

SUPPLEMENTARY TABLE 1.

List of BAC clones used in FISH experiments.

Gene/marker symbol (synonyms)	Gene name	BAC ID*	Overgo probe**	GenBank, when available	Chicken chromosome (location, Mb)	Condor chromosome	Stork chromosome
CAPZA2	capping protein (actin filament) muscle Z-line, alpha 2	20P14	uprobe	AC183448	1 (26.68)	1	n/a****
CCT2	chaperonin containing TCP1, subunit 2 (beta)	10P14	<i>Gallus gallus</i>		1 (37.39)	1	n/a
EMP1	epithelial membrane protein 1	29A3	<i>Gallus gallus</i>		1 (50.22)	1	n/a
CHUNK1	CHUNK-1 protein	5D3	<i>Gallus gallus</i>		1 (63.11)	1	n/a
USP5	ubiquitin specific peptidase 5 (isopeptidase T)	1D23	<i>Gallus gallus</i>		1 (80.43)	1	n/a
OCA2	oculocutaneous albinism II (pink-eye dilution homolog, mouse)	5D3; 21D8	<i>Gallus gallus</i>		1 (134.82)	1	n/a
WNT11	wingless-type MMTV integration site family, member 11	2P2	<i>Gallus gallus</i>		1 (198.84)	1	n/a
ACVR2B	activin A receptor, type IIB	3A13	<i>Gallus gallus</i>		2 (5.68)	2	n/a
RARB	retinoic acid receptor, beta	37G11	<i>Gallus gallus</i>		2 (37.83)	2	n/a
NFX1	nuclear transcription factor, X-box binding 1	30M16	<i>Gallus gallus</i>		2 (56.52)	no signal	n/a
EPB41L4B	erythrocyte membrane protein band 4.1 like 4B	24C3	<i>Gallus gallus</i>		2 (86.70)	2	n/a
MOS	v-mos Moloney murine sarcoma viral oncogene homolog	47O3	<i>Gymnogyps californianus</i>		2 (114.90)	2	n/a
PENK	proenkephalin	1L8	<i>Gallus gallus</i>		2 (115.07)	2	n/a
CA2	carbonic anhydrase II	27N2	<i>Gallus gallus</i>		2 (127.60)	2	n/a
MYC	v-myc myelocytomatosis viral oncogene homolog (avian)	46O10	<i>Coragyps atratus</i>		2 (145.39)	no signal	n/a
FYN	FYN oncogene related to SRC, FGR, YES	2P12	<i>Gallus gallus</i>		3 (68.61)	3	n/a
BMP5	bone morphogenetic protein 5	48L9	<i>Gallus gallus</i>		3 (90.16)	3	n/a
SUPT3H	suppressor of Ty 3 homolog (S. cerevisiae)	13G5	<i>Gallus gallus</i>	AC171379	3 (112.01)	3	n/a
RUNX2	runt-related transcription factor 2	13G5	<i>Gallus gallus</i>	AC171379	3 (112.22)	3	n/a
ADL0143	STS (sequence tagged-site)	7C18*	<i>Gallus gallus</i>	CC223698,	4p (1.40)	no signal	n/a
ADL0255	STS	139H8*	<i>Gallus gallus</i>	CC223699,	4p (2.24)	no signal	n/a
BTK	Bruton agammaglobulinemia tyrosine kinase	1N8; 13M23	<i>Gallus gallus</i>	CC284373	4p (2.02)	9; W repeat***	n/a
GCT0026	STS	133E20*	<i>Gallus gallus</i>	CC265640,	4p (2.15)	no signal	n/a
ADL0317	STS	103H4*	<i>Gallus gallus</i>	CC265641,	4p (3.46)	no signal	n/a
RRAGB (RRAGA)	Ras-related GTP binding B	28F10	<i>Gallus gallus</i>	CC294981,	4p (11.57)	9	n/a
ADL0145	STS	7B16*	<i>Gallus gallus</i>	CC294982,	4q (17.90)	no signal	n/a
