Supplementary Data

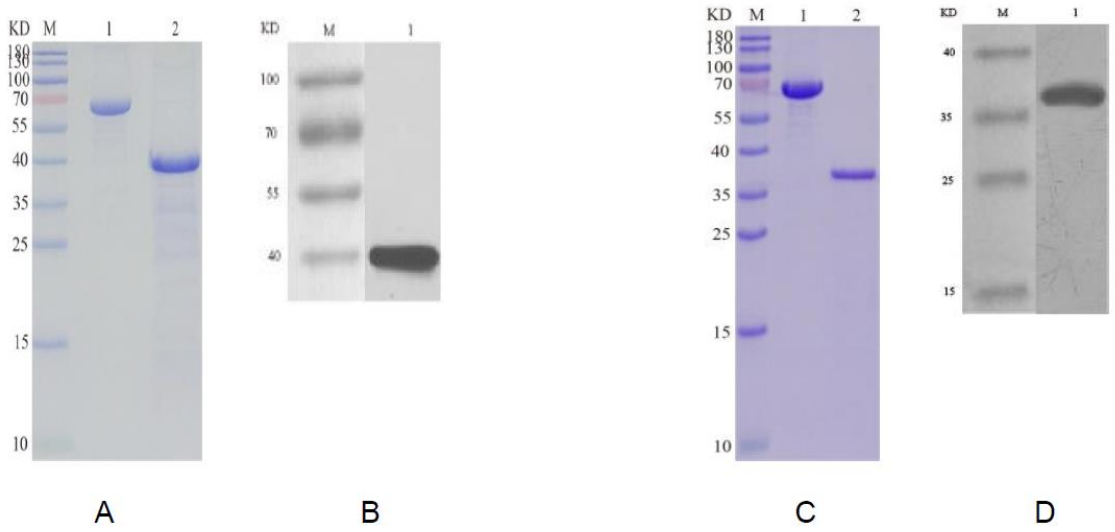


Figure S1. Quality detection and Western blot analysis of the expressed N-lobe and C-lobe segments after gel cutting. (**A**) Purification of the expressed N-lobe after gel cutting. Lines: M, marker; 1, 0.5% mg/mL BSA; 2, purified sample. (**B**) Western blot of the expressed N-lobe. Lines: M, marker; 1, purified sample. (**C**) Purification of the expressed C-lobe after gel cutting. Lines: M, marker; 1, 0.5% mg/mL BSA; 2, purified sample. (**D**) Western blot of the expressed C-lobe. Lines: M, marker; 1, purified sample.

Supplementary Data S1. *Transferrin* and *Actin* sequences obtained from previous transcriptome sequencing data of Amur stickleback for primer designing in this study.

>Transferrin

ATGCAGACTCTCATCCTCGTGGCGTTGCTCGGATGCCTCGCCACCGCGTTCGCGGCCCCCGC
TGACACGGTGAAGTGGTGCGTCACGTCGGACAGAGAACATGACAAATGTAGGGCCCTCGT
CGCAAGTGCTCCGGCTTTCTCCTGCGTGAAGAGGGAAAGCGTCCTCAGCTGCATCACTGCG
ATTAAGGCTGGTGAGGCAGATGCCATCACTCTGGATGGAGGGGATATCTACACAGCTGGAC
AGGTCAATTATGACCTGCAGCCCATTATTGCTGAGGACTACGGCACCACTGCGGACACCTG
TTACTACGCTGTTGCCGTGGTGAAGAAGGGCACTACATTTGGCATTAGAGATCTCCAGGGG
AAGAAATCCTGCCACACTGGGTTGGGGAAATCTGCGGGCTGGAACATCCCCATCGGGACC
CTTGTGTCAATGGGTTTGATTCAGTGGGGAGGCATTGAAGACAAACCCCTCGAGGAGGCGG
TGAGCACTTTCTTCTCGTCCAGCTGTGTTCCCGGGGCCACAAGGAGAAGTCTGTGTCAGCTG
TGCAGTGGAGACTGCTCCAAGAGCCACAGTGAGCGTTACTACGACTACAGCGGAGCCTTCC
AGTGTCTGAAGGATGGTGCTGGAGACGTGGCTTTTGTGAAGCACCTCACTGTCCCAGAGTC
GGAGAAGGACGGCTATGAGCTGCTGTGTAAAGATAACACCAGGGCCCCTATTGACCAATA
CAAAAGCTGCTACCTGGCCAGAGCACCCGCTCACGCTGTTGTCAGCCGTAAGGACCCACA
GCTGGCTGAACTCATCTGGACTAGCCTCGATTCAGTACAGAAACGCCCCCAGGACTTCAGG
CTCTTCTCCTCCGAAGCCTTTGCACCTTCCAAAAACCTGATGTTCAAAGACTCAACAGAAA
AGCTGGTGAAGCTGCCCCCAAGCATGGATTCCTTCTTGTATTTGGGTGCCGGCTACATGAGT

