

### Supplementary Table S2

NCBI database accession numbers and sequence description of one representative HCA<sub>1</sub> ortholog of *Chondrichthyes*, *Actinopterygii*, *Coelacanth*s and *Amphibia* and mammalian HCAR orthologs

<i>Latin species name</i>	<i>English species name</i>	<i>NCBI or ENSEMBL accession number / trace identifiers of NCBI trace archive</i>		
		HCA <sub>1</sub>	HCA <sub>2</sub>	HCA <sub>3</sub>
<b><i>Chondrichthyes</i></b>				
<i>Callorhynchus milii</i>	elephant shark	XM_007902210.1		
<i>Rhincodon typus</i>	whale shark	XM_020512881.1		
<b><i>Actinopterygii</i></b>				
<i>Astyanax mexicanus</i>	Mexican tetra	XM_007250281.2		
<i>Austrofundulus limnaeus</i>		XM_014023514.1		
<i>Boleophthalmus pectinirostris</i>	great blue-spotted mudskipper	XM_020921815.1		
<i>Clupea harengus</i>	Atlantic herring	XM_012827120.1		
<i>Cynoglossus semilaevis</i>	tongue sole	XM_008325648.2		
<i>Cyprinodon variegatus</i>	sheepshead minnow	XM_015376811.1		
<i>Cyprinus carpio</i>	common carp	XM_019086953.1		
<i>Danio rerio</i>	zebrafish	NM_001163292.1		
<i>Esox lucius</i>	northern pike	XM_010877437.2		
<i>Fundulus heteroclitus</i>	mummichog	XM_012869599.2		
<i>Gasterosteus aculeatus</i>	three-spined stickleback	trace archives gi: 902823148, 869593848, 849397327, 867304063, 867604810, 867234216, 855926790, 866492951, 867476020, 867514201, 867306594, 868023256, 863913155, 866753566, 868977227, 855931071, 864224968, 867300398, 831830686, 866340179)		
<i>Haplochromis burtoni</i>	Burton's mouthbrooder	XM_005946323.2		
<i>Ictalurus punctatus</i>	channel catfish	XM_017477394.1		
<i>Kryptolebias marmoratus</i>	mangrove rivulus	XM_017440390.1		
<i>Labrus bergylta</i>	ballan wrasse	XM_020655416.1		

<i>Larimichthys crocea</i>	large yellow croaker	XM_019278680.1
<i>Lates calcarifer</i>	barramundi perch	XM_018696932.1
<i>Lepisosteus oculatus</i>	spotted gar	XM_015366037.1
<i>Maylandia zebra</i>	zebra mbuna	XM_004566929.3
<i>Monopterus albus</i>	swamp eel	XM_020588126.1
<i>Neolamprologus brichardi</i>	lyretail cichlid	XM_006804703.1
<i>Nothobranchius furzeri</i>	turquoise killifish	XM_015943374.1
<i>Oncorhynchus kisutch</i>	coho salmon	XM_020484975.1
<i>Oncorhynchus mykiss</i>	rainbow trout	XM_021622844.1
<i>Oreochromis niloticus</i>	Nile tilapia	XM_005459638.3
<i>Oryzias latipes</i>	Japanese medaka	XM_004074627.3
<i>Poecilia formosa</i>	Amazon molly	XM_007570857.2
<i>Poecilia latipinna</i>	sailfin molly	XM_015044560.1
<i>Poecilia mexicana</i>	shortfin molly	XM_014999463.1
<i>Poecilia reticulata</i>	guppy	XM_008423323.2
<i>Pundamilia nyererei</i>	Nyerere's Victoria Cichlid	XM_005720042.1
<i>Pygocentrus nattereri</i>	red-bellied piranha	XM_017681657.1
<i>Salmo salar</i>	Atlantic salmon	XM_014138487.1
<i>Scleropages formosus</i>	Asian bonytongue	XM_018746830.1
<i>Sinocyclocheilus anshuiensis</i>		XM_016443409.1
<i>Sinocyclocheilus grahami</i>	Golden-line barbel	XM_016237071.1
<i>Sinocyclocheilus rhinoceros</i>	horned Golden-line barbel	XM_016530661.1
<i>Stegastes partitus</i>	bicolor damselfish	XM_008305231.1
<i>Takifugu rubripes</i>	torafugu	XM_003965407.2
<i>Tetraodon nigroviridis</i>	spotted green pufferfish	trace archives gi: 1144280996, 1144209422, 1145624449, 1143498005, 1143979005, 97629832, 99571522, 1141784461, 1144389438, 99115439, 1145624448, 95652118, 1143979227, 99054120, 1143718859, 1143981004 XM_005802492.1
<i>Xiphophorus maculatus</i>	southern platyfish	
<b><i>Coelacanth</i></b>		