NPY2R	neuropeptide Y receptor Y2	2B24	<i>Gallus gallus</i>		4q (21.63)	4; centromeric repeat***	n/a
FGF2	fibroblast growth factor 2 (basic)	2E13	<i>Gallus gallus</i>		4q (55.12)	4	n/a
FGFR3	fibroblast growth factor receptor 3	35K11	<i>Gallus gallus</i>		4q (86.43)	4	n/a
RAG1	recombination activating gene 1	5H14	<i>Gallus gallus</i>		5 (21.21)	5	n/a
LOC428877 (ZFP36L1, ROS0052)	hypothetical LOC428877	21F19	<i>Gallus gallus</i>		5 (30.64)	5	n/a
FOS	v-fos FBJ murine osteosarcoma viral oncogene homolog	20L3	<i>Gallus gallus</i>		5 (40.63)	5	n/a
SPATA7	spermatogenesis associated 7	87L14	uprobe	AC183451	5 (45.51)	5	n/a
DYNC1H1	dynein, cytoplasmic 1, heavy chain 1	27I22	<i>Gallus gallus</i>		5 (51.97)	5	n/a
BMP4	bone morphogenetic protein 4	30F7	<i>Gallus gallus</i>		5 (61.15)	5	n/a
SUPV3L1	suppressor of vart1, 3-like 1 (S. cerevisiae)	37H15	<i>Gallus gallus</i>		6 (11.94)	6	n/a
CYP17A1	cytochrome P450, family 17, subfamily A, polypeptide 1	24J23	<i>Gallus gallus</i>		6 (24.82)	6	n/a
CD28	CD28 molecule	34P13	<i>Gallus gallus</i>		7 (14.53)	7	n/a
NRD1	nardilysin (N-arginine dibasic)	27F12	<i>Gallus gallus</i>		8 (24.92)	8	n/a
Gga.1829	finished cDNA, clone ChEST296i7	47P2	<i>Gymnogyps californianus</i>		9 (6.53)	10	n/a
PER2	period homolog 2 (<i>Drosophila</i>)	47P2	<i>Cathartes melambrotus</i>		9 (6.55)	10	n/a
SEC11L1	SEC11 homolog A (<i>S. cerevisiae</i>)	31B11	<i>Gallus gallus</i>		10 (0.37)	no signal	n/a
CHRN4	cholinergic receptor, nicotinic, beta 4	6A6	<i>Gallus gallus</i>		10 (4.55)	11	n/a
ACAN (AGC1)	aggrecan	21P20	<i>Gallus gallus</i>	AC171743	10 (14.78)	11	n/a
RPL4	ribosomal protein L4	35A6	<i>Gallus gallus</i>		10 (20.67)	11	n/a
RAF1	v-raf-1 murine leukemia viral oncogene homolog 1	21I7	<i>Gallus gallus</i>		12 (5.18)	13	n/a
NINJ1	ninjurin 1	44N15	<i>Gallus gallus</i>		12 (6.84)	13	n/a
OVM	ovomucoid	5J24	<i>Gallus gallus</i>		13 (10.63)	14	n/a
NR3C1	nuclear receptor subfamily 3, group C, member 1 (glucocorticoid receptor)	29N19	<i>Gallus gallus</i>		13 (17.99)	14	n/a
ALDH2	aldehyde dehydrogenase 2 family (mitochondrial)	46P15	<i>Gallus gallus</i>		15 (6.26)	16	n/a
DBC1	deleted in bladder cancer 1	14E23	<i>Gallus gallus</i>		17 (4.60)	18	n/a
FBXW2	F-box and WD repeat domain containing 2	21C14	<i>Gallus gallus</i>		17 (11.11)	18	n/a
AANAT	arylalkylamine N-acetyltransferase	22G13	<i>Cathartes melambrotus</i>		18 (4.37)	19	n/a
MYBBP1A	MYB binding protein (P160) 1a	24E3	<i>Gallus gallus</i>		19 (2.90)	20	n/a
AGRN	agrin	18N4	<i>Gallus gallus</i>		21 (2.75)	no signal	n/a

