

Black porgy	ATG CACACTCCCGACTATGCGCTTGTCTCTGAGCGGAGGGAACAGGTCTCTGGTCTTCAGT
Oryzias	ATG TACACTCTCTCCAGCGTGCTGCTCTTGAGCGGAGAGAACTGTTCTCTGGATTCCAGT
Epinephelus	-----
Amphiprion	-----
Halichores	-----
Paralichthys	-----

Black porgy	CCCACTGATGACTTCACGATGGGAACACCTGGGAACGACAGCGTCCACCACAACGGATCC
Oryzias	TTGTCCAGTGACCTCATGATGGGAACGTCTGGAAACGGCACC CGAACTCGAACGGATCC
Epinephelus	-----
Amphiprion	-----
Halichores	----- ATG GGGACTCCTGGGAACGACACGGTCTACCCCAACGGGTCT
Paralichthys	----- ATG GAGAAGCCTGGAAACATCACCTCCACCCGAACGGCTCC

Black porgy	GATCCTTTTGGCGGGAACGAAGAGGTGGCCCAAATCGAGATCATGGTGCTGAGCATCACT
Oryzias	GACCCGTTTGGCAGGAATGAGGAGGTGGCCCAAATCGAGATCATGGTCCTGAGCATCACC
Epinephelus	GACCCGTTTGGCGGGAACGAGGAGGTGGCCAGATCGAGATAATGGTCGTGAGCATCACC
Amphiprion	-----
Halichores	GATCCGTACGCGCGGAACGAGGAGGTGGCGCAGATGGAGATCCTGGTCCTGAGCATCACC
Paralichthys	GATCCGTTTCGCGAGGAACGAGGAGGTGGCCAGATCGAGATCATGGTGCTGTGCATCACT

Black porgy	TTCGTGGTCGCTGTGGTCGGCAACGTGAGCGTCCTGCTGGCAATGTACAACACGAAGAAG
Oryzias	TTTGTGGTTGCAGTGATTGGAAACGTGAGCGTCCTTTTGGCGATGTACAACACCAAGAAG
Epinephelus	TTCGTGGTTGCTGTGATTGGGAATGTGAGCGTCCTGCTGGCAATGTACAACACAAAGAAG
Amphiprion	-----
Halichores	TTCGTGGTGGCTGTGATCGGGAACGTGAGCGTCCTGCTGGCGATGTACAACACCAAGAAG
Paralichthys	TTGGTGGTCGCCGTGATCGGAAACGTGAGCGTCCTTCTGGCGATGTACAACACCAAGAAG

Black porgy	AAGATGTCGCGGATGCACCTCTTCATCAAACACCTCAGCCTGGCTGACCTGGTGGTCGCC
Oryzias	AAGATGTCGCGGATGCACCTCTTCATCAAACACCTCAGCCTGGCTGATCTGGTGGTCGCC
Epinephelus	AAGATGTCGCGGATGCACCTTTTCATCAAGCACCTCAGCTTGGCTGACCTGGTGGTCGCC
Amphiprion	-----
Halichores	AAGATGTCCCGGATGCACCTCTTCATCAAACACCTGAGCCTGGCCGACCTGGTGGTCGCC
Paralichthys	AAGATGTCGCGCATGCACCTCTTCATCAAACACCTGAGCCTGGCTGACCTGGTGGTCGCC

Black porgy	TTCTTCCAGGTGCTGCCGCAGCTCTGCTGGGAGATCACCTTCCGCTTCTACGGTCCGGAC
Oryzias	TTCTTCCAGGTGCTACCGCAGCTCTGCTGGGAGATCACCTTCCGCTTCTACGGTCCAGAC
Epinephelus	TTCTTCCAGGTGCTGCCGCAGCTCTGCTGGAAGATCACCTACCGCTTCTACGGTCCAGAC
Amphiprion	-----
Halichores	TTCTTCCAGGTGCTGCCGCAGCTCTGCTGGGAGGTACCTTCCGCTTCTACGCCCGGAC
Paralichthys	TTCTTCCAGGTGCTGCCGCAGCTCTGCTGGAAGGTTACCTTCCGCTTCTATGGTCCGGAC

