

Supplemental Material

Supplemental Figure 1: Ets-2 staining in bone tumors from *Prkar1a*^{+/-} and *Prkar1a*^{+/-} *Prkaca*^{+/-} mice and in bone tissue from *Prkaca*^{+/-} and WT mice (magnification, x10 and x40).

Supplemental Figure 2 ETS-1 is strongly expressed in human osteochondromyxomas from Carney complex: **A.** Human osteochondromyxoma stained by H&E (magnification, x10). **B.** Human osteochondromyxoma displaying a strong immunoreactivity for ETS-1 (magnification, x10 and x20). Cryopyrin (**C**) Caspase-1 (**D**), and IL1B (**E**) expression in human osteochondromyxoma detected by immunostaining (magnification, x10).

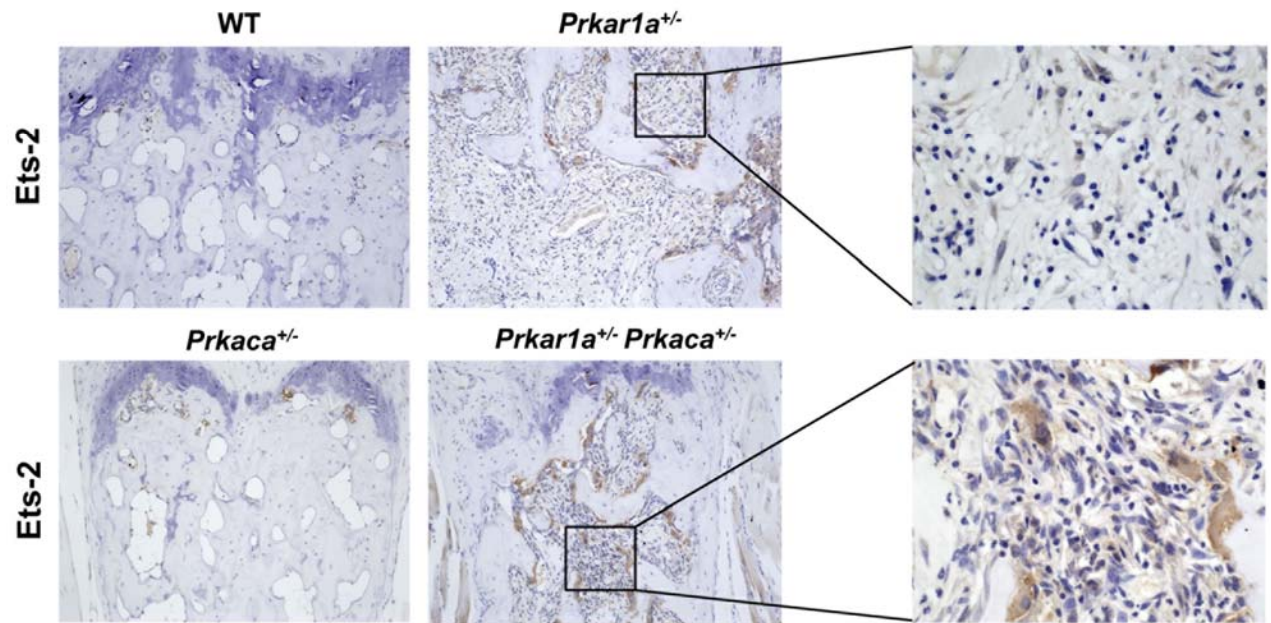
Supplemental Figure 3: Ets-1 and caspase-1 expression are not regulated by regulatory PKA subunits. Down-regulation of R1 α , R11 α or R11 β by specific siRNAs did not modify Ets-1 and caspase-1 protein expression. siRNA knock-down was confirmed by Western blot analysis. All the Western blot experiments were performed in triplicate.

Supplemental Figure 4 cAMP via PKA regulates Ets-1 and caspase-1 inflammasome: **A.** Forskolin promoted a significant increase in *Nlrp3*, *Caspase-1* and *Ets-1* expression. PKA inhibitor H89 blocked the increase in the *Nlrp3*, *Caspase-1* and *Ets-1* expression stimulated by cAMP. **B.** Western blot analysis confirmed the increase in Ets-1 and caspase-1 expression stimulated by forskolin. PKA activity inhibitor also

