Genome inventory and analysis of nuclear hormone receptors in *Tetraodon nigroviridis*

Raghu Prasad Rao Metpally, Ramakrishnan Vigneshwar and Ramanathan Sowdhamini

J. Biosci. **32(1), January 2007, 43–50**, **© Indian Academy of Sciences**

Supplementary Table 1

Tetraodon nigroviridis nuclear receptors.

NR	Accession No.	No.	Gene	DBD	LBD	Invariable Splice junction (D)	Chromosome
Subfamily 1:							
NR1A1	CAF90676.1	2	TRA	f	f	no	2
NR1A1	CAG02086.1*	16	TRA	f	f	yes	UD
NR1A2	CAG00249.1	54	THB	f	a	no	UD
NR1B1	CAG02080.1	15	RARA	f	f	yes	UD
NR1B1	CAG04399.1*	38	RARA	f	f	yes	2
NR1B3	CAG07392.1	43	RARG	f	f	yes	9
NR1C1	CAF95270.1*	5	PPARA	f	f	yes	13
NR1C1	CAF99979.1	55	PPARA	f	a	no	19
NR1C2	CAG07471.1	56	PPARD	f	p	no	9
NR1C3	CAG07050.1*	49	PPRG	f	f	yes	11
NR1D1	CAG07394.1*	44	REVA	f	f	no	9
NR1D1	CAG06739.1	47	REVA	p	f	yes	11
NR1D2	CAG00250.1	7	REVB	f	f	no	UD
NR1D2	CAG02755.1	57	REVA	a	f	yes	UD
NR1D2	CAG02756.1	58	REVA	f	p	no	UD
NR1F1	CAG11892.1	34	RORA	f	f	yes	8
NR1F1	CAF98309.1*	37	RORA	f	f	yes	13
NR1F2	CAG01439.1	11	RORB	f	f	yes	1
NR1F2	CAG07758.1	42	RORB	f	f	yes	15
NR1F2	CAG06880.1	48	RORB	f	f	yes	11
NR1H3	CAG03422.1*	21	FXRA	f	f	yes	13
NR1H3	CAF99925.1*	51	LXRA	f	f	yes	5
NR1H4	CAF90864.1	1	FXRA	f	f	yes	UD
NR1H4	CAF91991.1	3	FXRB	f	f	yes	UD
NR1I1	CAF94134.1*	59	VDR	a	f	yes	UD
NR1I1	CAF96472.1	60	VDR	a	f	yes	UD
NR1I1	CAF96473.1	61	VDR-beta	f	a	no	UD
NR1I2	CAG05861.1*	41	PXR	f	f	yes	2
Subfamily 2:							
NR2A1	CAG03838.1*	45	HNFA	f	f	yes	9
NR2A2	CAF97945.1	28	HNFG	f	f	yes	6
NR2B1	CAF95413.1	6	RXRA	f	p	yes	4
NR2B1	CAF91378.1	62	RXRA	f	a	no	1
NR2B2	CAG11675.1	14	RXRB	f	f	yes	UD
NR2B2	CAG12025.1*	36	RXRB	f	f	yes	8
NR2B2	CAF88861.1	63	RXRB	f	a	no	UD
NR2C1	CAG08700.1*	31	TR2	f	f	yes	13

Supplementary table 1. (*Continued*)

