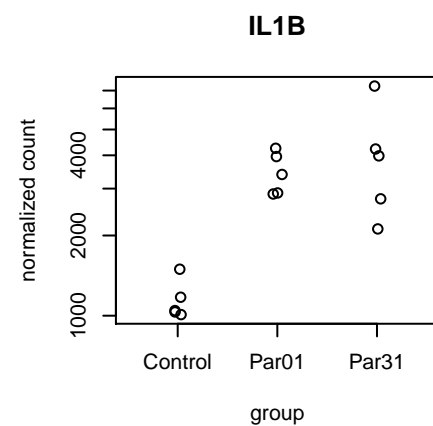
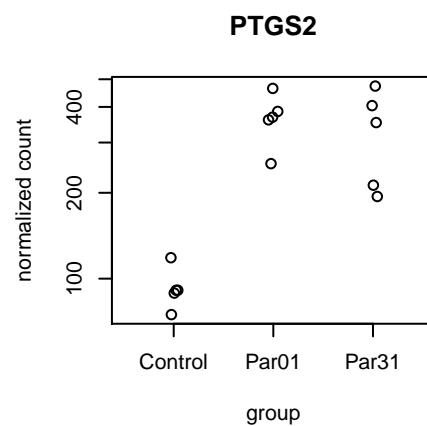
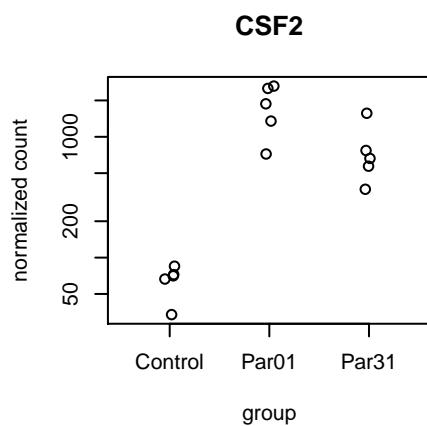
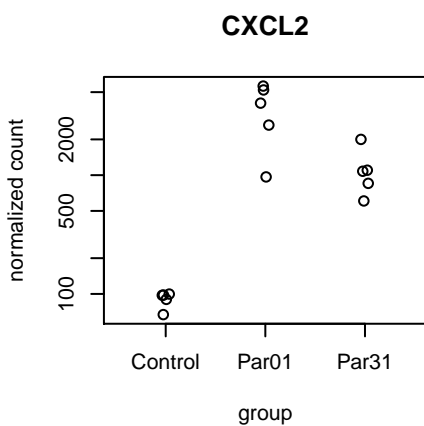
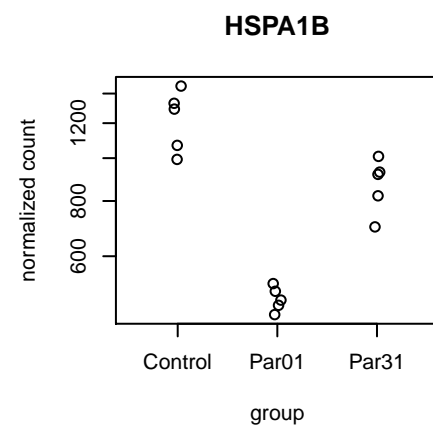
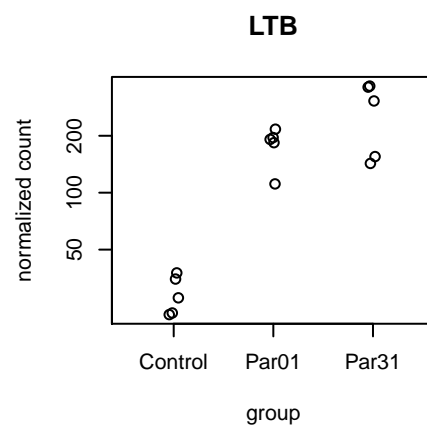
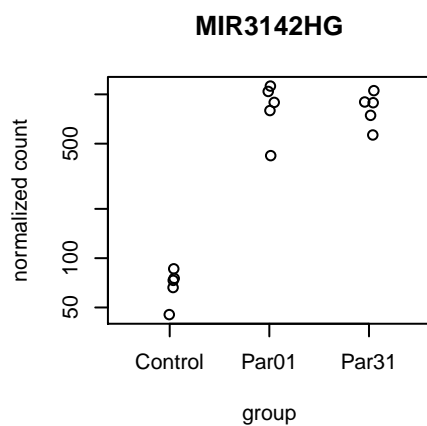
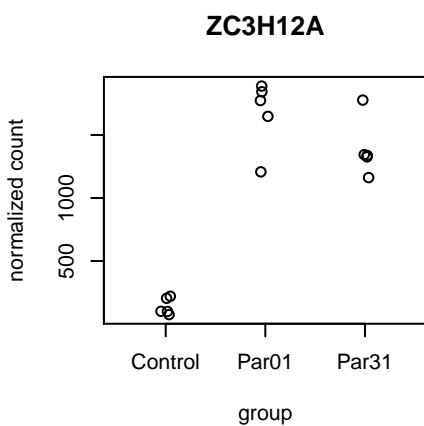
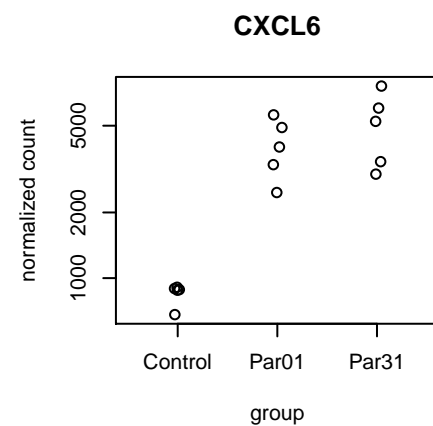
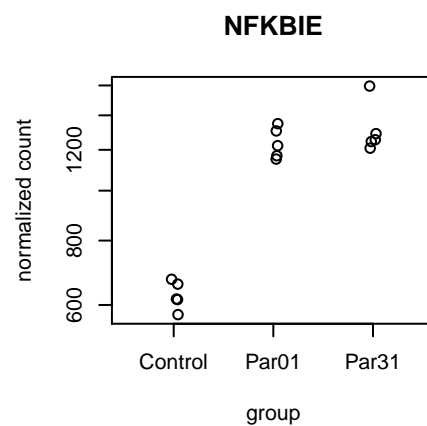
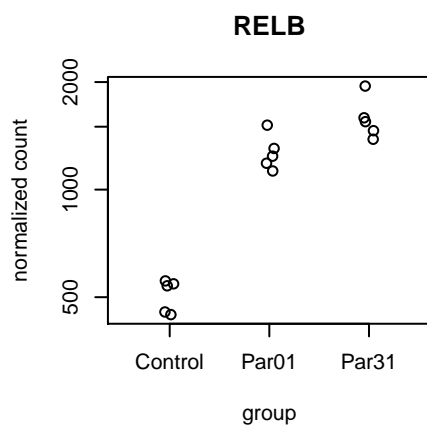
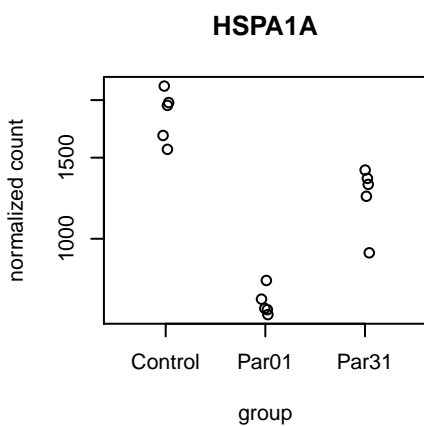
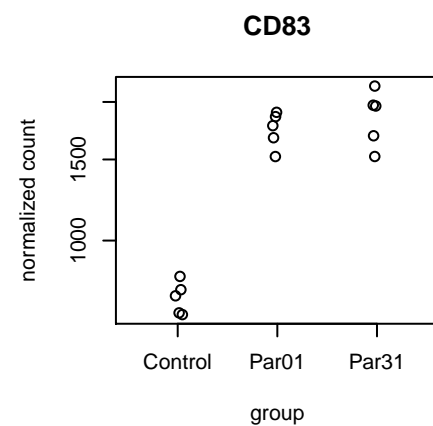
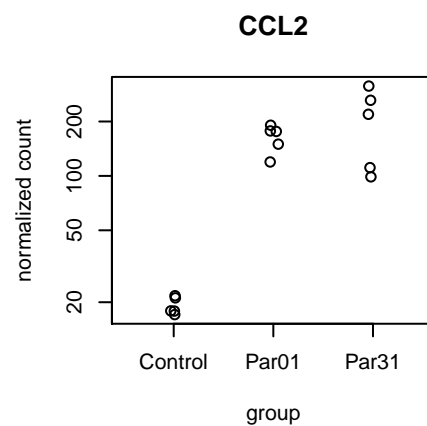
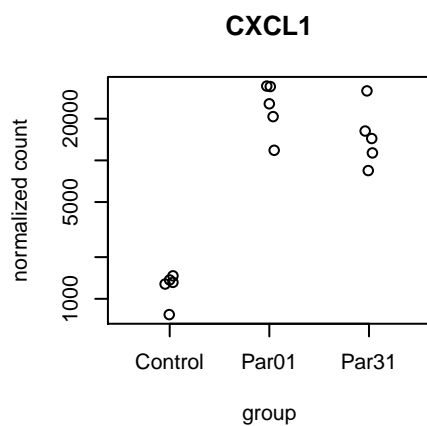
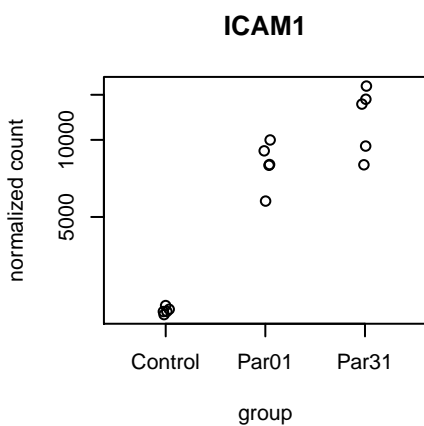
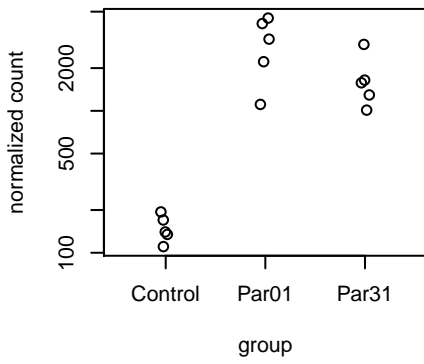
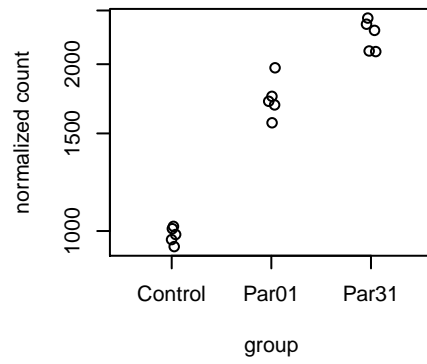
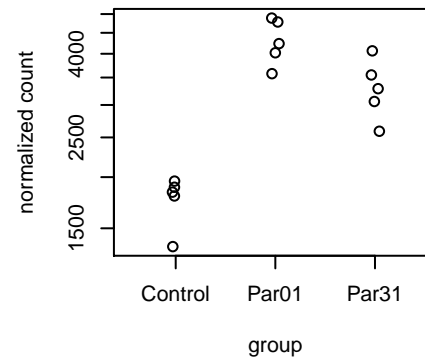
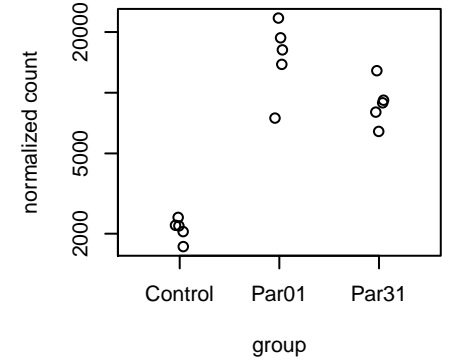
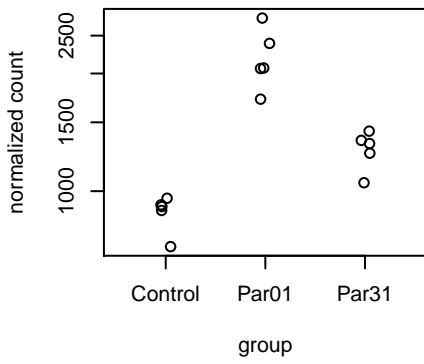
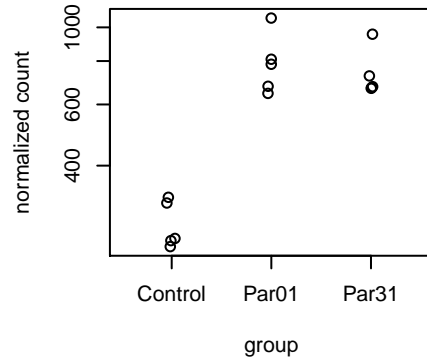
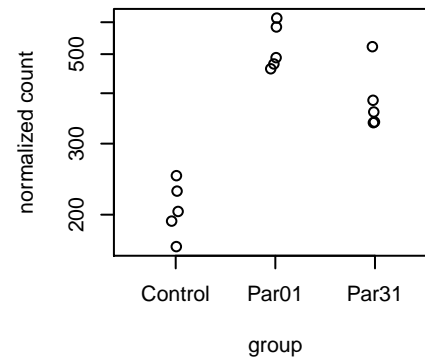
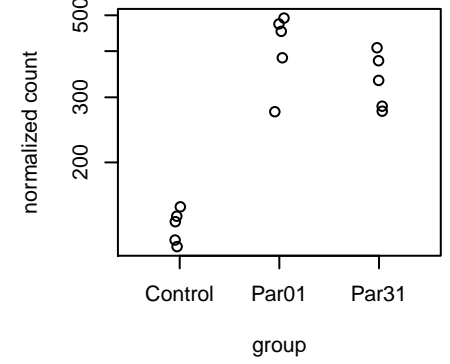
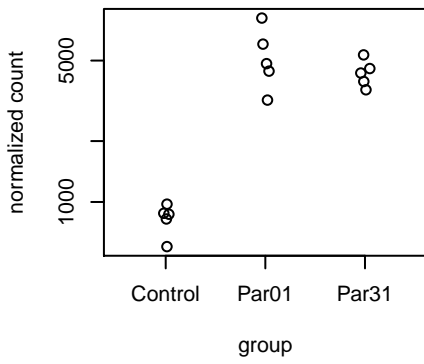
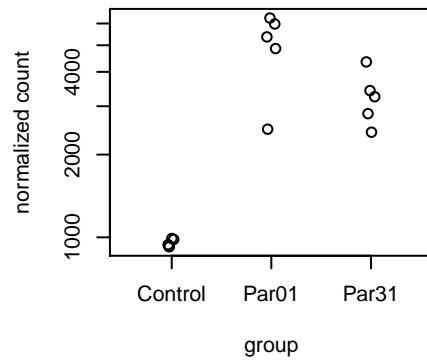
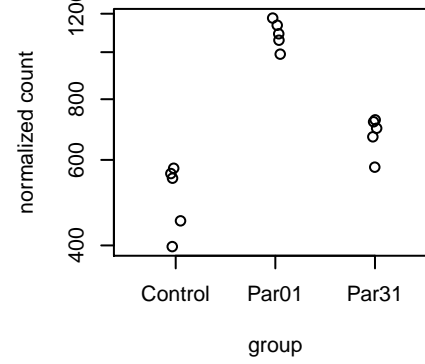
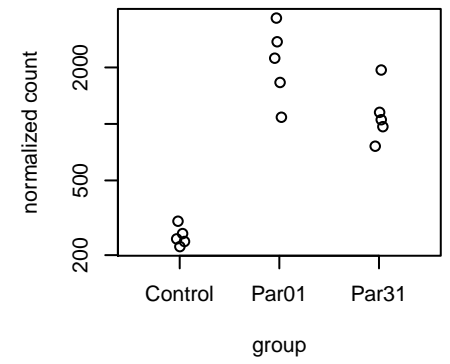
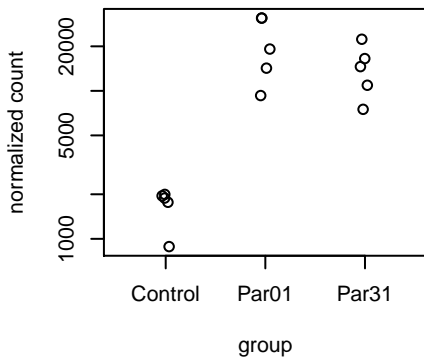
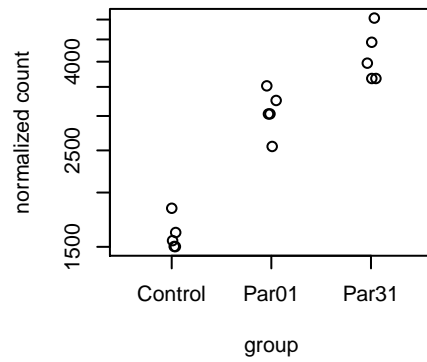
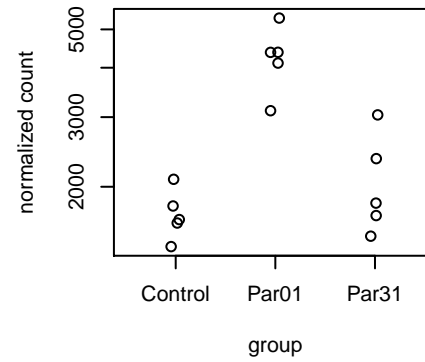
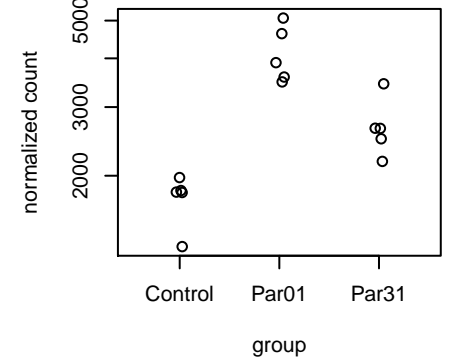
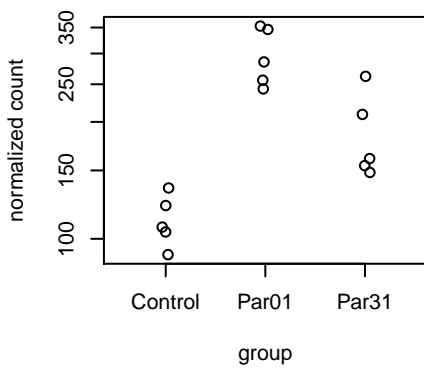
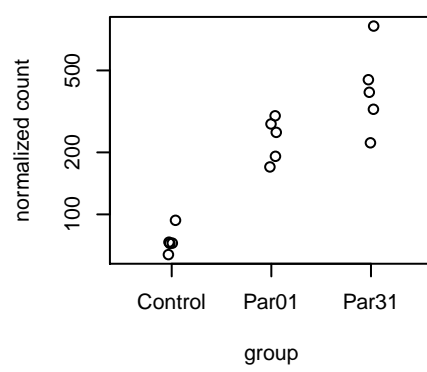
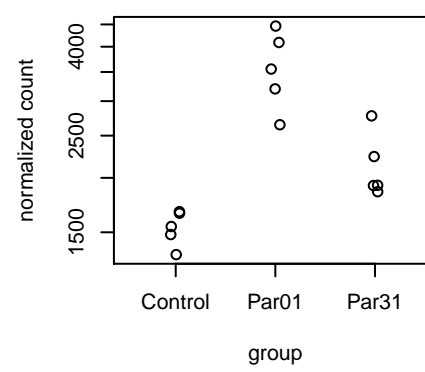
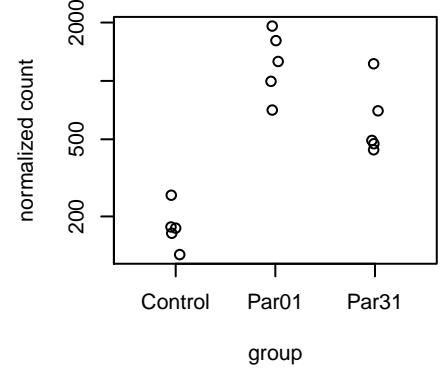
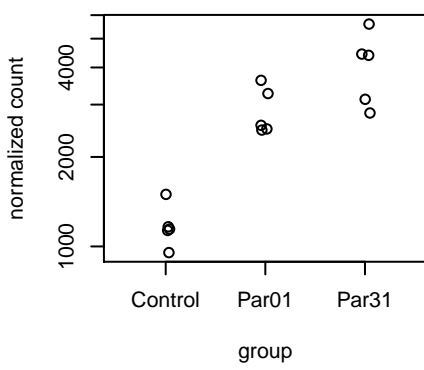
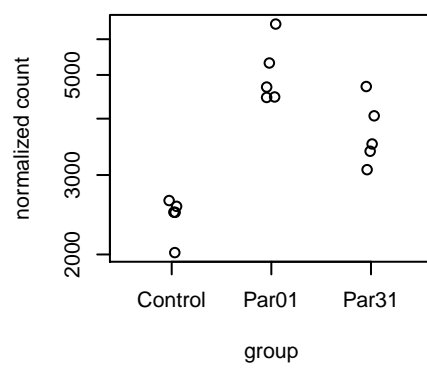
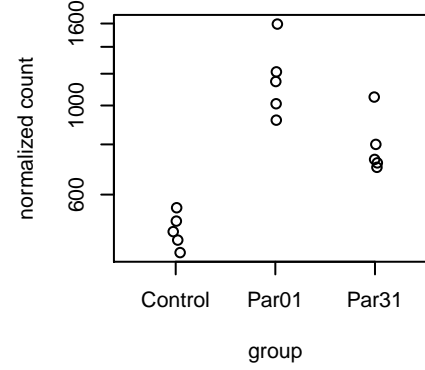
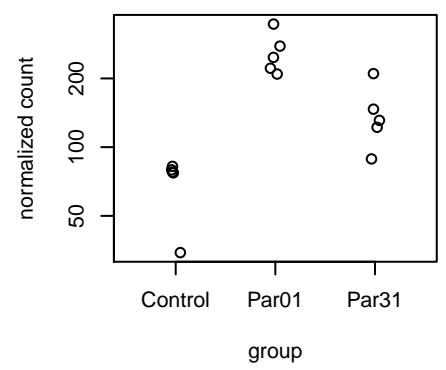
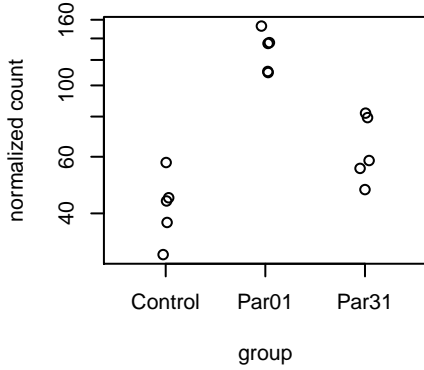
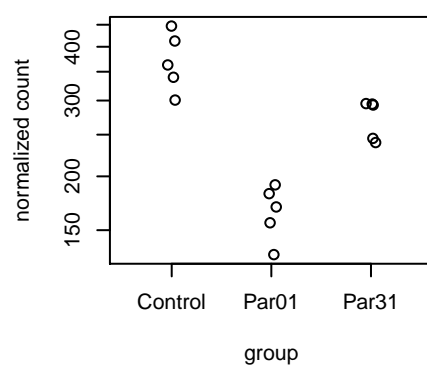
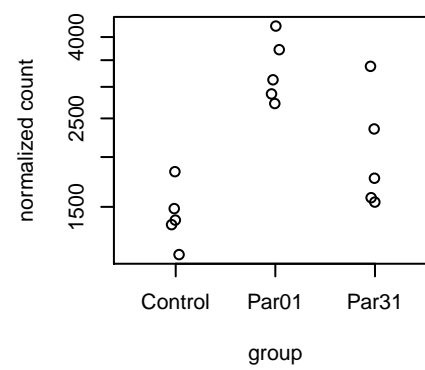
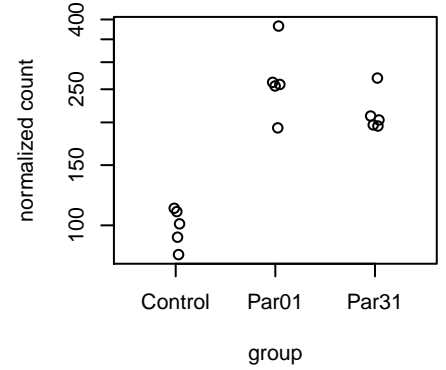
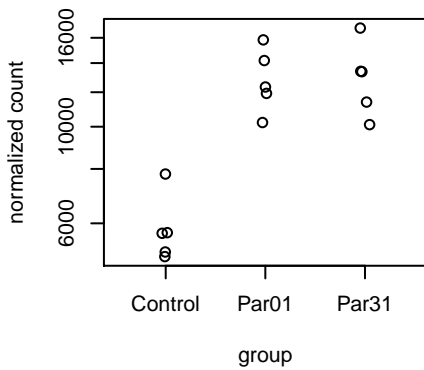
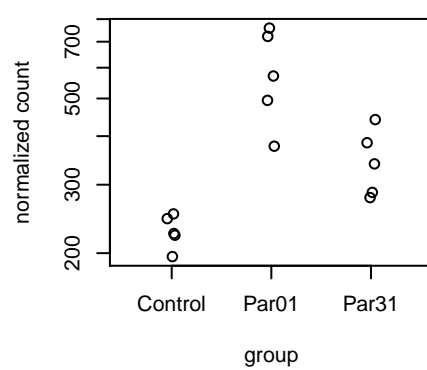
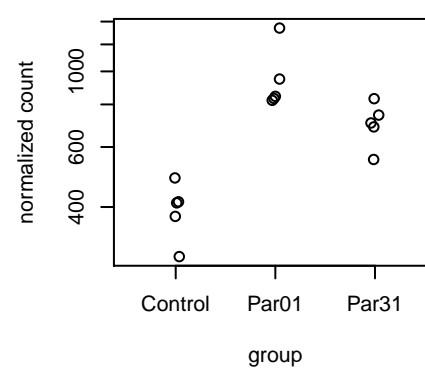
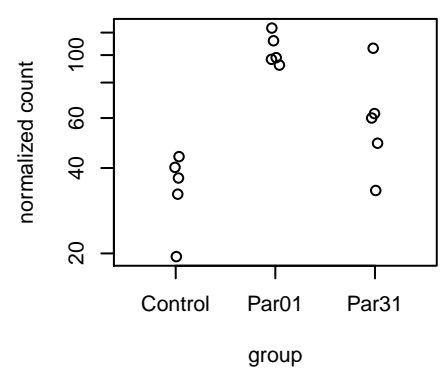