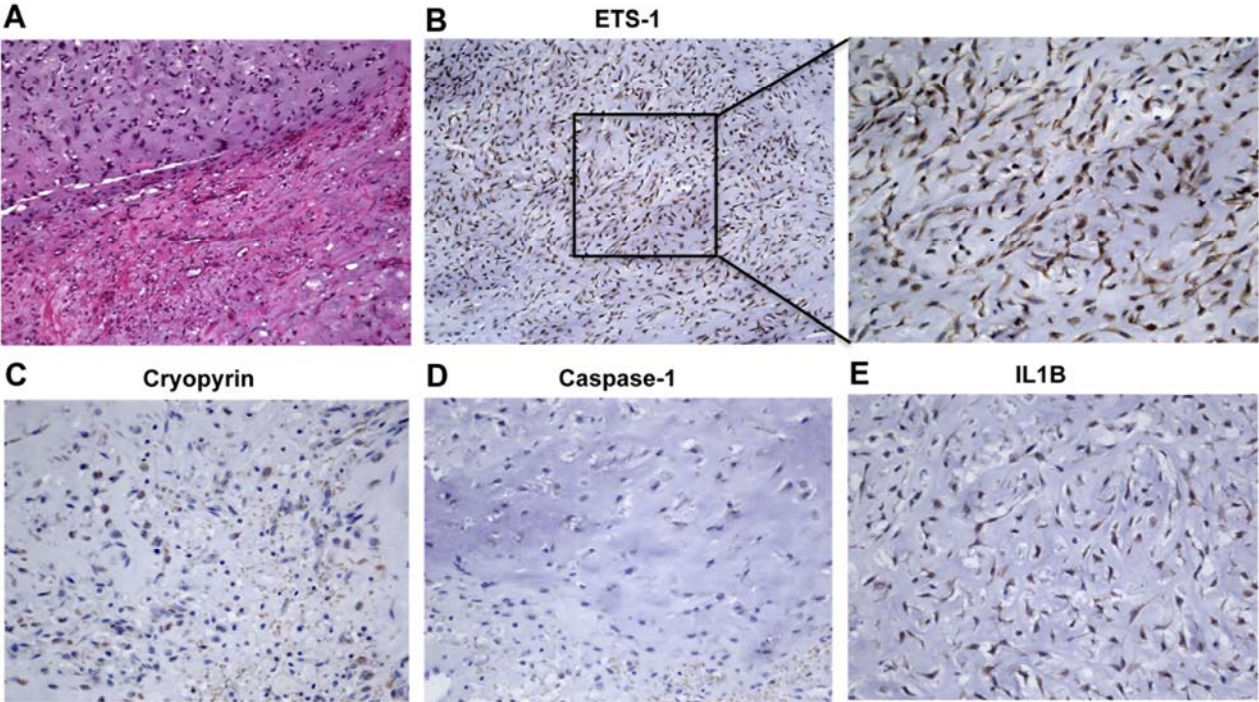
blocked the stimulatory effects of cAMP on Ets-1 and caspase-1 expression at protein levels. Gene expression analysis is presented as mean \pm SD. Western blot experiments were performed in triplicate.

Supplemental Table 1: Genes differentially expressed between NOMID tumor cells compared to NOMID non-lesional cells.