NR2C2	CAG11327.1*	27	TR4	f	f	yes	9
NR2E1	CAG03617.1*	33	TLL1	f	f	no	14
NR2E2	CAF93476.1	4	PNR	f	f	yes	UD
NR2F1	CAF91926.1	64	CPTA	a	f	yes	12
NR2F1	CAG13569.1	65	CPTA	f	a	no	UD
NR2F2	CAG13090.1*	29	CPTB	f	f	yes	13
NR2F2	CAF94543.1	66	CPTB	f	a	no	UD
NR2F5	CAG00925.1	8	COUPG	f	f	yes	UD
NR2F6	CAG01948.1	12	EAR2	f	f	yes	15
NR2F6	CAG00763.1*	18	EAR2	f	f	yes	1
Subfamily 3:							
NR3A1	CAG03596.1*	32	ERA	f	f	no	14
NR3A2	CAG03763.1	13	ERB	f	f	no	10
NR3A3	CAF90265.1	67	ERG	f	a	no	14
NR3B1	CAG01578.1	20	ERRA	f	f	yes	7
NR3B2	CAG09135.1	30	ERRB	f	f	yes	14
NR3B2	CAG10628.1*	50	ERRB	f	f	yes	10
NR3B3	CAG11044.1	68	ERRG	a	f	yes	5
NR3B3	CAG12248.1	69	ERRG	a	f	no	UD
NR3B3	CAG09068.1	70	ERRG	f	a	no	14
NR3B3	CAG11045.1	71	ERRG	f	a	no	5
NR3C1	CAG11713.1*	19	GR	f	f	no	7
NR3C1	CAF99074.1	26	GR	f	f	no	1
NR3C2	CAG11072.1	17	MR	f	f	no	18
NR3C3	CAG12799.1*	23	PR	f	f	no	16
NR3C4	CAG02975.1*	24	AR	f	f	no	7
NR3C4	CAG08385.1	39	AR	f	f	no	1
Subfamily 4:							
NR4A1	CAF96539.1*	25	NGF1B	f	f	yes	11
NR4A1	CAG03953.1	46	NGFIB	f	f	yes	9
NR4A2	CAG09317.1*	40	NOR1	f	f	yes	2
NR4A3	CAG11936.1	35	NURRI	f	f	yes	8
Subfamily 5:							
NR5A1	CAG01304.1*	10	SF1	f	f	no	UD
NR5A2	CAF92683.1	72	LRH1	f	a	no	1
NR5A5	CAG12178.1	22	FF1C	f	f	yes	3
Subfamily 6:							
NR6A1	CAG01303.1*	9	GCN	f	f	yes	UD
Subfamily 0:							
NR0B1	CAG05777.1*	52	DAX	a	f	yes	2
NR0B2	CAG00032.1*	53	SHP	a	f	yes	8

'f' represent full domain: 'p' represents partial domain; 'a' absence of domain.

* means, it has putative human NR ortholog.

Supplementary Table 2

Sequence conservation of *Tetraodon* NRs between DBDs and LBDs.

Subfamily	Average identity	
	DBD	LBD
Subfamily 1	53%	34%
Subfamily 2	59%	43%
Subfamily 3	65%	41%
Subfamily 4	86%	67%
Subfamily 5	56%	46%

Subfamily 6 has a single member that is why not shown in the table.

Supplementary Table 3

List of nuclear receptors from Human, *Tetraodon*, fugu fish and zebra fish genomes.