<i>Latimeria chalumnae</i>	coelacanth	XM_005989018.1	
<b>Amphibia</b>			
<i>Nanorana parkeri</i>	Xizang plateau frog	XM_018556801.1	
<i>Xenopus laevis</i>	African clawed frog	XM_018226771.1	
<i>Xenopus tropicalis</i>	tropical clawed frog	XM_012968999.2	
<b>Mammalia</b>			
<i>Ailuropoda melanoleuca</i>	Giant panda	XM_011226294.1	XM_002913130.2
<i>Aotus nancymae</i>	Ma's night monkey	XM_012447105.1	
<i>Balaenoptera acutorostrata scammoni</i>	Minke whale	XM_007189590.1	
<i>Bison bison</i>	American bison	XM_010841312.1	
<i>Bos grunniens mutus</i>	Yak	XM_005911827.1	
<i>Bos taurus</i>	Cattle	NM_001145234.1	
<i>Bubalus bubalis</i>	Water buffalo	XM_006047196.1	
<i>Callithrix jacchus</i>	Common marmoset	XM_002753127.2	
<i>Camelus bactrianus</i>	Bactrian camel	XM_010969698.1	
<i>Camelus dromedarius</i>	Arabian camel	XM_010995910.1	
<i>Camelus ferus</i>	Wild Bactrian camel	XM_006195843.1	
<i>Canis lupus familiaris</i>	Dog	NM_001145231.1	
<i>Capra hircus</i>	Goat	XM_005709563.1	
<i>Cavia porcellus</i>	Guinea pig	trace archives gi: 1582747945 1627289015 1645142123 1609973226 1654472717 1648840438 1608699595 1660358347 1656935446 1638015360 1612305650 808334221 810654609 763380574 763917813 1638586485	

<i>Ceratotherium simum simum</i>	Southern white rhinoceros	XM_004444041.1	XM_004444040.2	
<i>Cercocebus atys</i>	Sooty mangabey	XM_012071277.1	XM_012071275.1	
<i>Chinchilla lanigera</i>	Long-tailed chinchilla	XM_005403075.1	XM_005415327.1	
<i>Chlorocebus sabaeus</i>	Green monkey	XM_008005062.1	XM_008005060.1	
<i>Chrysochloris asiatica</i>	Cape golden mole	XM_006865484.1	XM_006878296.1	
<i>Colobus angolensis palliatus</i>	Angolan colobus	XM_011948481.1	XM_011948480.1	
<i>Condylura cristata</i>	Star-nosed mole	XM_004695933.2	XM_004690624.1	
<i>Cricetulus griseus</i>	Chinese hamster	XM_007652908.1	XM_003512415.1	
<i>Dasyopus novemcinctus</i>	Nine-banded armadillo	XM_004484978.2	XM_004484979.2	
<i>Dipodomys ordii</i>	Ord's kangaroo rat	XM_013023063.1	XM_013023107.1	
<i>Echinops telfairii</i>	Lesser hedgehog tenrec	XM_004709724.1	XM_004709722.1	
			XM_004709723.1	
<i>Eptesicus fuscus</i>	Big brown bat	XM_008142901.1	XM_008142902.1	
<i>Equus caballus</i>	Horse	XM_005614958.1	XM_005614972.2	
<i>Equus przewalskii</i>	Przewalski's horse	XM_008518469.1	XM_008518468.1	
<i>Erinaceus europaeus</i>	European hedgehog	XM_007539798.1	trace archives gi: 909569621 916868228 9197477 956896226 921926170 931620789 937804449 955617607 956096237 921892597 937763996 955550463 919608302 914608357 929672032	
<i>Felis catus</i>	Cat	XM_006938419.2	NM_001309044.1	
<i>Galeopterus variegatus</i>	Sunda flying lemur	XM_008577706.1	XM_008577707.1	
<i>Gorilla gorilla</i>	Western gorilla	KU285431	KU285439	KU285447
<i>Heterocephalus glaber</i>	Naked mole rat	XM_004844096.1	XM_004843902.1	