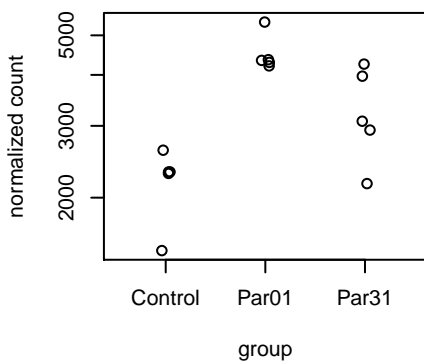
Figure S1: Impact of altered gravity on intracellular organization of F-actin: Confocal laser scanning microscopy of TRITC-conjugated phalloidin stained (F-actin) samples. **A-C:** PC-3 cells cultivated under altered gravity conditions. **A:** Static 1g ground control. **B:** After the first parabola (1P). **C:** After the 31st parabola (31P). The white arrows show pseudopodia and lamellipodia and yellow arrows indicate stress fibers. Scale bars represent 30 μm .



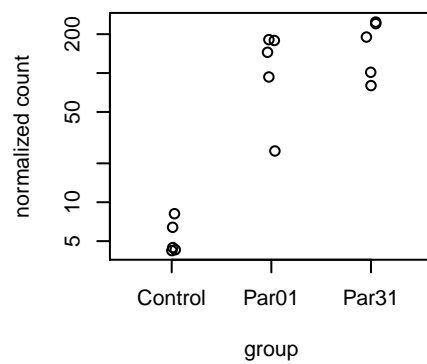
CXCL3**IRAK2****JUNB****NFKBIA****TUFT1****CSF1****CLDN14****MAP3K8****BIRC3****IRF1****ZNF587B****TNFAIP3****CXCL8****NFKB2****CCN2****HBEGF**

NFKBID**CSF3****GADD45A****NUAK2****TNFAIP2****ETS2****ZNF697****DLX2****ZEB2****IGIP****AMOTL2****REL****LIF****NOCT****C3orf52****IL12A**