Black porgy	TTTCTCTGCAGGATAGTGAAGCACCTGCAGGTGATGGGGATGTTTCGCGTCCACCTACATG
Oryzias	TTTCTGTGCAGGATTGTAAAGCACCTCCAGGTGATGGGAATGTTTGCCTCCACCTATATG
Epinephelus	TTTCTCTGCAGGGTCGTCAAGCACCTCCAGGTGATGGGGATGTTTCGCGTCCACTTACATG
Amphiprion	-----
Halichores	TTTCTGTGCCGGATCGTCAAACACCTCCAGGTGATGGGGATGTTTCGCGTCCACCTACATG
Paralichthys	TTTCTATGCAGGATCGTGAAGCACCTCCAGGTGACGGGGATGTTTGCCTCCACCTACGTG

Black porgy	ATGGTGATGATGACCCTGGACCGTTACATCGCCATCTGCCACCCCTGAAAACCTCCAG
Oryzias	ATGGTGATGATGACTTTGGACCGTTACATCGCCATCTGCCACCCCTCTGAAAACCTCCAG
Epinephelus	ATGGTGATGATGACCGTGGACCGTTACATTGCCATCTGCCACCCCTCTGAAAACCTGCAG
Amphiprion	-----
Halichores	ATGGTGATGATGACCCTGGACCGGTACATCGCCATCTGCCACCCCTCTGAAGACCTGCAG
Paralichthys	ATGGTGATGATGACCCTTGACCGCTACATCGCCATCTGCCACCCGCTGAAAACCTCCAT

Black porgy CAGCCCACCCAGCGCTCCTACATCATGATAATCTCCACGTGGATGTGCAGCCTGGTGTTA
Oryzias CAGCCCACCAAGCGCTCCTACATCATGATTACCTCCACGTGGATGTGCAGCCTGGTGCTC
Epinephelus CAGCCCACCCAGCGCTCCTACATCATGATCATCTCCACGTGGATGTGCAGCCTGGTGTTC
Amphiprion -----
Halichores CAGCCCACGCAGCGCGCCTACATCATGATCGTGTCCACGTGGATGTGCAGCCTGGTGCTC
Paralichthys CAGCCCACCTCAGCGCTCCTACATCATGATTGTCTCCACGTGGATGTGCAGCCTGGTGTTC

Black porgy AGCACCCCGCAGTACTTCATCTTCTCCCTGAGCGAGATCAAGAACGGCTCGGATGTTTTAC
Oryzias AGCACCCCGCAGTACTTCATCTTCTCCCTGAGTGAGATCAAAAACGGCTCGGACGTGTAC
Epinephelus AGCACCCCGCAGTACTTCATCTTCTCCCTGAGCGAGATCAAGAACGGCTCGAAAGTAAAC
Amphiprion -----CGAGATCGAGAACGGCTCGGACGTCTAC
Halichores AGCACCCCGCAGTACTTCATCTTCTCCCTGAGCGAGATCAAGAACGGGTCCGAGGTCTAC
Paralichthys AGCAGCCCGCAGTACTTCATCTTCTCCCTGAGCGAGATCAAGAACGGCTCGAAAGTCTAC
*****.*.***** ** .* ** :**

Black porgy GACTGCTGGGCGTACTTCATCGAGCCATGGGGCGCCAAGGCGTATATCACCTGGATAACC
Oryzias GACTGCTGGGCGCACTTCATCCAGCCCTGGGGCGCAAAGGCGTATATCACCTGGATAACA
Epinephelus GACTGCTGGGCGCACTTTATCGAGCCGTGGGGCGCCAAGGCGTACATCACCTGGATAA
Amphiprion GATTGCTGGGCGCACTTCATCGAGCCCTGGGGCGCCAAGGCGTACATCACCTGGATAACC
Halichores GACTGCTGGGCGCACTTCATCGAGCCGTGGGGCGCCAAGGCGTACATCACCTGGATCACC
Paralichthys GACTGCTGGGCGCACTTCATCGAGCCCTGGGGCGCCAGGGCGTACATCACCTGGATCACC
** ***** ** ** ** *****.*.***** *****.*