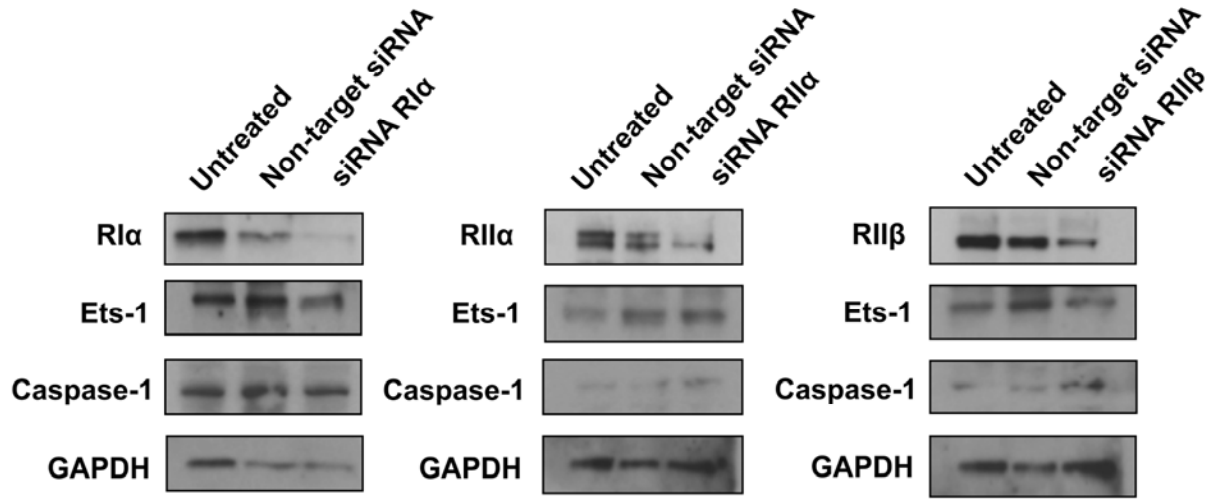
Supplemental Fig. 1



Supplemental Fig. 2

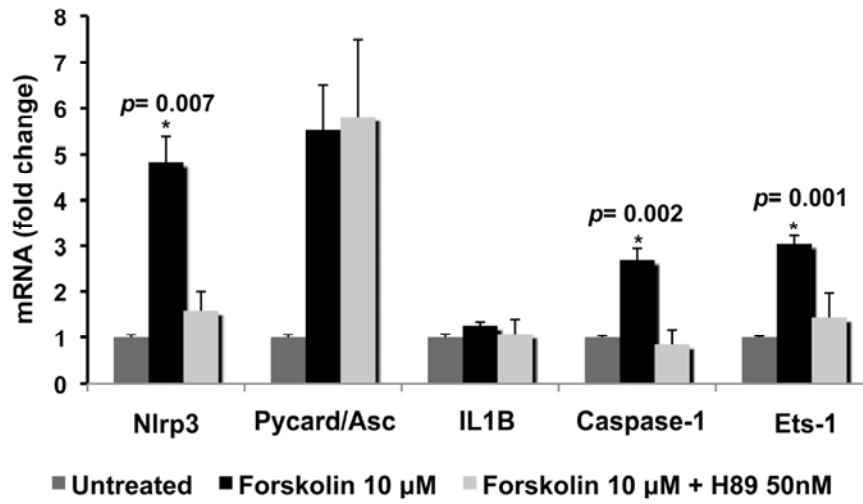


Supplemental Fig. 3

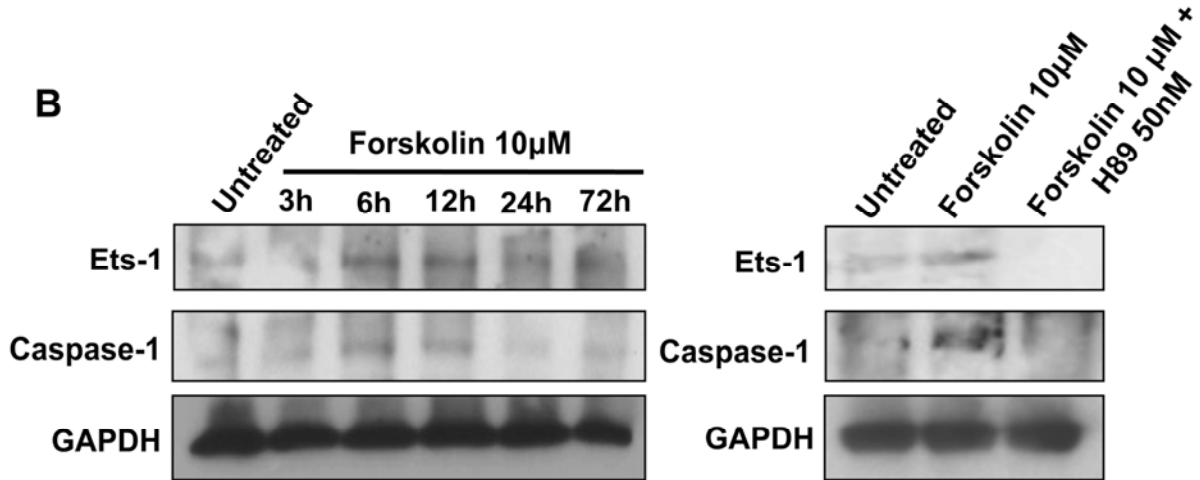


Supplemental Fig. 4

A



B



Up-regulated genes

Genes differentially expressed between NOMID tumor cells compared to non-lesional cells.

PROBE_ID	SYMBOL	DEFINITION	zSCORE	p value
ILMN_1682694	LOC203547	Homo sapiens hypothetical protein LO	156.938817	0.01460227
ILMN_1681703	FOXO3	Homo sapiens forkhead box O3 (FOXO	134.205139	0.01189125
ILMN_1663032	FNDC4	Homo sapiens fibronectin type III dom	75.5548905	0.02778968
ILMN_1810559	RHOQ	Homo sapiens ras homolog gene famil	53.2847732	0.0194943
ILMN_1652749	ERF	Homo sapiens Ets2 repressor factor (E	43.7134869	0.0339902
ILMN_1733756	COL12A1	Homo sapiens collagen, type XII, alpha	41.2080958	0.03376441
ILMN_2406043	VPS24	Homo sapiens vacuolar protein sorting	37.5033646	0.02059451
ILMN_1691926	HADH2	Homo sapiens hydroxyacyl-Coenzyme	35.493501	0.04647442
ILMN_2404063	APP	Homo sapiens amyloid beta (A4) precu	34.6803203	0.0282616
ILMN_1746378	GHDC	Homo sapiens GH3 domain containing	26.9372998	0.00469615
ILMN_1751559	C16orf30	Homo sapiens chromosome 16 open r	23.4878914	0.01711647
ILMN_1716596	NSMAF	Homo sapiens neutral sphingomyelina	22.5718959	0.03684249
ILMN_1711166	WDR8	Homo sapiens WD repeat domain 8 (M	15.9527182	0.03405009
ILMN_1798663	MAB21L2	PREDICTED: Homo sapiens mab-21-like	15.1719947	0.02845314
ILMN_2370976	FER1L3	Homo sapiens fer-1-like 3, myoferlin (C	14.6906521	0.0087438
ILMN_1797776	PRSS23	Homo sapiens protease, serine, 23 (PR	13.8399983	0.00820914
ILMN_2061435	MEG3	Homo sapiens maternally expressed 3	12.4275395	0.02966133
ILMN_1660368	TRRAP	Homo sapiens transformation/transcri	12.3358121	0.03446157
ILMN_1681515	CRLF1	Homo sapiens cytokine receptor-like fa	12.2714031	0.00722736
ILMN_1680104	SLC35C1	Homo sapiens solute carrier family 35,	11.5133136	0.01866465
ILMN_1685002	RCE1	Homo sapiens RCE1 homolog, prenyl p	10.2112164	0.00120654
ILMN_1699931	HCST	Homo sapiens hematopoietic cell signi	9.97775598	0.03613521
ILMN_1779034	NADSYN1	Homo sapiens NAD synthetase 1 (NAD	9.5748428	0.00880764
ILMN_1768227	DCN	Homo sapiens decorin (DCN), transcrip	9.54579223	0.00849538
ILMN_1680339	PDGFRL	Homo sapiens platelet-derived growth	9.41935137	0.01350513
ILMN_1661537	LEPROT	Homo sapiens leptin receptor overlap	9.10294708	0.04835232
ILMN_1674620	SGCE	Homo sapiens sarcoglycan, epsilon (SG	7.59765776	0.04994395
ILMN_1690105	STAT1	Homo sapiens signal transducer and a	7.29758248	0.00787046
ILMN_1740466	FAM46A	Homo sapiens family with sequence si	6.68184283	0.02623444
ILMN_1755364	RALA	Homo sapiens v-ral simian leukemia vi	6.64044628	0.04745055
ILMN_2058782	IFI27	Homo sapiens interferon, alpha-induci	6.63469058	0.00985991
ILMN_2403458	SMARCB1	Homo sapiens SWI/SNF related, matrix	6.56326292	0.02859502
ILMN_1697469	SFRS6	Homo sapiens splicing factor, arginine,	6.5155192	0.04389685
ILMN_2402392	COL8A1	Homo sapiens collagen, type VIII, alph	6.38278422	0.02585555
ILMN_1698491	MBD3	Homo sapiens methyl-CpG binding do	6.25652404	0.03947417
ILMN_2360229	MAPKAP1	Homo sapiens mitogen-activated prote	6.21402893	0.04096855
ILMN_2068747	OAT	Homo sapiens ornithine aminotransfer	6.20743857	0.03671004
ILMN_1713124	AKR1C3	Homo sapiens aldo-keto reductase fan	5.70596924	0.01096915
ILMN_1800008	ACAT1	Homo sapiens acetyl-Coenzyme A ace	5.58723701	0.04009442
ILMN_1750100	TUBB4Q	Homo sapiens tubulin, beta polypeptic	5.52053568	0.01072605
ILMN_1690342	LTA4H	Homo sapiens leukotriene A4 hydrolas	5.39390261	0.04536949
ILMN_1701441	LPAR1	Homo sapiens lysophosphatidic acid re	5.36629024	0.02970775
ILMN_1728975	SCO1	Homo sapiens SCO cytochrome oxidas	5.36116552	0.04371086