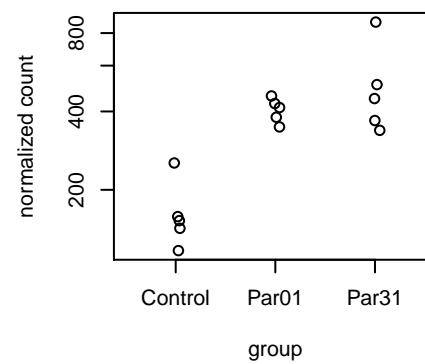
MAP3K14



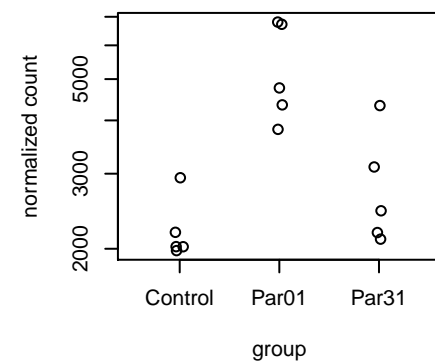
CCL20



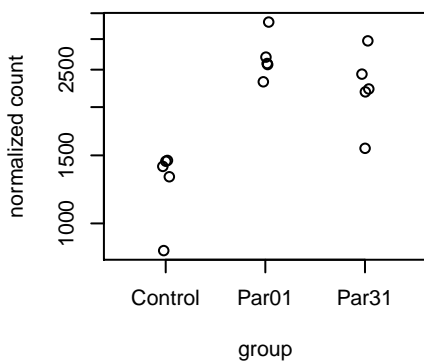
IL23A



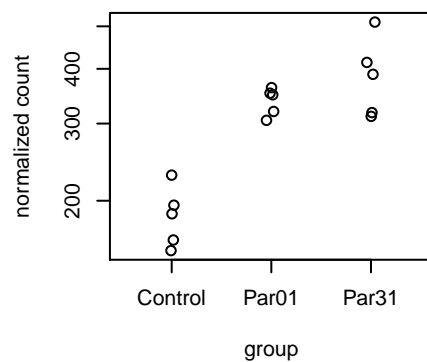
PLK2



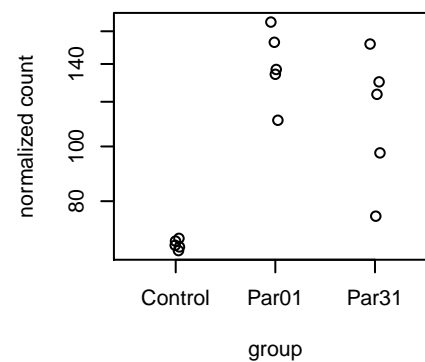
ANKRD33B



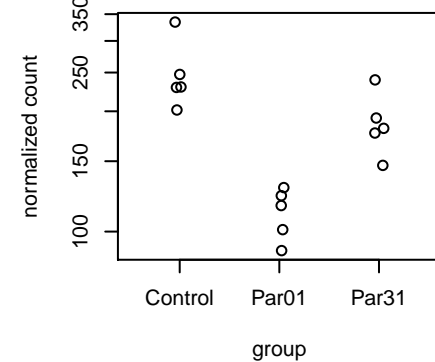
PLEKHF1



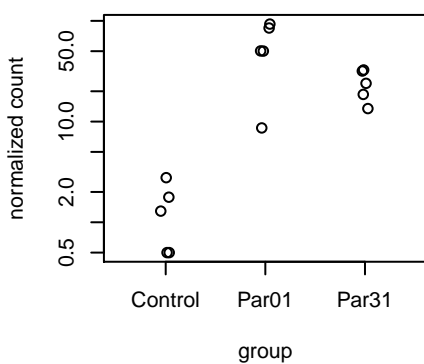
BTG2



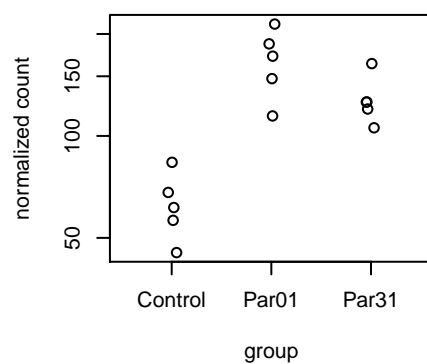
DISP1



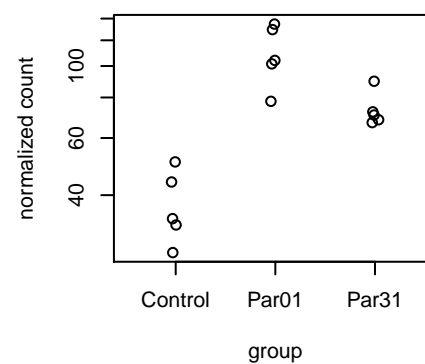
TNF



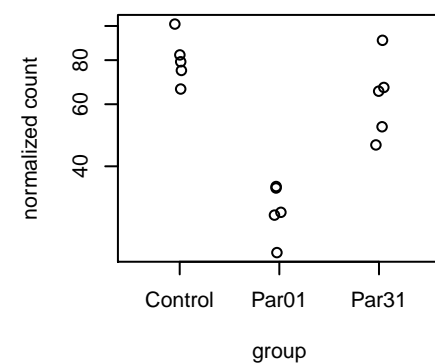
AL390719.2



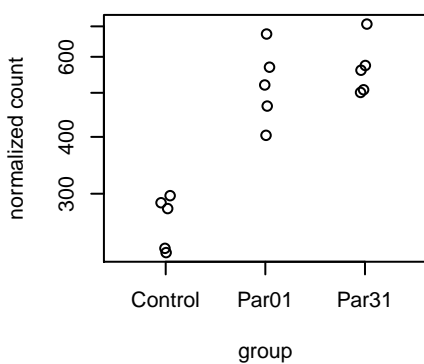
BMS1P4



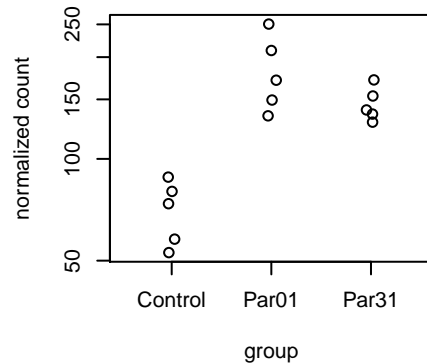
HSPA1L



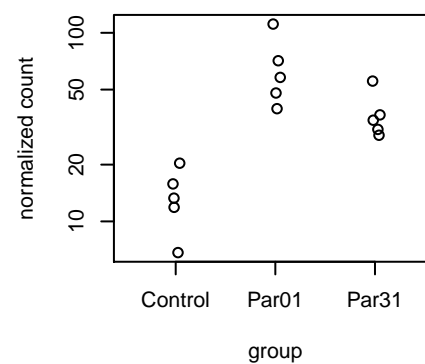
ERVK3-1



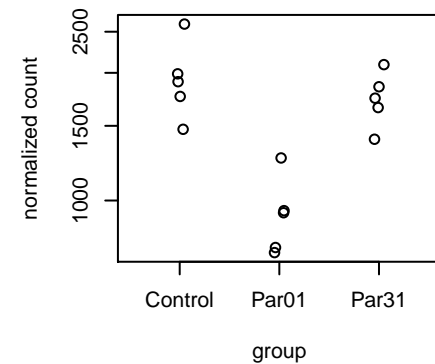
EGLN2



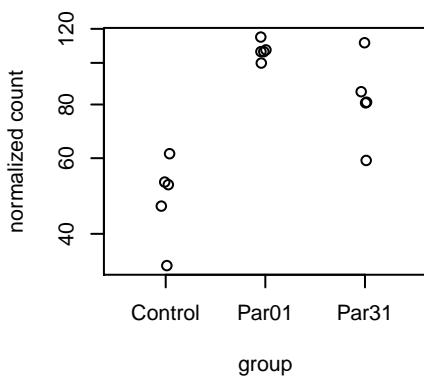
BDKRB1



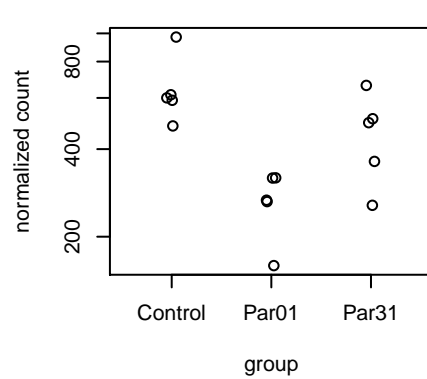
MAML2



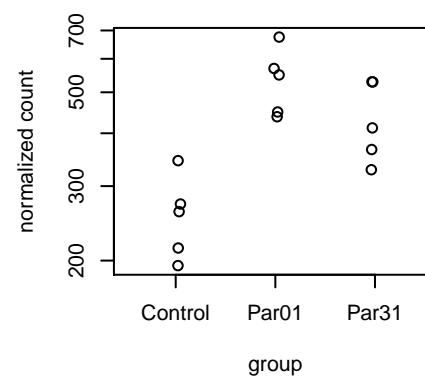
ST7-AS1



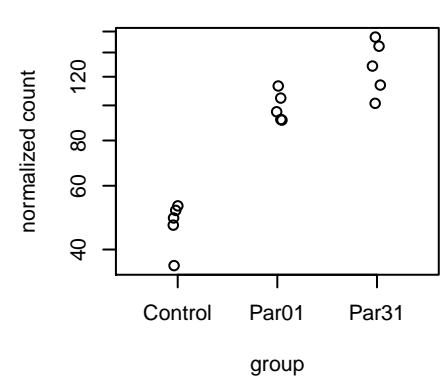
LURAP1L



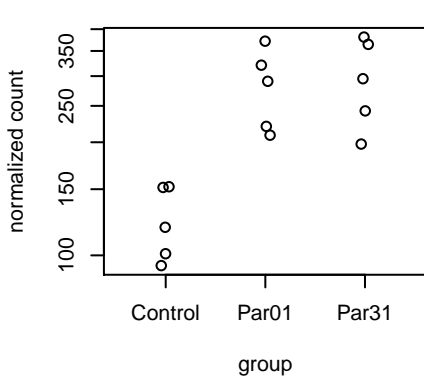
MIR222HG



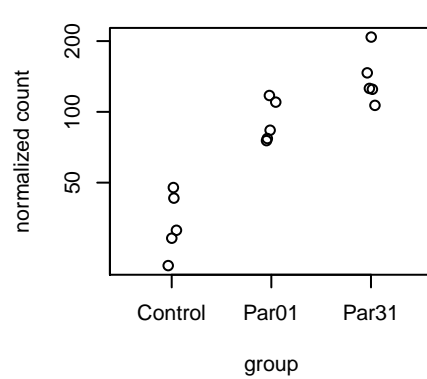
AC016596.1



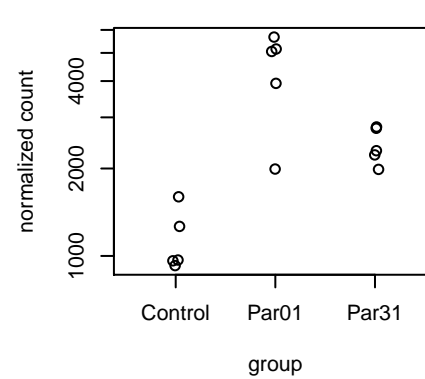
CEBPD



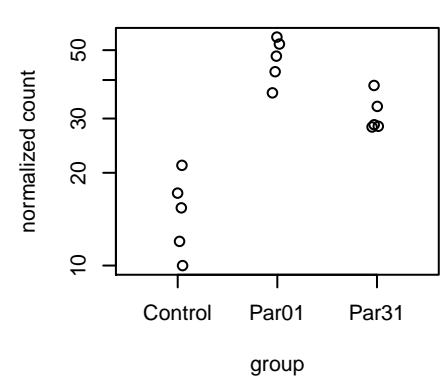
IL4I1



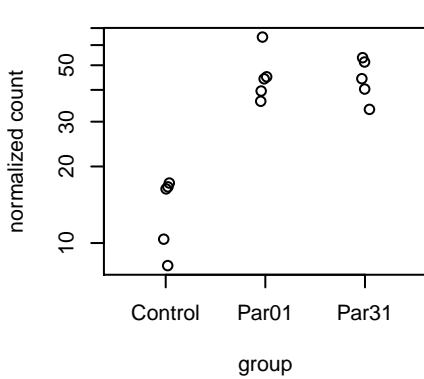
NFKBIZ



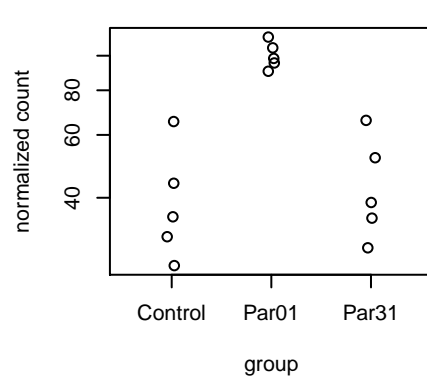
RAET1L



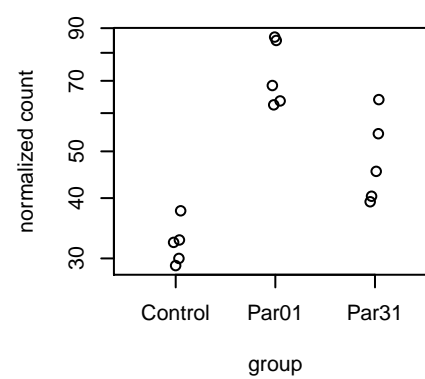
NPTN-IT1



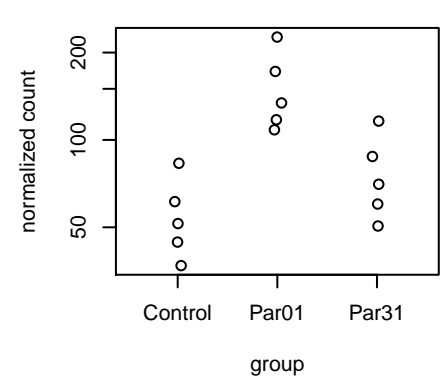
AC107308.1



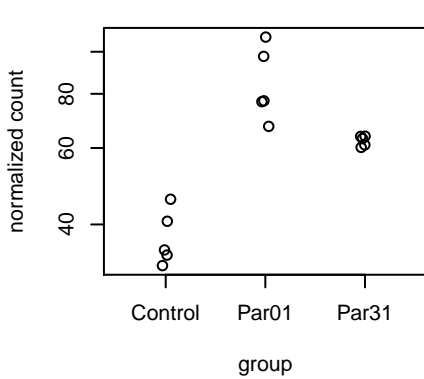
AC090181.2



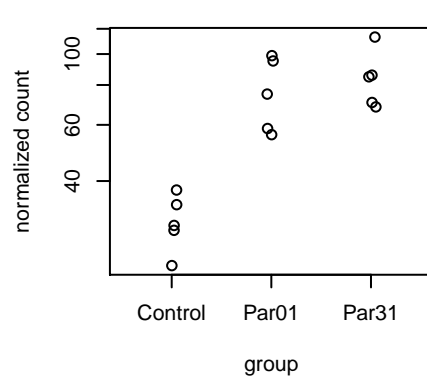
MIR17HG



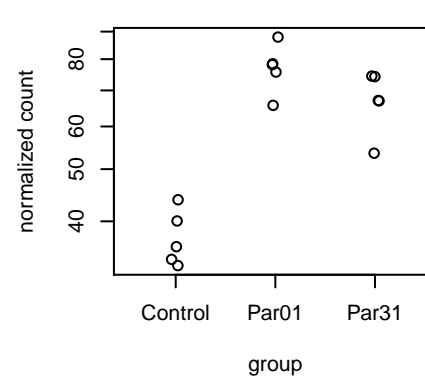
AL080276.2



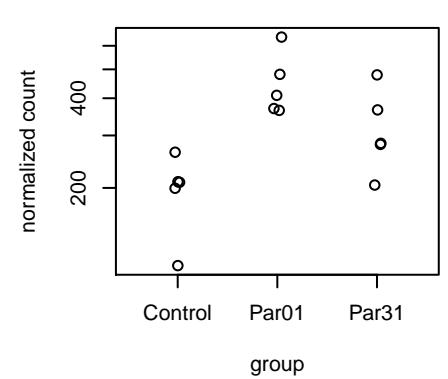
RND1



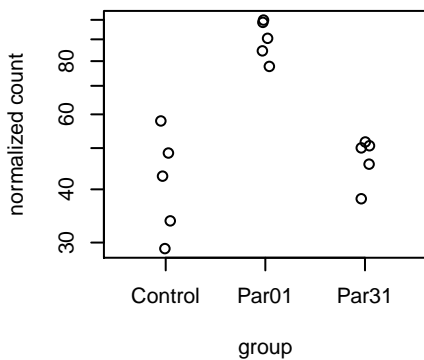
AC097059.1



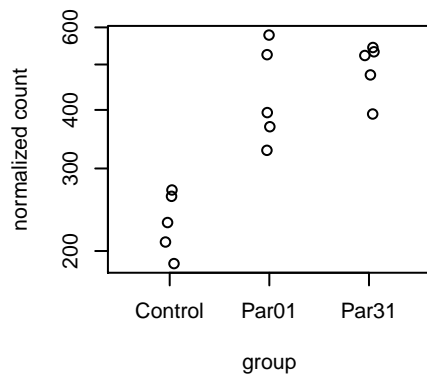
CD274



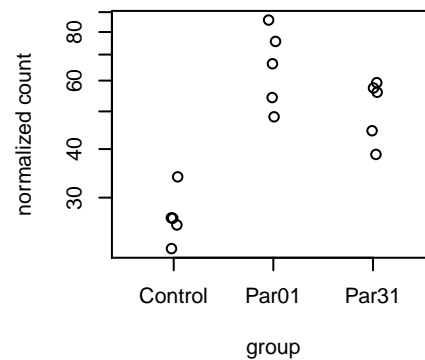
ALMS1-IT1



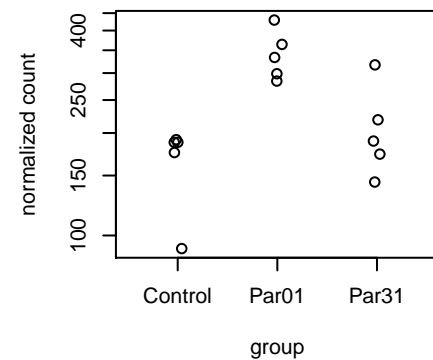
CLUHP3



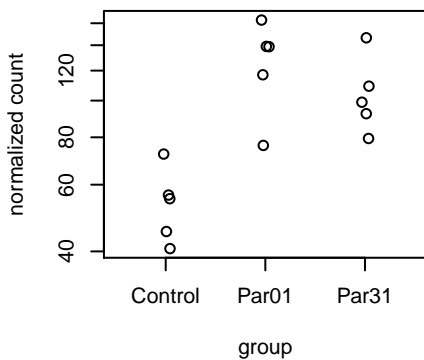
U2AF1L5



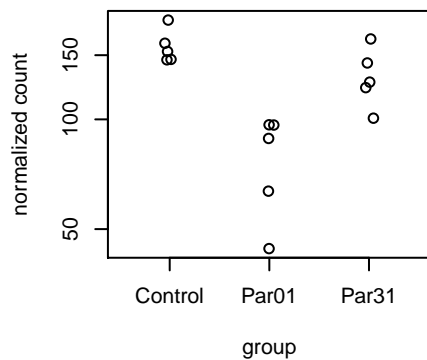
DLC1



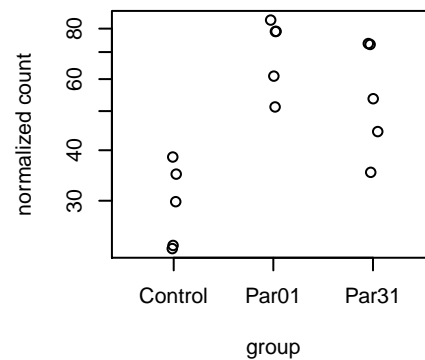
LY6G5B



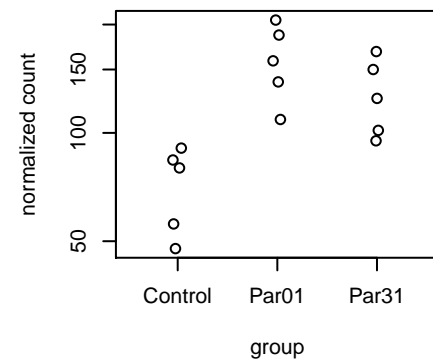
MIR3185



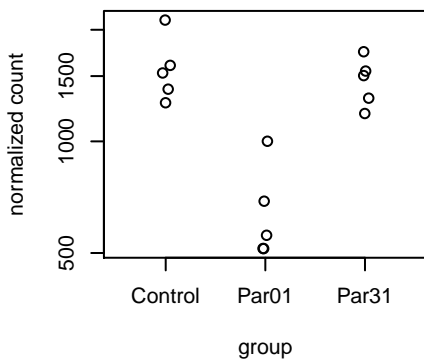
AC110285.2



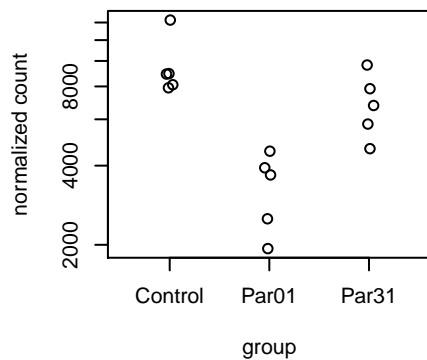
EIF4A1



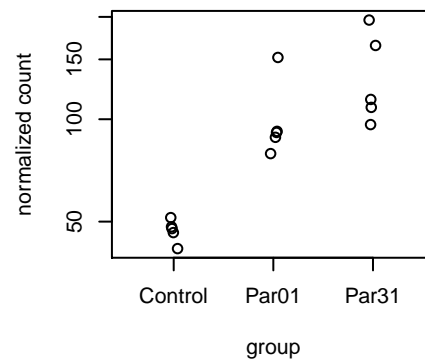
CSRNP3



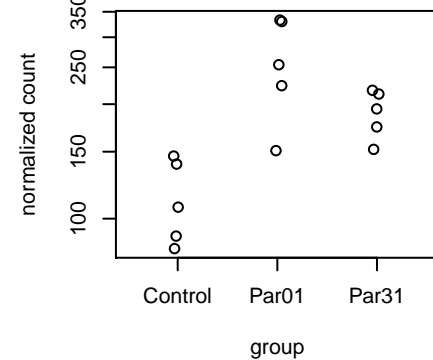
SOX9



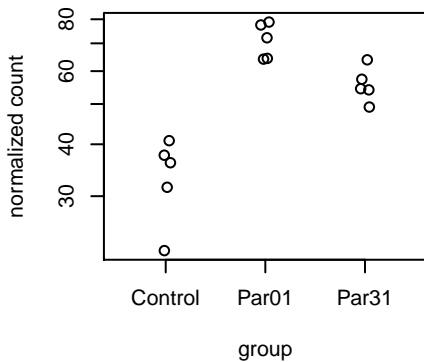
TRAF1



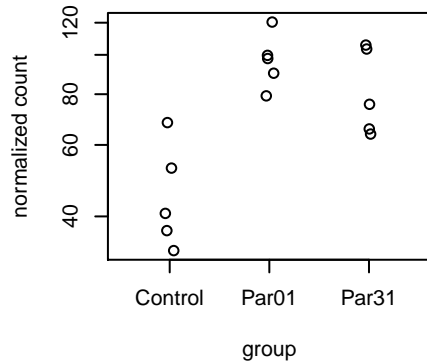
RTEL1-TNFRSF6B



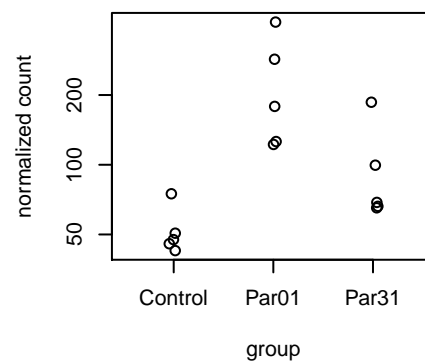
FRMD6-AS1



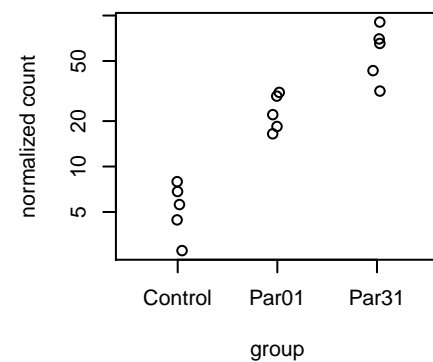
AL138724.2

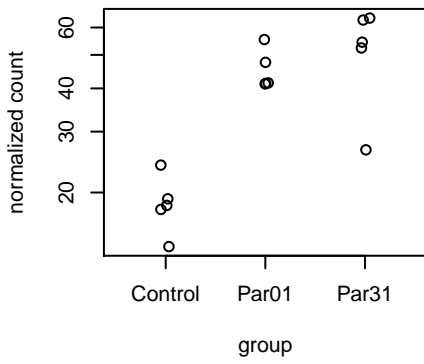
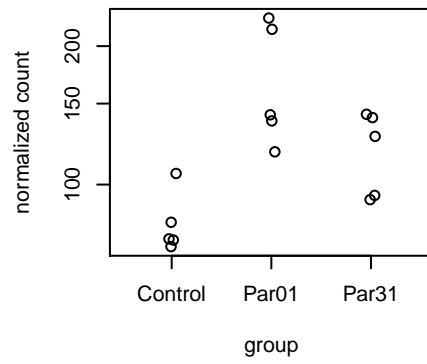
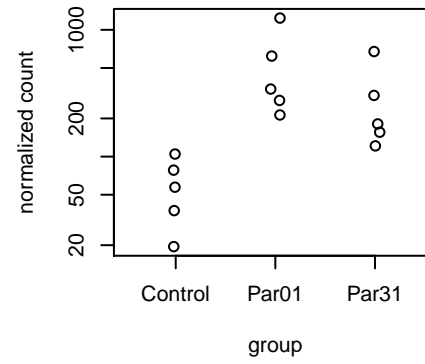
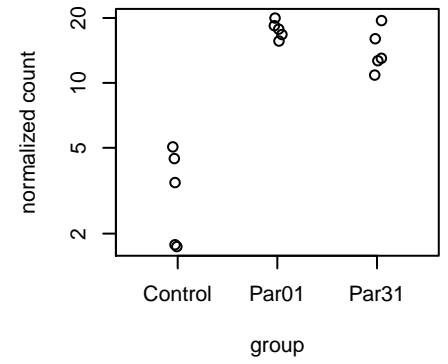
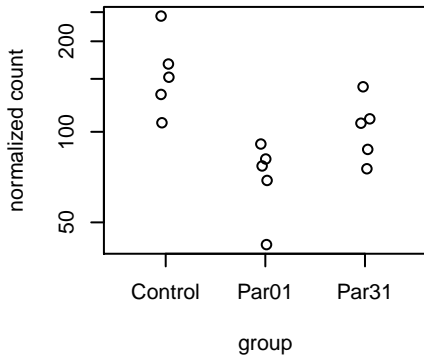
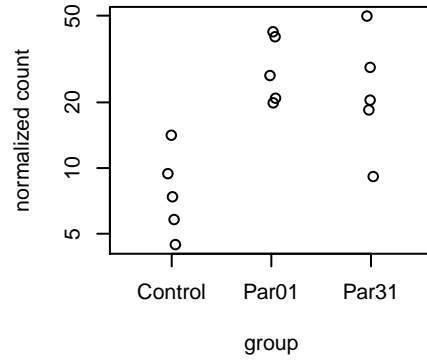
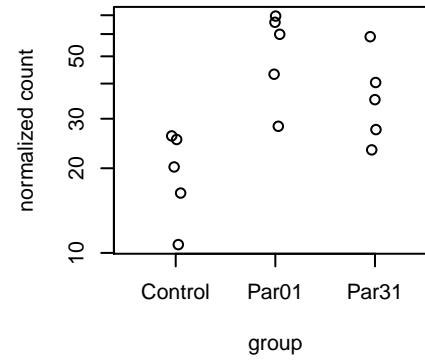
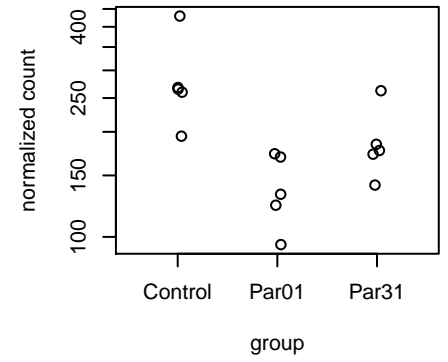
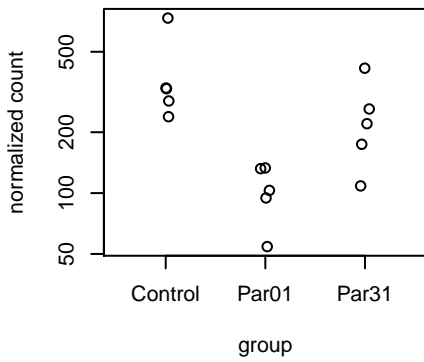
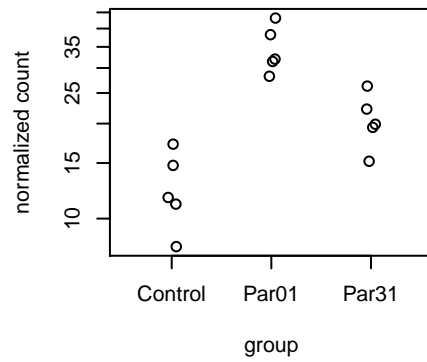
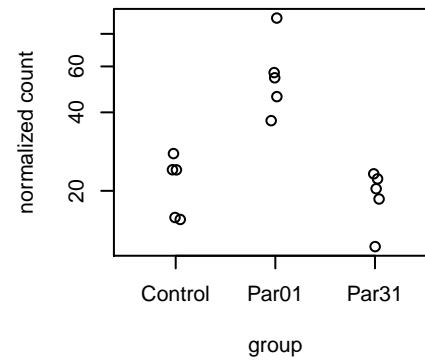
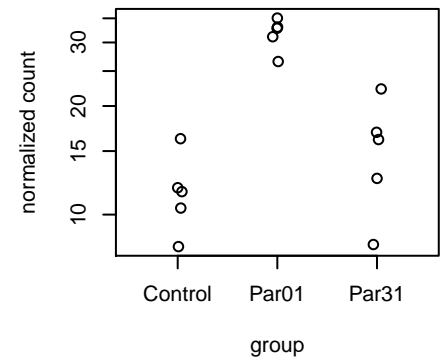
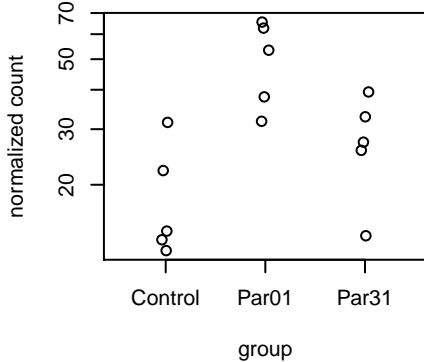
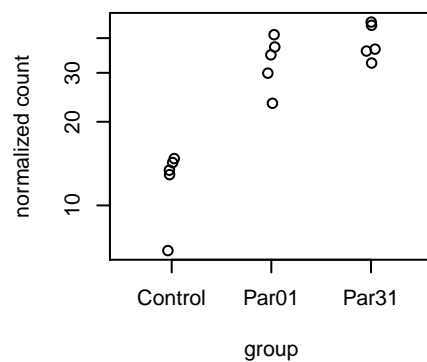
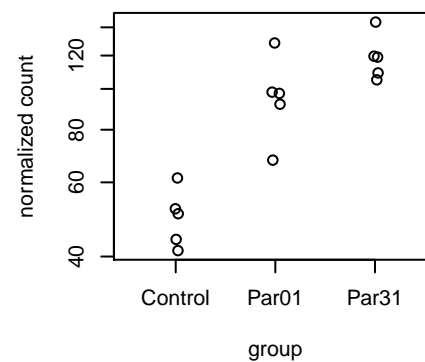
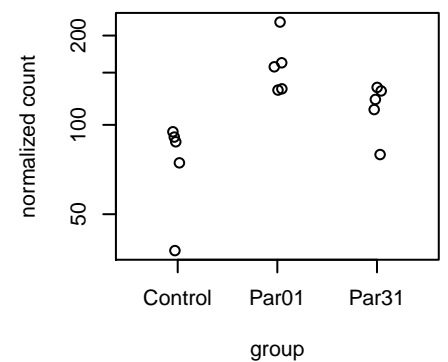