AGCATCAGTTCCCTTACGAAAGAGTCGACTCCCGCTACGTCCTCTGCCATTAAATGGTGCGC
TGTGGGTCACGCCGAGACGAGCAAGTGTGACTCGTGGAGCATCAATATTCTCAACGGTGCC
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AGGCTGACGCAATGGCAGTTGATGGAGGACAGGTGTACACCGCTGGGAAGTGTGGTCTGG
TTCCTGCGATGGTGGAGCAGTACAGCGAAGAGCTGTGCGGCACCGCAGGAGCCAGAGCCT
CCTCTTACTATGCTGTCGCTGTGGTGAAGAAGGGCTCAGGGGTGACCTGGGACAAGCTGAA
GGGCACGAGGTCTTGCCACACAGGCGTCGGCAGAACTGCTGGCTGGAACATTCCCATGGGT
CAAATACACAAAAAGACTGGTGACTGCGACTTCACCAAGTTCTTCAGCAGTGGCTGCGCCC
CCGGAGCAGAGCCCAGCTCTCCATTCTGTACTCAGTGCATCGGCAGCGGGGAAACGGTGG
GAGATGAATCCAAGTGCAAAGCCAGCTCCGAGGAGCGGTACTACGGCTACGCTGGAGCCT
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ATTTGAGCACAAAAGTGATTACCAGCTGATCTGCCCTGGGAAGGAGCCGGTGGAAGTCGA
AGACTATGCCTCTTGTCACCTGGCTATTGTGCCAGCCCATGCCGTGGTCACTCGTCCAGAGA
TCCGCGACGATGTTGTTCGCATTCTCCTGGCAGAGCAGTCTAGATTAGGTTCCAGCAGCGAT
GGCCCATTTAGCATGTTTAAATCAGAACCAGGAAAGAACCTTCTCTTCAAGGACTCCACCA
AGTGTCTCCAGGAAGTTGAAGCTGGAACAAGCTATGAGAGGTTTTTGGGAGCAGAGTACAT
GGATGCCATGACTTCGCTCAGACAGTGCACTGCCAGTACTCCAGATCTGGAGAAATCCTGC
ACTTTCCATTCCTGCCAGGAAAAAAAC

>*Actin* (partial)
ATGCTGATTGGCATGGATGAGGCCCCTGGGTTCCATGAGATGACGTTCCAGTCTATTAACAAGTGCGA
TATCGATGTGAGACGTGATCTTTACGGGAATATTGTTCTTTCTGGTGGGACAACCATGTTCAAGAATCT
TCCTGAGCGCCTTGGAAAGGAAATCAGCAATCTCGCACCGTCGTCTATTAAGCCGAAGGTAGTGGCTC
CGCCTGAGCGCAAGTACAGTGTGTGGATTGGCGGCTCCATCCTATCGTCCCTCACGACATTCCAGACC
ATGTGGATCAAGAAGAGCGAGTACGACGAAGCAG

Supplementary Data S2. Transferrin sequences used in this study. N-lobe and C-lobe segments are also marked.

>*Pungitius sinensis*
MQTLILVALLGCLATAFAAPADTVKWCVTSDREHDKCRALVASAPAFSCVKRESVLSCITAIKA
GEADAITLDGGDIYTAGQVNYDLQPIIAEDYGTTADTCYYAVAVVKKGTTFGIRDLQGKKSCH
TGLGKSAGWNIPIGTLVSMGLIQWGGIEDKPLEEAVSTFFSSSCVPGATRRSLCQLCSGDCSKSH
SERYYDYSGAFQCLKDGAGDVAFVKHLTVPESEKDGYELLCKDNTRAPIDQYKSCYLARAPAH
AVVSRKDPQLAELIWTSLDSVQKRPQDFRLFSSEAFAPSKNLMFKDSTEKLVKLPPSMDSFLYL
GAGYMSSISSLTKESTPATSSAIKWCAVGHAETSKCDSWSINILNGATIICQNAPTVEECLTKIMR
KEADAMAVDGGQVYTAGKCGLVPAMVEQYSEELCGTAGARASSYYAVAVVKKGSGVTWDK
LKGTRSCHTGVGRTAGWNIPMGQIHKKTGDCDFTKFFSSGCAPGAEPSSPFCTQCIGSGETVGD
ESKCKASSEERYYGYAGALRCLAEGAGDVAFIKHTTILEFEHKSDYQLICPGKEPVEVEDYASC
HLAIVPAHAVVTRPEIRDDVVRILLAEQSRLGSSSDGPFSMFKSEPGKNLLFKDSTKCLQEVEAG
TSYERFLGAEYMDAMTSLRQCTASTPDLEKSCTFHSCQEKN

>*Amphilophus citrinellus* (ENSACIT00000018950.1)

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GLGKSAGWNIPIGTLVSMNIIKWGGIEDKPLEEAVGTFFQASCVPGATRGSKLCELCKGDCSKS
QREPYYDYNGAFQCLADGVGDVAFVKHLTVPESEKSNYELLCKDNTRAPIDSYQTCYLVRVPA
HAVVTRKDPELAELISTSLQGVQNFNLFSSEAYAPAKNLMFTDSAVKLVRLPPSIDSFLYLGANY
MSIIFSLKKEPTPGITSSAIRWCAVGHAETAKCDTWSINSVTDDTTSIECQNAPTVEECLKKIMRK
EADAMAVDGGQVFTAGKCGLVPVMVEQYAQDLCSRADVTASSYFAVAVVKKGSGVTWENL
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EAKCKASADEQYYGYAGAFRCLVEGGGDVAFIKHTIVQENSDGNGPDWARSLRSSDYQLICPG
KAPVEITEYASCHLANVPAHAVVARPESHAEVVRILQEQQTRFGGQGTDPAFRMFQSENGKNL
LFKDSTKCLQEVPAGRSYEEFLGPEYMDSMKLLRHCSGTASDLEKSCTSHSCQQP

