTGCAAGTCTACAGCGCCCAAGATCTGCTGAGGCTACAGCAGCAGGCCAGCAGTTTCACCTTCGGCGGAACCCTGCTTCAAGTGCAGCGATGAGAAGAGCAATGCGAGCAGCATCAGAACCAATCTCAGCCCCACAGTATCGCCAGCTAAACAGAGATGAATTCCCACCAAATTTCAAAACAAATTAACATCTGAGTCAAATTCGAAATGCCTTCTCGCTCTCATGTAGCTGGTGTAGACTTAAGCTTAGTTAGGAGCTAGATCTTGTCACCGTTTTGTGCATATATCAACTTCAAATTCAATACGTAATACCCAAATCGGATAGATGCCACTTCTTTCCAGGAGCACACAGCACACTTCTTATCTAAGCGATCTTCTTCAGATTAATATTCTGAATATCCCTAGTGTTTGTACATACTATAAAGAGACGCATTCGGCGTCCAACATCTGTGATATTTAAGTTTTCTTAACTCTTTTCTATTGTACCATAGTTGTCAGTGTAATTCTCTTAAGCTAAAACACACACAATTGTATTTATTGCTAAATGTGAAAAAAAGAAAATGAAAACAAATAGAATAATGGATCATCGCACGATTCCAATCTCAACAAATGAAAATATACATATTTTCCAAAG

***CbtD148*--sequencing result:**

1. **Primers used for genomic PCR**

 Cbt-5A: 5’-TGGTTGCTCCACTGCCGATGACG-3’

 Cbt-3D: 5’-CACTGTGCTGAGCAGGATAAGTT-3’

1. **PCR product was inserted into pJET1.2 vector for sequencing**

 **3. CbtD148 sequencing map (deleted region 478447…479466)**

>2L:476446..479688 (reverse complemented)

