

## Carassius carassius mitochondrion, complete genome

NCBI Reference Sequence: NC\_006291.1

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LOCUS NC\_006291 16580 bp DNA circular VRT 01-FEB-2010  
DEFINITION Carassius carassius mitochondrion, complete genome.  
ACCESSION NC\_006291  
VERSION NC\_006291.1  
DBLINK Project: [13054](#)  
BioProject: [PRJNA13054](#)  
KEYWORDS RefSeq.  
SOURCE mitochondrion Carassius carassius (crucian carp)  
ORGANISM [Carassius carassius](#)  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
Actinopterygii; Neopterygii; Teleostei; Ostariophysi;  
Cypriniformes; Cyprinidae; Cyprininae; Carassius.  
REFERENCE 1 (bases 1 to 16580)  
AUTHORS Guo,X., Liu,S. and Liu,Y.  
TITLE Evidence for maternal inheritance of mitochondrial DNA in  
allotetraploid  
JOURNAL DNA Seq. 18 (4), 247-256 (2007)  
PUBMED [17541829](#)  
REFERENCE 2 (bases 1 to 16580)  
CONSRMT NCBI Genome Project  
TITLE Direct Submission  
JOURNAL Submitted (17-SEP-2004) National Center for Biotechnology  
Information, NIH, Bethesda, MD 20894, USA  
REFERENCE 3 (bases 1 to 16580)  
AUTHORS Guo,X.H., Liu,S.J. and Liu,Y.  
TITLE Direct Submission  
JOURNAL Submitted (11-AUG-2004) College of Life Sciences, Hunan Normal  
University, Lushan Road, Changsha, Hunnan 410081, China  
COMMENT REVIEWED [REFSEQ](#): This record has been curated by NCBI staff. The  
reference sequence was derived from [AY714387](#).  
COMPLETENESS: full length.  
FEATURES Location/Qualifiers  
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/organelle="mitochondrion"  
/mol\_type="genomic DNA"  
/db\_xref="taxon:[217509](#)"  
/note="red"  
[stem\\_loop](#) 1..923  
[tRNA](#) 924..992

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          993..1946
          /product="s-rRNA"
tRNA      1947..2018
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rRNA      2019..3699
          /product="l-rRNA"
tRNA      3700..3777
          /product="tRNA-Leu"
          /codon_recognized="UUR"
gene      3778..4752
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          /db_xref="GeneID:3021861"
CDS       3778..4752
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          /protein_id="YP_087031.1"
          /db_xref="GeneID:3021861"
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VVGPGYGLLQPIADGVKLFikePVrpSTSSPFLFLAAPVLALTLAMTLWAPMPMPHPVT
DLNLGILFILALSSLAVYSILGSGWASNSKYALIGALRAVAQTISYEVSILGLILLSVI
IFSGGYTLQTFNTTQESIWLLIPAWPLAAMWYISTLAETNRAPFDLTEGESELVSGFN
VEYAGGPFALFFLAEYANILLMNTLSAVLFLGASHIPNMPelTTINlMTKAALLSILF
LWVRASYPRFRYDQLMHLVWKNFLPLTLAFVLWHTALPIALAGLPPQL"
tRNA      4756..4829
          /product="tRNA-Ile"
tRNA      complement(4827..4897)
          /product="tRNA-Gln"
tRNA      4899..4967
          /product="tRNA-Met"
gene      4968..6012
          /gene="ND2"
          /db_xref="GeneID:3021864"
CDS       4968..6012
          /gene="ND2"
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residues to the mRNA"
          /codon_start=1
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          /protein_id="YP_087032.1"

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ALKIGLAPMHFWMP EVMQGLDLLTG LILSTWQKLAPFALIIQTAQNIDP LLLTLLGVT
STLVGGWGG LNQTQLRKILAYSSIAHMGWMIIVI QYAPQLTLIALGTYIIMTSAAFLT
LKMSLTTKLSTLAT TWSKSPILTATTALVLLSLGGLPPLTG FMPKWLI LQELTKQDLP
IVATIMALAALISLYFYLR LCYAMTLTISP NMINSTTPWRTQT TQTSMP LALFTMATL
GLLPMTPTILMLAT"

tRNA      6013..6083
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tRNA      complement (6086..6154)
           /product="tRNA-Ala"

tRNA      complement (6156..6228)
           /product="tRNA-Asn"

tRNA      complement (6261..6331)
           /product="tRNA-Cys"

tRNA      complement (6330..6400)
           /product="tRNA-Tyr"

gene      6402..7952
           /gene="COX1"