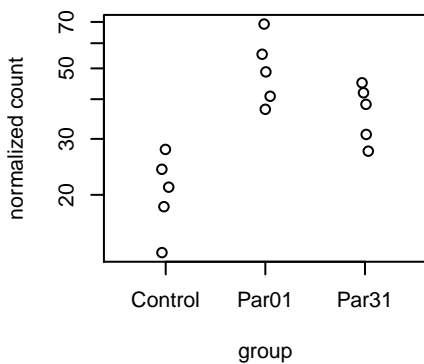
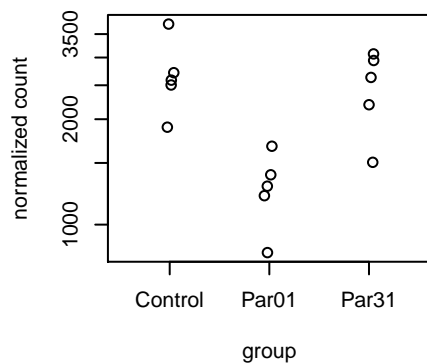
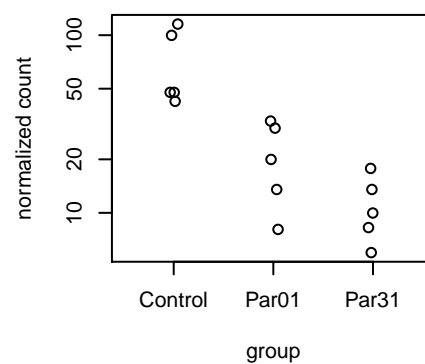
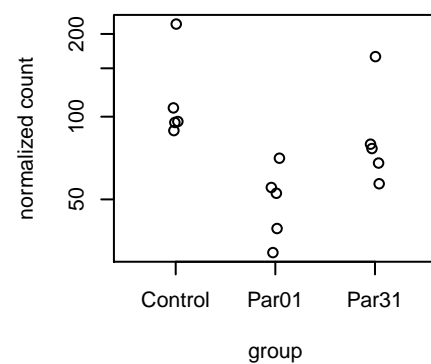
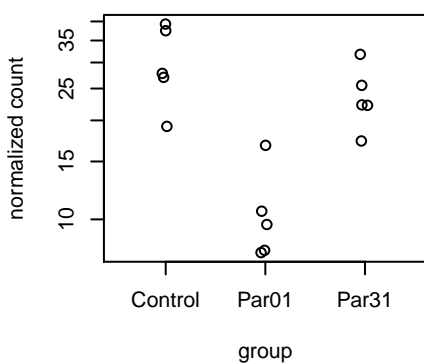
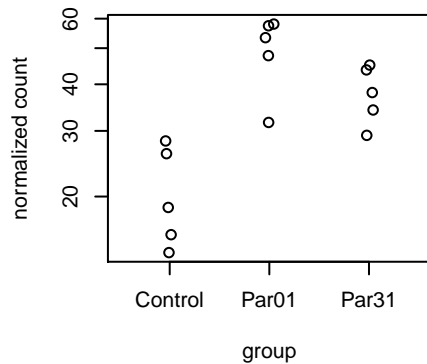
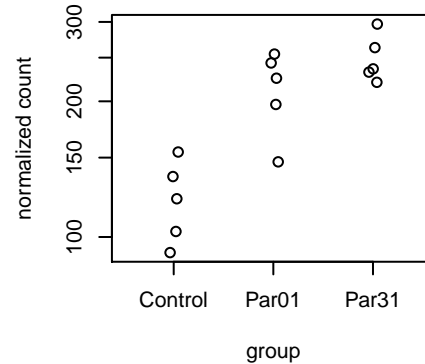
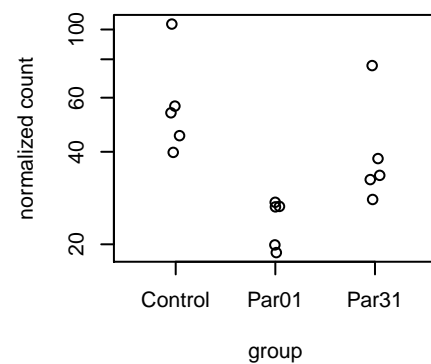
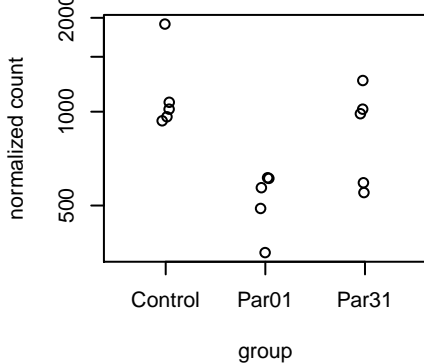
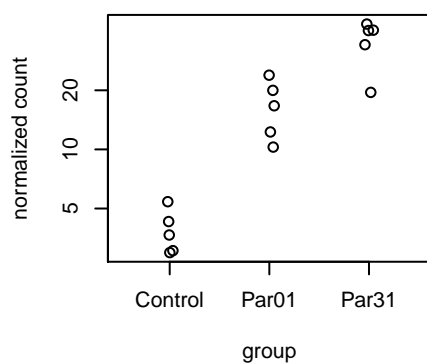
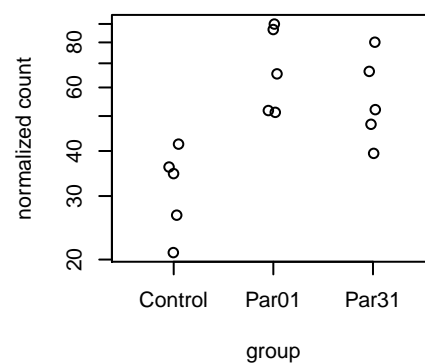
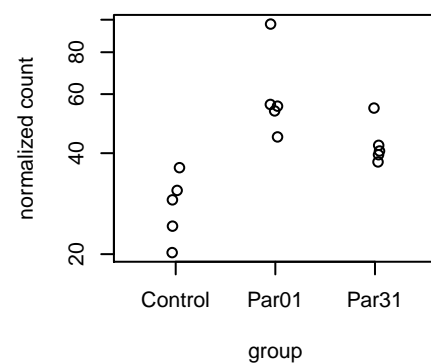
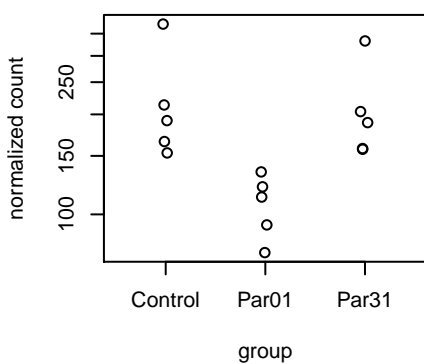
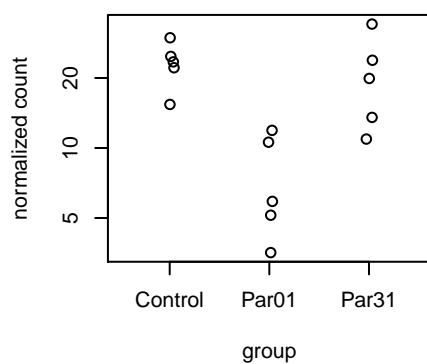
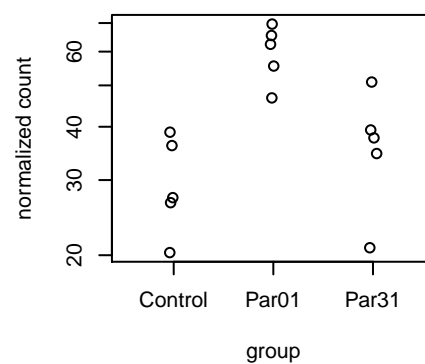
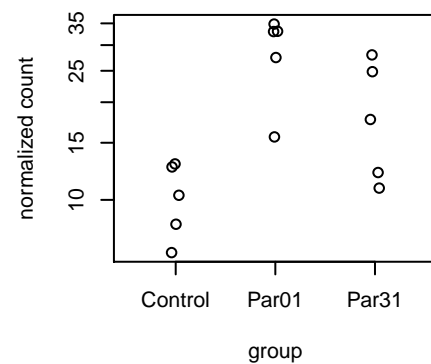
EDN1



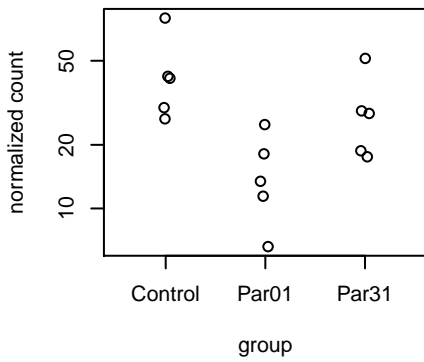
LINC02605



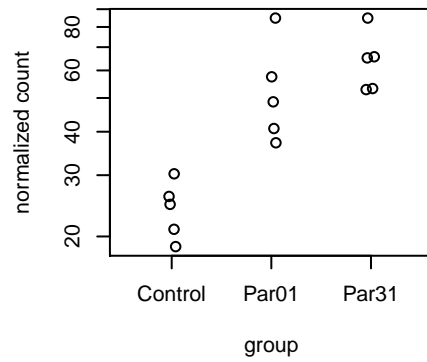
N4BP3**RPL36A****IL6****KIRREL1-IT1****C9orf152****IL1A****AC092168.2****LANCL3****HSPA6****DDX47****ATOH8****MIR221****EGR2****AC093525.8****AC132872.4****VGLL3**

DFFBP1**EPHB3****MT-TP****NWD1****ZFP2****MIR34AHG****RPL32P3****AC108676.1****CCNG2****GPR37L1****LINC00472****SERPINB2****CSGALNACT1****RHOH****EID3****AC021945.1**