>*Amphiprion ocellaris* (ENSAOCT00000003602.1)

MKPLLCAALLGFLATVLAAPGPEKVKWCVKSDAELQKCLALAAAAPAFSCVKKDNTIDCIIAIK
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TGLGKSAGWNIPIGTLLSMNIIEWAGIEDKPVEEAVSDFFQSSCAPGAGTGSKLCELCKGDCSRS
HKEPYYDYAGAFQCLVDGVGDVAFVKHLTVPDSEKSNYELLCKDNTRAPVDNYKTCNLARVP
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EYMSIVRSLKKEQTPGTTSSAIKWCTVSRAETAKCDTWSINTVDKVNGGNAAIECQEAPTVDEC
LIKIMRKEADAMAVDGGQVYTAGKCGLVPAMVEQYDEGLCGSSEAKASSYYAVAVVKKSSG
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>*Astatotilapia calliptera* (ENSACLT00000036419.1)

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>*Astyanax mexicanus* mexican (ENSAMXT00000041616.1)

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KKETSTDSASRAIKWCAVGHAETQKCDAWSINSMDETTGSVRVECQNGKTVDECLSKIMRKEA
DAMAIDGGQVYSAGRCGLVPAMVEKYTSKCCESDACPDPSYYAVAVVRADSKLTWSSLRGK
KSCHTGLGRTAGWNVPMGLLHKDTGECDFSKFFSQSCAPGADPKSKLCALCVGSGKGVGSEE
AKCKASTEELYYGYSGAFRCLVEGGGDVAFIKHTIVEEHTGGKGPAWAKSLKKSDYRLICPGH
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LLFKDSTKCLKEISDTKSYREFLGAAYLSTMDTLRQCDSSMSDLEKACTFHTCQQSV

>*Astyanax mexicanus* cavefish (ENSAMXT00005045486.1)

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>*Carassius auratus* (ENSCART00000037543.1)

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>*Clupea harengus* (ENSCHAT00000024451.1)

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RVPAHAVVSRKDPELAKRIFDVLTPVESKLFVSDPYGGKNLMFKDSATKLVQLPSTTDSFLYLG
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KQADAMTIDGGEVYTAGKCGLVPVMVEQYVEALCKPDASGPASSYYAVAVAKKSSDITWETL
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>*Cyclopterus lumpus* (ENSCLMT00005033740.1)
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>*Cyprinodon variegatus* (ENSCVAT00000010277.1)
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SQKEPYYDYSGAFQCLAEGAGDVAFVKHLTVPDSEKSKYELLCKDNTRAPIDNYKDCHLARVP
AHAVITRKDPELANLIWNSLSGVQNFNLFSSEAYAPAKNLMFKDSTQKLVRVPPNTDSFLYLGS
NYVSIVHSLKKESATGTASSGIRWCAVGHAETVKCDEWSINSVTDDSASIECQNAPTVEDCFKKI
MRKEADVMAVDGGQVYTAGKCGLVPAMVEQYDEQACTGPSDTASSYFAVAVVKKTSGVNW
ENLKGKKSCHTGVGRTAGWNMPMGQIYSQTKDCNFANFFSSGCAPGAEPSSPFCRECKGSGKA
VGDEAKCKASAEEQYYGYAGAFRCLVEGAGDVAFIKHTTVGENSDGNGPEWARGVNSNDYQ
LICPGKDPMPLSEYMSCHLAKVPAHAVVTRPEIRDNVVRILQDQQTKFGARVDSTFRMFSSTNG
KNLLFKDSTKCLQEIPSGRTFKEFLGNEYMAAMSSLRECSDTASDLEKSCTFHTCQQP

>*Cyprinus carpio* (ENSCCRT00000026706.1)

MNILLITLLACLVVALPSASAQKVKWCVKSQNEMKKCQHLETKSSELECHLKSSVTECMTSIKT
GDADAITVDGEHVYLAGLINYDLHPIIAENNKAVCSYAVAVVKSDTDFSINDLKGKTSCHSCYQ
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>*Danio retio* (ENSDART00000163194.2)
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RSGGWNTPIGKLIATNKITWEGPNEMPVERAVSEFFSSSCVPGVSKPKYPNLCKACQGDCSCSH
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RTVIARTDTDLQYVYDVLKQIPASDLFSSQAFGGKDLIFSDSATELMLLPKRTDSLLYLKEEYYE
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>*Electrophorus electricus* (ENSEEET00000033184.1)
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LQGYGLFSSEGYSAKNLMFKDSTKSLLQLSKTIDSFTYLGAVYMATIRSLEKEISTDSSSGAIKW
CTVGHAETVKCDTWSINAVDDKGTTKIMCTRAESVDECIRKILHKEADAIAVDGGQVYTAGKC
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GLIHKETEDCDFSKYFSESCAPGADPKSSLCALCAGSGKSVGGDEAKCKASSDELYYGYAGAL
RCMVEGKGEVAFVKHTTVQENADGPQWASGLKSAELKLICPGGSAEISSYTTCHLAKVPAHAI
VTRPEMRIEVVSVLKEQQTVFGVTSSNPFKMFQSEDGSNLIFKDSTKCLQDVPSTDSYKDFLGSA
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>*Erpetoichthys calabaricus* (ENSECRT00000008430.1)