CDS       /db_xref="GeneID:3021858"
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           /gene="COX1"
           /codon_start=1
           /transl_table=2
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           /protein_id="YP_087033.1"
           /db_xref="GeneID:3021858"
           /translation="MAITRWFFSTNHKDIGTLYLVFGAWAGMVGTALS LLIRAELSQP
GSL LGDDQIYNVIVTAHAFVMIFFMVMPILIGGFGNWL VPLMIGAPDMAFPRMNNMSF
WLLPPSFLLLLASSGVEAGAGTGWTVYPPLAGNLAHAGASVDLTIFSLHLAGVSSILG
AINFITTTINMKPPAISQYQTPLFVWSVLVTAVLLLLSLPVLAAGITMLLTDRNLNTT
FFDPAGGGDPILYQHLFWFFGHPEVYILILPGFGIISHVVAYYS GKKEPFGYMGMVWA
MMAIGLLGFIVWAHMF TVGMDVDTRAYFTSATMIIA IPTGVKVF SWLATLHGGSIKW
ETPMLWALGFIFLFTVGGLTGIVLSNSSLDIVLHDTYYVVAHFHYVLSMGAVFAIMAA
FVHWFPLL TG YTLHSAWTKIHFGVMFIGVNL TFFPQHFLGLAGMPRRYS DYPDAYALW
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AFVQIQSN"

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gene      8111..8801

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/ db_xref="GeneID:3021857"
CDS      8111..8801
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residues to the mRNA"
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/ transl_table=2
/ product="cytochrome c oxidase subunit II"
/ protein_id="YP_087034.1"
/ db_xref="GeneID:3021857"
/ translation="MAHPTQLGFQDAASPVMEELLHFHDHALMIVFLISTLVLYIIIA
MVSTKLTNKYILDSQEIEIVWTILPAVILVLIALPSLRILYLMDEINDPHLTIKAMGH
QWYWSYEYTDYENLGFDSYMVPTQDLAPGQFRLLETDRMVVPMESPVRVLVSAEDVL
HSWAVPSLGVKMDAVPGRLNQTAFIASRPGVFYGCSEICGANHSFMPPIVVEAVPLEH
FENWSSLMLEDA"
tRNA     8802..8877
/ product="tRNA-Lys"
gene     8879..9043
/ gene="ATP8"
/ db_xref="GeneID:3021865"
CDS      8879..9043
/ gene="ATP8"
/ codon_start=1
/ transl_table=2
/ product="ATP synthase F0 subunit 8"
/ protein_id="YP_087035.1"
/ db_xref="GeneID:3021865"
/ translation="MPQLNPGPWFAILVFSWLVLFTIIPTKILSHISPNEPTPVSAEK
HKTESWDWPW"
gene     9037..9720
/ gene="ATP6"
/ db_xref="GeneID:3021862"
CDS      9037..9720
/ gene="ATP6"
/ codon_start=1
/ transl_table=2
/ product="ATP synthase F0 subunit 6"
/ protein_id="YP_087036.1"
/ db_xref="GeneID:3021862"
/ translation="MMVSFFDQFASPSYLGIPLIAIAIALPWVLYPTSSSRWINNRLI
TIQGWFINRFTNQMLPLNVGGHKWALLLASLMIFLITINMLGLLPYTFTPTQLSLN
MGFAVPLWLATVIIGMRNQPTVALGHLLPEGTPPIPLIPVLIITISLFI RPLALGVR