ILMN_2377174	SYPL1	Homo sapiens synaptophysin-like 1 (SY	5.35531119	0.04401473
ILMN_1666482	SP2	Homo sapiens Sp2 transcription factor	5.16832992	0.01788285
ILMN_2141790	HYOU1	Homo sapiens hypoxia up-regulated 1	5.16451115	0.04883687
ILMN_1764629	SLC39A14	Homo sapiens solute carrier family 39	5.12700533	0.03436091
ILMN_1669376	DRAM	Homo sapiens damage-regulated auto	4.85815433	0.01872899
ILMN_1695290	FERMT2	Homo sapiens fermitin family homolog	4.82307452	0.03207433
ILMN_1651229	IPO13	Homo sapiens importin 13 (IPO13), m	4.75623219	0.01620647
ILMN_2148527	H19	Homo sapiens H19, imprinted matern	4.56840134	0.00182734
ILMN_1777325	STAT1	Homo sapiens signal transducer and a	4.48516875	0.00217798
ILMN_1691237	CAP2	Homo sapiens CAP, adenylate cyclase-	4.44748523	0.03970708
ILMN_1789702	GBE1	Homo sapiens glucan (1,4-alpha-), bra	4.30192224	0.0268224
ILMN_1677085	RGS19	Homo sapiens regulator of G-protein s	4.2574722	0.01355423
ILMN_1747744	LHFPL2	Homo sapiens lipoma HMGIC fusion pr	4.24475574	0.00283031
ILMN_2367258	SMOX	Homo sapiens spermine oxidase (SMO	4.20366996	0.00068019
ILMN_1796417	ASNS	Homo sapiens asparagine synthetase (	4.18543333	0.03757355
ILMN_1667030	HSBP1	Homo sapiens heat shock factor bindir	4.1600241	0.00896596
ILMN_1687626	ZDHHC24	Homo sapiens zinc finger, DHHC-type c	4.11615643	0.04332581
ILMN_1712312	RAB11A	Homo sapiens RAB11A, member RAS c	4.09180748	0.04505228
ILMN_1674243	TFRC	Homo sapiens transferrin receptor (p9	4.06046184	0.04951915
ILMN_1802669	PPP3CB	Homo sapiens protein phosphatase 3 (	3.95695969	0.04821562
ILMN_1772459	RPS23	Homo sapiens ribosomal protein S23 (	3.92642909	0.01725593
ILMN_1693039	ZFPL1	Homo sapiens zinc finger protein-like 1	3.90178591	0.04575153
ILMN_1769810	ARL6IP5	Homo sapiens ADP-ribosylation-like fa	3.83137656	0.04290335
ILMN_1681081	AGPAT2	Homo sapiens 1-acylglycerol-3-phosph	3.79190189	0.02634441
ILMN_1685433	COL8A1	Homo sapiens collagen, type VIII, alph	3.7600651	0.00286129
ILMN_1809483	HSD17B14	Homo sapiens hydroxysteroid (17-beta	3.69055297	0.02273824
ILMN_1811313	SLIT3	Homo sapiens slit homolog 3 (Drosoph	3.68486923	0.0071526
ILMN_1729142	PRR6	Homo sapiens proline rich 6 (PRR6), m	3.54086149	0.01861814
ILMN_1726901	KLC1	Homo sapiens kinesin light chain 1 (KL	3.52292567	0.00762866
ILMN_2376953	KCNK2	Homo sapiens potassium channel, sub	3.51202982	0.04059665
ILMN_1770084	TACC1	Homo sapiens transforming, acidic coi	3.37947677	0.03280033
ILMN_1765649	IRF3	Homo sapiens interferon regulatory fa	3.3716222	0.02831593
ILMN_1760490	ACVR1	Homo sapiens activin A receptor, type	3.37099654	0.02799408
ILMN_1773395	RDH5	Homo sapiens retinol dehydrogenase 5	3.35704708	0.00157695
ILMN_1768505	IL13RA1	Homo sapiens interleukin 13 receptor,	3.35375924	0.02609371
ILMN_1769787	SELO	Homo sapiens selenoprotein O (SELO),	3.34815032	0.03575488
ILMN_1701487	TAOK2	Homo sapiens TAO kinase 2 (TAOK2), t	3.30572521	0.02013179
ILMN_1790689	CRISPLD2	Homo sapiens cysteine-rich secretory |	3.26328294	0.00603845
ILMN_2256765	CDC16	Homo sapiens cell division cycle 16 ho	3.25022621	0.0052317
ILMN_1672496	DNAJA1	Homo sapiens DnaJ (Hsp40) homolog,	3.23343304	0.04973542
ILMN_1773865	HSPA5	Homo sapiens heat shock 70kDa prote	3.20876858	0.02963857
ILMN_1682099	TNFAIP8L3	Homo sapiens tumor necrosis factor, a	3.20010896	0.04858559
ILMN_1777526	MED20	Homo sapiens mediator complex subu	3.11581768	0.04886488
ILMN_1776723	PHF11	Homo sapiens PHD finger protein 11 (f	3.08903356	0.00514765
ILMN_1684771	PGRMC1	Homo sapiens progesterone receptor 1	3.07621449	0.03341024
ILMN_2057573	FAM62B	Homo sapiens family with sequence si	3.03409399	0.03135743