MKLLFQCFVVFASLIYCFSGEPVPSCIKWCNKSSLEQKKCLALKAAVPGICACVQKPDTKECLQ
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SCHTGLGKSAGWNVPIGVLISYGLLAWNGTSEETIESAVSRFFSASCVPGADKELYPRLCQQCK
KNCVRSHDEPYYDYEGALQCLKDGKGDVAFVKHLVAQGADKDEYELLCEDGTRKPINEYKSC
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>*Fundulus heteroclitus* (ENSFHET00000030491.1)
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>*Gadus morhua* (ENSGMOT00000011457.2)
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GKTAGWNIPIGTLLTTGQLVWSGQEDLPVEEAVSTFFSKSCVPGAGGLVGGKLCTLCPSDCSKS
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RGKRSCHTGLGRTAGWNIPMGLVHSITGSCDFGGFFPSGCAPGSEPSSTFCRQCAGSGSGVEDG
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VGRAEISDFASCNLAAVPSHAVVTRQDIRDDVVKMLLDQQRKFGIDGSDPLFRIYESKDGNNLL
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>*Gambusia affinis* (ENSGAFT00000032023.1)

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>*Gasterosteus aculeatus* (ENSGACT00000017985.1)
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AVVSRNDPQLAELIWNSLDSVQKHPENFNLFSSEAFAPAKNLMFKDSTEKLVKLPANMDTFLY
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GDESKCKASSEERYYGYAGALKCLADDAGDVAFIKHTTILEFEHKNEYELICPGKGPMAVEDY
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>*Gouania willdenowi* (ENSGWIT00000023789.1)
MTGFQFYLYSFDECKQQVKSLSCLSCYKRPSCVPDSLHSSSADSLNPPIMKMLLHVLLLLQCISV
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SCNLAKVPAHAVVTRPEARSKVIDVLQVQQANFGNRATDAPFRLFQSENGKNLLFKDSTKCLQ
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>*Hippocampus comes* (ENSHCOT00000017339.1)

MKHLILSLLRPALLLSYLVAVVLSAPAENVRWCVKSDKEHEKCVAMAKKAPVFTCVKRSDSLG
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>*Hucho hucho* (ENSHHUT00000087355.1)
HSQLLPSGECLDCCCVYSSVSRLYMVFIVCVRICFAAVSDFFIASCAPGATKSSKLCQLCKGDCS
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LCQDGTTQPVSKFLECHLAKVPAHAVITRPETRKEVVSILLEQQVGVKTYSQICFYLRQIISQFSQ
G

>*Ictalurus punctatus* (ENSIPUT00000022799.1)
MKLSVIGVVLGCVALAKAAPMDPRIRWCLKSEQEAQKCRQLASKSDLLSCVKLEGSMECIKAI
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EGIRGKLDKCKASTAERYYGYAGAFRCLAEGAGDVAFVKHSTVAENTDGNGPEWAKAFKSAD
FKLICPGGSAEITEYEKCYLAKVPAHAVVTHPEKRDDVVSVLKEQQAVYGHSSSWVVFNMFKS
EGKQNLLFKDSTKCLQEVPPGKNYKEFLGKEYIRTIDSLRECASSKTELEKACTIHSCQKKT

>*Labrus bergylta* (ENSLBET00000025664.1)
MKALLLVLLGCLATVFAAPLEKVKWCVKSDQEFQKCLSLEAKTSAFTCVKRDSTLNCIIAIRAG
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>*Lepisosteus oculatus* (ENSLOCT00000011952.1)
MKLVLCSLVLGCLASALAAPQSQPVRWCLKSAAEKKKCDALVKASPRFSCVQKSSTLDCIKAI
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QKH