<i>Homo sapiens</i>	Human	KU285432	KU285440	KU285448
<i>Hoolock leuconedys</i>	eastern hoolock gibbon	SRX590196, SRX590198	SRX590196, SRX590198	
<i>Hylobates moloch</i>	silvery gibbon	SRX590190	SRX590190	
<i>Hylobates pileatus</i>	pileated gibbon	SRX590199	SRX590199	
<i>Jaculus jaculus</i>	Lesser Egyptian jerboa	XM_004673237.2	XM_004673240.2	
<i>Leptonychotes weddellii</i>	Weddell seal	XM_006752446.1	XM_006752452.1	
<i>Lipotes vexillifer</i>	Yangtze River dolphin	XM_007472205.1	XM_007472206.1	
<i>Loxodonta africana</i>	African bush elephant	XM_010599841.1	XM_003420333.1	
<i>Macaca fascicularis</i>	Crab-eating macaque	XM_005572512.1	XM_005596020.1	
<i>Macaca mulatta</i>	Rhesus macaque	NM_001145254.1	XR_012318.2	
<i>Macaca nemestrina</i>	Pig-tailed macaque	XM_011762566.1	XM_011762579.1	
<i>Mandrillus leucophaeus</i>	Drill	XM_011964508.1	XM_011964507.1	
<i>Mesocricetus auratus</i>	Golden hamster	KP639582.1	KP639583.1	
<i>Microcebus murinus</i>	Gray mouse lemur	XM_012782236.1	XM_012782142.1	
<i>Microtus ochrogaster</i>	Prairie vole	XM_005344400.1	XM_005344399.1	
<i>Monodelphis domestica</i>	Gray short-tailed opossum	XM_001374185.2	XM_001374136.2	
<i>Mus musculus</i>	House mouse	KU285433	KU285441	
<i>Mustela putorius furo</i>	Ferret	XM_004828342.2	XM_004828343.2	
<i>Myotis lucifugus</i>	Little brown bat	XM_006103820.1	XM_006109863.2	
<i>Nannospalax galili</i>	Upper Galilee mountains blind mole rat	XM_008839408.1	XM_008839315.1	
<i>Nomascus leucogenys</i>	White-cheeked gibbon	KU285434 SRX590181, SRX590192	KU285442 SRX590181, SRX590192	
<i>Ochotona princeps</i>	American pika	XM_004595402.1	XM_004595401.1	
<i>Octodon degus</i>	Degu	XM_012515727.1	XM_004649001.2	
<i>Odobenus rosmarus</i>	Pacific walrus	XM_004395897.2	XM_004395896.2	
<i>Orcinus orca</i>	killer whale	XM_004286868.2	XM_004286872.2	
<i>Ornithorhynchus anatinus</i>	Platypus	XM_007666896.1	XM_007666895.1	
<i>Orycteropus afer afer</i>	Aardvark	XM_007938249.1	XM_007938250.1	
<i>Oryctolagus cuniculus</i>	Rabbit	XM_008250523.1	XM_002722739.2	
<i>Otolemur garnettii</i>	Garnett's greater galago	XM_003796014.2	XM_003804027.2	
<i>Ovis aries</i>	Sheep	XM_012097734.1	XM_004023416.2	
<i>Pan paniscus</i>	Bonobo	KU285435	KU285443	KU285449
<i>Pan troglodytes</i>	Chimpanzee	KU285436	KU285444	KU285450
<i>Panthera tigris altaica</i>	Amur tiger	XM_007079644.1	XM_007099226.1	