Black porgy GTGGGCATCTTCCTCGTGCCCGTGGTCATTCTCATGATGTGCTACGGGTTTCATCTGCCAC
Oryzias GTGGGCATCTTCCTCGTCCCTGTAGTCATCCTCATGTTGTGTTACGGGTTTCATCTGCCAC
Epinephelus GTGGGCATCTTCCTCGTGCCCGTGGTCATTCTCGTGATGTGCTACGGGTTTCATCTGCCAC
Amphiprion GTGGGCATCTTCCTCGTGCCCGTGTGTCATTCTCATGATGTGCTACGGGTTTCATCTGCCAC
Halichores GTGGGCATCTTCCTCGTGCCCTGTGGTCATCCTCGTGCTGAGCTACGGCTTCATCTGCCAC
Paralichthys GGCGGGATCTTCCTGGTGCCCGTGGTCATCCTTGTGATGTGCTACGGCTTCATCTGCCAC
* ** ***** ** ** ** ***** ** .* ** :* ***** *****

Black porgy AGCATATGGAAAAATATCAAATACAAGAAAAGGAAAACGATGGCCGGCGCTGCCAGCAAG
Oryzias AGTATATGGAAAAACATAAAGTACAAGAAAAGAAAACGACGGCTGGAGCATCAAATAAG
Epinephelus AGCATATGGAAATAATATCAAATACAAGAAAAGGAAATCGACGGCTGGTGCTGCGAACAAG
Amphiprion ACTATATGGAAAAATATCAAATTCAAGAAAAGGAAAACGATGTCTGGGGCTGCGAGCAAG
Halichores AGCATTGGAAGAAACATCAAATACAAGAACGGAAGAACGACCGGAGGAGCCGCTGCGAAG
Paralichthys AGCATATGGAGAAATATCAAATACAAGAAAAGGATAACGATGGCTGGCGCTGTGAGCAAG
* **:****.* ** **.*:*****.*.*:*** ** ** . ***

Black porgy AACGCGATAATCGGGAAGAATTCAAGTCAGTCAGCAGTGTTACAACGATATCCAGAGCCAAGCTG
Oryzias AACGGGCTCATCGGGAAGAACTCCGTCAAGTAGCGTCACCACCATCTCCAGAGCCAAACTC
Epinephelus AACGGGCTGATTGGGAAGCATTCAAGTCAGTCAGCAGCATTACAACGATATCCAGAGCCAAACTG
Amphiprion AATGGATTGATTGGAAAGAATTCAAGTCAGTCAGCAGCGTCACAACATATCAAGAGCCAACTG
Halichores AGCGGGCTGATCGGGAAGAACTCAAGTCAGTCAGCAGCGTCACCACCATCTCCAGAGCCAAGCTG
Paralichthys AACGGGTTGATTGGAAAGAATTCAAGTCAGTCAGCAGCGTCACGACCATATCGAGAGCCAAGCTG
* . * . * ** **.***.* **.****** ** . * ** ** **.*** *****.*

Black porgy AGGACTGTCAAAATGACTTTTGTGATAGTTTTGGCGTACATTATCTGCTGGGCGCCGTTT
Oryzias CGCACGGTTAAAATGACTTTTGTGATCGTTTTGGCCTACATTGTTTGTGCTGGTCGCCGTTT
Epinephelus AGGACTGTAAAAATGACTTTTGTGATAGTTTTGGCGTACATCGTGTGCTGGGCGCCGTTT
Amphiprion AGGACCGTTAAAATGACTTTTCGTGATAGTTCTGGCGTACATTATCTGCTGGGCCCCGTTT
Halichores AGGACTGTCAAAATGACTTTTCGTGATCGTCCCTGGCCTACATCGTGTGCTGGGCGCCGTTT
Paralichthys CGGACTGTTAAGATGACTTTTGTGATAGTTTTGGCGTACATCATTTGTTGGGCGCCGTTT
.* ** ** **.****** *****.* ***** ***** .* ** ** ** * *****

Black porgy TTCATCGTGAGATGTGGTGGTGTGGGATGAGAACTTCCAGTGGGCTGATTCTGAGAAC
Oryzias TTCATAGTGCAAATGTGGTCTGTGTGGGATGAAAACCTTCTGTGGGACGATTCTGACAAC
Epinephelus TTCACAGTGAGATGTGGTCTGTGTGGGATGAAAACCTTCCAGTGGGTTGATTCTGAGAAC
Amphiprion TTCATCGTGAGATGCGGTCTGTGTGGGATGAAAACCTTCCAGTGGGCTGATTCTGTGGAC
Halichores TTCATCGTTAGATGTGGTCCGTGTGGGACGAGAACTCCAGTGGGCCGAATCCGAGAAC
Paralichthys TTCACCGTGAGATGTGGTGGTGTGGGATGAAAACCTTATGTATGCTGATTCTGAGAAC
**** .* ** **.*** ***** *.****** * :** . * **:** * :.*