ILMN_1814726	SCARB2	Homo sapiens scavenger receptor clas	3.00290928	0.01486292
ILMN_1795918	CENTG3	Homo sapiens centaurin, gamma 3 (CE	2.99753501	0.04171867
ILMN_2052208	GADD45A	Homo sapiens growth arrest and DNA-	2.9868311	0.03405285
ILMN_1713884	C16orf42	Homo sapiens chromosome 16 open r	2.98010513	0.04628314
ILMN_1773906	NCOA4	Homo sapiens nuclear receptor coacti	2.97153285	0.03522076
ILMN_1726104	C11orf51	Homo sapiens chromosome 11 open r	2.9643849	0.00108914
ILMN_1695917	C5orf15	Homo sapiens chromosome 5 open re	2.96377095	0.00286722
ILMN_1798485	ATP6V1E1	Homo sapiens ATPase, H+ transporting	2.93292228	0.0223707
ILMN_2390162	PHF11	Homo sapiens PHD finger protein 11 (f	2.92851645	0.017755
ILMN_2339796	CDC16	Homo sapiens cell division cycle 16 ho	2.92125762	0.01356856
ILMN_1691364	STAT1	Homo sapiens signal transducer and a	2.91567766	0.00524559
ILMN_1705849	SPR	Homo sapiens sepiapterin reductase (	2.91331559	0.01693828
ILMN_1792508	TMEM59	Homo sapiens transmembrane proteir	2.90956436	0.04183208
ILMN_2143261	CXorf40B	Homo sapiens chromosome X open re	2.9062443	0.03104119
ILMN_2216637	STK32B	Homo sapiens serine/threonine kinase	2.88249481	0.00111754
ILMN_2148459	B2M	Homo sapiens beta-2-microglobulin (B	2.8588819	0.0145705
ILMN_2365711		3-Sep Homo sapiens septin 2 (SEPT2), transc	2.85475848	0.02952066
ILMN_1651347	SERTAD2	Homo sapiens SERTA domain containir	2.83728432	0.03212655
ILMN_1745964	IRAK2	Homo sapiens interleukin-1 receptor-a	2.83509922	0.03874169
ILMN_1660691	RAB31	Homo sapiens RAB31, member RAS or	2.81921309	0.04586547
ILMN_2128428	DAB2	Homo sapiens disabled homolog 2, mi	2.79245924	0.0309434
ILMN_1724789	CD59	Homo sapiens CD59 molecule, comple	2.77984085	0.0436181
ILMN_2049536	TRPV2	Homo sapiens transient receptor pote	2.77156573	0.00090194
ILMN_2087692	CYBRD1	Homo sapiens cytochrome b reductase	2.75799316	0.04777333
ILMN_1738401	FOXC1	Homo sapiens forkhead box C1 (FOXC1	2.74110093	0.00791219
ILMN_1705151	SF3A3	Homo sapiens splicing factor 3a, subur	2.73853337	0.03466088
ILMN_1717099	DSCR3	Homo sapiens Down syndrome critical	2.73739104	0.03205917
ILMN_1780937	MUS81	Homo sapiens MUS81 endonuclease h	2.73113305	0.00783177
ILMN_1655469	TSPAN3	Homo sapiens tetraspanin 3 (TSPAN3),	2.7288183	0.03696634
ILMN_2338963	SLC29A1	Homo sapiens solute carrier family 29	2.71642235	0.00529268
ILMN_2058795	PGCP	Homo sapiens plasma glutamate carbc	2.71580964	0.03463465
ILMN_2408683	PPAP2B	Homo sapiens phosphatidic acid phos	2.70995035	0.04458256
ILMN_1770732	COPS3	Homo sapiens COP9 constitutive phot	2.70722788	0.0418981
ILMN_1670796	EXOSC10	Homo sapiens exosome component 10	2.69560456	0.04196184
ILMN_1722798	PLCD3	Homo sapiens phospholipase C, delta	2.6858166	0.03990318
ILMN_1695271	RPP25	Homo sapiens ribonuclease P/MRP 25	2.67885408	0.01943574
ILMN_1654939	TMED2	Homo sapiens transmembrane emp24	2.67288796	0.04107902
ILMN_1714327	SETD1A	Homo sapiens SET domain containing	2.65914121	0.03320006
ILMN_1746888	PCOLCE2	Homo sapiens procollagen C-endopep	2.64848979	0.02143633
ILMN_1697268	EMILIN2	Homo sapiens elastin microfibril interf	2.62223081	0.01152729
ILMN_1778177	ZNF207	Homo sapiens zinc finger protein 207 (	2.61392817	0.03210102
ILMN_1806692	HEXB	Homo sapiens hexosaminidase B (beta	2.61301562	0.0231066
ILMN_1809417	LRFN4	Homo sapiens leucine rich repeat and	2.57622503	0.01827767
ILMN_2384241	TGFBR2	Homo sapiens transforming growth fa	2.56597589	0.03262294
ILMN_1746013	SPOCK1	Homo sapiens sparc/osteonectin, cw	2.56242576	0.02024938
ILMN_1815306	AP2A1	Homo sapiens adaptor-related protein	2.54327344	0.02626545