>*Mastacembelus armatus* (ENSMAMT00000019068.2)
MKLLLLVALIGGLATMFAAPAEKVKWCVKSEPEYRKCLDLAAKAPAFSCVRRDNTIDCIIAIKA
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>*Maylandia zebra* (ENSMZET00005035241.1)
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>*Mola mola* (ENSMMOT00000025312.1)
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>*Monopterus albus* (ENSMALT00000026314.1)
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>*Nothobranchius furzeri* (ENSNFUT00015028535.1)
MQGPGPVGSSIKASAPSQTVCSAAQIRRPTHTHTQTMKPLLLVALFGCLATVFAAPAETVKWC
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>*Oncorhynchus kisutch* (ENSOKIT00005094898.1)
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>*Oncorhynchus mykiss* (ENSOMYT00000115310.1)
MKLLLVSALLGCLATVYAAPAEGMVRWCVKSDKELQKCHDLAANVAQFSCVRRDNSLECIQA
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LCHDGTTQPVTKFRDCHLAKVPAHAVITRPESRGEVVSILLEQQARFGSSGSDSSFNMFQSDLG
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>*Oreochromis niloticus* (ENSONIT00000054363.1)
MKPLLLVTLLGLLASAFAAPGSQKVKWCVKSDQELRKCSDLAAAAPAFSCVKKENTLECIVAI
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SRSQREPYYDYNGAFQCLVEGAGDVAFVKHLTVPESDKPMYELLCKDNTRAPIDNYKACSLAR
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EDCLKKIMRKEADAVAVDGGQVFTAGKCGLVPVMVEQYDQEMCGNSNAPASSYYAVAVVK
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MFQSENGKNLLFKDSTKCLQEVAEGSTYEQFLGEAYMDAMKALRICSETASDLEKSCAFHTCQ
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>*Oryzias javanicus* (ENSOJAT00000037182.1)
MKPLLLLTLLGCLAAALAAPPQKVKWCVKSDQEFRKCTDLAAAFPAFSCVKKESTLDCIIAIKA
GEADAITVDGGDVYTAGLNNYDLQPIIAEDYGASSETCYYAVAVVKKGTAFGIRDLRGKKSCH
TGLGKSAGWNIPIGTLVSMGIIQWAGIEDKPVEEEVSTFFQASCVPGATRGSKLCEICKGDCSRS
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GAQYMSTIRSLKKEQSPGTASNAIKWCAVGHAETAKCDTWSINSVTDDTAAIECQNAPTVDEC
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>*Oryzias latipes* (ENSORLT00020019142.1)
MKPLLLLTLLGCLAAALAVPAQKVKWCVKSDQEFRKCSDLAAASPAFSCVKKESTLDCIIAIKA
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HTGLGKSAGWNIPIGTLISQNILQWAGIEDKPIEEAAVSTFFQASCAPGATRGSKLCELCKGDCS
RSQREPYYDYSGAFQCLVEDAGEVAFVKHLTVPDSEKSNYELLCLDNTRATIDSYKTCHLARVP
AHAVITRKDPELAKLIWESLSGVQNFNLFSSEAYGPAKDLMFKDSTQKLVPVPPNTDSFLYLGA
DYVSIIHSLRKEQSTGPESTSIRWCAVGHAETAKCDMWSINSVTEDTASVECQNAPTVEDCFKKI
MRKEADAMAVDGGQVYTAGKCGLVPAMVEQYQQELCGSSPDTASSYYAVAVVKKSSGVTW
ANLQGKKSCHTGIGRTAGWNIPMGHIYAQTKNCQFDTFFSSGCAPGAEANSPFCRECKGSGKA
VGDEAKCKASAEEQYYGYAGAFRCLVEGAGDVAFIKHSIVSENSDGNGPDWARGVNSADYQL
ICPGKDPVPVEDFVSCHLAAVPAHAVVTRPDVRDKVVRILQDQQTKFGTDGSDSTFRMFQSTN
GKNLLFKDSTKCLQEVTSGKTYDQFLGQEYMNAMSSLRQCADTASDLEKSCTFHACQQP

>*Poecilia reticulata* (ENSPRET00000004349.1)
MWKLRSGLCFPVYQHTKVHRRPHIRKPEQTVVFYLLASAGRLCYKSHGPVTESLLCPTGQXTP
QSTSMKSLLLVVLLGCLAAVLAAPAXKVRWCVKSDQELRKCTDLAAASEAFSCVKKESTLECII
AIKASEADAITVDGGDVYTAGLNNYDLHPIIAEDYGETSDTCYYAVAVVKKGTGFGIRDLGGK
KSCHTGLGKSAGWNIPIGTLISQNIIQWAGIEDKPIEEAVSTFFQASCAPGATRGSKLCELCKGDC
SRSQREPYYDYSGAFQCLVEDAGEVAFVKHLTVPDSEKSNYELLCLDNTRAPIDNYKACHLAR
VPAHAVITRKDPELAKLIWESLRGVQNFNLFSSEAYAPAKDLMFKDSTQKLVPVPPNTDSFLYL
GADYVSIIHSLRKEQSAGPESSSIRWCAVGHAETAKCDTWSINSVTEDTASVECQNAPTVEDCF
KKIMRKEADAMAVDGGQVYTAGKCGLVPAMVEQYQQELCGSSPDTASSYYAVAVVKKSSGV
TWANLQGKKSCHTGIGRTAGWNIPMGHIYAQTNNCQFDTFFSSGCAPGAEANSPFCRECKGSG
KAVGDEAKCKASAEEQYYGYAGAFRCLVEGAGDVAFIKHSIVSENSDGNGPDWARGVNSADY
QLICPGKDPVPVEDFVSCHLAAVPAHAVVTRPDIREKVVGILQDQQTKFGASGSDSTFRMFQST
NGKNLLFKDSTKCLQEVTAGKNYEQFLGQEYMNAMSSLRQCADTASDLEKSCTFHTCQQP

>*Salmo salar* (ENSSSAT00000106960.1)
MKLLLVSALLGCLATAYAAPAEGIVRWCVKSEQELRKCHDLAAKVAQFSCVRKDGSFECIQAV
KGGEADAITLDGGDIYTAGLTNYGLQPIIAEDYGEDSDTCYYAVAVAKKGTAFGFKTLRGKKS
CHTGLGKSAGWNIPIGTLVTESQIQWAGIEDRPVESAVSDFFNASCAPGATMGSKLCQLCKGDC
SRSHKEPYYDYAGAFQCLKDGAGDVAFIKPLAVPAAEKASYELLCKDGTRASIDSYKTCHLAR
VPAHAVVSRKDPELANRIYNKLVAVKDFNLFSSDGYAAKNLMFKDSAQKLVQLPTTTDSFLYL
GAEYMSTIRSLKKSQATGASSRAIKWCAVGHAEKGKCDTWTINSFADGESKIDCQDAPTVEECI
KKIMRKEADAIAVDGGEVYTAGKCGLVPVMVEQYDADLCSAPGEASSYYAVAVAKKGSGLT
WKTLKGKRSCHTGLGRTAGWNIPMGLIHQETNDCDFTKYFSKGCAPGSEVGSPFCAQCKGSGK
AVGDEYRCKARSEEQYYGYTGAFRCLVEDAGDVAFIKHTIVPESTDGNGPDWAKDLKSSDFEL
LCQDGTTQPVTKFSECHLAKVPAHAVITRPETRGDVVSILLELQAKFGSSGSDSSFRMFQSSVEK
NFLFKDSTKCLQEIPKGTKFQDFLGKEYMIAMQSLRKCSDSTSDLEKACTFHSCQQKE