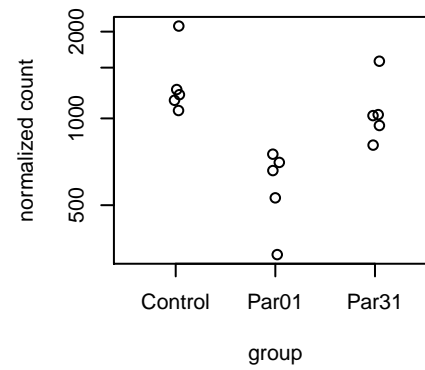
PKDCC



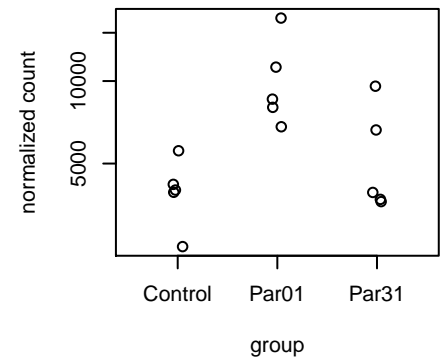
LINC00944



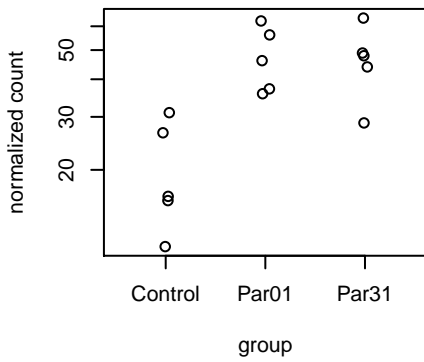
AC018978.1



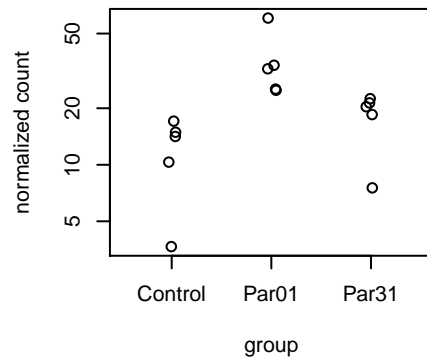
CCN1



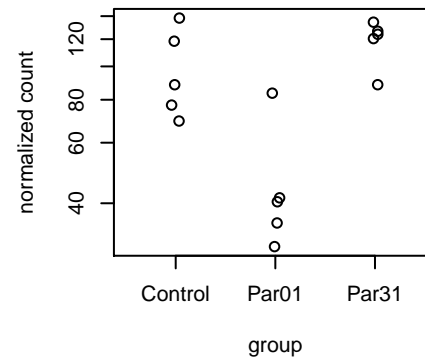
VARS2



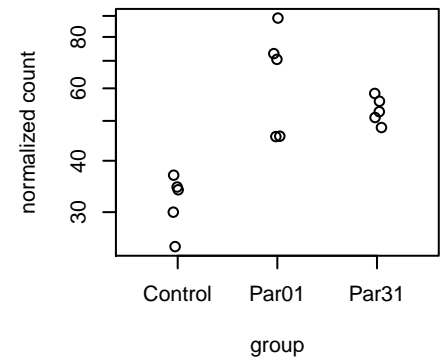
AC008264.2



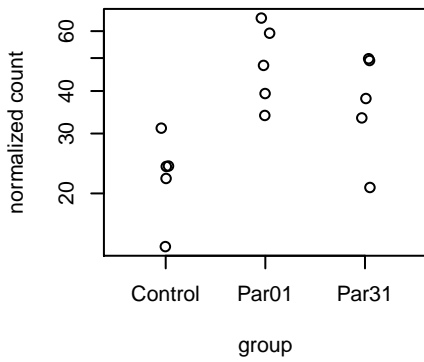
DLL4



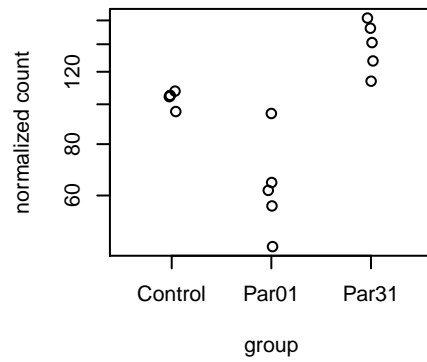
U2AF1



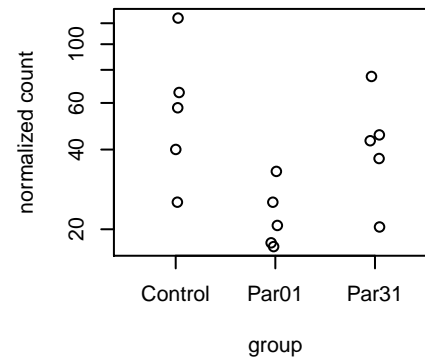
NEXN-AS1



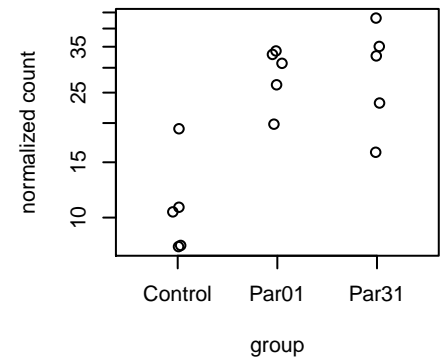
NR6A1



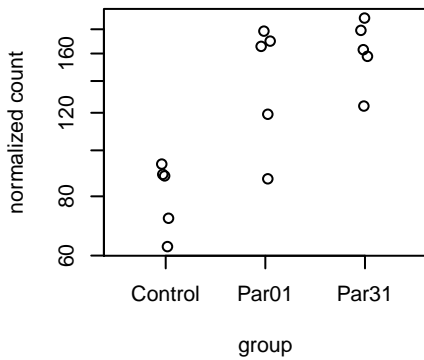
THSD7A



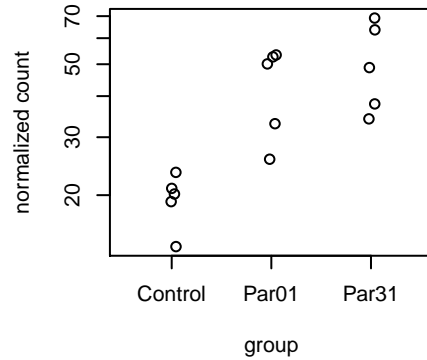
AC022400.7



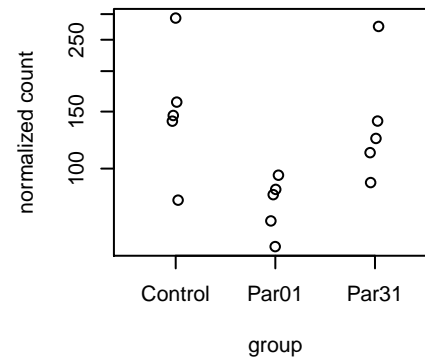
LTB4R2



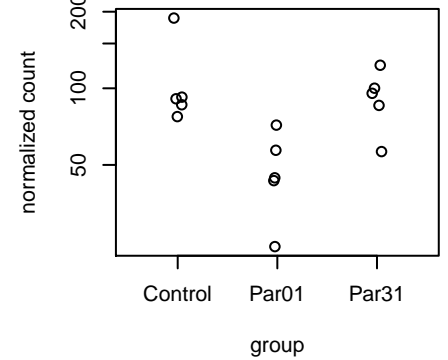
AL121845.1



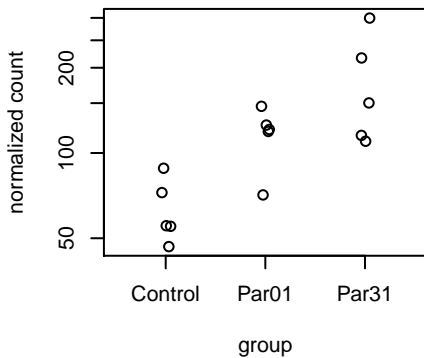
MYB



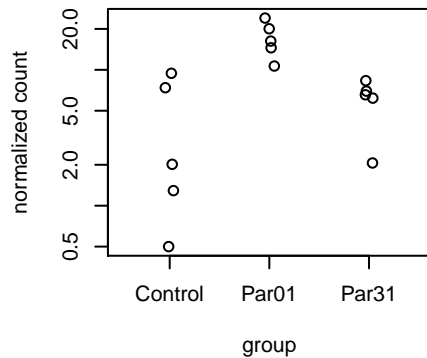
GRID2



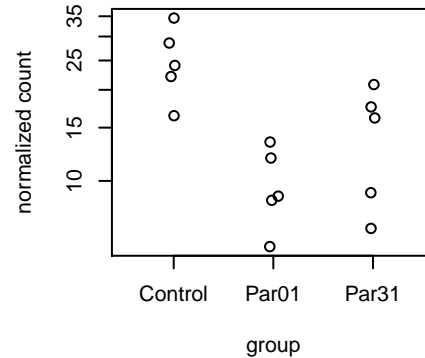
AMH



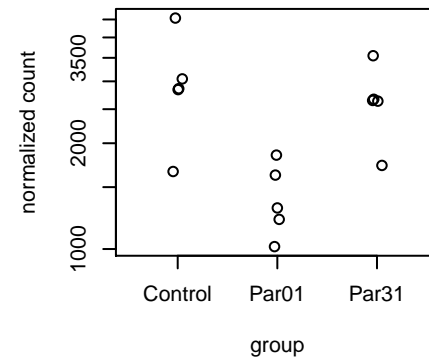
AC039056.2



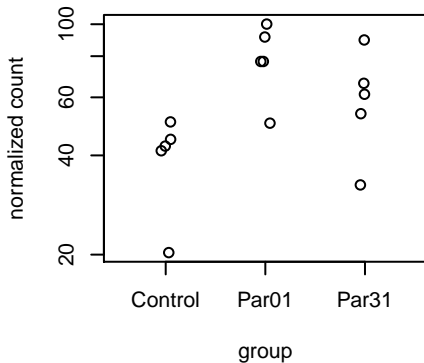
AC092040.2



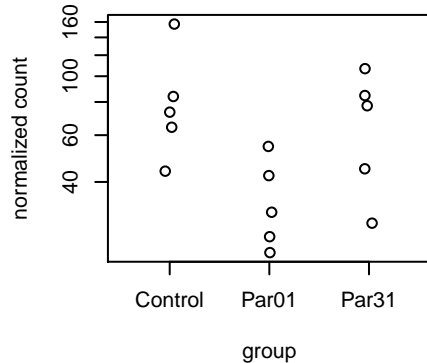
CHRM3



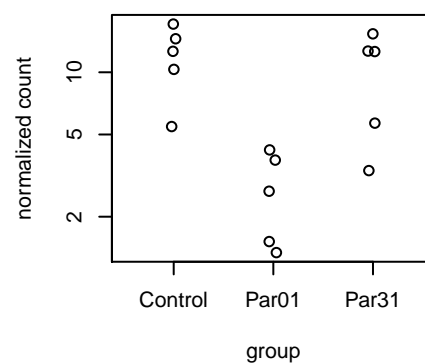
PRR22



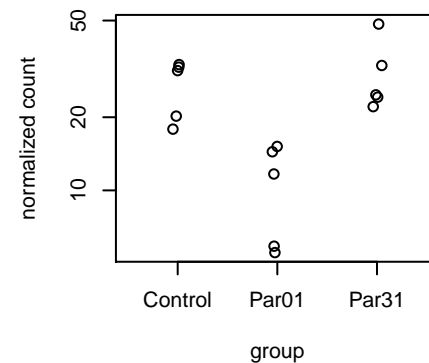
VAV3



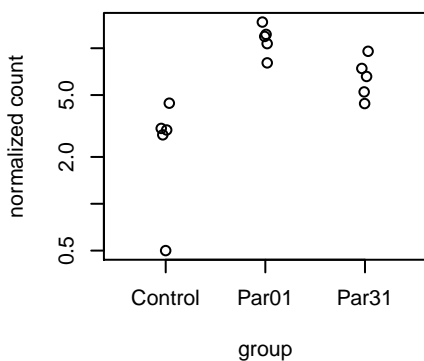
AC132153.1



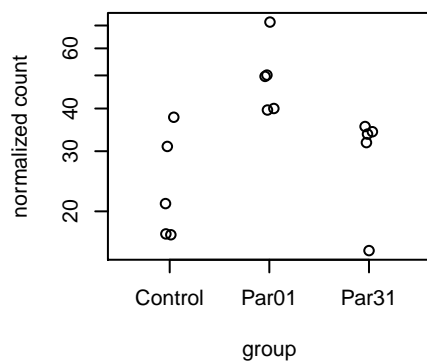
AC009283.1



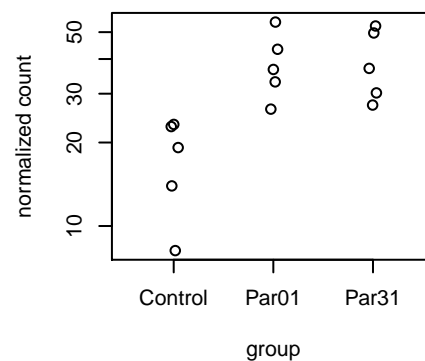
AL138689.1



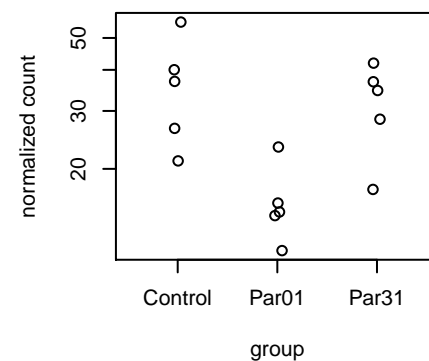
MIR25



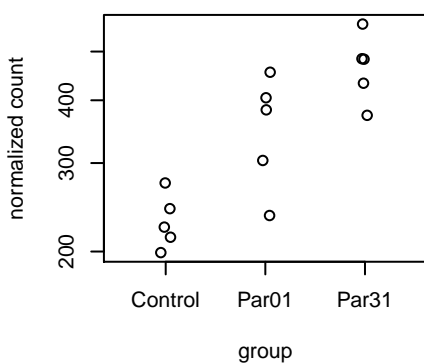
MRPS24



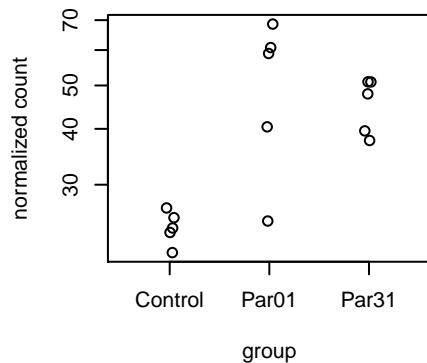
FOXQ1



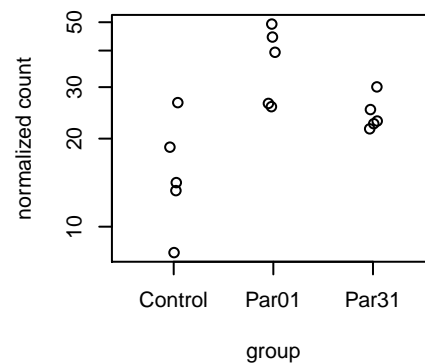
SH3BP5-AS1



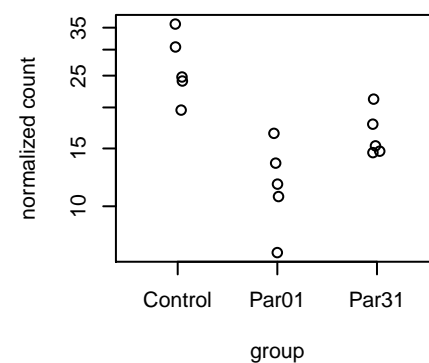
SPNS1



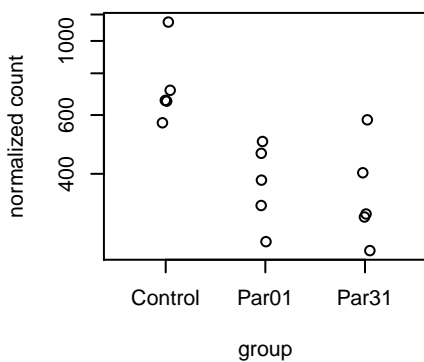
HAUS7



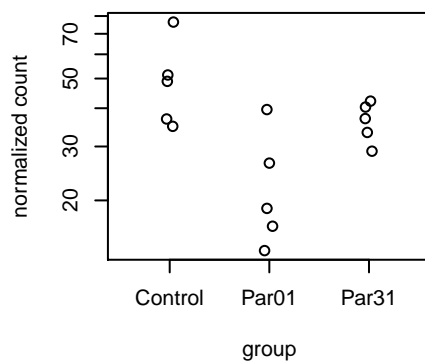
AC003072.1



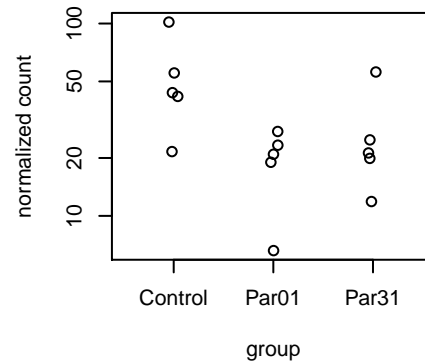
CCDC141



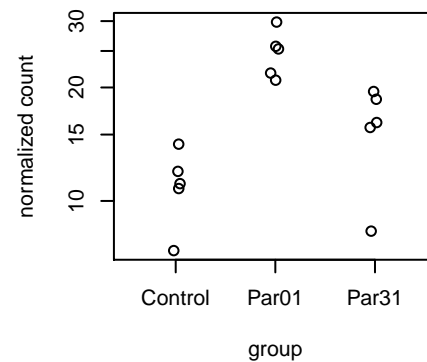
AC004980.5



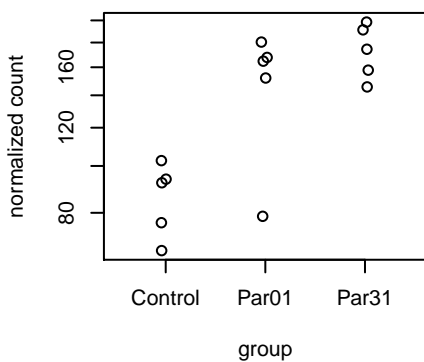
AL391844.1



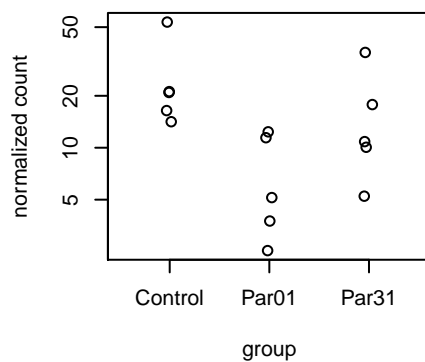
LINC01465



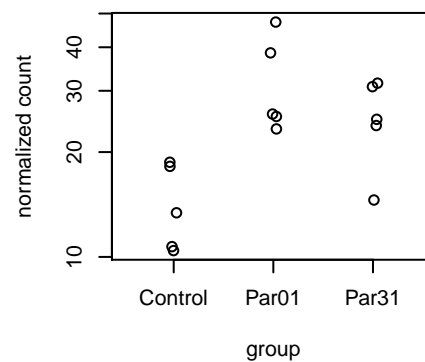
MIR29B2CHG



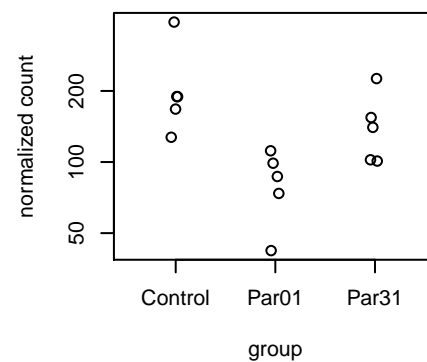
HSD17B13



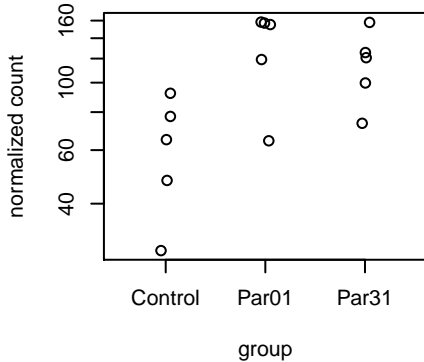
SCHIP1



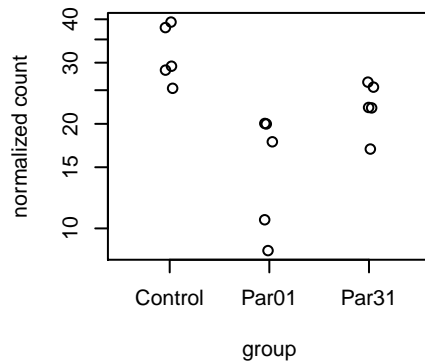
SLC2A12



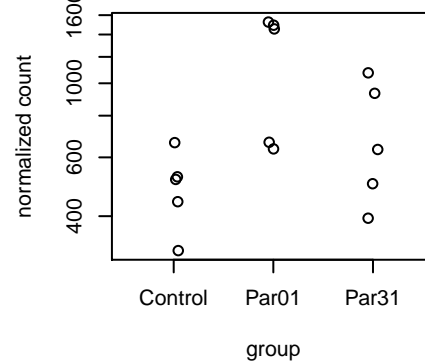
AC138932.1



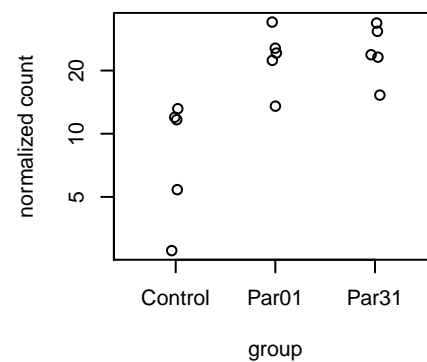
C1QTNF3



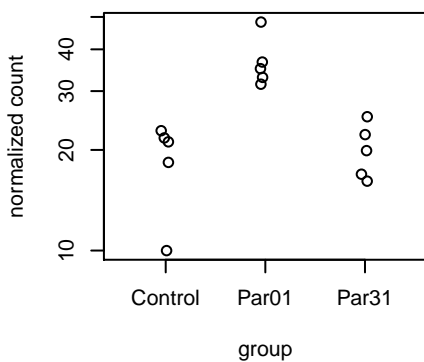
AC021066.1



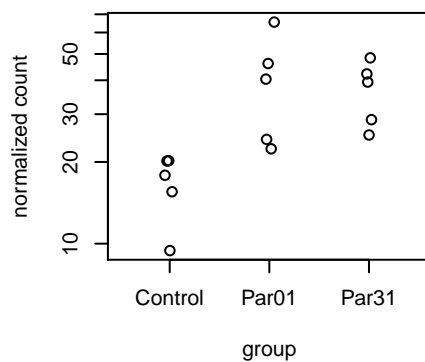
MIR429



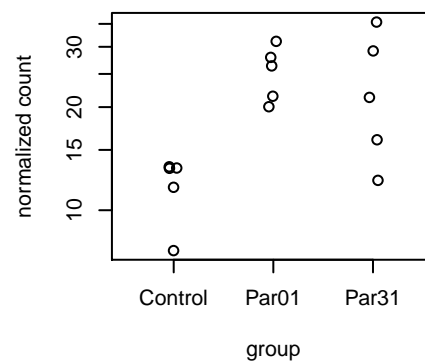
FAM172BP



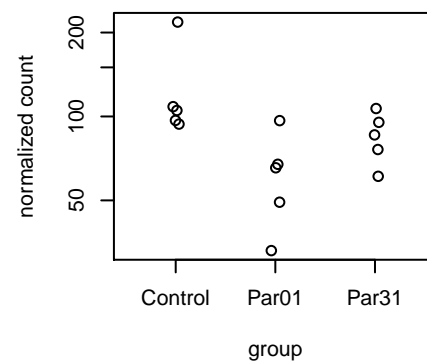
EBLN2



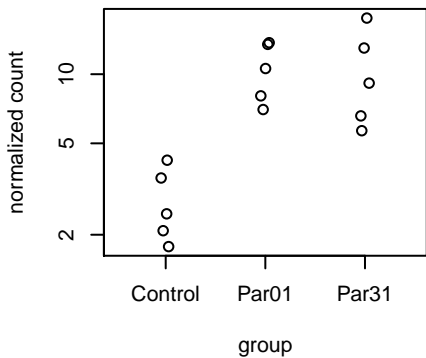
SNORA71B



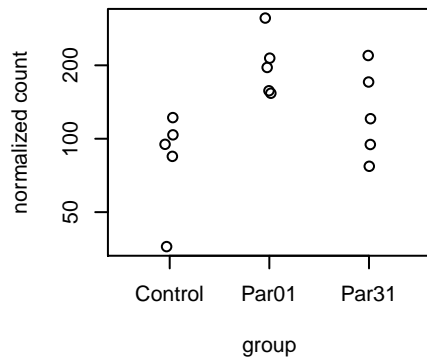
AC004980.3



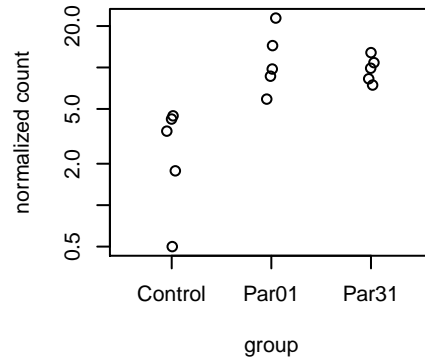
GBP5



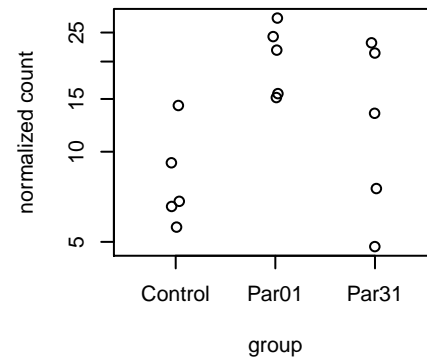
ADAMTS6



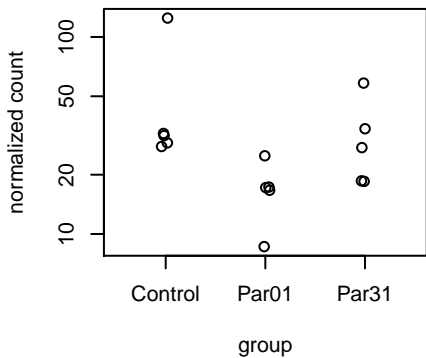
MIR200A



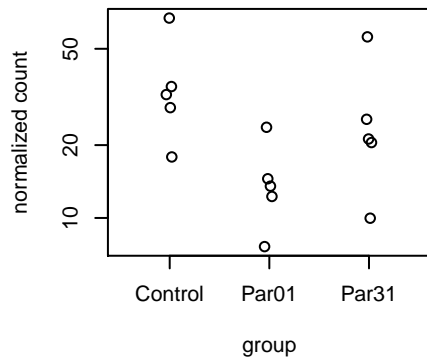
LINC02728



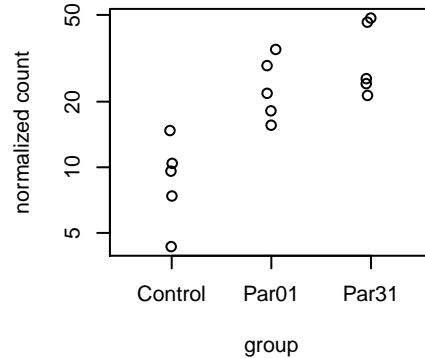
EYS