TTTTTCATTCGTCTCTTGAATTCCGAACGCAACGGTTCGCCTTCGCTCCAAAACGGCAAGCGGCACTTGAAAGCGCCAGTGCAAAGTTAGCTGAAGTGCAAAAATCTACACAAACTGAGATTAAACCAAGTGATTAGCCCCGGAACAAAACAAACAAACAAACACAGACTCTTCAATAAAAAAAAGAGAGTGCAACTGAAATTTGAAAGTGCAATGGACATGGATACCTTGCTACCTTCACCACCCGCAACGCCCCCACTAAGGGAAAACAAGTTGGAAATCGTAAGTGACCTACAAAGTGGATATATACAGTGTACGCTAGTGTAATTAGTGCTTATTGAGTGGGGATAGTGCATTCAAGGCAGCGGAAAATCAAACGGAATCGTACTTAGCTCGCTCTCGCTCCCACTTGCCGCGTTTCTAAAAACAAAGTGCCTCGTCCCGCTCGCACTCGCACACAGCCATGCGATCACGCAGCCAACACGCTTTCACGTGAACACCGCATGCACAGCGAGTGATGTGTGAGTGCGAGCGAGAGGCCGCAGCTGAACATTGGACTTGGCACCACTAGGAAAAAACAACAGAAAAGCAAAAGAGAGAAGGTGAGTTGCCAATTGGCAACTGTAGGCGAGCGGTGGAGTGTGAGAGGAAAGAGAGGGCCTAGCCAAAAGCTAGGCAAACAGGCCAAGCCCCAACCCATAAAACCATGTCACATTTCTGGCTCGTTTTTTATCTGGCCAAGAAAGAAACAAACAAACACTGTCGCACATTAGAGCGCAACGTGCCGAGCCCATAAAAAGATTTCGACGTCTTCGCACGAGTCATAATACACCCCTCGCATTCGCCTTCCCCATGAAATCACCCACCTGAGGCACGTCATAATAATACTGGTGGTGTGGCTGCATTTTCCTTGCATGCTTTTAGGCGCAATTTTTAAATGGTTCTAGAATATGCGCCGAAAACGCAACAGTTGCTCATGTTTTCATCCTTAAAAATTAAGTAGTGAAATTTGAAAAGTCCATATTAAGAACAGTTTTTAAAATTTTAAGACATTTTTTGTTTCTGTCAGGAGCACATCAATTTAAAGACTTTTATGTGGTCATCAATACAGTATTCACCTTTAACATTTACATACGTCTATAATTTAAAGCACAGCTGGCAGCAACAGTTAATGAGTAATATTCTGTCACCCCAAACGGCCTTTAAAAGAGTTCAAAAACCGCCAAAAACAAAGTTCCCTTGGCCTTTCGAAGGAGCATTGAACCTGGGGTTGGGCGGGGTATTGCAGGGTGTGTGAAGGTTAACGGTGAACGGCCTTGTCAGCCGCCGGCGTAATTAGCGAATTGCGAGGAAAAGTTATTGTGGGTCAATGCTGGTCAGCGAAAAGTGAATGGGACTGTGAATGTGAATGCACTCCTCAGAACATAAACTCGACAATGTTAACGAACTCTGACTAACCCTGAACTTGTTCTTTCCTTTTCCAGGTCGCCAAGGACGAACAACAGGTGAACGAGAATCTGCTAAAGGCAAAGCTCAAGCTGGTGGCCCAAAAGAGTCAGAAAAATGGAGGGATTATTACACCAAATCCATCGGACACGGAAGACGAGGCTCCCGAAATAGCGGTTCCCAACAAGAAACCCCGTTTGGAACAACCTGCTATGAGCATGACACCGCCGCCGGATCAAAAGCTGGACGATGATCAGAAAGCGGAAAGGGTTAGCGTCATCATGCGGGTCAACAGTTCTGGCGCTGTCTCTTCTAGTAGCCAAGACGAGAACTCATCTAGTTCCACCTCCTGCTGTAGTTCCTCTTCCAACACAAACACAAGTACAAGTTCAGTACCACCCACTGTGGAGGACGACTATCCAGAGGCCAATGTGTGGCGCAATCTCAAGTTCAAAATGAACAGAAAGCGTGCTGCAGAAGTGGCACTACCCCCAGTACAAACACCCGAGACACCAGTTGCGAAGCTTGTAACGCCACCTGCTCCAGCGGAATGCATCAAGGAGGAGGAAATAAAACCTATTCTGACACCGATATATGTTAGCCCAGTAGCTTCGTCTGCCAGCCAACTTATCCTGCTCAGCACAGTGGCCGCCCAACAGAGCCCCACACCCGTACCCAAAACGCCAACAATGTCCGAGGAGAAACTAACAACCAGAATTACGGCCGCCCAGGCGGCGGCCACCAGAAGTCGCATCTACGAGTGCAGTTTTCCCGATTGCGGCAAGAATTACTTCAAAAGCAGTCATCTGAAGGCCCACCAGAGGGTTCACACCGGCGAGCGACCCTTTATCTGCAAGTGGGAGAACTGTGACAAACGATTCTCCCGTTCCGATGAGTTGTCCCGACACAAACGGACCCACACCGGTGAAAAGAAATTCCAGTGCAGCGTCTGCCAGAAGAAATTCATGAGAAGCGATCACCTGTCGAAGCACGTCAAACGGCACAACAAGGACAAGGCGAACGGAGTGAATCGACATGTCTCCCTGGCCAACAACAACACATCAGCTTCGGTAGCGGCTTCCCTCTGCGATGCCTCGCTCCATTTGCGAGCGATAGCACCGGCGGGCTCCAGCGCTAGTTCCTCGCCCATCAGTTCCGCCAGCTTGCAAGTCTACAGCGCCCAAGATCTGCTGAGGCTACAGCAGCAGGCCAGCAGTTTCACCTTCGGCGGAACCCTGCTTCAAGTGCAGCGATGAGAAGAGCAATGCGAGCAGCATCAGAACCAATCTCAGCCCCACAGTATCGCCAGCTAAACAGAGATGAATTCCCACCAAATTTCAAAACAAATTAACATCTGAGTCAAATTCGAAATGCCTTCTCGCTCTCATGTAGCTGGTGTAGACTTAAGCTTAGTTAGGAGCTAGATCTTGTCACCGTTTTGTGCATATATCAACTTCAAATTCAATACGTAATACCCAAATCGGATAGATGCCACTTCTTTCCAGGAGCACACAGCACACTTCTTATCTAAGCGATCTTCTTCAGATTAATATTCTGAATATCCCTAGTGTTTGTACATACTATAAAGAGACGCATTCGGCGTCCAACATCTGTGATATTTAAGTTTTCTTAACTCTTTTCTATTGTACCATAGTTGTCAGTGTAATTCTCTTAAGCTAAAACACACACAATTGTATTTATTGCTAAATGTGAAAAAAAGAAAATGAAAACAAA