>*Salmo trutta* (ENSSTUT00000100204.1)

MKLLLVSALLGCLATAYAAPAEGIVRWCVKSEQELRKCHDLAAKVAQFSCVRKDGSFECIQAI
KGGEADAITLDGGDIYTAGLTNYGLQPIIAEDYGEDSDTCYYAVAVAKKGTAFGFNTLRGKKS
CHTGLGKSAGWNIPIGTLVTENQIQWGGIEDRPVESAVSDFFNASCAPGATKGTKLCQLCKGDC
SRSHKEPYYDYAGAFQCLKDGAGDVAFIKPLAVPAAEKASYELLCKDGTRAPIDSYKTCHLAR
VPAHAVVSRKDPELADRIYNKLVAVKDFNLFSSDGYAAKNLMFKDSAQKLVQLPNTTDSFLYL
GAEYMSTIRSLKKSQATGATSRAIKWCAVGHAEKDKCDTWTINSFADGESKIECQNAPTVEECI
KKIMRKEADAITVDGGEVYTAGKCGLVPVMVEQYDADLCSAPGEASSYYAVAVAKKGSGLT
WKTLKGKRSCHTGLGRTAGWNIPMGLIHKETEDCDFTKYFSKGCAPGSEVGSTFCAQCKGSGK
PVGDEDMCKARSEEQYYGYTGAFRCLVEGAGDVAFIKHTIVPESTDGNGPVWAKDLKSSDFEL
LCQDGTTQPVTKFRECHLANVPAHAVITRPETRGDVVSILLEQQAKFGSSGSDSSFKMFQSSVE
KNLLFKDSTKCLQEIPKGTKYQDFLGEEYMIAMQSLRKCSDSTSDLEKACTFHSCQQKE

>*Sander luciop* (ENSSLUT00000055031.1)
MQTLLLVALLGCLAAVFAAPADRVRWCVKSDKEHEKCEALAAKAPAFSCVKKTNTIDCIVAIK
AGEADAITLDGGDIYVAGLKNYDLQPIIAEDYGTSSETCYYAVAVVKKGTEFTIDQLRGKKSCH
TGLGKSAGWNIPIGTLVSMNLIQWRGIEDKPVEEAVSEYFSASCVPGATRSSKLCQLCRGDCSRS
HNEPYYDYGGAFQCLKDGAGDVAFVKHLTVPESEKSNYELLCKDNTRAPIDSYQNCHLAKVP
AHAVVTRKDPQLAQLIWTHLSSVQSLPDFDLFSSEAYAPAKNLMFKDSTLKLVQVPANTDSFLY
LGAEYMSIVRSLKKEPTGTTSTAIKWCAVGHAETAKCDSWSINSVRDDATAAIECARGATVEEC
LKMIMSKEADAMAVDGGQVYTAGKCGLVPAMVEQYESELCSTAGATASSYYAVAVVKRDSG
VTWETLQGKRSCHTGVGRTAGWNIPMGLIHQRTQDCDFTRFFSSGCAPGANSTSPFCTNCRGS
GKAVGDEYKCKASAEEQYYGYAGAFRCLVENAGDVAFIKHTIVSENSDGKNVAPWASGVKSA
DYQLICPGKAPVPVTDYASCHLALVPAHAVVTRPESHGEVVSVLRDQQAKFGSSVPDATFRMF
QSESGKNLLFKDSTKCLQEVQAGKTYADFLGEQYMISMKSLRQCSETTPDLEKSCTFHSCQQKI

>*Scleropages formosus* (ENSSFOT00015048266.1)
MNALLAAAVLLGSLELVASSDQKVKWCLKSEQEKKKCDDLAAKVPRFTCVLRHGSEECIKAIK
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CHTGLGKSAGWNIPVGTLVAQGDITWGGQEDESILKAFSEFVSASCVPGAQKGSNLCQLCKGD
CSRSHREPYYDYDGAFQCLKDGAGDVAFVKHLTVPPSEKAGYELLCKDGTRKDIDEYKSCHLA
RVPAHAVVSRKEPELASRIWDSLQAAQGFPLFSSEGYGAKNLMFKDSTVRLVQLPKTTDSFLYL
GAEYMSTIRSLKKELSSDIQSKAIKWCAVSRVETVKCDTWSIHSVDTGVAKIECQQAPTVDECIK
KIMRKEADAMAVDGGEVYSAGKCGLVPAMVEQYDEDKCGSSNAVASSYYAVAVVKKNSGLT
WTELKEKKSCHTGMGRTAGWNVPMGLIHNQTNDCDFSKFFAKSCAPGADPSSNLCELCVGSG
KAVSGQEHKCKASSEELFYGYAGALRCLVEGDGDVAFMKHTTVKENSGGQGGQWAKDLKPS
DFELLCPSGLAATMPVEQYEKCHLAKVPAHAVVTRPESRQEVVAILKEQQGRFGHSSTAGFKM
FQSKDGKNLLFKDSTKCLQEVPSQQSYEDFLGPEYMASIRSLRQCASSVSDLEQACTFHTCQQK
A

