

AMINO ACID SEQUENCES IN CYTOCHROME-C PROTEINS FROM DIFFERENT SPECIES
Formatted for easy comparisons

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Horse .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F T Y T D A
Donkey .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Horse .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Donkey .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
    
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Horse .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F T Y T D A
Gray whale .....     - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A V G F S Y T D A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Horse .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Gray whale.....      N K N K G I T W G E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K G E R A D L I A Y L K K A T N E
    
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Horse .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F T Y T D A
Penguin.....         - - - - - - - - - - G D I E K G K K I F V Q K C S O C H T V E K G G K H K T G P N L H G I F G R K T G Q A E G F S Y T D A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Horse .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Penguin.....         N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R A D L I A Y L K D A T S K
    
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Horse .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F T Y T D A
Chicken, Turkey...   - - - - - - - - - - G D I E K G K K I F V Q K C S Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A E G F S Y T D A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Horse .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Chicken, Turkey...   N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R V D L I A Y L K D A T S K
    
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Number of differences in cytochrome-C between:

Horse & Donkey: _____

Horse & Whale: _____

Horse & Penguin: _____

Horse & Chicken: _____

AMINO ACID SEQUENCES IN CYTOCHROME-C PROTEINS FROM DIFFERENT SPECIES
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Donkey ..... - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Gray whale ..... - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A V G F S Y T D A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Donkey ..... N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Gray whale..... N K N K G I T W G E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K G E R A D L I A Y L K K A T N E

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Donkey ..... - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Chicken, Turkey... - - - - - - - - - - G D I E K G K K I F V Q K C S Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A E G F S Y T D A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Donkey ..... N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Chicken, Turkey... N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R V D L I A Y L K D A T S K

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Donkey ..... - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Penguin..... - - - - - - - - - - G D I E K G K K I F V Q K C S O C H T V E K G G K H K T G P N L H G I F G R K T G Q A E G F S Y T D A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Donkey ..... N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Penguin..... N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R A D L I A Y L K D A T S K

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Donkey ..... - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Rattlesnake..... - - - - - - - - - - G D V E K G K K I F S M K C G T C H T V E E G G K H K T G P N L H G L F G R K T G Q A V G Y S Y T A A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Donkey ..... N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Rattlesnake..... N K N K G I I W G D D T L M E Y L E N P K K Y I P G T K M V F T G L K K K K E R T D L I A Y L K E A T A K

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Number of differences in cytochrome-C between:

Donkey & Whale: _____

Donkey & Chicken: _____

Donkey & Penguin: _____

Donkey & Snake: _____

AMINO ACID SEQUENCES IN CYTOCHROME-C PROTEINS FROM DIFFERENT SPECIES
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Donkey .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Silkworm moth.....    - - - - - G V P A G N A E N G K K I F V Q R C A Q C H T V E A G G K H K V G P N L H G F Y G R K T G Q A P G F S Y S N A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Donkey .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Silkworm moth.....    N K A K G I T W G D D T L F E Y L E N P K K Y I P G T K M V F A G L K K A N E R A D L I A Y L K E S T K -
    
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Donkey .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Baker's yeast (Fungus) - - - T E F K A G S A K K G A T L F K T R C E L C H T V E K G G P H K V G P N L H G I F G R H S G Q A Q G Y S Y T D A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Donkey .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Baker's yeast.....    N I K K N V L W D E N N M S E Y L T N P K K Y I P G T K M A F G G L K K E K D R N D L I T Y L K K A C E -
    
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Donkey .....          - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A P G F S Y T D A
Wheat .....          A S F S E A P P G N P D A G A K I F K T K C A Q C H T V D A G A G H K Q G P N L H G L F G R Q S G T T A G Y S Y S A A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Donkey .....          N K N K G I T W K E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K T E R E D L I A Y L K K A T N E
Wheat.....           N K N K A V E W E E N T L Y D Y L L N P K K Y I P G T K M V F P G L K K P Q D R A D L I A Y L K K A T S S
    
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Gray whale .....     - - - - - - - - - - G D V E K G K K I F V Q K C A Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A V G F S Y T D A
Chicken, Turkey...   - - - - - - - - - - G D I E K G K K I F V Q K C S Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A E G F S Y T D A
[CONTINUED FROM ABOVE]
Amino Acid Number-> 60 70 80 90 100 110
Gray whale.....      N K N K G I T W G E E T L M E Y L E N P K K Y I P G T K M I F A G I K K K G E R A D L I A Y L K K A T N E
Chicken, Turkey...   N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R V D L I A Y L K D A T S K
    
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Number of differences in cytochrome-C between:

Donkey & Moth: _____

Donkey & Yeast: _____

Donkey & Wheat: _____

Whale & Chicken: _____

AMINO ACID SEQUENCES IN CYTOCHROME-C PROTEINS FROM DIFFERENT SPECIES
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Chicken, Turkey...      - - - - - - - - - - G D I E K G K K I F V Q K C S Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A E G F S Y T D A
Baker's yeast (Fungus) - - - T E F K A G S A K K G A T L F K T R C E L C H T V E K G G P H K V G P N L H G I F G R H S G Q A Q G Y S Y T D A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Chicken, Turkey...   N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R V D L I A Y L K D A T S K
Baker's yeast.....  N I K N K N V L W D E N N M S E Y L T N P K K Y I P G T K M A F G G L K K E K D R N D L I T Y L K K A C E -