TAGAATAATGGATCATCGCACGATTCCAATCTCAACAAATGAAAATATACATATTTTCCAAAG

**11AH71-sequencing result: primers 5A3D for cloning, into pJET1.2**

CACTGTGCTGAGCAGGATAAGTTGGCTGGCAGACGAAGCTACTGGGCTAACATATATCGGTGTTAGAATAGGTTTTATTTCCTCCTCCTTGATGCATTCCGCTGGAGCAGGTGGCGCTACAAGCTTCGCAACTGGTGTCTCGGGTGTTTGTACTGGGGGTAGTGCCACTTCTGCAGCACGCTTTCTGTTCATTTTGAACTTGAGATTGCGCCACACATTGGCCTCTGGATAGTCGTCCTCCACAGTGGGTGGTACTGAACTTGTACTTGTGTTTGTGTTGGAAGAGGAACTACAGCAGGAGGTGGAACTAGATGAGTTCTCGTCTTGGCTGCTAGAAGAGACAGCGCCAGAACTGTTGACCCGCATGATGACGCTAACCCTTTCAGCTTTCTGATCATCGTCCAGCTTTTGATCCGGCGGCGGTGTCATGCTCATAGCAGGTTGTTCCAAACGGGGTTTCTTGTTGGGAACCGCTATTTCGGGAGCCTCGTCTTCCGTGTCCGATGGATTTGGTGTAATAATCCCTCCATTTTTCTGACTCTTTTGGGCCACCAGCTTGAGCTTTGCCTTTAGCAGATTCTCGTTCACCTGTTGTTCGTCCTTGGCGACCTGGAAAAGGAAAGAACAAGTTCAGGGTTAGTCAGAGTTCGTTAACATTGTCGAGTTTATGTTCTGAGGAGTGCATTCACATTCACAGTCCCATTCACTTTTCGCTGACCAGCATTGACCCACAATAACTTTTCCTCGCAATTCGCTAATTACGCCGGCGGCTGACAAGGCCGTTCACCGTTAACCTTCACACACCCTGCAATACCCCGCCCAACCCCAGGTTCAATGCTCCTTCGAAAGGCCCCATGTCCATTGCACTTTCAAATTTCAGTTGCACTCTCTTTTTTTTATTGAAGAGTCTGTGTTTNNTTGGTTGGTTTTGTTCCGGGGCTAATCACTTGGTTTAATCTCAATTTGTGTAAATTTTTGCACTTCAGCTAACTTTTGCACTGGNNGCTTTCAAGTGCCGCNTTGCCGTTTTGGAANCNAAGGNNAANCCGTTGCGTTCGNNAATTCA