ILMN_1675055	C1orf166	Homo sapiens chromosome 1 open re	2.54061482	0.00411139
ILMN_1657744	C15orf17	Homo sapiens chromosome 15 open r	2.53536206	0.0200759
ILMN_1702501	RPS6KA2	Homo sapiens ribosomal protein S6 kii	2.53269563	0.00902454
ILMN_2338997	PTP4A2	Homo sapiens protein tyrosine phosph	2.52179656	0.03681718
ILMN_1706376	OSBP	Homo sapiens oxysterol binding protei	2.51271371	0.04093468
ILMN_1713756	GLUD1	Homo sapiens glutamate dehydrogena	2.51015642	0.00400285
ILMN_1782015	FCRLB	Homo sapiens Fc receptor-like B (FCRL	2.4832742	0.04518617
ILMN_1729596	C14orf151	Homo sapiens chromosome 14 open r	2.46437211	0.01654509
ILMN_1770048	DPH5	Homo sapiens DPH5 homolog (S. cerev	2.43976296	0.02335872
ILMN_2320850	UBE2D3	Homo sapiens ubiquitin-conjugating ei	2.43712524	0.03860644
ILMN_1769282	FRMD6	Homo sapiens FERM domain containin	2.434501	0.03436372
ILMN_2343278	PPAP2A	Homo sapiens phosphatidic acid phosph	2.40471597	0.0297747
ILMN_1673639	ABI3BP	Homo sapiens ABI gene family, membe	2.38763777	0.02187308
ILMN_2339779	ATP6V1E1	Homo sapiens ATPase, H+ transporting	2.38643138	0.03615983
ILMN_2186806	HLA-F	Homo sapiens major histocompatibilit	2.3849213	0.03700994
ILMN_1808333	PPP1R7	Homo sapiens protein phosphatase 1,	2.38349706	0.01421979
ILMN_1681812	HIF1AN	Homo sapiens hypoxia-inducible facto	2.38204193	0.01594383
ILMN_1668639	TBC1D10B	Homo sapiens TBC1 domain family, me	2.37772725	0.00197117
ILMN_1711289	GYS1	Homo sapiens glycogen synthase 1 (m	2.3697336	0.04230561
ILMN_1718285	HOXC8	Homo sapiens homeobox C8 (HOXC8),	2.36280292	0.00304523
ILMN_1764709	MAFB	Homo sapiens v-maf musculoaponeuri	2.3614794	0.00328319
ILMN_1685703	ACOX2	Homo sapiens acyl-Coenzyme A oxida	2.36020668	0.00400817
ILMN_2064694	STIM1	Homo sapiens stromal interaction mol	2.35597179	0.00555887
ILMN_1692664	PRR5	Homo sapiens proline rich 5 (renal) (P	2.35000623	0.04317773
ILMN_2347145	DCN	Homo sapiens decorin (DCN), transcrip	2.31124224	0.01465079
ILMN_1669046	FOXQ1	Homo sapiens forkhead box Q1 (FOXQ	2.3045984	0.00091917
ILMN_2326591	ANXA6	Homo sapiens annexin A6 (ANXA6), tra	2.2952442	0.01256085
ILMN_1651735	TGOLN2	Homo sapiens trans-golgi network pro	2.29522206	0.02926964
ILMN_1658800	BRPF3	Homo sapiens bromodomain and PHD	2.28065456	0.03445859
ILMN_1788024	PCID2	Homo sapiens PCI domain containing	2.2665585	0.03765289
ILMN_1767253	RRP12	Homo sapiens ribosomal RNA processi	2.26489559	0.00092979
ILMN_1804789	KIAA1967	Homo sapiens KIAA1967 (KIAA1967), t	2.26328488	0.0042712
ILMN_1651788	MAP3K11	Homo sapiens mitogen-activated prote	2.23948467	0.0453007
ILMN_1732612	SHB	Homo sapiens Src homology 2 domain	2.23460765	0.03309781
ILMN_1704446	SLC6A10P	Homo sapiens solute carrier family 6 (	2.2262363	0.04441022
ILMN_1731745	NINJ2	Homo sapiens ninjurin 2 (NINJ2), mRN	2.21051362	0.03962523
ILMN_1706015	FAM43A	Homo sapiens family with sequence si	2.20707708	0.02287497
ILMN_1747451	PLCXD1	Homo sapiens phosphatidylinositol-sp	2.1998109	0.04873765
ILMN_1815130	MICALL1	Homo sapiens MICAL-like 1 (MICALL1)	2.18475856	0.01560541
ILMN_1664931	GTF2E2	Homo sapiens general transcription fa	2.17868992	0.02755253
ILMN_1811551	DERA	Homo sapiens 2-deoxyribose-5-phosph	2.17481501	0.01959339
ILMN_1672295	ZC3H12A	Homo sapiens zinc finger CCCH-type c	2.16482733	0.04952488
ILMN_2163873	FNDC1	Homo sapiens fibronectin type III dom	2.14720053	0.03531606
ILMN_1690653	CDK2AP2	Homo sapiens CDK2-associated protei	2.13982326	0.04984472
ILMN_1720998	CA12	Homo sapiens carbonic anhydrase XII (	2.13120968	0.04425522
ILMN_1667692	PTGIS	Homo sapiens prostaglandin I2 (prosta	2.12782418	0.01320731