Black porgy ACAGCAGTGACTCTGTCTGCGCTCCTTGCCAGTCTCAACAGCTGCTGTAACCCGTGGATA
Oryzias ACAGCAGTGACTCTGTGCGCACTCCTCGCCAGTCTCAACAGCTGCTGCAACCCGTGGATT
Epinephelus ACAGCAGTGACTCTGTCTGCGCTTCTTGCCAGTCTCAACAGCTGCTGTAACCCGT-----
Amphiprion ACAGCAGTGACTCTGTCTGCGCTCCTTGCCAGT-----

Halichores	ACGGCGGTGACTCTGTCTGCGCTGCTTGCCAGTCTCAACAGCTGCTGCAACCCGTGGATA
Paralichthys	ACAGCAGTGACTCTTTCTGCGCTCCTTGCCAGTCTCAACAGCTGCTGCAACCCGTGGATA **.*.*.***** ** **.* ** *****
Black porgy	TACATGATCTTCAGCGGTACCTCCTCCAGGATTTCTGTCAGTGTCTTCTCGTGTGCCTC
Oryzias	TACATGATCTTCAGCGGCCATCTCCTGCAAGATTTGTGCACTGCTTCTCCTGTGCCGG
Epinephelus	-----
Amphiprion	-----
Halichores	TACATGATCTTCAGCGGTACCTCCTCCAGGATTCATGCACTGCTTCTCCTGTGCCTC
Paralichthys	TACATGATCTTCAGCGGCCACCTCCTGCAGGATTTCTGTCAGTGTCTTCTCCTGTTGCCAC
Black porgy	AGGATGAACACTGACTTCAAGAAGGAGGACTCGGACAGCAGTATCCGCAGGACAACGCTG
Oryzias	AGGGTAAACGCT---GATAAGAAAGAGGACTCGGACAGCAGCATCAGACGGACCACGTTG
Epinephelus	-----
Amphiprion	-----
Halichores	AGGCTCAACCCCGACTACAAGAAGGAGGACTCGGACAGCAGCCTCCGCAGGACCACGCTG
Paralichthys	AGAGCAAACCGGACTTCAAGAAGGAGGACTCGGACAGCAGCATCCGCAGGACGACGCTG
Black porgy	CTGACTAAGATGACCAATCGGAGCCCAACAGGCAGCTCCGCAAACTGGAGAGAGCTGGAC
Oryzias	CTGACTAAGATGACCAACCGGAGCCCCACAGGCAGCACTGGCAACTGGAAGGAGCTGGAC
Epinephelus	-----
Amphiprion	-----
Halichores	CTCACCAAGATGACCAACCGCAGCCCGACGGGGAGCACGGGGAACTGGAGAGAGTTTGAC
Paralichthys	CTGACTAAGATGACCAACCGCAGCCCCACAGGCAGCACTGGCAACTGGAGAGAGTTTGAC
Black porgy	AATTCTCCCAAATCCTCCATTACGCCAGAGGAAAATAACAGCTAG-----
Oryzias	AATTCTCCCAAAAACCTCTGCTCAGGCAGAGTAAACAGCAGAGCAGAGACATCATAAAATG
Epinephelus	-----
Amphiprion	-----
Halichores	AACTCACCCAAGACCTCGATTACAGGCTGATTGA-----
Paralichthys	AACTCTCCCAAGACCTCCATTACAGTGGAGTAA-----

Figure S5. Multiple alignments of the nucleotide sequences of *avtr* (black porgy, *Acanthopagrus schlegelii*) with other teleosts. GenBank accession numbers for the nucleotide sequences are follows: orange spotted grouper (*Epinephelus coioides*, GU929704), clown anemonefish (*Amphiprion ocellaris*, AB597955), olive flounder (*Paralichthys olivaceus*, EF451960), threespot wrasse (*Halichoeres trimaculatus*, AB642257), medaka (*Oryzias latipes*, NM001308987). The boxes represent the ATG start codon and underlines represent the stop codon. The symbols “*”, “.”, and “:” denote the identity, single nucleotide variation, and more than one nucleotide variation among fish species, respectively.