**11AH72-sequencing reverse complement:**

TTCCAAGNTTCGCAACTGGNNTNTCGGNTGTTTGTACTGGGGGTAGTGCCAATTNTGCAGCACGCTTTCTGTTCATTTTGAACTTGAGATTGCGCCACACATTGGCCTCTGGATAGTCGTCCTCCNCAGTGGGTGGTACTGAACTTGTACTTGTGTTTGTGTTGGAAGAGGAACTACAGCAGGAGGTGGAACTAGATGAGTTCTCGTCTTGGCTGCTAGAAGAGACAGCGCCAGAACTGTTGACCCGCATGATGACGCTAACCCTTTCAGCTTTCTGATCATCGTCCAGCTTTTGATCCGGCGGCGGTGTCATGCTCATAGCAGGTTGTTCCAAACGGGGTTTCTTGTTGGGAACCGCTATTTCGGGAGCCTCGTCTTCCGTGTCCGATGGATTTGGTGTAATAATCCCTCCATTNTTCTGACTCTTTTGGGCCACCAGCTTGAGCTTTGCCTTTAGCAGATTCTCGTTCACCTGTTGTTCGTCCTTGGCGACCTGGAAAAGGAAAGAACAAGTTCAGGGTTAGTCAGAGTTCGTTAACATTGTCGAGTTTATGTTCTGAGGAGTGCATTCACATTCACAGTCCCATTCACTTTTCGCTGACCAGCATTGACCCACAATAACTTTTCCTCGCAATTCGCTAATTACGCCGGCGGCTGACAAGGCCGTTCACCGTTAACCTTCACACACCCTGCAATACCCCGCCCAACCCCAGGTTCAATGCTCCTTCGAAAGGCCCCATGTCCATTGCACTTTCAAATTTCAGTTGCACTCTCTTTTTTTTATTGAAGAGTCTGTGTTTGTTTGTTTGTTTTGTTCCGGGGCTAATCACTTGGTTTAATCTCAGTTTGTGTAGATTTTTGCACTTCAGCTAACTTTGCACTGGCGCTTTCAAGTGCCGCTTGCCGTTTTGGAGCGAAGGCGAACCGTTGCGTTCGGAATTCAAGAGACGAATGAAAAAGGCAAAGCCATTCAGCTCCCAGCAGAGCTGCCGCCGCCGACGCCGCTGCCGGCAGAGGCTGTGCAAGTGTGAGTGAGTGGAGCCGCCGACGACGTAATCACTGGAAACGGGCAAGTGTGTGTGAGCGGGCCATCGTCATCGGCAGTGGAGCAACCA

***CbtD148* sequence in full (please also see the attached 11AH71&11AH72.seq files):**

CACTGTGCTGAGCAGGATAAGTTGGCTGGCAGACGAAGCTACTGGGCTAACATATATCGGTGTTAGAATAGGTTTTATTTCCTCCTCCTTGATGCATTCCGCTGGAGCAGGTGGCGCTACAAGCTTCGCAACTGGTGTCTCGGGTGTTTGTACTGGGGGTAGTGCCACTTCTGCAGCACGCTTTCTGTTCATTTTGAACTTGAGATTGCGCCACACATTGGCCTCTGGATAGTCGTCCTCCACAGTGGGTGGTACTGAACTTGTACTTGTGTTTGTGTTGGAAGAGGAACTACAGCAGGAGGTGGAACTAGATGAGTTCTCGTCTTGGCTGCTAGAAGAGACAGCGCCAGAACTGTTGACCCGCATGATGACGCTAACCCTTTCAGCTTTCTGATCATCGTCCAGCTTTTGATCCGGCGGCGGTGTCATGCTCATAGCAGGTTGTTCCAAACGGGGTTTCTTGTTGGGAACCGCTATTTCGGGAGCCTCGTCTTCCGTGTCCGATGGATTTGGTGTAATAATCCCTCCATTTTTCTGACTCTTTTGGGCCACCAGCTTGAGCTTTGCCTTTAGCAGATTCTCGTTCACCTGTTGTTCGTCCTTGGCGACCTGGAAAAGGAAAGAACAAGTTCAGGGTTAGTCAGAGTTCGTTAACATTGTCGAGTTTATGTTCTGAGGAGTGCATTCACATTCACAGTCCCATTCACTTTTCGCTGACCAGCATTGACCCACAATAACTTTTCCTCGCAATTCGCTAATTACGCCGGCGGCTGACAAGGCCGTTCACCGTTAACCTTCACACACCCTGCAATACCCCGCCCAACCCCAGGTTCAATGCTCCTTCGAAAGGCCCCATGTCCATTGCACTTTCAAATTTCAGTTGCACTCTCTTTTTTTTATTGAAGAGTCTGTGTTTGTTTGTTTGTTTTGTTCCGGGGCTAATCACTTGGTTTAATCTCAGTTTGTGTAGATTTTTGCACTTCAGCTAACTTTGCACTGGCGCTTTCAAGTGCCGCTTGCCGTTTTGGAGCGAAGGCGAACCGTTGCGTTCGGAATTCAAGAGACGAATGAAAAAGGCAAAGCCATTCAGCTCCCAGCAGAGCTGCCGCCGCCGACGCCGCTGCCGGCAGAGGCTGTGCAAGTGTGAGTGAGTGGAGCCGCCGACGACGTAATCACTGGAAACGGGCAAGTGTGTGTGAGCGGGCCATCGTCATCGGCAGTGGAGCAACCA