ILMN_2363065	RTN3	Homo sapiens reticulon 3 (RTN3), tran	2.12339315	0.00436618
ILMN_1798360	CXCR7	Homo sapiens chemokine (C-X-C motif	2.11704238	0.0239774
ILMN_1707727	ANGPTL4	Homo sapiens angiopoietin-like 4 (ANC	2.11650401	0.0184204
ILMN_1780671	PLEKHG3	Homo sapiens pleckstrin homology do	2.09764183	0.01186083
ILMN_1766657	STOM	Homo sapiens stomatin (STOM), transi	2.09185634	0.02759413
ILMN_1790549	TSPAN3	Homo sapiens tetraspanin 3 (TSPAN3),	2.09093582	0.0463226
ILMN_2076463	SLC15A4	Homo sapiens solute carrier family 15,	2.05417966	0.00585403
ILMN_1652163	DVL2	Homo sapiens dishevelled, dsh homok	2.04084286	0.04529209
ILMN_1740160	PLCG1	Homo sapiens phospholipase C, gamm	2.03339342	0.03085415
ILMN_1810289	FER1L3	Homo sapiens fer-1-like 3, myoferlin (C	2.02703599	0.04144313
ILMN_1752197	PDDC1	Homo sapiens Parkinson disease 7 dor	2.02142303	0.02331397

Down-regulated genes

Genes differentially expressed between NOMID tumor cells compared to non-lesional cells.

PROBE_ID	SYMBOL	DEFINITION	zSCORE	p value
ILMN_1801600	CCDC97	Homo sapiens coiled-coil domain cont	-163.720106	0.01993372
ILMN_2367469	CARS	Homo sapiens cysteinyl-tRNA syntheta	-108.808141	0.04046624
ILMN_1713751	ADAM19	Homo sapiens ADAM metallopeptidase	-79.4405558	0.0060249
ILMN_1715273	PICALM	Homo sapiens phosphatidylinositol bin	-66.8861025	0.04068139
ILMN_2192620	LOC90379	Homo sapiens hypothetical protein BC	-63.4639423	0.01954419
ILMN_1795419	C2orf24	Homo sapiens chromosome 2 open rea	-63.2777038	0.00368289
ILMN_1747775	STX2	Homo sapiens syntaxin 2 (STX2), transc	-59.6633183	0.02533913
ILMN_1773847	DYNC112	Homo sapiens dynein, cytoplasmic 1, ir	-47.6253478	0.04085034
ILMN_2313821	AIFM1	Homo sapiens apoptosis-inducing factr	-30.2490692	0.01492358
ILMN_1725510	DHCR24	Homo sapiens 24-dehydrocholesterol r	-25.7702446	0.00431328
ILMN_1709590	PGM5	Homo sapiens phosphoglucomutase 5	-20.3276704	0.00107363
ILMN_2320964	ADAR	Homo sapiens adenosine deaminase, F	-16.8190612	0.02303907
ILMN_1781388	PGM5	Homo sapiens phosphoglucomutase 5	-16.7337213	0.00021778
ILMN_1776464	PARP4	Homo sapiens poly (ADP-ribose) polym	-14.5018123	0.00819301
ILMN_1738558	RGS20	Homo sapiens regulator of G-protein si	-13.6731094	0.00170421
ILMN_1765858	CAB39	Homo sapiens calcium binding protein	-13.3445104	0.04386949
ILMN_1673522	MOCOS	Homo sapiens molybdenum cofactor s	-12.0164958	6.2025E-05
ILMN_1676448	WDFY1	Homo sapiens WD repeat and FYVE do	-12.0011484	0.029735
ILMN_2224907	C4orf34	Homo sapiens chromosome 4 open rea	-11.814511	0.01177227
ILMN_1813641	C9orf167	Homo sapiens chromosome 9 open rea	-9.8071185	0.00275405
ILMN_1727389	CDC16	Homo sapiens cell division cycle 16 hor	-9.73133173	0.0126164
ILMN_2223941	FBLN5	Homo sapiens fibulin 5 (FBLN5), mRNA	-9.51460016	0.00174643
ILMN_1781516	SUPT16H	Homo sapiens suppressor of Ty 16 hor	-8.55110598	0.02802383
ILMN_1784238	SEC22B	Homo sapiens SEC22 vesicle trafficking	-8.32730893	0.03427239
ILMN_1676088	MSRB3	Homo sapiens methionine sulfoxide re	-6.91682318	0.0268988
ILMN_1702503	ALDH3A1	Homo sapiens aldehyde dehydrogenas	-6.87630172	0.01971185
ILMN_2111932	SERINC2	Homo sapiens serine incorporator 2 (SI	-6.86256966	0.00099074
ILMN_1773073	PHYH	Homo sapiens phytanoyl-CoA 2-hydrox	-6.83442586	0.01732293
ILMN_2087528	CPSF3	Homo sapiens cleavage and polyadeny	-6.04330586	0.03718374
ILMN_1740185	TPMT	Homo sapiens thiopurine S-methyltran	-5.94360886	0.01530962
ILMN_1729976	ZNF828	Homo sapiens zinc finger protein 828 (	-5.6959163	0.02773163
ILMN_1685371	SUMF2	Homo sapiens sulfatase modifying fact	-5.65544471	0.0132514
ILMN_1683194	DCN	Homo sapiens decorin (DCN), transcrip	-5.50611237	0.01642347
ILMN_1814122	MDC1	Homo sapiens mediator of DNA damag	-5.27724592	0.01833795
ILMN_1703374	NAV1	Homo sapiens neuron navigator 1 (NAV	-5.2621507	0.04028125
ILMN_1732176	AGPAT2	Homo sapiens 1-acylglycerol-3-phosph	-4.96806	0.04871727
ILMN_1758938	SLC31A2	Homo sapiens solute carrier family 31 |	-4.88515794	0.03328852
ILMN_1810100	PBX3	Homo sapiens pre-B-cell leukemia hor	-4.86077414	0.02799261
ILMN_1795906	PCBD1	Homo sapiens pterin-4 alpha-carbinola	-4.84410149	0.02884897
ILMN_1780698	ZFYVE19	Homo sapiens zinc finger, FYVE domair	-4.70578705	0.04481786
ILMN_1746968	PHF1	Homo sapiens PHD finger protein 1 (PH	-4.68462761	0.01870963
ILMN_1665455	DCUN1D3	Homo sapiens DCN1, defective in cullir	-4.63392884	0.02419159
ILMN_1747067	NPAS1	Homo sapiens neuronal PAS domain pr	-4.49545909	0.04472015