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          /db_xref="GeneID:3021867"
CDS       9720..10504
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          /transl_table=2
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          /protein_id="YP_087037.1"
          /db_xref="GeneID:3021867"
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          LGLLLLLLTMYQWWRDIIREGTFQGHHTPPVQKGLRYGMILFITSEVFFFLGFFWAFY
          HSSLAPTELGGCWPPTGITPLDPFEVPLLNTAVLLASGVTVTWAHHSIMEGERKQAI
          QSLALTILLGLYFTALQAMEYYEAPFTIADGVYGSTFFVATGFHGLHVIIGSTFLAVC
          LLRQIQYHFTSEHHFGFVAAAWYWHFVDVWVLFYVSIYWWGS"
tRNA      10505..10576
          /product="tRNA-Gly"
gene      10577..10925
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          /db_xref="GeneID:3021866"
CDS       10577..10925
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          /protein_id="YP_087038.1"
          /db_xref="GeneID:3021866"
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          LGSARLPFSLRFFLVAILFLLFDLEIALLLPLPWGDLNNPTGTFFWATTVLILLTLG
          LIYEWTQGGLEWAE"
tRNA      10926..10995
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gene      10996..11292
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CDS       10996..11292

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  /transl_table=2
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  /protein_id="YP_087039.1"
  /db_xref="GeneID:3021868"
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ALWALQFESTGFSTAPMLLLAFSACEASTGLALLVATARTHTGTDRLQNLNLLQC"
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}

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  /db_xref="GeneID:3021856"
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LQAFILMAFGATEIIMFYIMFEATLIPTLIIITRWGNQTERLNAGTYFLFYTLAGSLP
LLVALLLLQQSTGTLSMLVLQYSQPLQLNSWGHMIWWAGCLIAFLVKMPLYGVHLWLP
KAHVEAPVAGSMVLA AVLKLGGYGMMRMMVMDPLSKELAYPFIIALWGIIMTGS I
CLRQTDLKSLIAYSSVSHMGLVAGGILIQTPWGFSGAIIILMIAHGLVSSALFCLANTA
YERTHSRTMILARGLQIIFPLTAVWWFIANLANLALPPLPNLMGELMIITTLFNWSPW
TILLTGLGLITAGYSLYFLMSQRGPTPNHITGLQPFHTREHLLMTLHLVPVILLVT
KPELMWGWY"
}
}

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/feature_id="3"
/feature_start=12667
/feature_end=12735
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/feature_qualifiers={
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}
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tRNA 12736..12804
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/feature_id="4"
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/feature_end=12804
/feature_type="tRNA"
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}
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/feature_end=12878
/feature_type="tRNA"
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  /codon_recognized="CUN"
}
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gene 12882..14705
/feature="CDS"
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  /db_xref="GeneID:3021860"
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}
}

CDS 12882..14705
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/feature_qualifiers={
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  /codon_start=1

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| gene | <pre> complement(14702..15223) /gene="ND6" /db_xref="GeneID:3077310" </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CDS  | <pre> complement(14702..15223) /gene="ND6" /codon_start=1 /transl_table=2 /product="NADH dehydrogenase subunit 6" /protein_id="YP_087042.1" /db_xref="GeneID:3077310" /translation="MTYFMFLLLMALVVGLVAVASNPTPYFAALGLVVAAGVGCGLV GHGGSFLSLVFLIYLGMLVVFAYSAAALAAEPYPEAWGSRSVLG YVLVYLLGVGLVA GFFWG GWYEGSWVVVDGLKEFSVLRGDSGVAVMYSSGGGMLVICAWVLLLTLLVLE LTRGLSRGALRAV" </pre>                                                                                                                                                                                                                                                                                                                                                                                                 |
| tRNA | <pre> complement(15224..15292) /product="tRNA-Glu" </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| gene | <pre> 15298..16438 /gene="CYTB" </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CDS  | <pre> 15298..16438 /gene="CYTB" /note="TAA stop codon is completed by the addition of 3' A residues to the mRNA" /codon_start=1 /transl_except=(pos:16438,aa:TERM) /transl_table=2 /product="cytochrome b" /protein_id="YP_087043.1" /db_xref="GeneID:3021859" </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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VQWIWGGFSVDNATLTRFFAFHFLLPFIIAAATVIHLLFLHETGSNNPIGLNSDADKI  
SFHPYFSYKDLLGFVIMLLALTLLALFSPNLLGDPENFTPANPLVTPPHIKPEWYFLF  
AYAILRSIPNKLGGVLALLFSILVLMVPLLHTSKQRGLTFRPITQFLFWTLVADMII  
LTWIGGMPVEHPFIIIGQIASVLYFALFLVLFPLAGWLENKALKWA"

tRNA 16439..16510

/product="tRNA-Thr"

tRNA complement(16509..16580)

