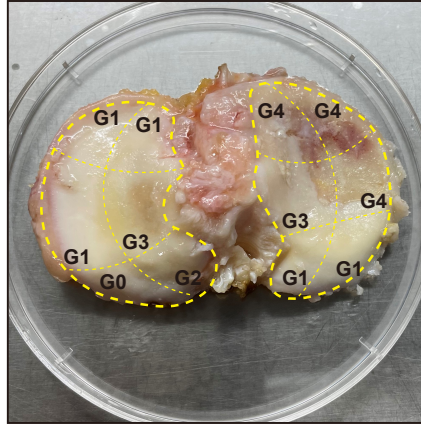
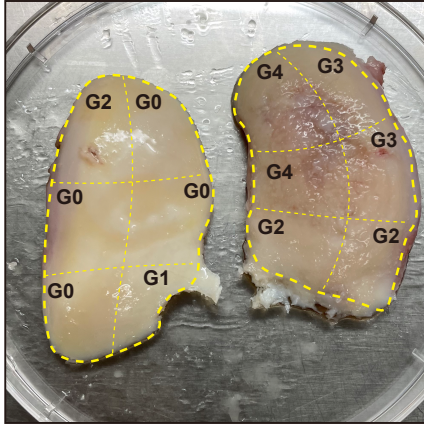


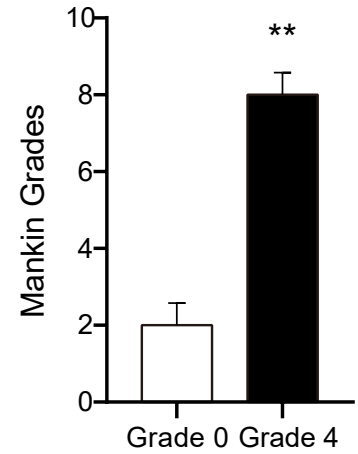
Supplementary Figure 1, also see Figure 1