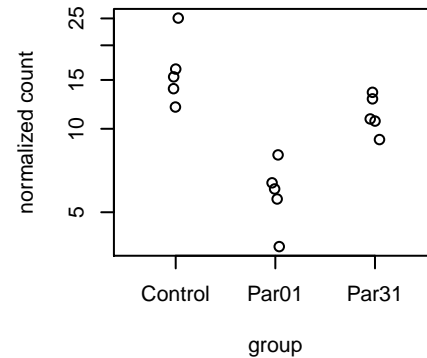
DACH1



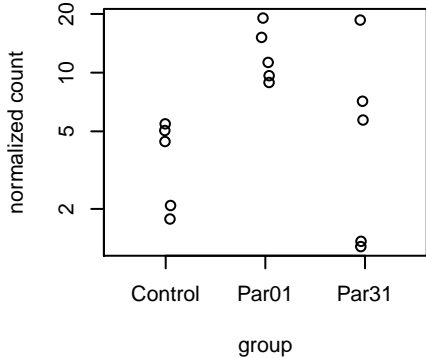
PSMD6-AS2



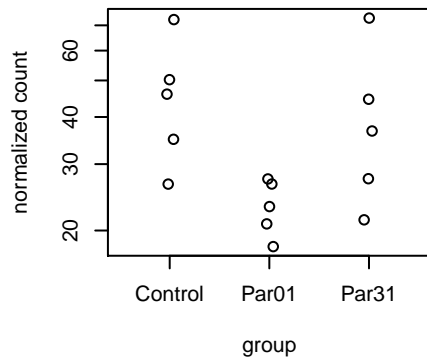
AC107214.2



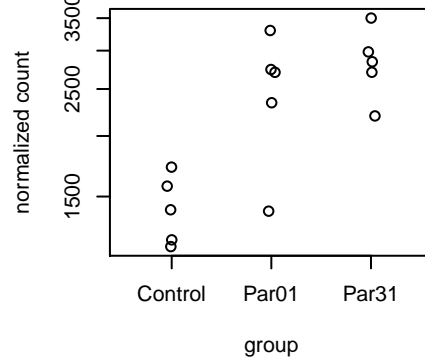
HSPD1P11



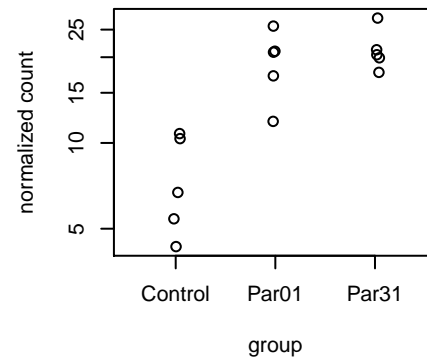
ZNF233



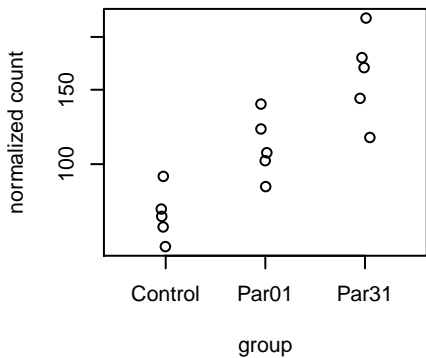
RNF207



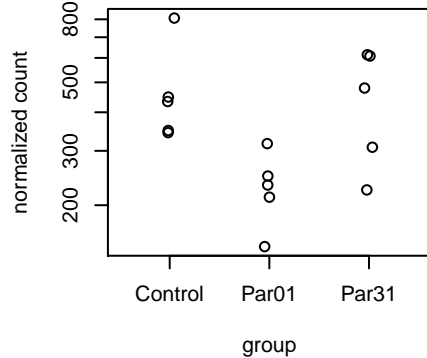
AC090181.3



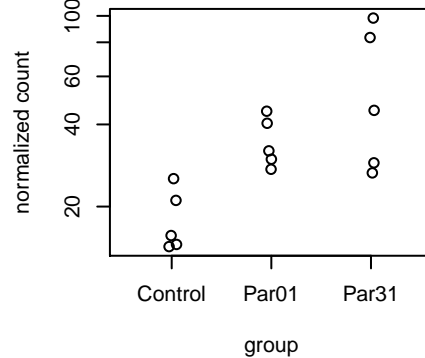
KMO



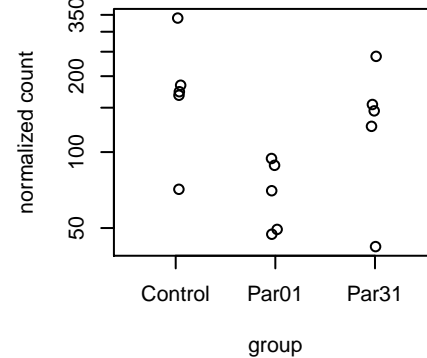
RASD1



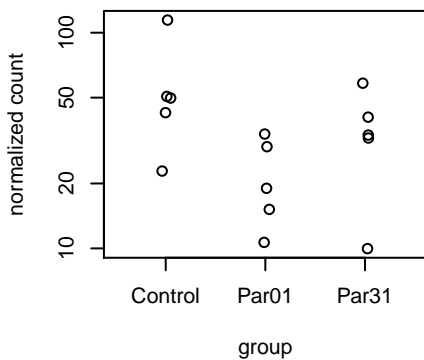
NGFR



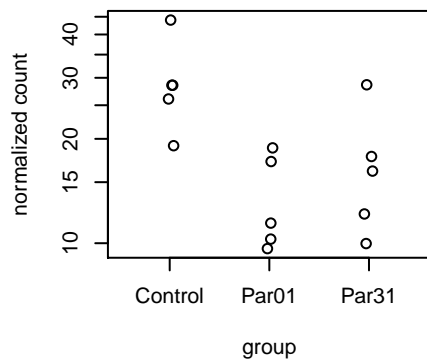
CADM2



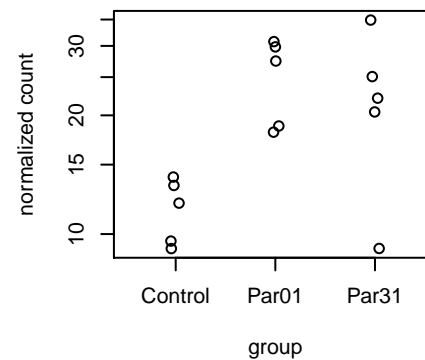
AC023310.4



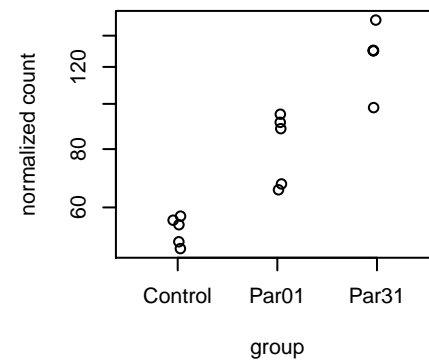
MIR2052HG



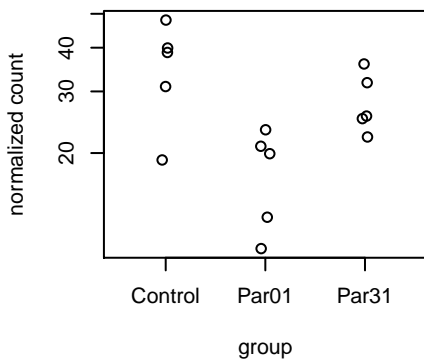
NEURL3



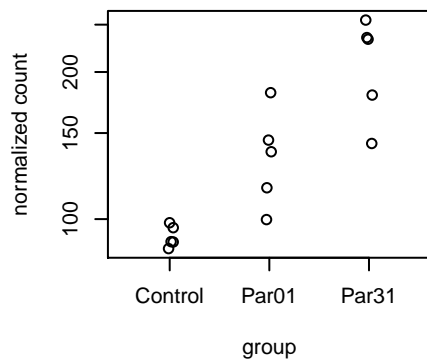
DAPP1



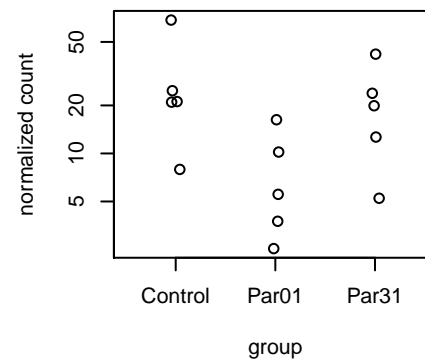
AC015660.1



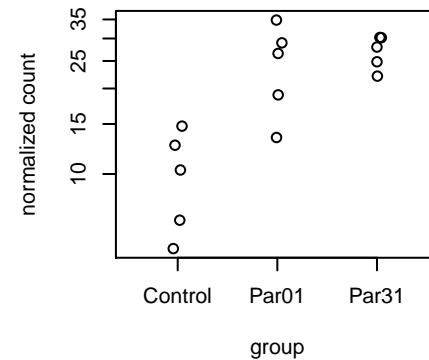
GBP1



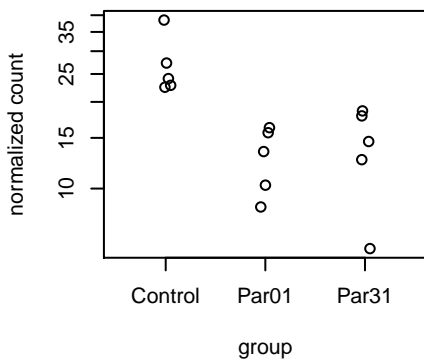
KCNJ3



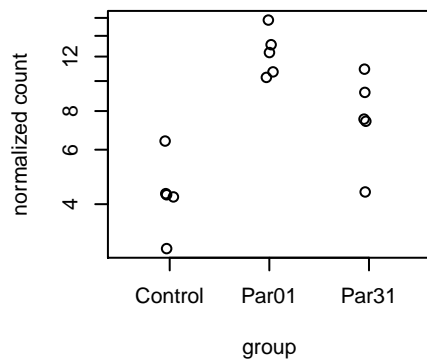
RNU6-26P



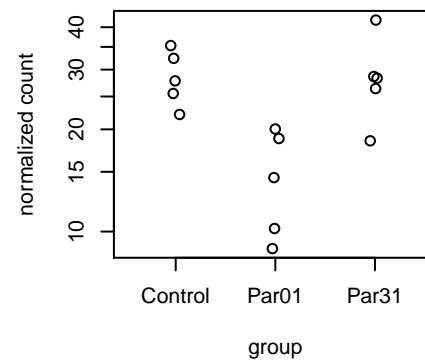
ABCB11



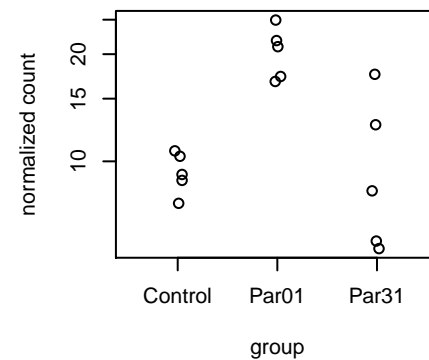
AC146507.3



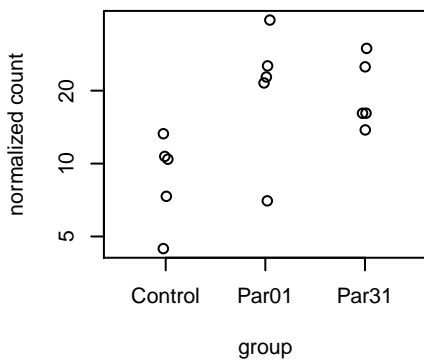
FAM78A



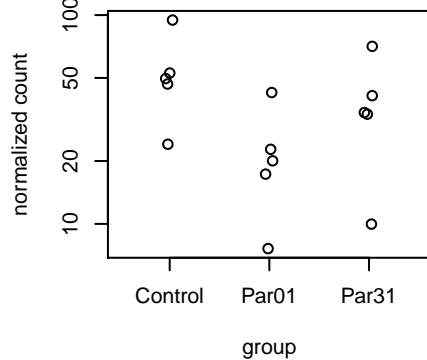
KRTAP1-5



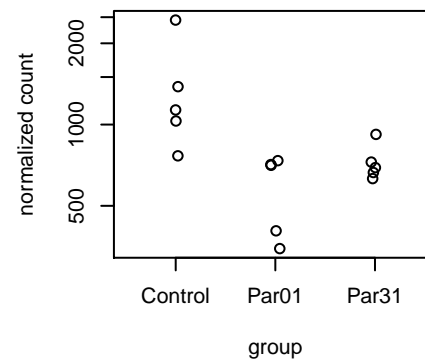
SLC16A6



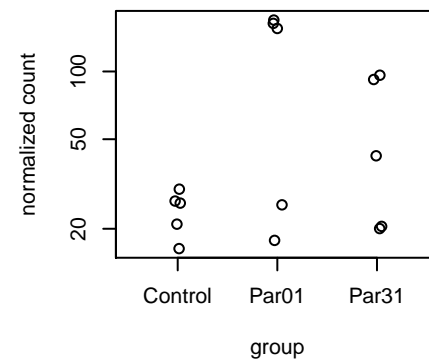
SH2D1A



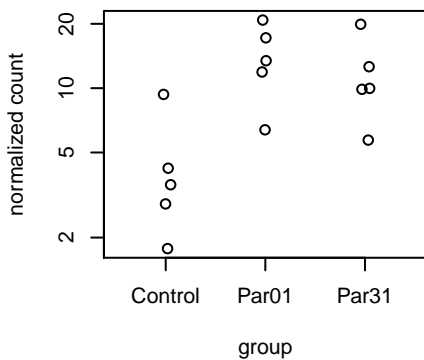
TTN



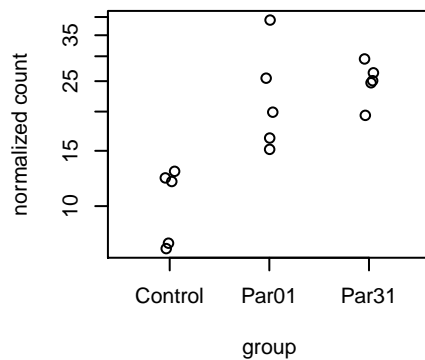
KRT83



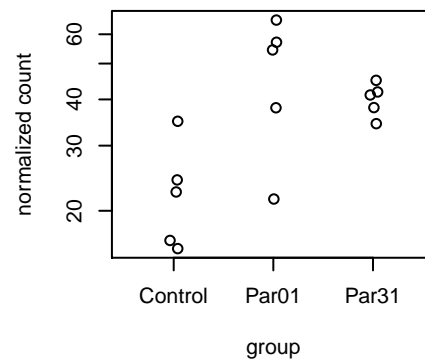
AC136604.2



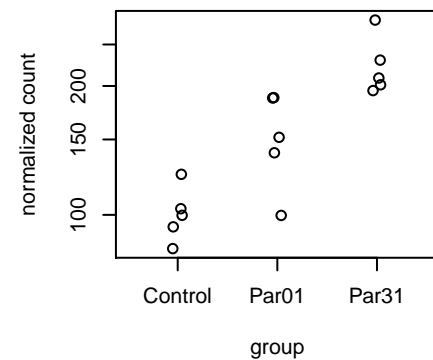
AC108704.2



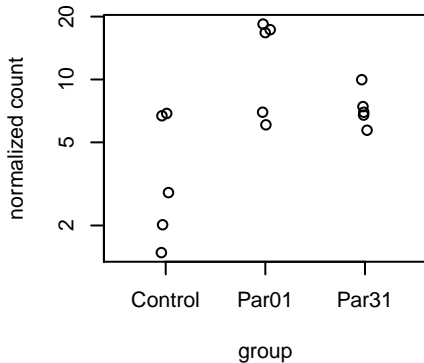
INE1



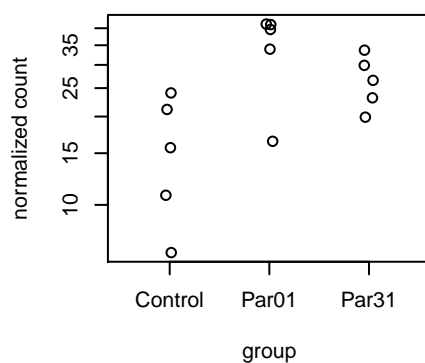
SLC25A25-AS1



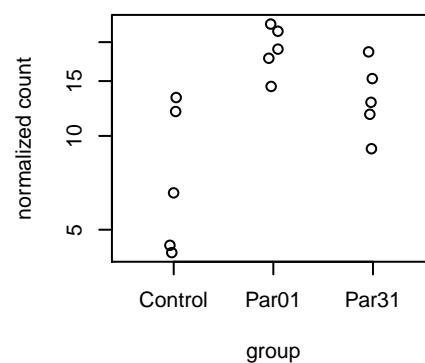
ATOH7



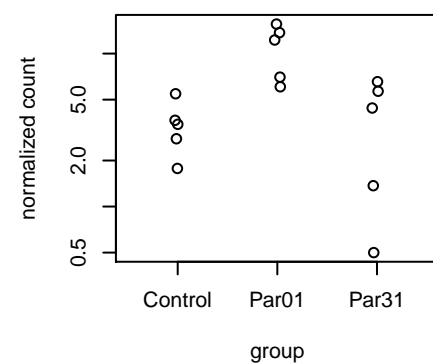
MORF4L2-AS1



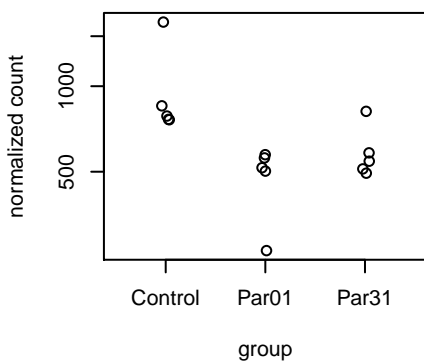
AC007256.1



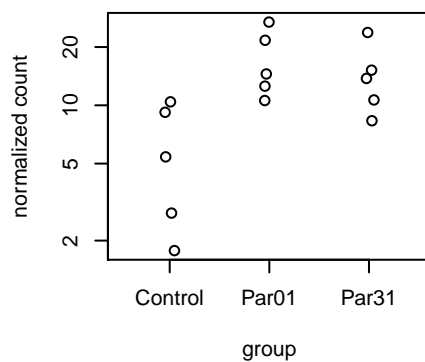
AC008514.2



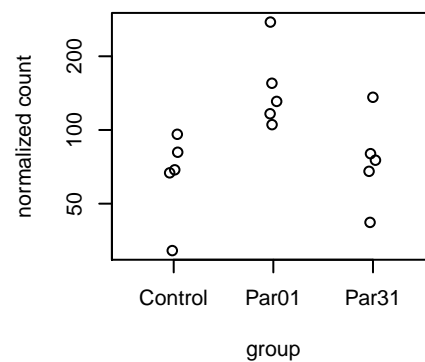
PLD1



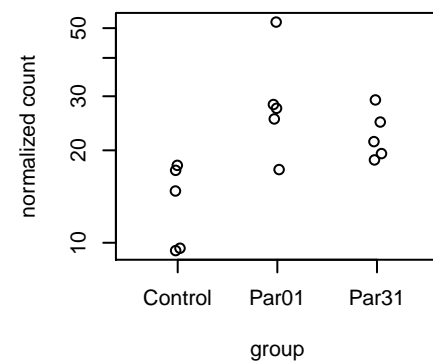
MIR590



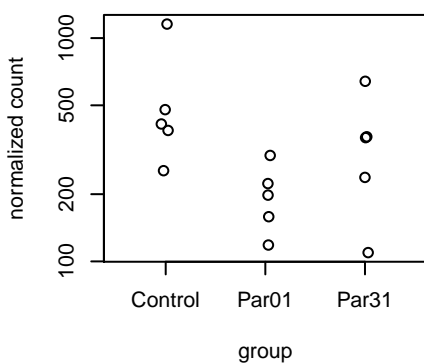
S1PR1



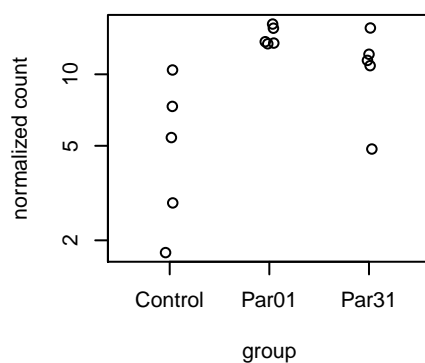
AC022211.2



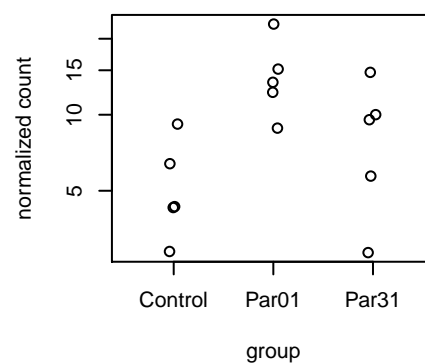
TENT5C



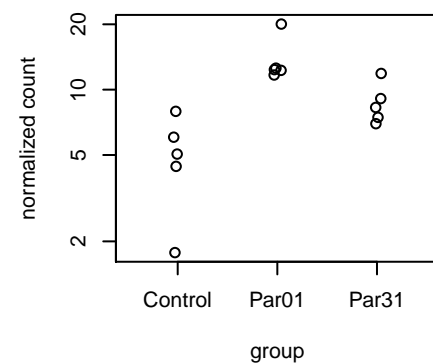
SLC7A5P1

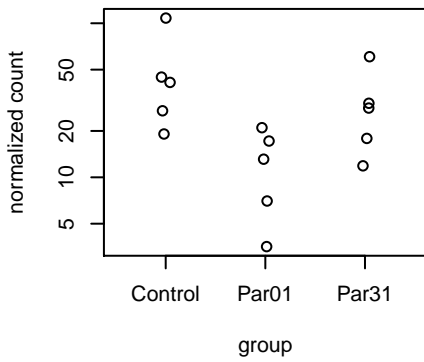
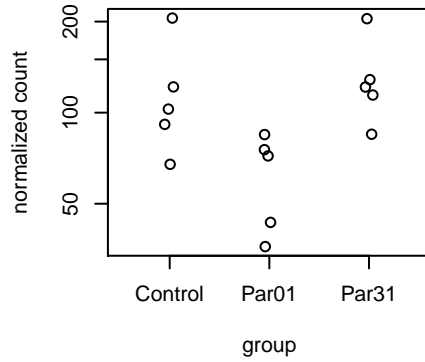
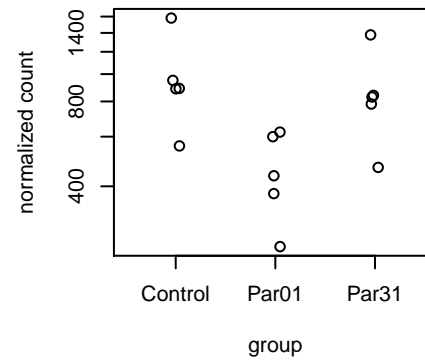
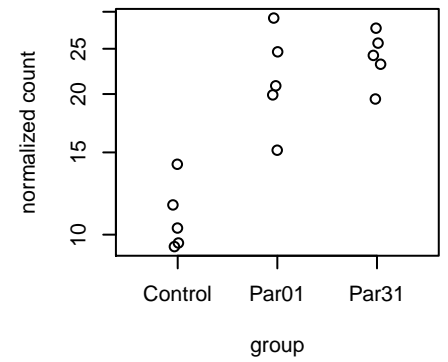
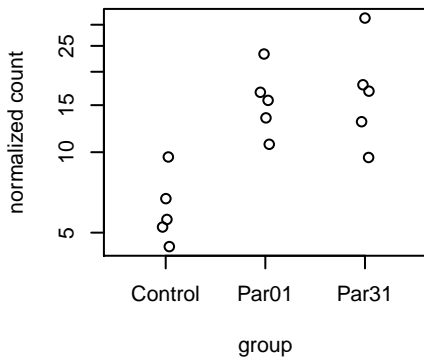
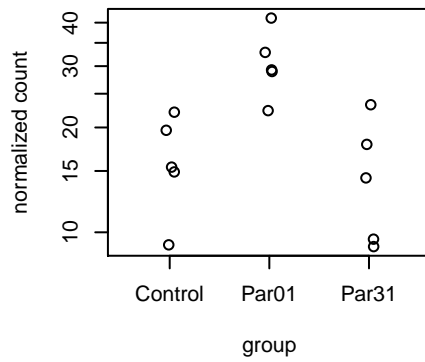
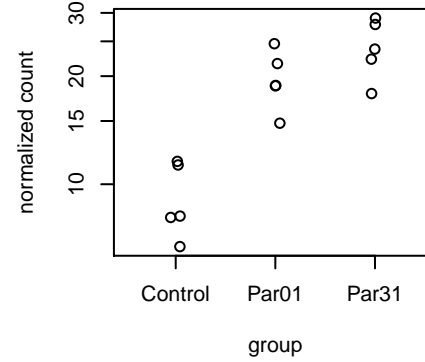
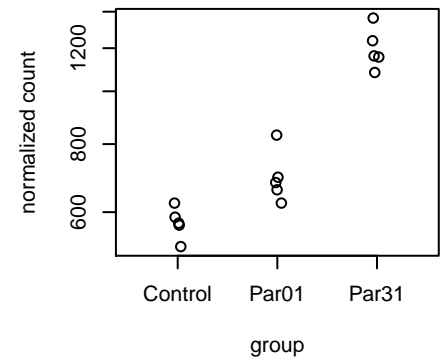
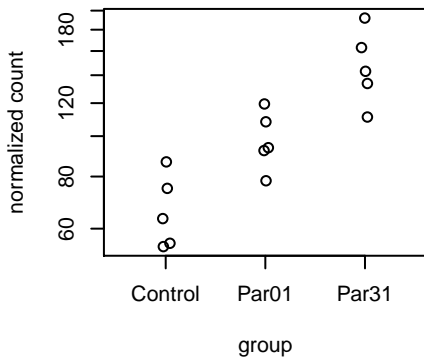
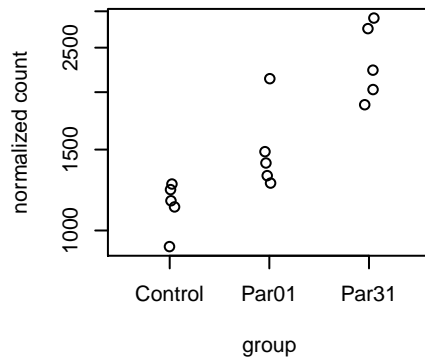
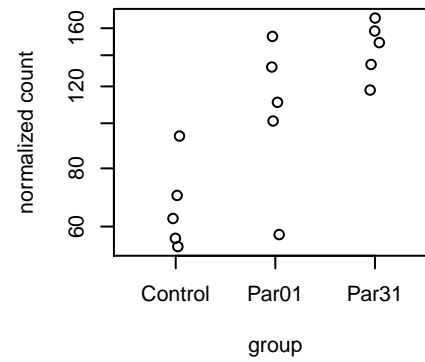
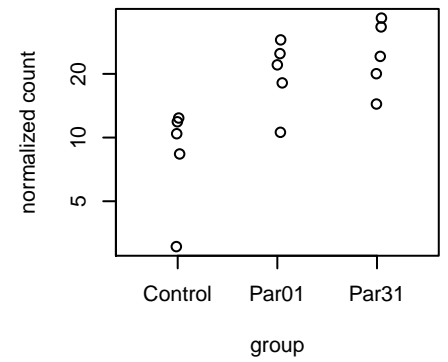
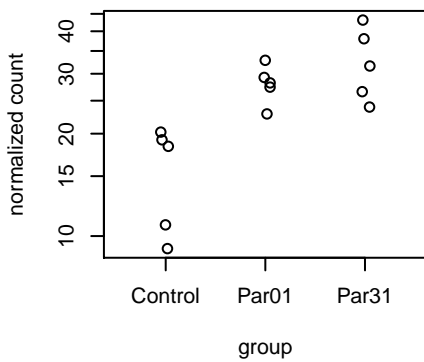
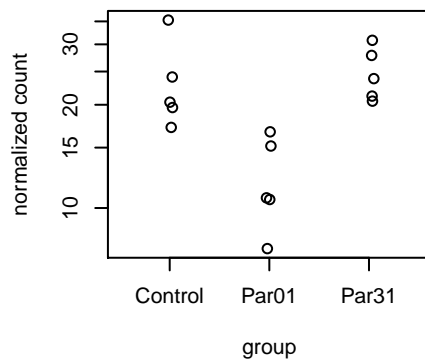
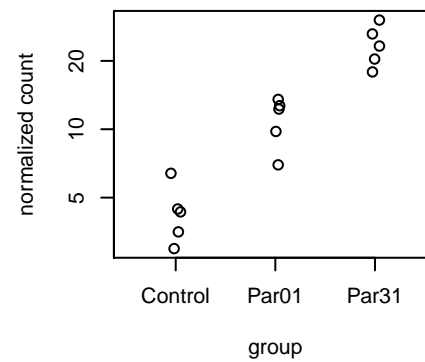
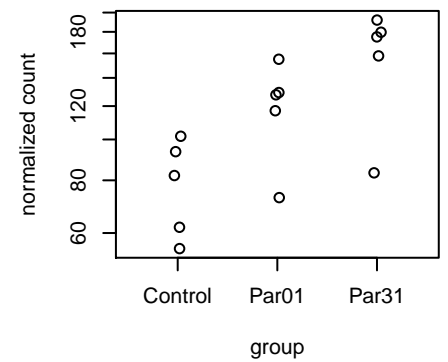


