

S1: Panel of 168 genes involved in breast carcinogenesis in women and female dogs

List of human genes that were sequenced and their characteristics.

<i>TargetID</i>	Gap	Number of regions analyzed	pb
ACTR3B	chr7:152456958-152551648	12	1497
AKT1	chr14:105235913-105258990	14	1764
ALOX12	chr17:6899427-6913752	14	2272
ANLN	chr7:36429626-36492219	25	3951
ATM	chr11:108098342-108236245	62	10411
AURKA	chr20:54945204-54963263	8	1387
BAG1	chr9:33255207-33264682	8	1359
BARD1	chr2:215593390-215674303	12	2590
BCL2	chr18:60795848-60985909	2	793
BIRC5	chr17:76210388-76219748	6	777
BLVRA	chr7:43810748-43846844	7	1031
BMP6	chr6:7727179-7880586	7	1682
BRAF	chr7:140426284-140624513	21	2799
BRCA1	chr17:41197685-41277212	26	6259
BRCA2	chr13:32890588-32972917	28	10983
BRIP1	chr17:59760647-59938910	21	4452
CCNB1	chr5:68463080-68473468	9	1659
CCNE1	chr19:30303453-30314694	11	1471
CDC20	chr1:43824877-43828810	10	1700
CDC6	chr17:38445663-38458263	11	1903
CDH1	chr16:68771309-68867412	16	3036
CDH3	chr16:68679273-68756484	18	3188
CDK2	chr12:56360783-56365419	8	1205
CENPF	chr1:214787088-214837147	19	9725
CEP55	chr10:95259799-95287920	8	1597
CHEK2	chr22:29083875-29133281	20	2326
CXXC5	chr5:139060099-139062502	2	1009
DDR1	chr6:30852987-30867869	19	3383
DLG2	chr11:83170851-85309750	38	4477
EGFR	chr7:55086961-55273320	31	4704
ERBB2	chr17:37855803-37884307	29	4545
ERBB4	chr2:212248330-213403264	29	4552

ESR1	chr6:152129038-152446493	9	2057
EXO1	chr1:242013718-242052912	13	2801
FGFR4	chr5:176516594-176524687	17	2906
FOXA1	chr14:38060560-38064187	3	1518
FOXC1	chr6:1610671-1612352	1	1682
FOXC2	chr16:86600932-86602457	1	1526
GATA3	chr10:8097609-8115996	5	1435
GPR160	chr3:169801751-169802787	1	1037
GRB7	chr17:37895149-37903160	15	1992
IGF2R	chr6:160390269-160526126	48	8471
KIF2C	chr1:45205595-45232861	23	2748
KRAS	chr12:25362719-25398328	6	828
KRT14	chr17:39738677-39743096	8	1579
KRT17	chr17:39775836-39780771	8	1459
KRT5	chr12:52908716-52914090	10	2022
MAP3K1	chr5:56111391-56189517	20	4939
MAPT	chr17:44039694-44101547	16	2802
MDM2	chr12:69202248-69233639	13	1910
MELK	chr9:36581669-36677344	17	2296
MIA	chr19:41281438-41283335	4	476
MKI67	chr10:129897444-129923941	14	10051
MLH1	chr3:37035029-37107120	20	2705
MLPH	chr2:238402060-238462356	18	2372
MMP11	chr22:24115048-24125741	9	1725
MSH2	chr2:47630321-47739583	17	3277
MSH6	chr2:48010363-48034009	10	4283
MTOR	chr1:11167532-11319476	57	8790
MYBL2	chr20:42295914-42344737	14	2383
MYC	chr8:128748830-128753214	3	1425
NAT1	chr8:18074393-18080439	3	1119
NBN	chr8:90947800-90996799	17	2611
NDC80	chr18:2572975-2616583	19	2659
NF1	chr17:29422216-29705959	63	10271
NRAS	chr1:115251146-115258791	4	650
NUF2	chr1:163295832-163325269	13	1655
ORC6	chr16:46723608-46731507	7	899

PALB2	chr16:23614770-23652488	15	3951
PGR	chr11:100909837-100999811	8	2962
PHGDH	chr1:120254636-120286673	12	1878
PIK3CA	chr3:178916604-178952162	20	3609
PMS2	chr7:6013020-6048660	15	2889
PTEN	chr10:89623697-89725239	9	1912
PTTG1	chr5:159849310-159855698	5	830
RAD51	chr15:40990947-41023386	10	1341
RAD51C	chr17:56769995-56811593	10	1487
RAD51D	chr17:33427962-33446816	13	1577
RRM2	chr2:10262736-10269523	10	1575
SFRP1	chr8:41122676-41166688	4	1161
SLC39A6	chr18:33689546-33706980	9	2460
STK11	chr19:1206903-1227866	11	1819
TGFBR3	chr1:92149286-92327098	18	3029
TMEM45B	chr11:129722368-129728590	5	928
TP53	chr17:7565247-7579922	14	1658
TYMS	chr18:657733-673007	7	1082
UBE2C	chr20:44441325-44445416	6	811
UBE2T	chr1:202300953-202304892	6	718
USH2A	chr1:215799113-216595688	72	17141

List of sequenced canine genes and their characteristics.