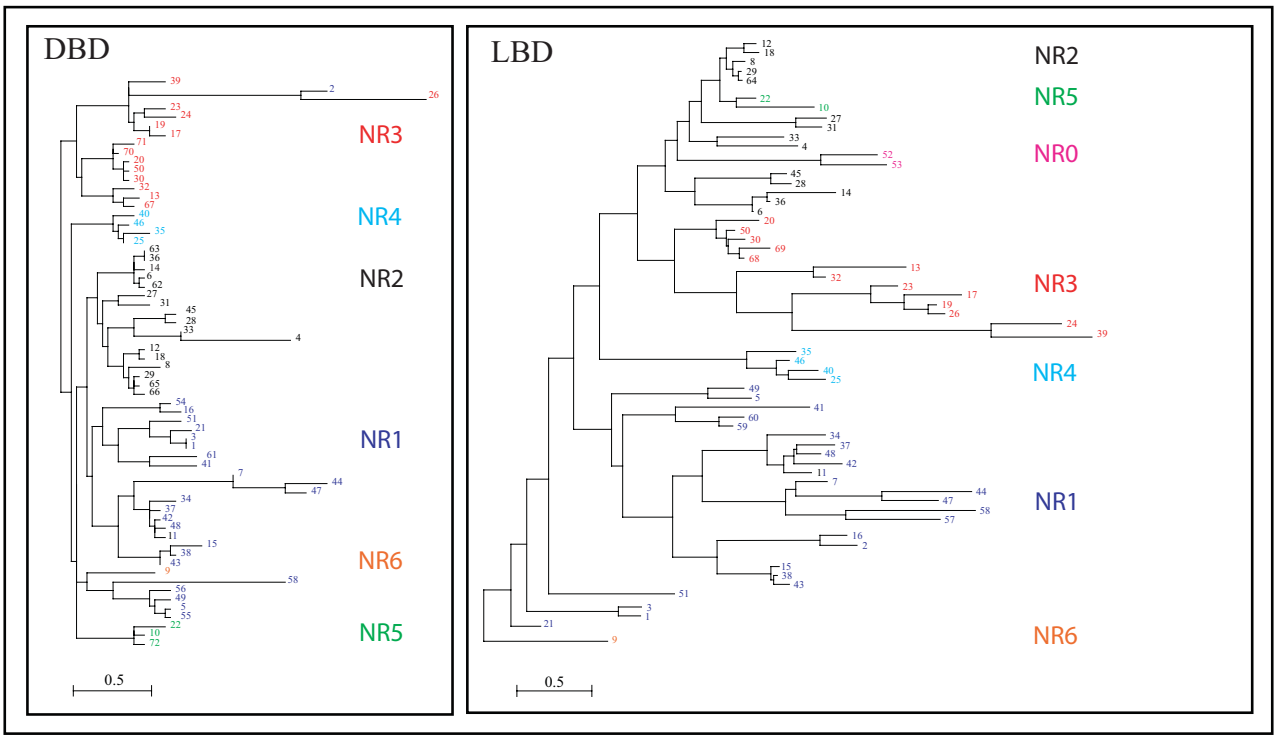
Human Nrs		*Tetraodon* NRs		Fugu fish NRs		Zebra fish NRs	
Gene	Code	Accession No.	No.	Accession No.	No.	Accession No.	No.
1I3_HOMS1	1I3	CAF90864.1	1	SINFRUP00000127989	100	ENSDARP00000000160	200
2F6_HOMS1	2F6	CAF90676.1	2	SINFRUP00000128122	101	ENSDARP00000001911	201
4A1_HOMS1	4A1	CAF91991.1	3	SINFRUP00000130029	102	ENSDARP00000002435	202
4A2_HOMS1	4A2	CAF93476.1	4	SINFRUP00000130211	103	ENSDARP00000002838	203
4A3_HOMS1	4A3	CAF95270.1	5	SINFRUP00000130483	104	ENSDARP00000003080	204
5A1_HOMS1	5A1	CAF95413.1	6	SINFRUP00000130524	105	ENSDARP00000004918	205
5A2_HOMS1	5A2	CAG00250.1	7	SINFRUP00000132228	106	ENSDARP00000005364	206
AR_HOMS1	AR	CAG00925.1	8	SINFRUP00000132438	107	ENSDARP00000007721	207
CPTA_HOMS1	CPTA	CAG01303.1	9	SINFRUP00000132486	108	ENSDARP00000008527	208
CPTB_HOMS1	CPTB	CAG01304.1	10	SINFRUP00000134462	109	ENSDARP00000009236	209
DAX_HOMS1	DAX	CAG01439.1	11	SINFRUP00000134772	110	ENSDARP00000010118	210
ERA_HOMS1	ERA	CAG01948.1	12	SINFRUP00000135072	111	ENSDARP00000010239	211
ERB_HOMS1	ERB	CAG03763.1	13	SINFRUP00000136830	112	ENSDARP00000010876	212
ERRA_HOMS1	ERRA	CAG11675.1	14	SINFRUP00000137435	113	ENSDARP00000011840	213
ERRB_HOMS1	ERRB	CAG02080.1	15	SINFRUP00000138195	114	ENSDARP00000013317	214
ERRG_HOMS1	ERRG	CAG02086.1	16	SINFRUP00000138236	115	ENSDARP00000014027	215
FXRA_HOMS1	FXRA	CAG11072.1	17	SINFRUP00000138841	116	ENSDARP00000015111	216
GCN_HOMS1	GCN	CAG00763.1	18	SINFRUP00000138848	117	ENSDARP00000015784	217
GR_HOMS1	GR	CAG11713.1	19	SINFRUP00000139076	118	ENSDARP00000016299	218
HNFA_HOMS1	HNFA	CAG01578.1	20	SINFRUP00000139078	119	ENSDARP00000017514	219
HNFG_HOMS1	HNFG	CAG03422.1	21	SINFRUP00000139079	120	ENSDARP00000017728	220
LXRA_HOMS1	LXRA	CAG12178.1	22	SINFRUP00000139498	121	ENSDARP00000019436	221
LXRB_HOMS1	LXRB	CAG12799.1	23	SINFRUP00000140232	122	ENSDARP00000019758	222
MR_HOMS1	MR	CAG02975.1	24	SINFRUP00000140234	123	ENSDARP00000021935	223
PNR_HOMS1	PNR	CAF96539.1	25	SINFRUP00000140681	124	ENSDARP00000022973	224
PPRA_HOMS1	PPRA	CAF99074.1	26	SINFRUP00000141263	125	ENSDARP00000023084	225
PPRB_HOMS1	PPRB	CAG11327.1	27	SINFRUP00000143035	126	ENSDARP00000023136	226
PPRG_HOMS1	PPRG	CAF97945.1	28	SINFRUP00000143415	127	ENSDARP00000024987	227
PR_HOMS1	PR	CAG13090.1	29	SINFRUP00000143426	128	ENSDARP00000026313	228

