

The complete cDNA sequence of mouse elongation factor 1 alpha (EF 1 alpha) mRNA

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The elongation factor 1 alpha (EF 1 alpha) catalyses the binding of aminoacyl-tRNA to the ribosome under hydrolysis of GTP. cDNA clones exist for EF 1 alpha from *S. cerevisiae* (1); *Artemia* (2) and human (3). Partial N-terminal nt sequences of EF 1 alpha from mouse were presented elsewhere (4, 5). By differential hybridisation of cell cycle phase-specific cDNA libraries (6) we identified an S-phase-specific clone comprising the cDNA sequence for full length mouse elongation factor 1 alpha mRNA:

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CCGCAGTGTGTGAAACCACCGCTAATCAAAAGCAAAAATGGGAAAGGAAAAGACTCACATCAACATCGTCGTATCGGCACGTTAGAT 90
      M G K E K T H I N I V V I G H V D
TCGGCGAAGTCCACCACACCGCCCACTGTACTCAAAATGGTGGAAATCGACAAGCGAACCATCGAAAAGTTTGAGAAGGAGGCTGCT 180
S G K S T T T G H L I Y K C G G I D K R T I E K F E K E A A
GAGATGGGAAAGGGCTCCTCAAGTACGCGCTGGTCTTGGACAACTGAAAGCTGAGCGGTGAGCGGTATCATATGACATCTCCACG 270
E M G K G S F K Y A W V L D K L K A E R E R G I T I D I S Q
AGGAAATCGAGACCAGCAAACTACTATGTGACATCATTGATCCCCAGGACACAGAGACTTCATCAAAAACATGATTACAGCCACATCC 360
R K F E T S K Y Y V T I I E S P G H R D F I K N M I T G T S
CAGGCTGACTGTGCTGCTGATGTTGCTGCTGGTGTGGTGAATTTGAAAGCTGGTATCCCAAGAACGGGCAGACCCCGGAGCATGCT 450
Q A D C A V L I V A A G V G E F E A G I S K N G Q T R E H A
CTTCTGGCTTACACCGTGGGTGTGAAACAGCTGATGTTGGTGTCAACAAAATGGATTCCACCAGAGCCACCATACAGTCAGAAGAGATAC 540
L L A Y T L G V K Q L I V G V N K M D S T E P P Y S Q K R Y
GAGGAAATCGTTAAGGAAGTCAGCACCTACATTAAGAAAATTTGGCTACAACCCCTGACACAGTAGGACTTCCGCAATTTGTGGTGGAAAT 630
E E I V K E V S T Y I K K I G Y N P D T V A F V P I S G W N
GGTGACAACATGCTGGAGCCAGTCTAATATGCTCTGGTTCAGGGATGGAAAGTCACCCGCAAGATGGCAGTGCAGTGGCCAGCAGCG 720
D N M L E P S A N M P W F K G W K V T R K D G S A V A E T
CTGCTGGAAGCTTGGATTGTATCTACCACCTCGTCCAACTGACAAAGCCCTGGGACTGCCCTCCAGGATGCTATAAAAATTTGGAGGC 810
L L E A L D C I L P R P T D K P L R L P L Q D V Y K I G
ATTGGCACTGTCCCTGTGGCCGAGTGGAGACTGGTGTCTCAAGCCTGGCATGGTGGTTACCTTTGCTCCAGTCAATGTACAACATGAA 900
I G T V P V G R V E T G T V L K P G M V V T F A P V N V T T E
GTCAAGCTCTGTGAAATGCACCATGAAGCTTTGATGAAAGCTTCTCCTGGGCAATATGGGCTCAATGTAAGAAGCTGTCCGCTCAA 990
V K S V E M H H E A L S E A L P G D N V G F N V K N V S V K
GATGTTGACCGAGCAATGTTCTGGTGCAGACAAAACGACCCCAATGGAAGCAGCTGGCTTCTACTGCTCAGGTGATTATCTCTGAAC 1080
D V R R G N V A G D S K N D P P M E A A G F T A Q V I I L N
CATCCAGCCAAATCAGTCTGGCTAGCCCTCTGTTGATGTTGCACACAGCCACATAGCATGCAAGTTTGCAGCTTAAAGAAAAG 1170
H P G Q I S A G Y A P V L D C H T A H I A C K F A E L K E K
ATCGATCGTCTTCTGTTAAGAAGCTGGAAGATGGCCCAAGTTCTGGAAGTCTGGCGATGCTGCAATTGTTGATATGGTCCCTGGCAG 1260
I D R R S G K K L E D G P K F L K S G D A A I V D M V P G K
CCCATGTGTGTGAGAGCTTCTGACTACCCCTCCACTTGGTGGCTTTGCTGTTGCTGACATGAGGACAGACAGTGTGGTGTGGTGTGATC 1350
P M C V E S F S D Y P P L G R F A V R D M R Q T V A V G V I
AAAGCTGTGACAAAGAGGCTGCTGGAGCTGGCAAGTCAACCAAGTCTGCCAGAAAGCTCAGAAGGCTAAATGAAATATACCCCTAACA 1440
K A V D K K A A G A G K V T K S A Q K A K ***
CCTGGCCACCCAGTCTTAATCAGTCTGGAAGAAGCGGTCTCAGAAGCTTTGTCTCAATGGCCATTAAAGTTTAATAGTAAAAGACTG 1530
GTTAATGATAACAATGCATCGTAAACCTTCAGAAGAAAAGAAATGTTGTGACCATTTTTTTTTGTGTGGTGGCAGTTTTAAGTTATTAGTT 1620
TCAAAAATCAGTACTTTTTAATGGAAACAACTTGACCAAAAATCTGTCCACAGAATTTGAGACCATTAATAACAAGTTAATGAGAAAAA 1710
AAAAAAA 1719

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The ORF starts from position 40 which is preceded by the stop codon at position 25-27. The termination codon is assigned to TGA at 1423-1425. Thus, the mouse EF 1 alpha mRNA encodes a protein of 461 amino acids with a predicted mol. wt. of 50466 d. The cDNA sequence presented here contains a 15 nt poly(A) tract preceded by ATTAATA from 1685 - 1690. Within the ORF, the mouse EF 1 alpha is highly homologous to the human EF 1 alpha (98.1% homology at the aa level, 91.8% at the nt level). Differences in the nt sequence, preferentially at the 'wobble' position, and in the aa sequence, are underlined. Between nt 753 and 754 the human EF 1 alpha contains an additional codon ACT for a threonine.

REFERENCES

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