/product="tRNA-Pro"

#### ORIGIN

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121 aggtatgcat aaagcataat cttaagactc acaagttaaa ttattttaac ccgggtaata
181 tattattccc caagaaattg tccccacatt tttccttgaa tgactcaact aaggttttat
241 tcaaacatat taatgtagta agagaccacc aaccatttat ataaaggaat atcatgcatg
301 atagaatcag ggacatcaat tgtggggggtc gcacaatatg aactattact ggcattctggt
361 tcctatttca ggtacataac tgtaatactc caccctcgga taattatact ggcattctgat
421 taatgggtga gtacatatgg ttcattaccc cacatgccga gcgttctttt atatgcataa
481 ggtatttttt ttttggtttc ctttcattct gcattctcaga gtgcaggcac aaatgttggt
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601 taagaactgc ataccttctaa ctcaagtga taacatatcc atctcttatt caacttatcc
661 ttatatagtg ccccttttgg tttttgcgcg acaaaccctc ctacccctta cgctcaaaga
721 atcctgttat ccttggtcaa ccccgaaacc aaggaggacc caagaacgtg taagccaacg
781 agttgaggta cgaattggca tccattata tatatatata tatatgtgca tcggtttttt
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901 actaaathtt ctgacattat ttagctagcg tagcttaata caaagcatag cactgaagat
961 gctaagatga gacctaaaaa tctccgcatg caaaaaggca tgggtcccgac cttattatca
1021 gctctaactc aacttacaca tgcaagtctc cgcacccag tgaatatgcc ctcaatcccc
1081 ctacccgggg acgaggagcg ggcattcaggc acaaatatta gcccaagacg cctagccgag
1141 ccacaccccc aagggaattc agcagtgata aacattaagc cataagtga aacttgactc
1201 agtttagtgt aagagggccg gtaaaactcg tgccagccac cgcggttaga cgagaggccc
1261 tagttgatat tacaacggcg taaagggtgg ttaaggataa ataaaaataa agtcaaatgg
1321 ccccttggtc gtcatacgct tctaggcgct cgaagcccta atacgaaagt aactttaatg
1381 aaccacactg accccacgaa agctgaggaa caaactggga ttagataccc cactatgctc
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1561 gataaccccc gttcaacctc accacttcta gccaaaccag cctatatacc gccgtcgtca
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1681 aggtgtagcg catggagtgg gaagaaatgg gctacatttt ctaacataga atattacgaa
1741 catgcacccat gaaacagtgc ttgaaggagg atttagtagt aaaagggaat tagagtgtcc
1801 ctttgaaccc ggctctgaga cgcgtacaca ccgcccgtca ctctccctg tcaaaatgca
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1921 accggaaggt gcacttggat caaaccaggt gtgtggctga gttagtcaag catctcactt  
1981 acaccgagaa gacatccatg caaattggat cgccctgagc caaacagcta gcttaactac  
2041 ctaataacta aacaatataa ataaaataag atagacctaa cactaaaaat taaatcattc  
2101 ttttacctga gtatgggcga cagaaaaggt tccacaaagc gatagaaata gtaccgcaag  
2161 ggaaagctga aagagaaatg aaataaccga tataagcaat aaaaagcaaa gattaaacct  
2221 tgtacctttt gcatcatgat ttagccagta caccaagca aagagacctt tagtttgaaa  
2281 ccccgagacc aggtgagcta ccccgagaca gcctattgag ggccaacccg tctctgtggc  
2341 aaaagagtgg gaagagctcc gggtagaagt gacagacctt ccgaacctgg tgatagctgg  
2401 ttgcctaaga aatggataga agttcagcct cgtactcccc aaatcaaata aacattaata  
2461 agacaacaag agaaacatac gagagttagt taaagggggg acagcccctt tgacaaagga  
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3781 ctaaacaccc taataaccga cctaattaac ccttagcct acatcgtaac cgtacttcta  
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