<i>Pantholops hodgsonii</i>	Chiru	XM_005985762.1	XM_005955269.1	
<i>Papio anubis</i>	Olive baboon	XM_003907319.2	XM_003907318.2	
<i>Peromyscus maniculatus bairdii</i>	Prairie deer mouse	XM_006999075.1	XM_006970707.1	
<i>Physeter catodon</i>	Sperm whale	XM_007131038.1	XM_007117167.1	
<i>Pongo pygmaeus abelii</i>	Sumatran orangutan	KU285437	KU285445	KU285451
<i>Propithecus coquereli</i>	Coquerel's sifaka	XM_012663442.1	XM_012663575.1	
<i>Pteropus alecto</i>	Black flying fox	XM_006927015.1	XM_006927014.1	
<i>Pteropus vampyrus</i>	Large flying fox	XM_011355737.1	XM_011355738.1	
<i>Rattus norvegicus</i>	Norway rat	NM_001145334.1	NM_181476.1	
<i>Rhinopithecus roxellana</i>	Golden snub-nosed monkey	XM_010368366.1	XM_010368365.1	
<i>Saimiri boliviensis</i>	Black-capped squirrel monkey	XM_003932150.2	XM_003932151.2	
<i>Sarcophilus harrisii</i>	Tasmanian devil	XM_003761068.1	XM_003761067.1	
<i>Sorex araneus</i>	Common shrew	XM_012933294.1	XM_004611156.1	
<i>Spermophilus tridecemlineatus</i>	thirteen-lined ground squirrel	XM_005343026.1	XM_005343027.1	
<i>Sus scrofa</i>	Wild boar	NM_001145381.1	AK397813.1	
<i>Symphalangus syndactylus</i>	Siamang	KU285438	KU285446	KU285452
		SRX590195, SRX590189	SRX590195, SRX590189	SRX590195, SRX590189
<i>Tarsius syrichta</i>	Philippine tarsier	XM_008050396.1	XM_008050397.1	
<i>Trichechus manatus latirostris</i>	Florida manatee	XM_004391326.2	XM_012558036.1	
<i>Tupaia chinensis</i>	Chinese treeshrew	XM_006149277.1	XM_006149278.1	
<i>Tursiops truncatus</i>	Common bottlenose dolphin	XM_004332398.1	XM_004332393.1	
<i>Ursus maritimus</i>	polar bear	XM_008688842.1	XM_008688841.1	
<i>Vicugna pacos</i>	Alpaca	XM_006220341.1	XM_006220342.1	

Zebra fish HCA<sub>1</sub> sequence (NM\_001163292.1) was used as query sequence in discontinuous megablast in a standard nucleotide BLAST for mining orthologous sequences. HCAR sequences of various mammalian species were obtained using the respective mouse ortholog nucleotide sequences (NM\_175520.4, NM\_030701.3) or human HCAR3 (NM\_006018.2) as query sequence in discontinuous megablast in a standard nucleotide BLAST, a Trace Archive Nucleotide BLAST of mammalian trace archives or a Sequence Read Archive Nucleotide BLAST. Trace files of sequences producing significant alignments were downloaded followed by assembly, analysis (using SeqManPro of the DNASTar Lasergene Software Suite for Sequence Analysis 7.1.) and manual proof-reading. Trace identifier, NCBI accession or SRA accession numbers are listed