Supplementary table 3 (*Continued*)

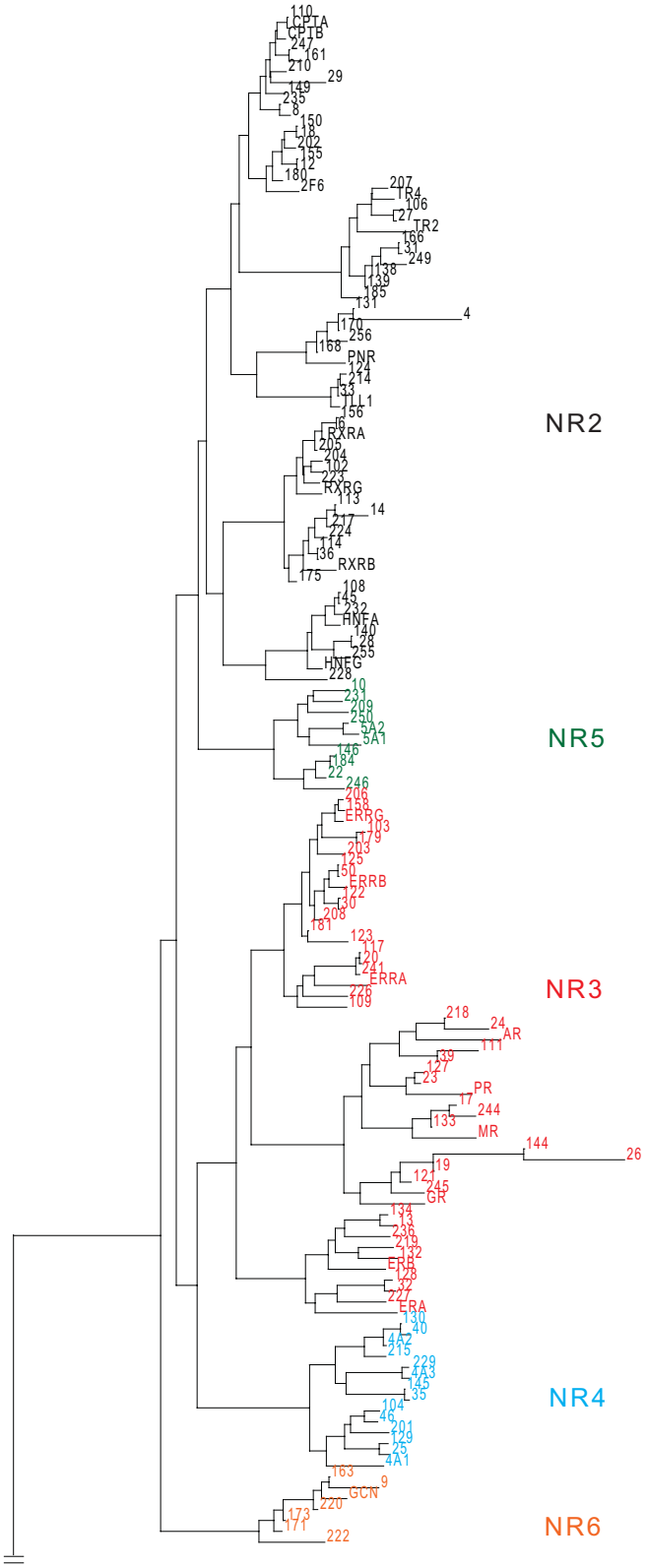
PXR_HOMS1	PXR	CAG09135.1	30	SINFRUP00000144235	129	ENSDARP00000028147	229
RARA_HOMS1	RARA	CAG08700.1	31	SINFRUP00000144980	130	ENSDARP00000028873	230
RARB_HOMS1	RARB	CAG03596.1	32	SINFRUP00000146354	131	ENSDARP00000029204	231
RARG_HOMS1	RARG	CAG03617.1	33	SINFRUP00000146840	132	ENSDARP00000029754	232
REVA_HOMS1	REVA	CAG11892.1	34	SINFRUP00000147278	133	ENSDARP00000036285	233
REVB_HOMS1	REVB	CAG11936.1	35	SINFRUP00000147711	134	ENSDARP00000040467	234
RORA_HOMS1	RORA	CAG12025.1	36	SINFRUP00000148149	135	ENSDARP00000040768	235
RORB_HOMS1	RORB	CAF98309.1	37	SINFRUP00000148150	136	ENSDARP00000041299	236
RORG_HOMS1	RORG	CAG04399.1	38	SINFRUP00000148390	137	ENSDARP00000042466	237
RXRA_HOMS1	RXRA	CAG08385.1	39	SINFRUP00000148638	138	ENSDARP00000042824	238
RXRB_HOMS1	RXRB	CAG09317.1	40	SINFRUP00000148642	139	ENSDARP00000044676	239
RXRG_HOMS1	RXRG	CAG05861.1	41	SINFRUP00000149882	140	ENSDARP00000049550	240
SHP_HOMS1	SHP	CAG07758.1	42	SINFRUP00000150826	141	ENSDARP00000050433	241
THA_HOMS1	THA	CAG07392.1	43	SINFRUP00000151563	142	ENSDARP00000050576	242
THB_HOMS1	THB	CAG07394.1	44	SINFRUP00000151911	143	ENSDARP00000053252	243
TLL1_HOMS1	TLL1	CAG03838.1	45	SINFRUP00000152420	144	ENSDARP00000053819	244
TR2_HOMS1	TR2	CAG03953.1	46	SINFRUP00000152690	145	ENSDARP00000054262	245
TR4_HOMS1	TR4	CAG06739.1	47	SINFRUP00000152795	146	ENSDARP00000057122	246
VDR_HOMS1	VDR	CAG06880.1	48	SINFRUP00000153576	147	ENSDARP00000059975	247
		CAG07050.1	49	SINFRUP00000154296	148	ENSDARP00000061524	248
		CAG10628.1	50	SINFRUP00000156329	149	ENSDARP00000062284	249
		CAF99925.1	51	SINFRUP00000157997	150	ENSDARP00000062419	250
		CAG05777.1	52	SINFRUP00000158010	151	ENSDARP00000063213	251
		CAG00032.1	53	SINFRUP00000158768	152	ENSDARP00000064037	252
		CAG00249.1	54	SINFRUP00000158774	153	ENSDARP00000064044	253
		CAF99979.1	55	SINFRUP00000158776	154	ENSDARP00000065377	254