<i>TargetID</i>	Gap	Number of regions analyzed	pb
AKT1	chr8:72318120-72335106	13	1703
ALOX12	chr5:32026267-32037785	14	2272
ANLN	chr14:47805282-47853540	24	3846
ATM	chr5:24182499-24291596	63	10458
AURKA	chr24:41585931-41600627	8	1387
BAG1	chr11:50351161-50363591	7	1517
BARD1	chr37:21948587-22014539	10	2387
BCL2	chr1:13734494-13900460	2	741
BIRC5	chr9:2930442-2935407	4	509
BLVRA	chr18:6426336-6473810	7	1031
BMP6	chr35:7804221-7831792	7	1154
BRAF	chr16:8222896-8316817	20	2760
BRCA1	chr9:19960900-20024400	22	6106
BRCA2	chr25:7735057-7796904	26	10867
BRIP1	chr9:34806525-34983796	19	4116
CCNE1	chr1:121689171-121693507	8	1102
CDC20	chr15:16803270-16806702	10	1700
CDC6	chr9:22304267-22316016	11	1900
CDH1	chr5:80759099-80927201	17	2999
CDH3	chr5:80865517-80912071	16	2810
CDK2	chr10:301079-305448	7	1037
CEP55	chr28:7757629-7777551	8	1548
CHEK2	chr26:22054480-22108825	15	1992
CXXC5	chr2:34936017-34938587	2	994
DDR1	chr12:653797-670340	18	3318
DLG2	chr21:15006402-15771964	23	3163
EGFR	chr18:5983658-6041638	27	4080
ERBB2	chr9:22761021-22785148	27	4323
ERBB4	chr37:19037500-19723438	27	4290
ESR1	chr1:42084177-42364316	8	1951

EXO1	chr7:33238970-33267815	13	2771
FGFR4	chr4:36244251-36251868	17	2746
FOXA1	chr8:16077442-16082938	3	1503
FOXC2	chr5:66294166-66295703	1	1538
GATA3	chr2:28069979-28087752	5	1435
GPR160	chr34:34657224-34658260	1	1037
GRB7	chr9:22743732-22747772	14	1873
IGF2R	chr1:49161666-49261867	49	8519
KIF2C	chr15:15558047-15579227	21	2598
KRT14	chr9:21190721-21194911	8	1609
KRT17	chr9:21156383-21161307	8	1462
KRT5	chr27:2567280-2810188	28	5839
MAP3K1	chr2:43917738-43994363	20	5404
MAPT	chr9:9572422-9618448	14	2644
MDM2	chr10:10936603-10971500	12	1802
MELK	chr11:52977288-53066857	17	2296
MKI67	chr28:36915558-36938663	13	7578
MLH1	chr23:6889161-6937969	19	2651
MLPH	chr25:48128791-48167545	16	2090
MMP11	chr26:28730877-28740274	8	1630
MSH2	chr10:49517509-49593735	16	3125
MSH6	chr10:49820661-49837951	10	4079
MTOR	chr2:84821004-84938398	57	8793
MYBL2	chr24:31348246-31382224	13	2339
MYC	chr13:25201146-25205319	3	1419
NDC80	chr7:69269687-69316938	16	2249
NF1	chr9:41470982-41679392	57	9606
NRAS	chr17:52412759-52418197	4	650
NUF2	chr38:19574363-19599053	13	1655
ORC6	chr15:8421723-8427791	7	1196
PALB2	chr6:22209677-22237527	13	4025
PGR	chr21:447309-552125	8	2990
PIK3CA	chr34:12647775-12675751	20	3607
PMS2	chr6:11411622-11438577	15	3017

PTEN	chr26:37853125-37913110	8	1306
RAD51	chr30:7849123-7876936	9	1200
RAD51C	chr9:33289753-33326274	9	1284
RAD51D	chr9:38242290-38259272	10	1187
RRM2	chr17:7106542-7122757	11	1366
SFRP1	chr16:24259470-24303069	7	1413
SLC39A6	chr7:54061712-54079530	9	2388
STK11	chr20:57560659-57625298	10	1739
TGFBR3	chr6:57047856-57216911	16	2894
TMEM45B	chr5:4985376-4990722	5	928
TP53	chr5:32561396-32565160	10	1352
TYMS	chr7:67488029-67497686	10	1341
UBE2C	chr24:33128369-33132033	6	660
UBE2T	chr7:721962-725895	6	714
USH2A	chr38:11063926-11750382	78	17184