A

Zoning and grading



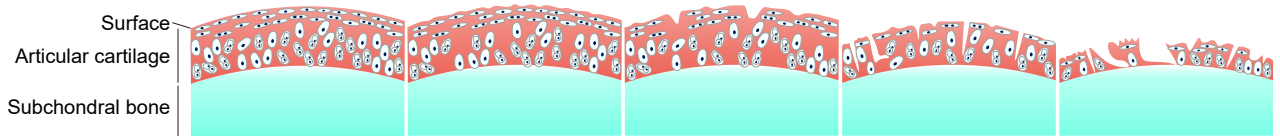
C



B

Femur

Tibia



OARSI grading system

Surface intact

Surface uneven

Surface discontinuous

Vertical fissures

Erosion

ICRS grading system

Normal

Abnormal

Abnormal lesions < 50%

Severely abnormal lesions > 50%

Severely abnormal Osteochondral injuries

Grade

Grade 0

Grade 1

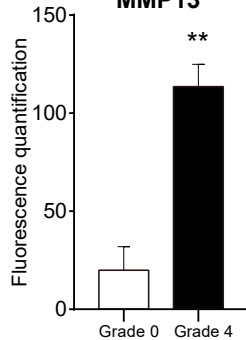
Grade 2

Grade 3

Grade 4

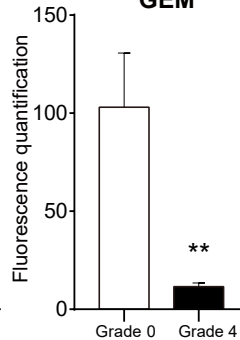
D

MMP13



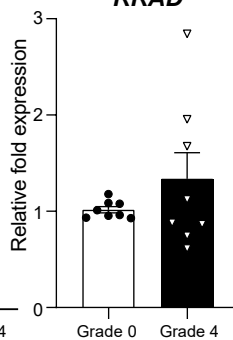
E

GEM



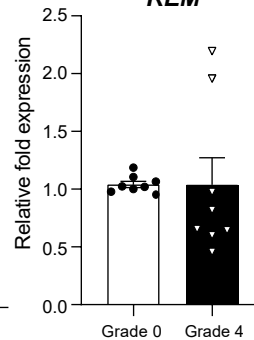
F

RRAD



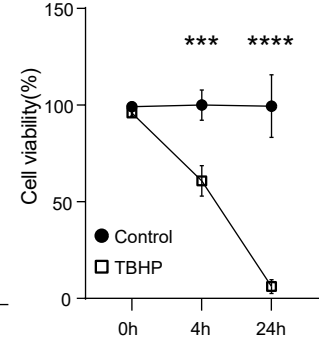
G

REM

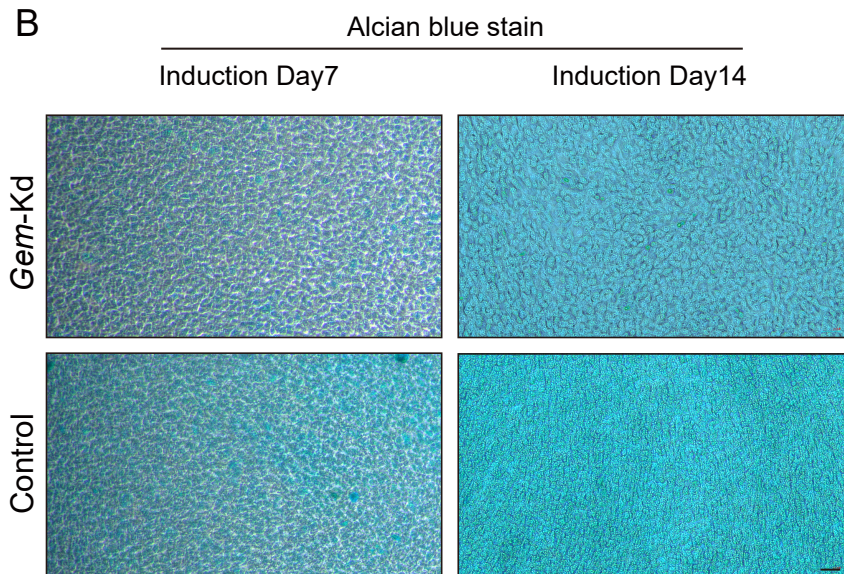
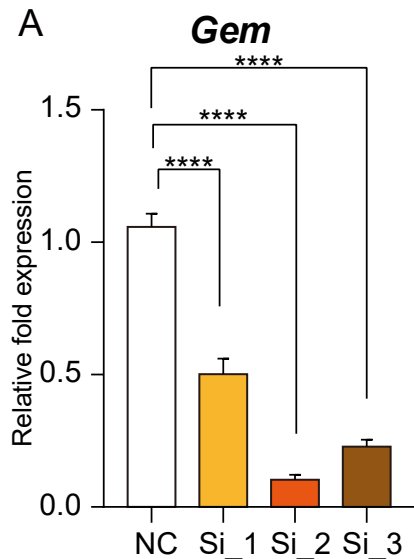