ILMN_1737833	ATN1	Homo sapiens atrophin 1 (ATN1), trans	-4.47862565	0.04140988
ILMN_1741942	STX16	Homo sapiens syntaxin 16 (STX16), tra	-4.46532113	0.02845955
ILMN_2108709	ANKRD11	Homo sapiens ankyrin repeat domain 1	-4.4361258	0.01125866
ILMN_1815190	METTL1	Homo sapiens methyltransferase like 1	-4.27524284	0.04266124
ILMN_1719972	PLXNA3	Homo sapiens plexin A3 (PLXNA3), mR	-4.16374952	0.01559555
ILMN_2395043	HSPA4	Homo sapiens heat shock 70kDa protei	-4.10388392	0.0368255
ILMN_1703379	VPS41	Homo sapiens vacuolar protein sorting	-3.48610771	0.03737295
ILMN_1654851	FAM134A	Homo sapiens family with sequence sir	-3.44289622	0.00350905
ILMN_1741204	KLHDC2	Homo sapiens kelch domain containin	-3.08995651	0.02123893
ILMN_2289924	TRAK1	Homo sapiens trafficking protein, kines	-3.03573802	0.04667353
ILMN_1755862	PFAS	Homo sapiens phosphoribosylformylgl	-2.97210618	0.02751967
ILMN_1775380	SMOX	Homo sapiens spermine oxidase (SMO)	-2.95115105	0.04642094
ILMN_2399174	TRAK1	Homo sapiens trafficking protein, kines	-2.94435785	0.00255331
ILMN_1671911	MTA1	Homo sapiens metastasis associated 1	-2.94180936	0.02462126
ILMN_1746598	SCNM1	Homo sapiens sodium channel modifie	-2.90953873	0.02497205
ILMN_1760121	RRAGC	Homo sapiens Ras-related GTP binding	-2.79269257	0.02496921
ILMN_1733851	DACT3	Homo sapiens dapper, antagonist of be	-2.76179724	0.03657785
ILMN_1739161	PPAP2A	Homo sapiens phosphatidic acid phosph	-2.55637273	0.0012587
ILMN_2364062	THOC4	Homo sapiens THO complex 4 (THOC4)	-2.54650576	0.02661255
ILMN_2380163	PTPRF	Homo sapiens protein tyrosine phosph	-2.48607124	0.00987093
ILMN_2096322	ADIPOR1	Homo sapiens adiponectin receptor 1 (	-2.40542228	0.04006284
ILMN_1768480	VGLL4	Homo sapiens vestigial like 4 (Drosophi	-2.37480654	0.03597793
ILMN_1718977	GADD45B	Homo sapiens growth arrest and DNA-	-2.33254206	0.02882668
ILMN_1729495	TRIM41	Homo sapiens tripartite motif-containi	-2.31059072	0.01535558
ILMN_1678957	WDR55	Homo sapiens WD repeat domain 55 (W	-2.2997774	0.04080737
ILMN_1796912	ARHGEF7	Homo sapiens Rho guanine nucleotide	-2.25785346	0.04882943
ILMN_1667068	ZC3HAV1	Homo sapiens zinc finger CCCH-type, a	-2.18114617	0.02010903
ILMN_1740426	RASD1	Homo sapiens RAS, dexamethasone-in	-2.16851263	0.00661928
ILMN_1739008	ATG9A	Homo sapiens ATG9 autophagy related	-2.05421339	0.02038962

Category	Term	Count	%	P Value	Genes
KEGG_PATHWAY	xtr04310:Wnt signaling pathway	17	0.0335	0.00261	DVL2,CSNK1A1,FZD8,PPP2R5A,TP53,PPP3R1,CSNK2B,WNT7B, RAC2,SFRP2,PPP3CB,CAMK2D,SIAH1,PPP2R5E,CAMK2A,CUL1 ,NFATC1
KEGG_PATHWAY	xtr04210:Apoptosis	12	0.0237	0.00376	BID,IRAK2,IRAK1,CASP6,CASP3,AIFM1,CASP7,PPP3CB,TP53,P PP3R1,BCL2L1,CAPN2
KEGG_PATHWAY	xtr00251:Glutamate metabolism	6	0.0118	0.00437	GOT2,GLUD1,NADSYN1,ALDH4A1,PPAT,EARS2
KEGG_PATHWAY	xtr00030:Pentose phosphate pathway	6	0.0118	0.02249	G6PD,TALDO1,PFKP,DERA,PRPS2