		CAG07471.1	56	SINFRUP00000161153	155	ENSDARP00000066643	255
		CAG02755.1	57	SINFRUP00000161308	156	ENSDARP00000067473	256
		CAG02756.1	58	SINFRUP00000162567	157		
		CAF94134.1	59	SINFRUP00000162788	158		
		CAF96472.1	60	SINFRUP00000163447	159		
		CAF96473.1	61	SINFRUP00000163457	160		
		CAF91378.1	62	SINFRUP00000163483	161		
		CAF88861.1	63	SINFRUP00000164033	162		
		CAF91926.1	64	SINFRUP00000164938	163		
		CAG13569.1	65	SINFRUP00000165123	164		
		CAF94543.1	66	SINFRUP00000165525	165		
		CAF90265.1	67	SINFRUP00000165728	166		
		CAG11044.1	68	SINFRUP00000165984	167		
		CAG12248.1	69	SINFRUP00000166348	168		
		CAG09068.1	70	SINFRUP00000166643	169		
		CAG11045.1	71	SINFRUP00000166688	170		
		CAF92683.1	72	SINFRUP00000167201	171		
				SINFRUP00000168173	172		
				SINFRUP00000168385	173		

Supplementary table 3 (*Continued*)

SINFRUP00000169072	174
SINFRUP00000169093	175
SINFRUP00000169341	176
SINFRUP00000170179	177
SINFRUP00000171165	178
SINFRUP00000171918	179
SINFRUP00000172227	180
SINFRUP00000172442	181
SINFRUP00000172695	182
SINFRUP00000172796	183
SINFRUP00000173136	184
SINFRUP00000174262	185
SINFRUP00000176119	186
SINFRUP00000176452	187



Supplementary figure 1. Phylogenetic tree of DBD and LBD domains of *Tetraodon* NRs. Tree topologies of DBD and LBDs differed with respect to association of subfamilies. NR1 is closer to NR4 in LBD tree. But NR4 is closer to NR2 and NR3 in DBD tree. Terminal branch lengths of members are shorter in DBD Tree compared to LBD tree. Sequences are indicated by codes as the serial number in supplementary table 1.



Supplementary figure 2. Phylogenetic Tree of the *Tetraodon*, fugu fish, zebra fish and human NRs. As represented in supplementary table 3, *Tetraodon* NRs are numbered below 100, fugu fish NRs from 100 to 199, zebra fish NRs numbered 200 onwards. Whereas human NRs are represent as corresponding gene names.