G

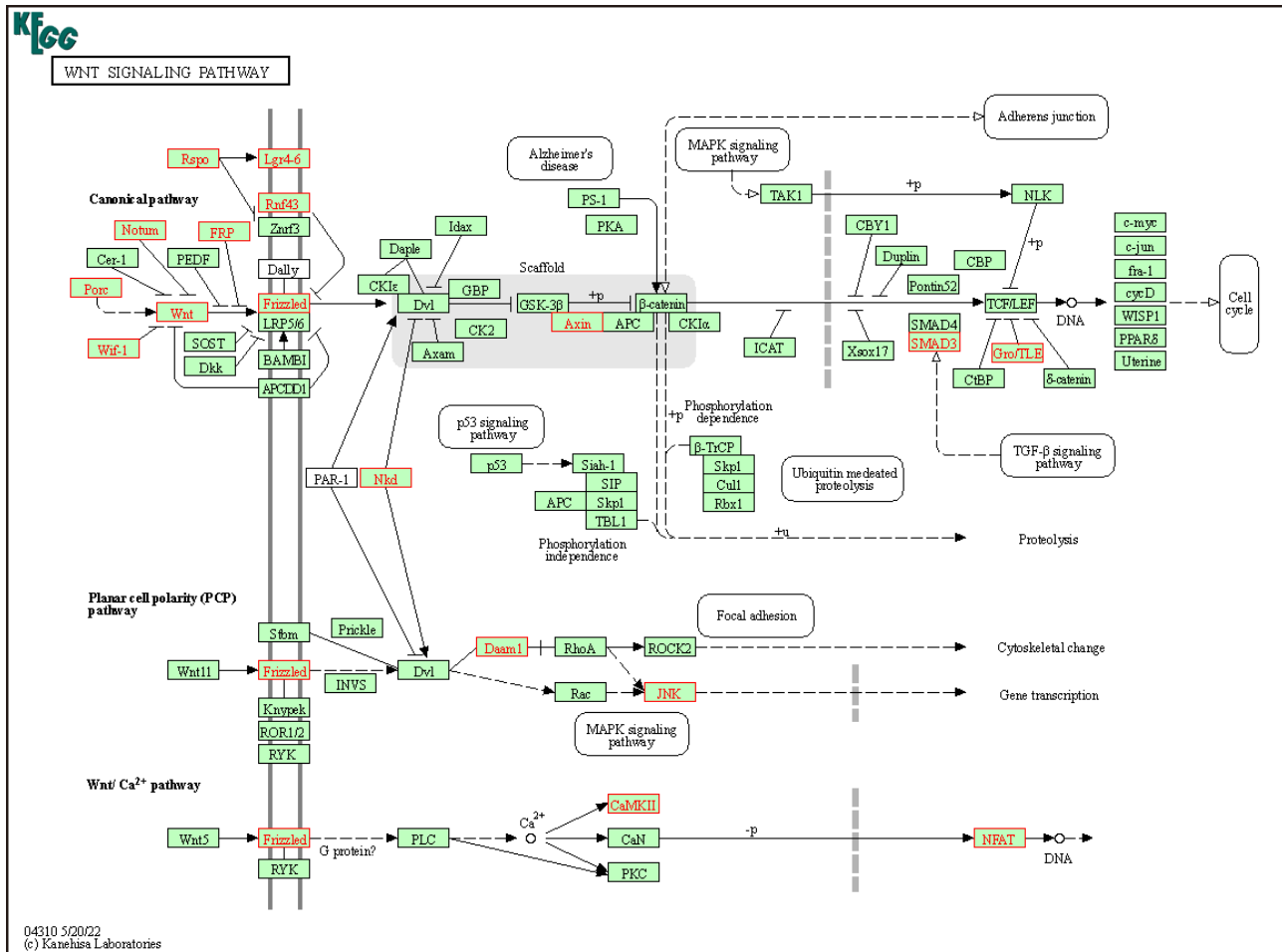
Cell viability (%)



Supplementary Figure 2, also see Figure 3

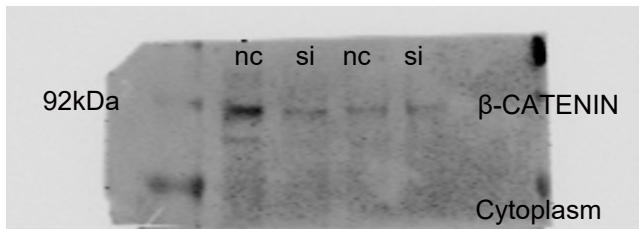
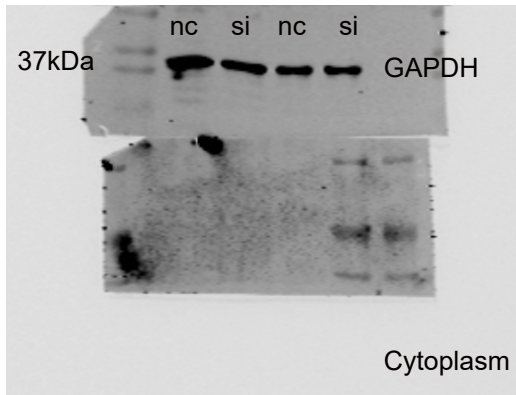