Gene/marker symbol (synonyms)	Gene name	BAC ID*	Overgo probe**	GenBank, when available	Chicken chromosome (location, Mb)	Condor chromosome	Stork chromosome	
PRNP	prion protein (p27-30) (Creutzfeldt-Jakob disease, Gerstmann-Strausler-Scheinker syndrome, fatal familial insomnia)	42C20	<i>Vultur gryphus</i>		22 (0.44)	23	n/a	
TRIM29	tripartite motif-containing 29	38C1	<i>Gallus gallus</i>		24 (4.11)	25	n/a	
PAFAH1B2	platelet-activating factor acetylhydrolase, isoform b, beta subunit 30kDa	43E17	<i>Gallus gallus</i>		24 (5.33)	25	n/a	
TAGLN	transgelin	43E17	<i>Gallus gallus</i>		24 (5.35)	25	n/a	
WNT2B	wingless-type MMTV integration site family, member 2B	181F1	uprobe	AC183845	26 (3.32)	27	n/a	
ACCN1	amiloride-sensitive cation channel 1, neuronal (degenerin)	41I0	<i>Gallus gallus</i>		27 (1.68)	28; W repeat	n/a	
UBE2R2 / LOC427134	ubiquitin-conjugating enzyme E2R 2 / hypothetical LOC427134	37I12	<i>Gallus gallus</i>		Z (6.87)/ W (0.12)	Z; no signal on W	Z	
WDR40A	WD repeat domain 40A	38O23	<i>Gallus gallus</i>		Z (7.02)	no signal	no signal	
UBAP1	ubiquitin associated protein 1	38O23	<i>Gallus gallus</i>		Z (7.05)	no signal	no signal	
CNTRF	ciliary neurotrophic factor receptor	47L2	<i>Gallus gallus</i>		Z (7.77)	no signal; W repeat	no signal	
SUB1	SUB1 homolog (<i>S. cerevisiae</i>)	30H6	<i>Taeniopygia guttata</i>		Z (9.16)	Z	Z	
MCW0331	STS	10B15	<i>Gallus gallus</i>		Z (12.06)	no signal	no signal	
OXCT1	3-oxoacid CoA transferase 1	46B5	<i>Taeniopygia guttata</i>		Z (12.63)	Z	no signal	
MOCS2	molybdenum cofactor synthesis 2	1J17	<i>Taeniopygia guttata</i>		Z (15.25)	Z	no signal	
FST	folistatin	1J17	<i>Taeniopygia guttata</i>		Z (15.40)	Z	no signal	
PLK2	polo-like kinase 2 (<i>Drosophila</i>)	20J21	<i>Taeniopygia guttata</i>		Z (17.39)	Z	Z	
TINP1	TGF beta-inducible nuclear protein 1	2P19	<i>Taeniopygia guttata</i>		Z (23.68)	Z	Z	
PGM5	phosphoglucomutase 5	26J20	<i>Gallus gallus</i>		Z (26.40)	Z	Z	
PGM5	phosphoglucomutase 5	32A7	<i>Gallus gallus</i>		Z (26.40)	Z	Z	
RCJMB04_13c10 (CBWD1)	COBW domain containing 1	32A7	<i>Taeniopygia guttata</i>		Z (26.49)	Z	Z	
SMARCA2	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a, member 2	11H4	<i>Taeniopygia guttata</i>		Z (27.21)	Z	Z	
KIAA1432	KIAA1432	35C5	<i>Taeniopygia guttata</i>		Z (28.29)	no signal	no signal	
KIAA1432	KIAA1432	19E4	<i>Taeniopygia guttata</i>		Z (28.29)	Z; W repeat	no signal	
LOC427229	hypothetical LOC427229	19E4	<i>Taeniopygia guttata</i>		Z (28.42)	Z; W repeat	no signal	
UHRF2	ubiquitin-like, containing PHD and RING finger domains, 2	6C12	<i>Taeniopygia guttata</i>		Z (28.55)	Z	Z	
JMJ2C	jumonji domain containing 2C	32H13	<i>Gallus gallus</i>		Z (28.66)	no signal	no signal	
JMJ2C	jumonji domain containing 2C	8M13*	<i>Gallus gallus</i>	CC267602-CC267604	Z (28.66)	no signal	no signal	
NFIB	nuclear factor I/B	21B22	<i>Gallus gallus</i>		Z (31.23)	no signal	no signal	
DENND4C	DENN/MADD domain containing 4C	10J11	<i>Taeniopygia guttata</i>		Z (33.48)	Z	Z	