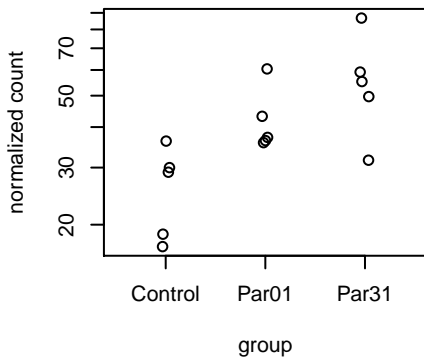
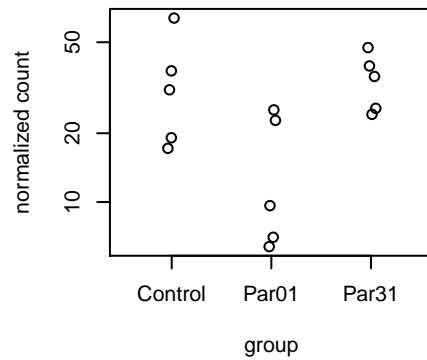
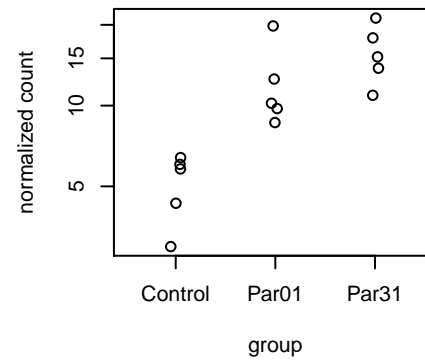
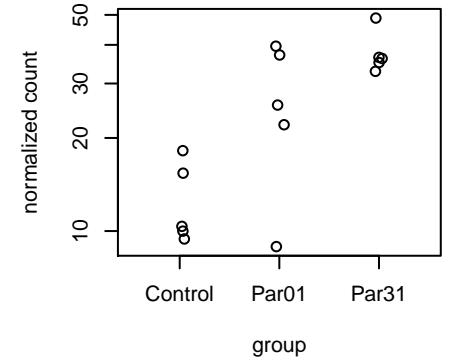
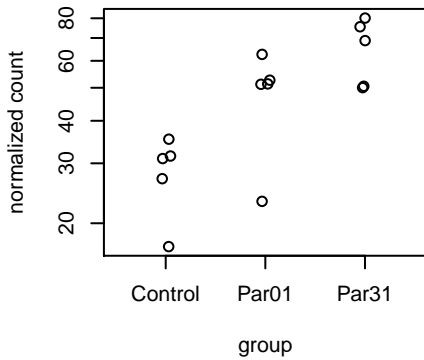
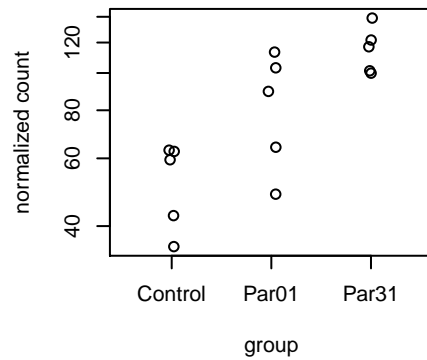
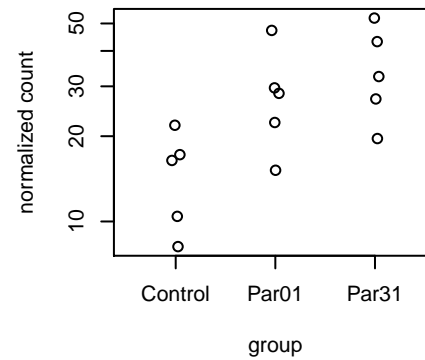
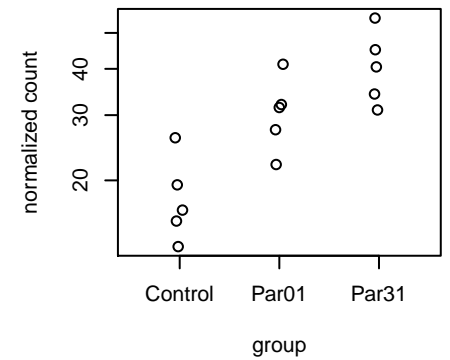
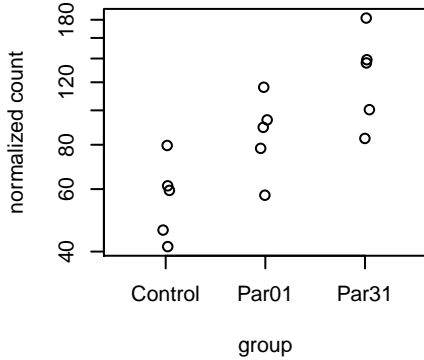
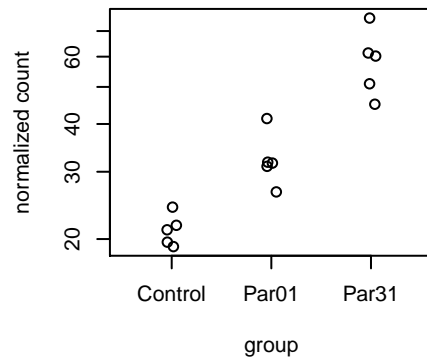
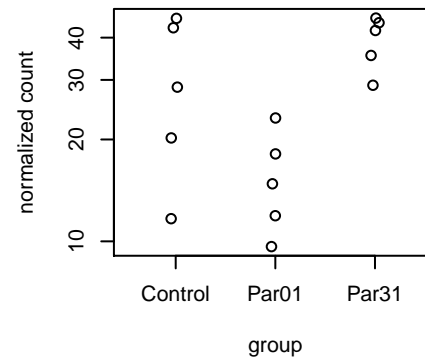
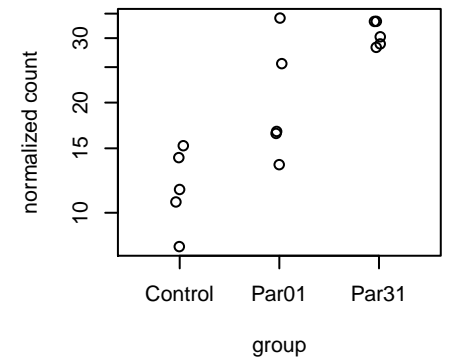
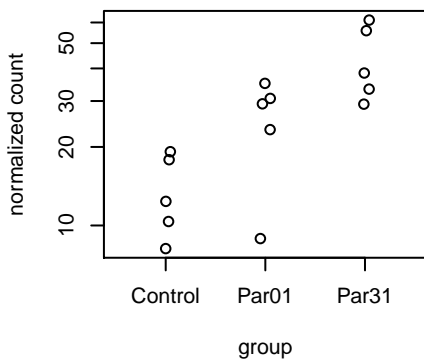
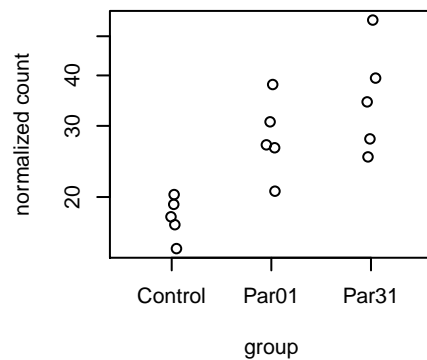
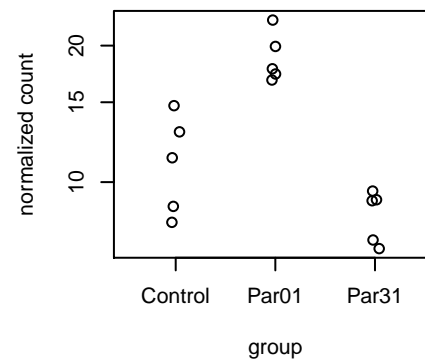
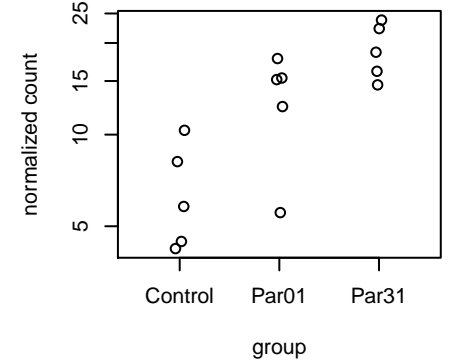
AL596325.2



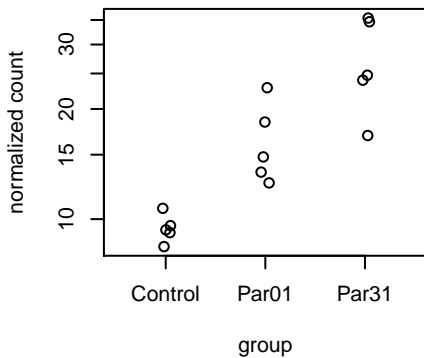
TLR4



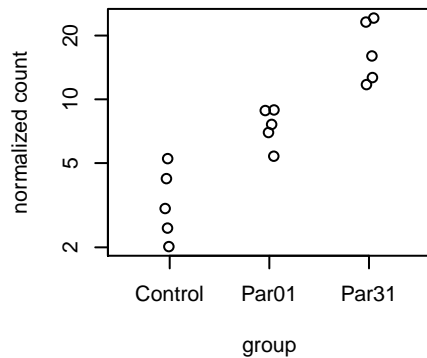
HSPA7**ARHGEF38****B3GALT1****GATM****RRAD****AC018628.2****LINC01126****ABTB2****VNN1****SLC30A1****AC084125.2****AC135048.4****NDUFV2****CD96****ICAM4****KCNAB3**

C15orf48**DOC2GP****AC135050.5****STX16-NPEPL1****AC120114.3****HYPK****AC090607.2****AC040162.1****RHBDL1****AC132872.3****C2orf66****AL356801.1****AC012531.1****SNX15****MIR589****AC233992.2**