>*Seriola lalandi* dorsalis (ENSSLDT00000015513.1)

MKLLLLVALLGCIAAVFAAPAEKVKWCVKSEQEYRKCLDLAAAAPAFSCVRKENTIDCITAIKA
GEADAITLDGGDIYTAGLTNYNLHPIIAEDYGPTSDTCYYAVAVVKKDTGFGFHDLRGKKTCHT
GLGKSAGWNIPVGTMISMGILPWGGIDDKPVEEAVSEFFLKSCVPGATRPKLCELCKGDCSRSH
KEPYYDYDGAFQCLVEDKGEVAFVKHLTVPESEKANYELLCKDNTRAPISSYKTCNLARVPAH
AVVTRKDPQLAELIWTSLQAVQVKHGFKLFSSEAYAPAKNLMFKDSAEKLVRLPPNIDSFLYLG
AEYMSIVRSLKKEQTPGTSSSAIKWCAVGHAETSKCDQWTINSVGDDGSAIECQNAPSVEECLK
KIMRKEADAMAVDGGQVYTAGKCGLVPVMVEQYDQGQCGNNDAGASSYYAVAVVKKSSGV
TWDTLQGKRSCHTGIGRTAGWNIPMGHIHKRTNDCDFSKFFTSGCAPGADPTSSFCNQCVGSRR
AVGDEYKCKASAEEQYYGYAGAFRCLVENSGDVAFIKHTIVGENSDGNGPAWASGVNSADYQ
LICPGKPPVPVSDFLSCNLAKVPAHAVVTRPESRSEVIRVLQDQQAKFGISGSDASFRIFHSEGGK
NLLFKDSTKCLQEIPSGSNYEQFLGVEYMNAMSSLRQCGETTPDLEKSCTFHSCQQKN

>*Stegastes partitus* (ENSSPAT00000011999.1)
MKLLLCATLLGFLATVLAAPAEKVKWCVKSDAEYQKCLALATAAPAFSCVKKDNTIDCIVAIK
AGDADAITLDGGDVFTAGLNNYDLQPIIAEDYGTTSDTCYYAVAVVKKGSGFGFRDLKGKKSC
HTGLGKSAGWNIPIGTLLTMNILEWAGIEDKPVEEAVSSFFQASCAPGATRGSKLCELCKGDCS
RSHSEPYYDYAGAFQCLVEDAGEVAFVKHLTVPDAEKSKYELLCKDNSRAPIDNYKTCNLARV
PAHAVVTRKDAQLAEFIWTSLNGVQGFNLFSSEGYTGKNLMFKDSTTKLVKLPPNTDSFLYLG
AEYMSVLRSLKKEQLPGTVSPAIKWCAVGHAETVKCDTWSINSVDGENAVIECQSAPTVDECL
KKIMRKEADAMAVDGGQVYTAGKCGLVPVMVEQYENNLCSSSEGVASSYYAVAVVKKSSGV
TWETLQGKKSCHTGMGRTAGWNIPMGRIYERTKDCDFTKFFSSGCAPGADANSPFCSQCAGSG
KAVGDEAKCKASADEQYYGYAGAFRCLVEGAGDVAFIKHTIVKENSDGVGPAWASAVSSGDY
QLICPGKEPAEITDFANCHLAIVPAHAVVTRPESRADVIRILQDQQAKFGSSGSDPTFKLFQSDQG
KNLLFKDSTQCLQEVAAGKSYGQFLGPEYTNAMASLRHCSDSTPDLEKSCTFHSCQQA

>*Takifugu rubripes* (ENSTRUT00000071311.1)
MLDSALKLDFQMLCEMCDQRGVSIATTFAPALGNADSANTTARTSSMKTLLLAVLLGCLAAAS
AVPAARIRWCLKSEAEYLKCKRLELVAPAISCVRRESTMECIVAITAKLADAITLDGGDVYTAG
LKNYDLHPIIAEDYGPSSDTCYYAVAVVKKGSSFGIKDLAGKKSCHTGLGKSAGWNIPIGTLLS
MDLIKWTGIEDSPVEEAVKNFFHSSCVPGANANDKLCQLCKGDCSRSHKEPYYDYAGAFQCLA
DGAGEVAFVKHLTVPESEKPSYELLCPDNTRKSIDSYKTCHLARVPAHAVVSRKDPQMAELIYN
TLTTVRGFNLFSSEDYAPAQNLMFKDSTIRLVKLPPNTDSFLYLGAGYMSIIRSLKREQATSAAP
TAIKWCAVGPAETAKCDTWSINSIEGEVTNVECHSAKSVEDCMSMIMRKRADAMAVDGGQVY
TAGKCGLVPVMVEQYDEAQCSVSSAPASSYYAVAVVKKGMGITWETLKGKRSCHTGMGRTA
GWNIPMGLIHKQTNNCDFTTFFSSGCAPGAEPTSPFCAACAGSSKSVGDEYKCKPSAEEHYYGY
AGAFRCLVEGAGDVAFIKHTIVKENSDGNGPDWARNVNSADYELICPNKSPVPVTDFASCHLA
MVPAHAVVTRPESRGDVVRILQDQQAKFGTKGTDGRFKLFQSESGKNLLFKDSTKCLQEIPLGE
SFEKFLGAEYMTAMSSLRVCTDSTPDLEKICTFHSCQQKS