Supplementary Figure 3, also see Figure 4

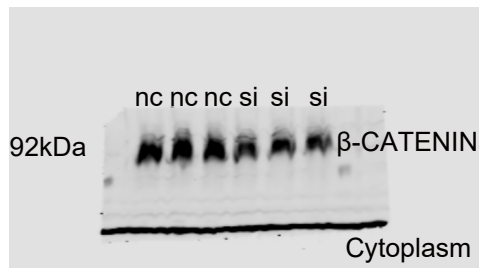
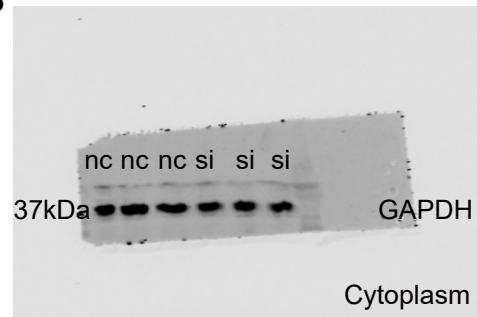


Supplementary Figure 4, also see Figure 5

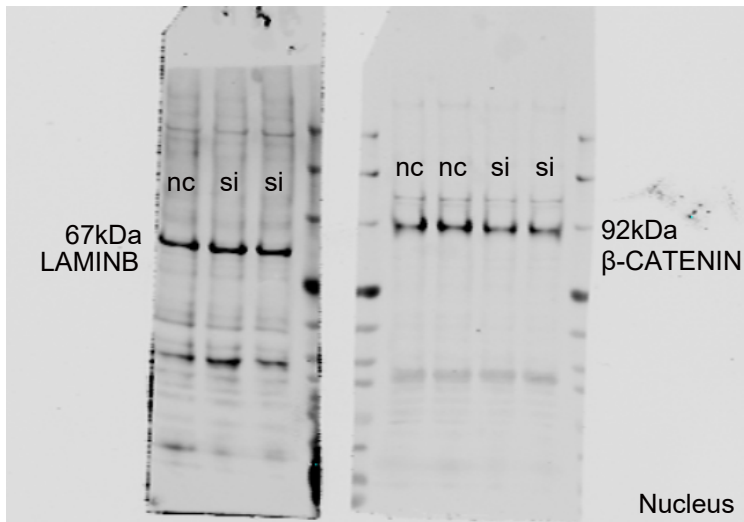
A



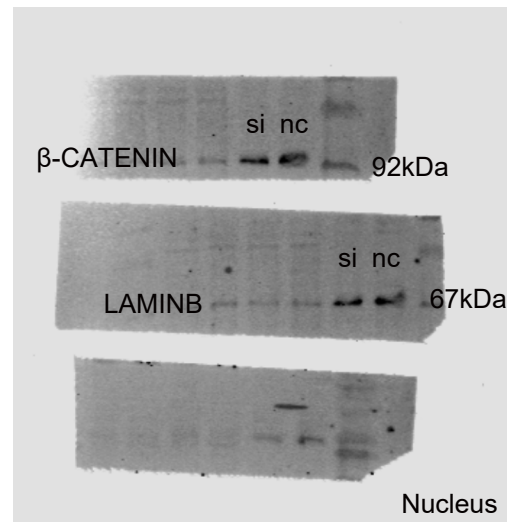
B



C



D



Supplement Table 1

Primer name	Sequence
hGEM Fw	CATGACAGCATGGACAGCGA
hGEM Rv	GGTTGCACTCTCTCCGTCAA
hSox9 Fw	AGCGAACGCACATCAAGAC
hSox9 Rv	CTGTAGGCGATCTGTTGGGG
hCol2a1 Fw	TGGACGATCAGGCGAAACC
hCol2a1 Rv	GCTGCGGATGCTCTCAATCT
hACAN Fw	ACTCTGGGTTTTTCGTGACTCT
hACAN Rv	ACACTCAGCGAGTTGTCATGG
hREM Fw	TGCCTTCCACTCAATCCCAG
hREM Rv	GATCTCCAAGTAGCACCCACAC
mGem Fw	CATGACAGCATGGACAGCGA
mGem Rv	GGTTGCACTCTCTCCGTCAA
mSox9 Fw	ATGAAGATGACCCGACGAGCA
mSox9 Rv	AACTTGTCTCCTCGCTCTC
mCol2a1 Fw	GATGACTTTTCTCCGTCTACTGTCC
mCol2a1 Rv	GTATGTGAACCTGCTGTTGCCC
mAcan Fw	GAGACTTCTGCCTCTGGAATAG
mAcan Rv	CTCCAGAAGGAATCCCCTAAC
mAxin2 Fw	AAGGTCCTGGCAACTCAGTA
mAxin2 Rv	ATGTGAGCCTCCTCTCTTTTAC
mTcf7 Fw	CCGTATCCACAACAGCTTGC
mTcf7 Rv	GGCCGCTGATTCTTTCAAGG
mLef1 Fw	CGGGAAGAGCAGGCCAAATA
mLef1 Rv	TCTGGGACCTGTACCTGAAGT
mWnt1_Fw	GGGTTTCTACTACGTTGCTACT
mWnt1_Rv	CAGACTCTTGAATCCGTCAA