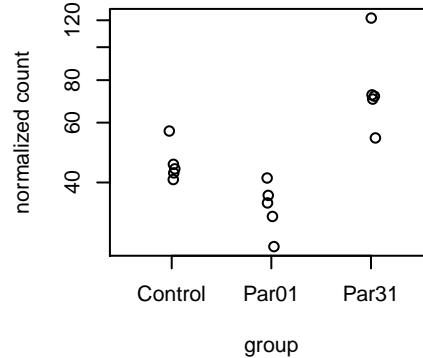
ITGAM



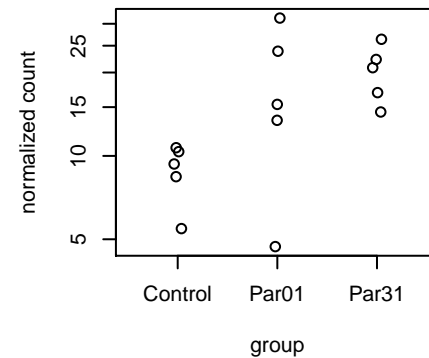
AKR1B15



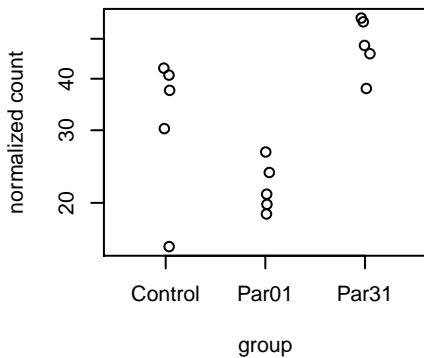
AC010247.2



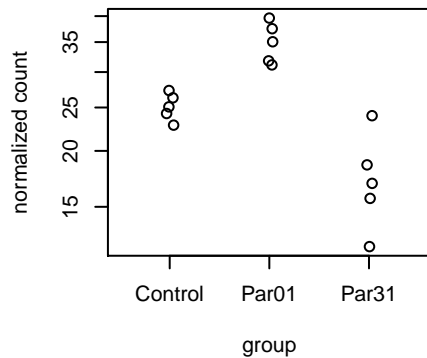
AC234782.2



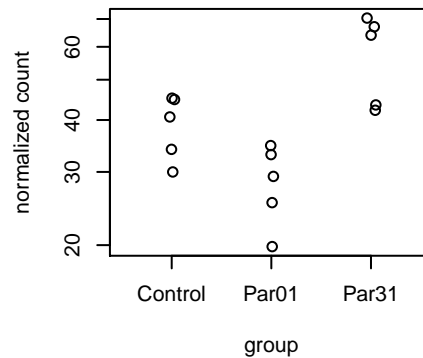
AC135506.1



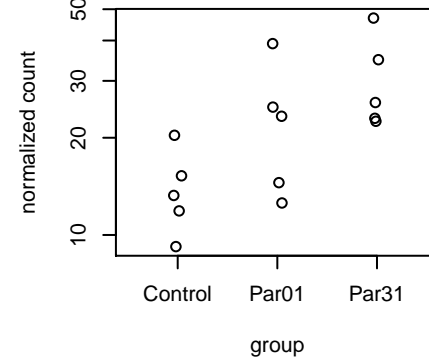
ID4



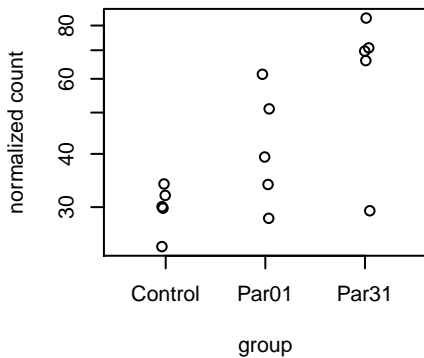
GPR35



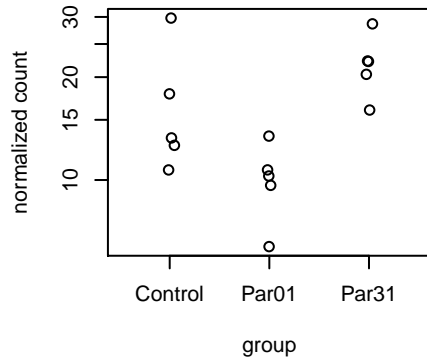
CTSS



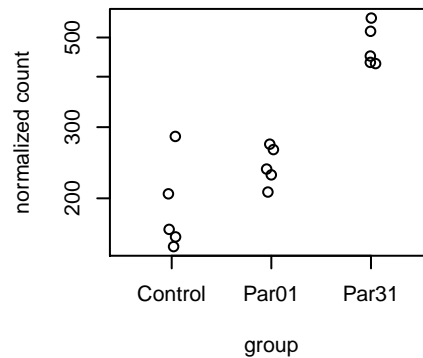
AC115284.4



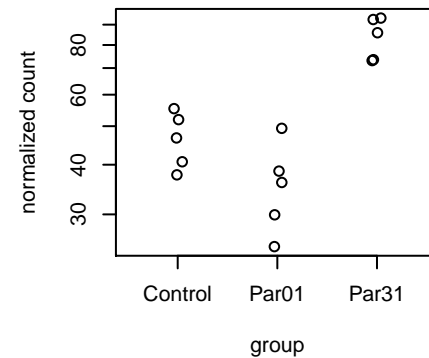
LINC02320



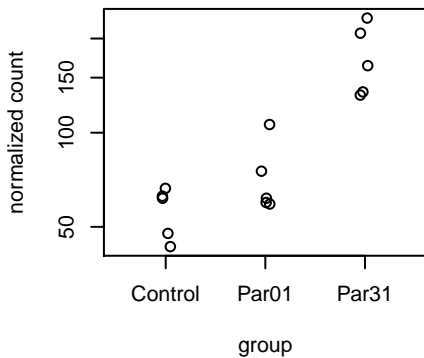
ICOSLG



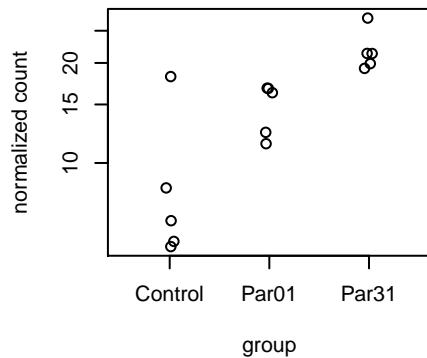
APOL3



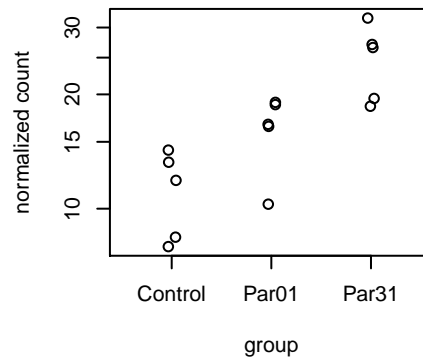
NECAB1



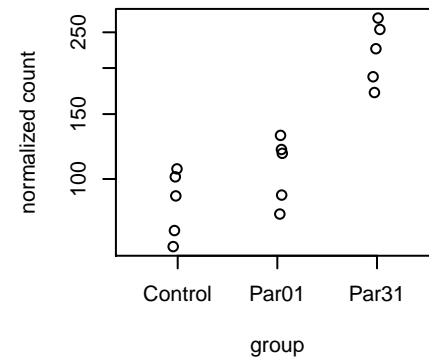
AL138889.3



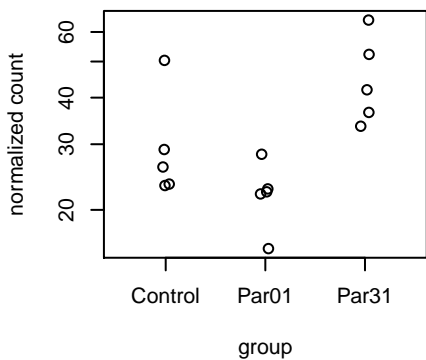
POU5F1



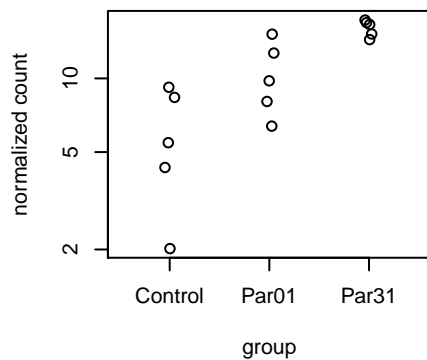
FP565260.3



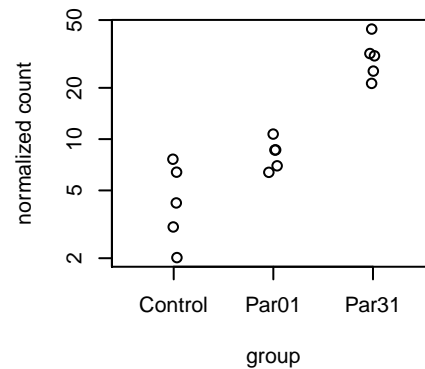
SORBS2



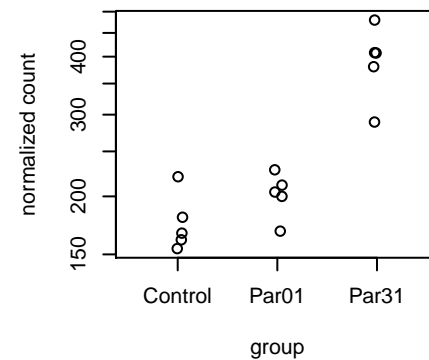
BTBD19



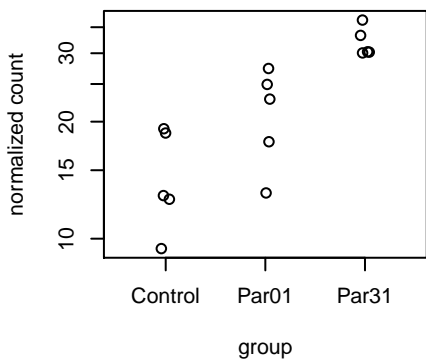
AC083837.1



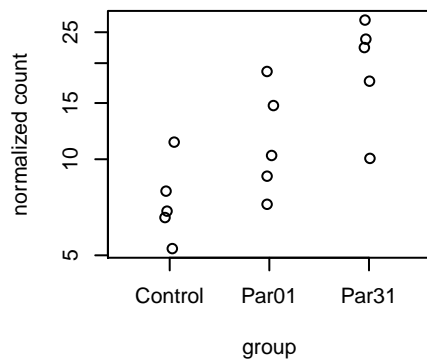
TNFRSF9



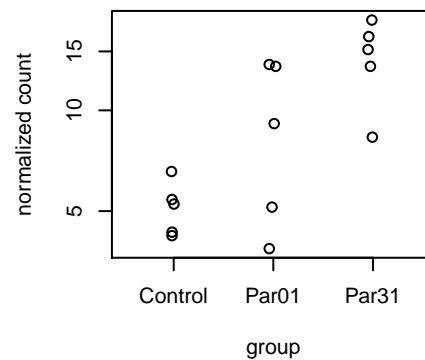
AL049795.1



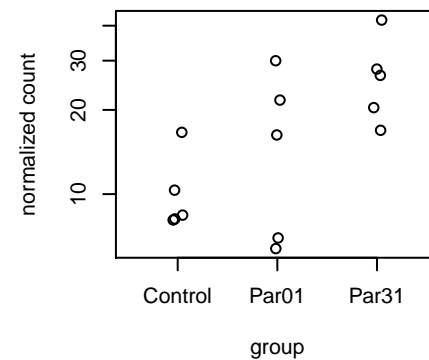
C11orf91



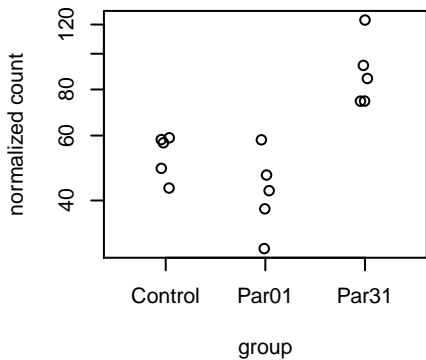
ADAMTSL4-AS1



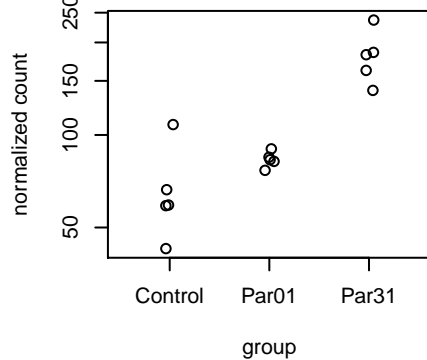
AC061975.8



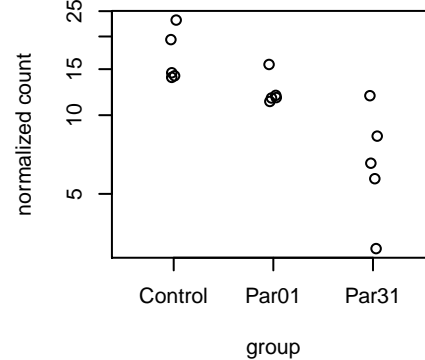
TMEM217



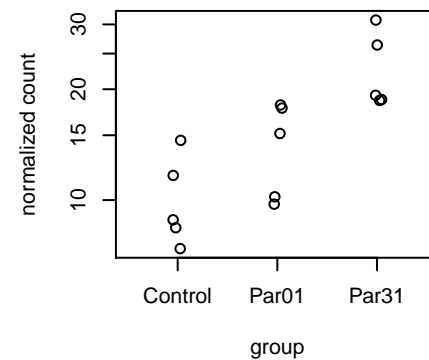
GBP4



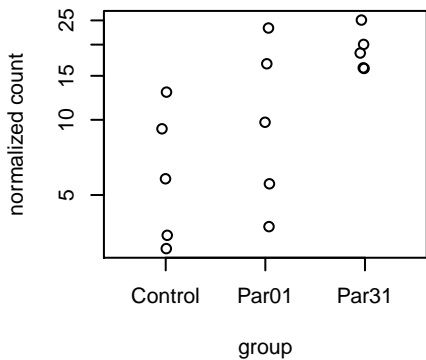
BLID



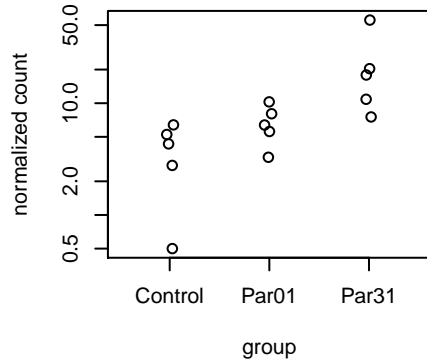
MEOX1



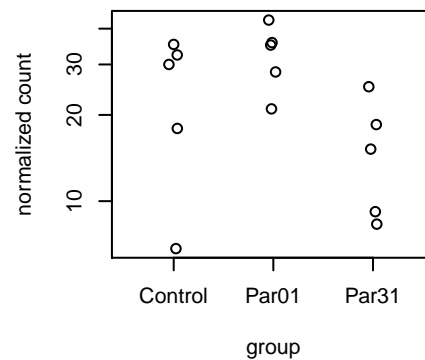
AC068946.1



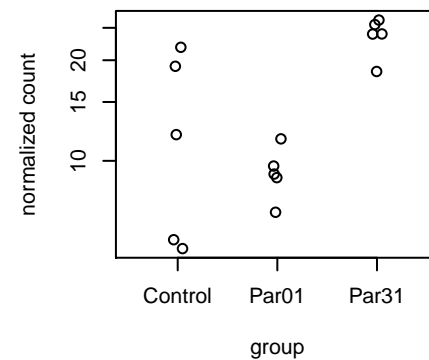
NPIP13



UCN2



AC093928.1



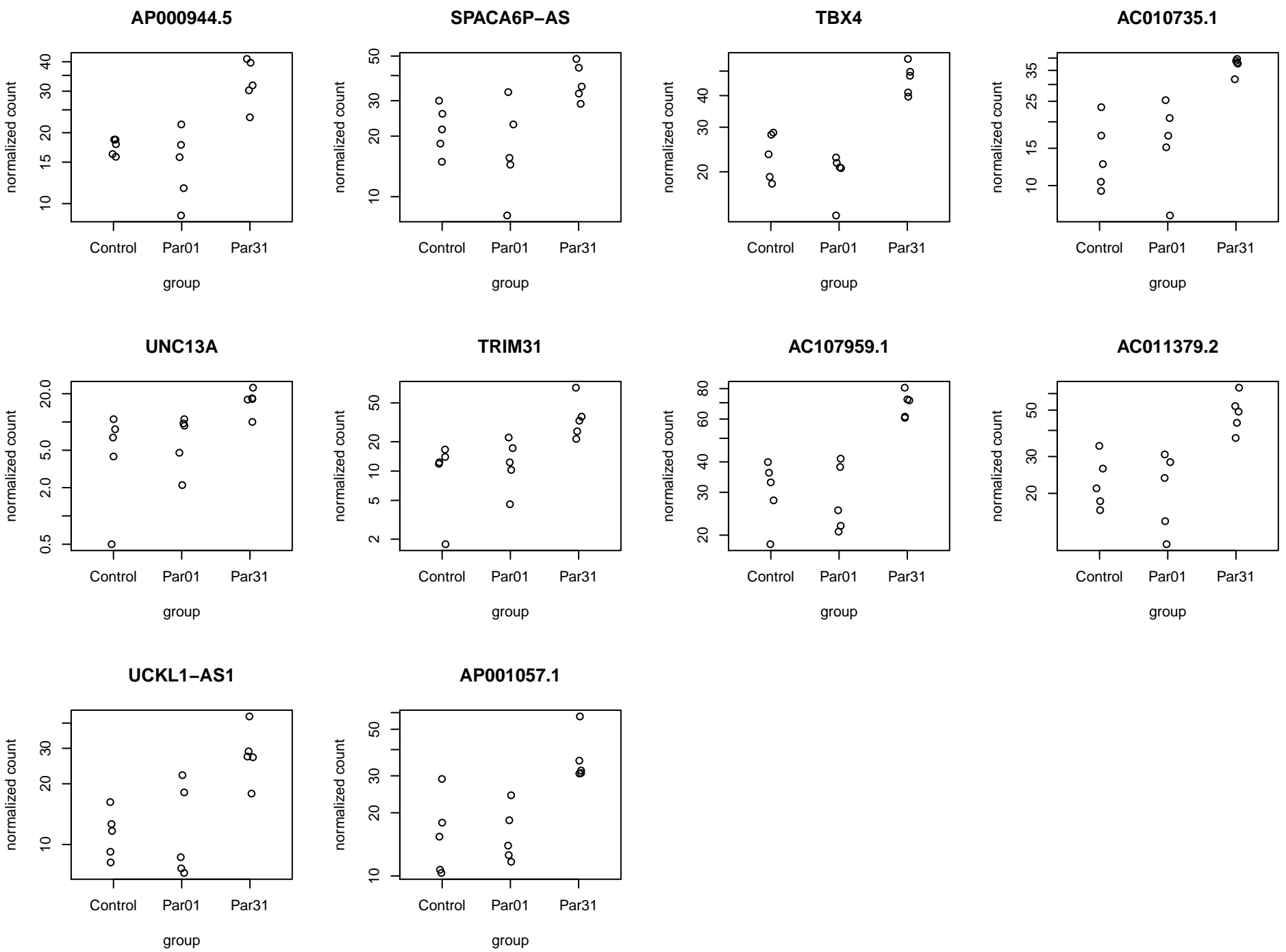


Figure S2: Boxplots of all 298 genes differentially expressed in the PC-3 PF RNAseq experiment.



Figure S3. Experiment hardware setup. **A:** Airbus 310 aircraft used for the 34th DLR parabolic flight campaign. **B:** View in the aircraft, equipped with the experiment racks of several science teams. **C:** The rack with the incubator used for the experiment. **D:** Inside of the incubator prior to take off of the flight. **E:** The Multi Sample Incubator Centrifuge (MuSIC) of DLR (Gravitational Biology) Cologne, placed in an incubator on ground. **F:** Samples within the swing-out device on the MuSIC centrifuge during acceleration. **G:** The Vibraplex device built by DLR (Gravitational Biology), Cologne, Germany.

Table S1 Demultiplexing statistic of the 10 PF and 5 control samples.

Sample	Barcode sequence	PF Clusters	% Perfect barcode	% One mismatch barcode	Yield (Mbases)	% PF Clusters	% \geq Q30 bases	Mean Quality Score
1P 1	GCCAAT	54,026,813	98.33	1.67	10,913	100	93.96	35.94
1P 2	CAGATC	65,954,683	98.59	1.41	13,323	100	93.68	35.87
1P 3	ACTTGA	59,237,051	98.95	1.05	11,966	100	93.85	35.92
1P 4	GATCAG	50,967,453	98.98	1.02	10,295	100	94.05	35.95
1P 5	TAGCTT	32,965,164	98.95	1.05	6,659	100	93.54	35.85
31P 1	GGCTAC	61,988,136	99.24	0.76	12,522	100	93.25	35.8
31P 2	CTTGTA	42,205,855	98.4	1.6	8,526	100	93.36	35.82
31P 3	AGTCAA	67,427,596	98.51	1.49	13,620	100	93.49	35.86
31P 4	AGTTCC	64,146,346	98.84	1.16	12,958	100	93.37	35.81
31P 5	ATGTCA	56,824,184	98.38	1.62	11,478	100	93.14	35.79
Control 1	ACAGTG	42,430,335	98.87	1.13	8,571	100	93.92	35.93
Control 2	ATCACG	58,111,319	98.8	1.2	11,738	100	91.96	35.49
Control 3	CGATGT	82,935,298	98.83	1.17	16,753	100	94.14	35.98
Control 4	TTAGGC	42,112,474	99.13	0.87	8,507	100	93.29	35.82
Control 5	TGACCA	67,660,339	98.73	1.27	13,667	100	93.53	35.85

Table S3. Primer selection for the 32 genes and the housekeeper gene 18S in qPCR

Factor	Primer Name	Sequence 5'–3'
18S rRNA	18s-F	GGAGCCTGCGGCTTAATTT
	18s-R	CAACTAAGAACGGCCATGCA
Actin beta (<i>ACTB</i>)	ACTB-F	TGCCGACAGGATGCAGAAG
	ACTB-R	GCCGATCCACACGGAGTACT
RAC alpha serine / threonine protein kinase (<i>AKT1</i>)	AKT1-F	CTTCTATGGCGCTGAGATTGTG
	AKT1-R	CAGCATGAGGTTCTCCAGCTT
Caspase 3 (<i>CASP3</i>)	CASP3-F	CTCCAACATCGACTGTGAGAAGTT
	CASP3-R	GCGCCAGCTCCAGCAA
Caspase 8 (<i>CASP8</i>)	CASP8-F	TGCAAAAGCACGGGAGAAAG
	CASP8-R	CTCTCAAAGGTCGTGGTCAAAG
Caspase 9 (<i>CASP9</i>)	CASP9-F	CTCCAACATCGACTGTGAGAAGTT
	CASP9-R	GCGCCAGCTCCAGCAA
Caveolin 2 (<i>CAV2</i>)	CAV2-F	GATCCCCACCGGCTCAAC
	CAV2-R	CACCGGCTCTGCGATCA
Cadherin-1 (<i>CDH1</i>)	CDH1-F	GCTGGACCGAGAGAGTTTC
	CDH1-R	CAGCTGTGCTGTTGTGCTT
Collagen 1 alpha 1 (<i>COL1A1</i>)	COL1A1-F	ACGAAGACATCCCACCAATCAC
	COL1A1-R	CGTTGTGCGACACGCAGAT
Endothelial growth factor (<i>EGF</i>)	EGF-F	TGCCAGCTGCACAAATACAGA
	EGF-R	TCTTACGGAATAGTGGTGGTCATC
Endothelial growth factor receptor (<i>EGFR</i>)	EGFR-F	TTGCCGCAAAGTGTGTAACG
	EGFR-R	GAGATCGCCACTGATGGAGG
Ezrin (<i>EZR</i>)	EZR-F	GCAATCCAGCCAAATACAACCTG
	EZR-R	CCACATAGTGGAGGCCAAAGTAC
Vascular endothelial growth factor receptor 2 (<i>FLK1</i>)	FLK1-F	TCTTCTGGCTACTTCTTGTCATCATC
	FLK1-R	GATGGACAAGTAGCCTGTCTTCAGT
Vascular endothelial growth factor receptor 1 (<i>FLT1</i>)	FLT1-F	CCCTCGCCGGAAGTTGTAT
	FLT1-R	GATAATTAACGAGTAGCCACGAGTCAA
Fibronectin (<i>FN1</i>)	FN1-F	AGATCTACCTGTACACCTTGAATGACA
	FN1-R	CATGATACCAGCAAGGAATTGG
Interleukin 6 (<i>IL6</i>)	IL6-F	CGGGAACGAAAGAGAAGCTCTA
	IL6-R	GAGCAGCCCCAGGGAGAA
Interleukin 8 (<i>CXCL8</i>)	IL8-F	TGGCAGCCTTCCTGATTCT
	IL8-R	GGGTGGAAAGGTTTGGAGTATG
Cytokeratin 8 (<i>KRT8</i>)	KRT8-F	GATCTCTGAGTGAACCGGAACA
	KRT8-R	GCTCGGCATCTGCAATGG
Laminin alpha 3 (<i>LAMA3</i>)	LAMA3-F	AAAGCAAGAAGTCAGTCCAGC
	LAMA3-R	TCCCATGAAGACCATCTCGG
Laminin beta 2 (<i>LAMB2</i>)	LAMB2-F	TGCTCATGGTCAATGCTAATCTG
	LAMB2-R	TCTATCAATCCTCTTCCTTGGACAA
Matrix metalloproteinase 9 (<i>MMP9</i>)	MMP9-F	CCTGGAGACCTGAGAACCAATC
	MMP9-R	TTCGACTCTCCACGCATCTCT
Moesin (<i>MSN</i>)	MSN-F	GAAATTTGTCATCAAGCCCATTG
	MSN-R	CCATGCACAAGGCCAAGAT
Mechanistic target of	MTOR-F	ATCTTGCCCATAGCTAGCCTC

rapamycin (<i>MTOR</i>)	MTOR-R	ACAACTGGGTCATTGGAGGG
Osteopontin (<i>OPN/SPP1</i>)	OSP-F	CGAGGTGATAGTGTGGTTTATGGA
	OSP-R	CGTCTGTAGCATCAGGGTACTG
Plasminogen activator inhibitor 1 (<i>PAI1</i>)	PAI1-F	AGGCTGACTTCACGAGTCTTTCA
	PAI1-R	CACCTCTCGTTACCTCGATCTTC
Phosphatidylinositol 4,5 bisphosphate 3 kinase catalytic subunit beta (<i>PIK3CB</i>)	PIK3CB-F	AGAAAAGTTTGGCCGGTTCC
	PIK3CB-R	GCAGTCAACATCAGCGCAAA
Radexin (<i>RDX</i>)	RDX-F	GAAAATGCCGAAACCAATCAA
	RDX-R	GTATTGGGCTGAATGGCAAATT
Transforming growth factor beta (<i>TGFB1</i>)	TGFB1-F	CACCCGCGTGCTAATGGT
	TGFB1-R	AGAGCAACACGGGTTTCAGGTA
TIMP metalloproteinase inhibitor 1 (<i>TIMP1</i>)	TIMP1-F	GCCATCGCCGCAGATC
	TIMP1-R	GCTATCAGCCACAGCAACAACA
Talin 1 (<i>TLN1</i>)	TLN1-F	GATGGCTATTACTCAGTACAGACAATGA
	TLN1-R	CATAGTAGACTCCTCATCTCCTTCCA
Tubulin beta (<i>TUBB</i>)	TUBB-F	CTGGACCGCATCTCTGTGTACTAC
	TUBB-R	GACCTGAGCGAACAGAGTCCAT
Vinculin (<i>VCL</i>)	VCL-F	GTCTCGGCTGCTCGTATCTT
	VCL-R	GTCCACCAGCCCTGTCATTT
Vascular Endothelial Growth Factor A (<i>VEGFA</i>)	VEGFA	CTACCTCCACCATGCCAAGTG
	VEGFA	GCGCTGATAGACATCCATGAAC