***CbtD148* full sequence\_reverse complement:**

TGGTTGCTCCACTGCCGATGACGATGGCCCGCTCACACACACTTGCCCGTTTCCAGTGATTACGTCGTCGGCGGCTCCACTCACTCACACTTGCACAGCCTCTGCCGGCAGCGGCGTCGGCGGCGGCAGCTCTGCTGGGAGCTGAATGGCTTTGCCTTTTTCATTCGTCTCTTGAATTCCGAACGCAACGGTTCGCCTTCGCTCCAAAACGGCAAGCGGCACTTGAAAGCGCCAGTGCAAAGTTAGCTGAAGTGCAAAAATCTACACAAACTGAGATTAAACCAAGTGATTAGCCCCGGAACAAAACAAACAAACAAACACAGACTCTTCAATAAAAAAAAGAGAGTGCAACTGAAATTTGAAAGTGCAATGGACATGGGGCCTTTCGAAGGAGCATTGAACCTGGGGTTGGGCGGGGTATTGCAGGGTGTGTGAAGGTTAACGGTGAACGGCCTTGTCAGCCGCCGGCGTAATTAGCGAATTGCGAGGAAAAGTTATTGTGGGTCAATGCTGGTCAGCGAAAAGTGAATGGGACTGTGAATGTGAATGCACTCCTCAGAACATAAACTCGACAATGTTAACGAACTCTGACTAACCCTGAACTTGTTCTTTCCTTTTCCAGGTCGCCAAGGACGAACAACAGGTGAACGAGAATCTGCTAAAGGCAAAGCTCAAGCTGGTGGCCCAAAAGAGTCAGAAAAATGGAGGGATTATTACACCAAATCCATCGGACACGGAAGACGAGGCTCCCGAAATAGCGGTTCCCAACAAGAAACCCCGTTTGGAACAACCTGCTATGAGCATGACACCGCCGCCGGATCAAAAGCTGGACGATGATCAGAAAGCTGAAAGGGTTAGCGTCATCATGCGGGTCAACAGTTCTGGCGCTGTCTCTTCTAGCAGCCAAGACGAGAACTCATCTAGTTCCACCTCCTGCTGTAGTTCCTCTTCCAACACAAACACAAGTACAAGTTCAGTACCACCCACTGTGGAGGACGACTATCCAGAGGCCAATGTGTGGCGCAATCTCAAGTTCAAAATGAACAGAAAGCGTGCTGCAGAAGTGGCACTACCCCCAGTACAAACACCCGAGACACCAGTTGCGAAGCTTGTAGCGCCACCTGCTCCAGCGGAATGCATCAAGGAGGAGGAAATAAAACCTATTCTAACACCGATATATGTTAGCCCAGTAGCTTCGTCTGCCAGCCAACTTATCCTGCTCAGCACAGTG

**Conclusion:**

Per the sequencing results, *cbtD41* did not impair the first intron, but deleted 241nt of the second intron and caused a frameshift of all three isoforms (Cbt-RA, -RB, and -RC). *cbtD148* deleted 59nt of the first intron of cbt-RA but did not impinge on cbt-RB and -RC.