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Chicken, Turkey...      - - - - - - - - - - G D I E K G K K I F V Q K C S Q C H T V E K G G K H K T G P N L H G L F G R K T G Q A E G F S Y T D A
Wheat .....           A S F S E A P P G N P D A G A K I F K T K C A Q C H T V D A G A G H K Q G P N L H G L F G R Q S G T T A G Y S Y S A A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Chicken, Turkey...   N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R V D L I A Y L K D A T S K
Wheat.....          N K N K A V E W E E N T L Y D Y L L N P K K Y I P G T K M V F P G L K K P Q D R A D L I A Y L K K A T S S

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Penguin.....           - - - - - - - - - - G D I E K G K K I F V Q K C S O C H T V E K G G K H K T G P N L H G I F G R K T G Q A E G F S Y T D A
Rattlesnake.....      - - - - - - - - - - G D V E K G K K I F S M K C G T C H T V E E G G K H K T G P N L H G L F G R K T G Q A V G Y S Y T A A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Penguin.....         N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R A D L I A Y L K D A T S K
Rattlesnake.....     N K N K G I I W G D D T L M E Y L E N P K K Y I P G T K M V F T G L K K K K E R T D L I A Y L K E A T A K

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Penguin.....           - - - - - - - - - - G D I E K G K K I F V Q K C S O C H T V E K G G K H K T G P N L H G I F G R K T G Q A E G F S Y T D A
Silkworm moth.....    - - - - G V P A G N A E N G K K I F V Q R C A Q C H T V E A G G K H K V G P N L H G F Y G R K T G Q A P G F S Y S N A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Penguin.....         N K N K G I T W G E D T L M E Y L E N P K K Y I P G T K M I F A G I K K K S E R A D L I A Y L K D A T S K
Silkworm moth.....   N K A K G I T W G D D T L F E Y L E N P K K Y I P G T K M V F A G L K K A N E R A D L I A Y L K E S T K -

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Number of differences in cytochrome-C between:

Chicken & Yeast: _____

Chicken & Wheat: _____

Penguin & Snake: _____

Penguin & Moth: _____

AMINO ACID SEQUENCES IN CYTOCHROME-C PROTEINS FROM DIFFERENT SPECIES
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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Rattlesnake..... - - - - - - - G D V E K G K K I F S M K C G T C H T V E E G G K H K T G P N L H G L F G R K T G Q A V G Y S Y T A A
Wheat ..... A S F S E A P P G N P D A G A K I F K T K C A Q C H T V D A G A G H K Q G P N L H G L F G R Q S G T T A G Y S Y S A A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Rattlesnake..... N K N K G I I W G D D T L M E Y L E N P K K Y I P G T K M V F T G L K K K K E R T D L I A Y L K E A T A K
Wheat..... N K N K A V E W E E N T L Y D Y L L N P K K Y I P G T K M V F P G L K K P Q D R A D L I A Y L K K A T S S

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Silkworm moth..... - - - - G V P A G N A E N G K K I F V Q R C A Q C H T V E A G G K H K V G P N L H G F Y G R K T G Q A P G F S Y S N A
Baker's yeast (Fungus) - - - T E F K A G S A K K G A T L F K T R C E L C H T V E K G G P H K V G P N L H G I F G R H S G Q A Q G Y S Y T D A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Silkworm moth..... N K A K G I T W G D D T L F E Y L E N P K K Y I P G T K M V F A G L K K A N E R A D L I A Y L K E S T K -
Baker's yeast..... N I K K N V L W D E N N M S E Y L T N P K K Y I P G T K M A F G G L K K E K D R N D L I T Y L K K A C E -

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Silkworm moth..... - - - - G V P A G N A E N G K K I F V Q R C A Q C H T V E A G G K H K V G P N L H G F Y G R K T G Q A P G F S Y S N A
Wheat ..... A S F S E A P P G N P D A G A K I F K T K C A Q C H T V D A G A G H K Q G P N L H G L F G R Q S G T T A G Y S Y S A A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Silkworm moth..... N K A K G I T W G D D T L F E Y L E N P K K Y I P G T K M V F A G L K K A N E R A D L I A Y L K E S T K -
Wheat..... N K N K A V E W E E N T L Y D Y L L N P K K Y I P G T K M V F P G L K K P Q D R A D L I A Y L K K A T S S

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Amino Acid Number ----> 1 2 3 4 5 6 7 8 9 10 20 30 40 50
Wheat ..... A S F S E A P P G N P D A G A K I F K T K C A Q C H T V D A G A G H K Q G P N L H G L F G R Q S G T T A G Y S Y S A A
Baker's yeast (Fungus) - - - T E F K A G S A K K G A T L F K T R C E L C H T V E K G G P H K V G P N L H G I F G R H S G Q A Q G Y S Y T D A
[CONTINUED FROM ABOVE]

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Amino Acid Number-> 60 70 80 90 100 110
Wheat..... N K N K A V E W E E N T L Y D Y L L N P K K Y I P G T K M V F P G L K K P Q D R A D L I A Y L K K A T S S
Baker's yeast..... N I K K N V L W D E N N M S E Y L T N P K K Y I P G T K M A F G G L K K E K D R N D L I T Y L K K A C E -

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Number of differences in cytochrome-C between:

Snake & Wheat: _____

Moth & Yeast: _____

Moth & Wheat: _____

Wheat & Yeast: _____