Primer name	Sequence
mWnt2b_Fw	GAGTGATCTGTGACAACATCCC
mWnt2b_Rv	TGACGAGATAGCATAGACGAAC
mWnt4_Fw	AGTTCAAGCCACATACAGATGA
mWnt4_Rv	TTTAGATGTCTTGTTGCACGTG
mWnt6_Fw	CGGTCACTCAAGCCTGTTCCATG
mWnt6_Rv	GAGGTCCAGGAGTGCCCAGAAG
mWnt7a_Fw	TGCCTTCACCTATGCGATTATC
mWnt7a_Rv	CGCCTCGTTATTGTGTAAGTTC
mWnt7b_Fw	CTCAAGGAGAAGTACAACGCAG
mWnt7b_Rv	GTCTCCATAGGCTTCTGGTAG
mWnt9b_Fw	CTCCTGTGCTGTTTCGTACCTGTTG
mWnt9b_Rv	GCCGTGTCATAGCGTAGCTTCAG
mWnt10a_Fw	AGGTTTTTCGAGAGAGTGCTTTC
mWnt10a_Rv	AAGCCTTCAGTTTACCCAGAG
mWnt11_Fw	AATCAGACGCAACACTGTAAAC
mWnt11_Rv	CTCGATGGAGGAGCAGTTC
mRspo1_Fw	CATTCTGCTGGAGAGGAACGACATC
mRspo1_Rv	GCCTCACAGTGCTCGATCTTGC
mLgr5_Fw	TTTTTCTGTCAAGTGCTCTTCG
mLgr5_Rv	CAGGACACATAGCAAAACGATC
mCcnd1_Fw	CGTATCTTACTTCAAGTGCGTG
mCcnd1_Rv	ATGGTCTCCTTCATCTTAGAGG
mLyz2_Fw	AGGTCTATGAACGTTGTGAGTT
mLyz2_Rv	ACCAGTATCGGCTATTGATCTG

Supplement Table 2

sample	concentration (ng/uL)	A260/A280	A260/A230
C28/I2-0h-1	176.2	1.86	2.34
C28/I2-0h-2	159.9	1.88	2.32
C28/I2-0h-3	168.2	1.78	2.34
C28/I2-TBHP-4h-1	185.5	1.89	2.37
C28/I2-TBHP-4h-2	162.2	1.91	2.06
C28/I2-TBHP-4h-3	171.2	1.95	1.94
C28/I2-TBHP-24h-1	158.4	1.84	2.35
C28/I2-TBHP-24h-2	169.8	1.9	1.98
C28/I2-TBHP-24h-3	160.6	1.9	1.91
ATDC5-0h-1	192.5	2.04	2.07
ATDC5-0h-2	199.7	1.86	2.19
ATDC5-0h-3	189.8	1.91	2.18
ATDC5-TBHP-4h-1	166.5	1.94	2.1
ATDC5-TBHP-4h-2	156.2	1.96	2.26
ATDC5-TBHP-4h-3	149.8	1.9	2.01
ATDC5-TBHP-24h-1	159.6	1.89	2.34
ATDC5-TBHP-24h-2	156.2	1.9	2.32
ATDC5-TBHP-24h-3	156.6	1.98	2.06
Primary-0h-1	129.5	2	2.3
Primary-0h-2	108.6	1.95	2.35
Primary-0h-3	117.8	1.93	2.08
Primary-TBHP-4h-1	118.2	1.91	2.32
Primary-TBHP-4h-2	119.1	1.89	2.32
Primary-TBHP-4h-3	115.6	1.9	2.04
Primary-TBHP-24h-1	128.3	1.91	2.18
Primary-TBHP-24h-2	134.6	1.95	2.1
Primary-TBHP-24h-3	119.3	1.84	2.25