SLC24A2	solute carrier family 24 (sodium/potassium/calcium exchanger), member 2	10J11	<i>Taeniopygia guttata</i>		Z (33.60)	Z	Z	
ZFAND5 (ZA20D2)	zinc finger, AN1-type domain 5	36P6	<i>Gallus gallus</i>		Z (35.44)	no signal; W repeat	no signal	
PCSK5	proprotein convertase subtilisin/kexin type 5	26N1	<i>Gallus gallus</i>		Z (36.79)	Z	no signal	
UBQLN1	ubiquilin 1	22P14	<i>Gallus gallus</i>		Z (39.46)	no signal	no signal	
HABP4	hyaluronan binding protein 4	33G4	<i>Gallus gallus</i>		Z (41.70)	Z	no signal	
CDC14B	CDC14 cell division cycle 14 homolog C (<i>S. cerevisiae</i>)	33G4	<i>Gallus gallus</i>		Z (41.76)	Z	no signal	
RCJMB04_3e14 (LOC427269)	similar to Auh protein	2A6	<i>Gallus gallus</i>		Z (43.58)	no signal	no signal	
RCJMB04_3e14 (LOC427269)	similar to Auh protein	15H17	<i>Gallus gallus</i>		Z (43.58)	Z; W repeat	no signal	
ST8SIA4	ST8 alpha-N-acetylneuraminidase 2,8-sialyltransferase 4	2J3	<i>Taeniopygia guttata</i>		Z (49.65)	Z	no signal	
TMEM175	transmembrane protein 175	19L5	<i>Taeniopygia guttata</i>		Z (52.36)	Z	no signal	
TAL2	T-cell acute lymphocytic leukemia 2	3O23	<i>Gallus gallus</i>		Z (53.97)	Z	Z	
TMEM167	transmembrane protein 167	1I22	<i>Taeniopygia guttata</i>		Z (61.63)	Z	Z	
CCDC125	coiled-coil domain containing 125	47D5	<i>Taeniopygia guttata</i>		Z (62.77)	Z; W repeat	Z	
PALM2 (PALM2-AKAP2)	paralemmin 2	42P15	<i>Gallus gallus</i>		Z (64.38)	Z	Z	
TXN	thioredoxin	19K1	<i>Gallus gallus</i>		Z (65.07)	Z	Z	
RCJMB04_17o18 (IKBKAP)	inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase complex-associated protein	2G3	<i>Gallus gallus</i>		Z (68.64)	no signal	no signal	
LOC427367 (IFT74)	similar to Intraflagellar transport 74 homolog (Coiled-coil domain-containing protein 2) (Capillary morphogenesis synuclein, alpha interacting protein (synphilin))	40B12	<i>Gallus gallus</i>		Z (66.84)	Z	no signal	
SNCAIP	synphilin	184F6	uprobe	AC183846	Z (73.74)	Z	Z	

Gene/marker symbol (synonyms)	Gene name	BAC ID*	Overgo probe**	GenBank, when available	Chicken chromosome (location, Mb)	Condor chromosome	Stork chromosome
-------------------------------	-----------	---------	----------------	-------------------------	-----------------------------------	-------------------	------------------

* Clones from chicken BAC library (CHORI-261), all others from condor BAC library (CHORI-262).

** BACs were captured during library screen with overgos designed from chicken (*Gallus gallus*), California condor (*Gymnogyps californianus*), zebra finch (*Taeniopygia guttata*), or other New World vulture (*Coragyps atratus*, *Cathartes melambrotus*, and *Vultur gryphus*) genomic sequences. Uprobes were universal probes derived from conserved regions across various species (Kellner et al. 2005; Romanov et al. 2009).

*** The hybridization patterns of two families of uncharacterized repetitive sequences were observed (see Fig. 1b).

**** n/a denotes FISH not attempted.