>*Tetraodon nigroviridis* (ENSTNIT00000018522.1)

MKTLLLAALLGCLVVAFAAPTDRVRWCLKSEQEHVKCKRLAAVAPAITCVPKQSTLDCIVAIK
DGLADAITLDGGDIYTAGLNNYDLHPIIAEDYGPSSETCYYAVAVVKKGSGFGIRDLAGKKSCH
TGLGKSAGWNIPIGTLLSMGLIQWSGIEDSPVEEAVKNYFQSSCVPGAKPGSKLCQLCKGDCSR
SHKEPYYDYSGAFQCLADGVGDVAFVKHLTVPDSEKSKYELLCRDGTRKPIDSYETCHLARVP
AHAVVSRKDPQLADLIYTTLTTIRGFSLFSSEDYAPAKDLIFKDSTTQLVKLPPKTDSFLYLGAEY
MSIIRSLKREQALSATPSAVKWCAVGPAETEKCDTWSINSIDNDVTTIECQTAPSVEECIKMIMR
KEADAIAVDGGQVYTAGKCGLVPVIAEQYDDAQCSAPSATTSSYYAVAVVKKGAGITWDTLK
GKKSCHTGVGRTAGWNIPMGLI

>*Xiphophorus couchianus* (ENSXCOT00000019341.1)
MKTLLLVVLLGCLAAVFAAPAAKVRWCVKSDQELRKCTDLAAAAPEFSCVKKESTLECIIAIKA
SEADAITVDGGDVYTAGLNNYDLHPILAEDYGETSDTCYYAVAVVKKGTNFGIRDLGGKKSCH
TGLGKSAGWNIPIGTLISMNVIQWAGIEDKPVEEAVSTFFQASCAPGATRGSKLCELCKGDCSRS
QREPYYDYSGAFQCLAEDAGEVAFVKHLTVPDSEKSKYELLCLDNSRAPIDSYKTCHLARVPA
HAVITRKDPALAELIRNSLSGVQNFNLFSSEAYAPAKDLMFKDSAQRLVPVPPNTDSFLYLGAD
YVSIIHSLRKEQSTGSESASIRWCAVGHAETAKCDTWSINSVTDDTASVECQNAPTVEDCFKKIM
RKEADAVAVDGGQVYTAGKCGLVPAMVEQYQQELCGSSPDTASSYYAVAVVKKSSGVTWAN
LAGKKSCHTGVGRTAGWNIPMGHIYAQTKDCNFANFFSSGCAPGAEANSPFCRECKGSGKAVG
DEAKCKASAEEQYYGYAGAFRCLVEGAGDVAFIKHSIVSENSDGNGPDWARGVNSDDYQLICP
GKDPVPVGGFASCHLAVVPAHAVVTRPDVRDKVVRILQDQQTKFGASGSDPTFRMFQSANGK
NLLFKDSTKCLQEVSQGKSYEQFLGPEYINAMSSLRQCSDTASDLEKSCTFHTCQQP

>*Xiphophorus maculatus* (ENSXMAT00000016142.2)
MWKLRSDLCFLVYQHTKVHRRPHIRKPEQTVVFYLLASSGRLCYKSHNPVTESLLCPIGQETPQ
STSMKTLLLVVLLGCLAAVFAAPAAKVRWCVKSDQELRKCTDLAAAAPEFSCVKKESTLECIIA
IKASEADAITVDGGDVYTAGLNNYDLHPILAEDYGETSDTCYYAVAVVKKGTNFGIRDLGGKK
SCHTGLGKSAGWNIPIGTLISMNVIQWNGIEDKPVEEAVSTFFQASCAPGATRGSKLCELCKGDC
SRSQREPYYDYSGAFQCLADDAGEVAFVKHLTVPDSEKSKYELLCLDNSRAPIDSYKTCHLAR
VPAHAVITRKDPALAELIRNSLSGVQNFNLFSSEAYAPAKDLMFKDSAQRLVPVPPNTDSFLYL
GADYVSIIHSLRKEQSTGSESSSIRWCAVGHAETAKCDTWSINSVTDDTASVECQNAPTVEDCF
KKIMRKEADAVAVDGGQVYTAGKCGLVPAMVEQYQQELCGSSPDTASSYYAVAVVKKSSGV
TWANLAGKKSCHTGVGRTAGWNIPMGHIYAQTKDCNFANFFSSGCAPGAEANSPFCRECKGS
GKAVGDEAKCKASAEEQYYGYAGAFRCLVEGAGDVAFIKHSIVSENSDGNGPDWARGVNSDD
YQLICPGKDPVPVGGFASCHLAVVPAHAVVTRPDVRDKVVRILQDQQTKFGASGSDPTFRMFQ
SANGKNLLFKDSTKCLQEVSQGKSYEQFLGPEYINAMSSLRQCSDTASDLEKSCTFHTCQQP