APPENDIX

Supplemental Figure 1: Expression of Notch and Notch ligands in NVR mouse at E18.5. Immunohistochemistry was performed for Notch1, Notch 2, Notch 4, HES1, DDL4 and JAGGED1 in the TMJ condyles of *CBF:H2B-Venus* reporter mouse strain (NVR) at E18.5.

Supplemental Figure 2: Generation of fibrocartilage stem cell (FCSC) line with ligand independent constitutively activated Notch. (a) PCR analysis following enzymatic restriction digest confirming Notch intracellular domain (NICD) in bacterial colonies. Lane 3 represents positive NICD colony. **(b)** Rat FCSCs following 48hrs transduction with GFP NCID plasmid lentivirus.

Supplemental Figure 3: Expression of Notch receptors are increased in TNF-alpha induced TMJ arthritis mouse model. (a) TNF-alpha was injected unilaterally into the TMJ intra-articular space of 6 week-old mice twice 3 days apart to induce inflammatory TMJ arthritis, while saline was injected into the contralateral TMJ as a control. TMJ condyles were examined by immunohistochemistry after 2 and14 days. **(b)** Immunohistochemistry was performed for Notch1, Notch 2 and Notch 4 in TMJ condyles following exposure to saline control and TNF-alpha.

Supplemental Figure 4: Expression of Notch ligands are increased in TNF-alpha induced TMJ arthritis mouse model. (a) TNF-alpha was injected unilaterally into the TMJ intra-articular space of 6 week-old mice twice 3 days apart to induce inflammatory TMJ arthritis, while saline was injected into the contralateral TMJ as a control. TMJ condyles were examined by immunohistochemistry after 2 and14 days. **(b)**

Immunohistochemistry was performed for DLL4, JAGGED1 and HES1 in TMJ condyles following exposure to saline control and TNF-alpha.

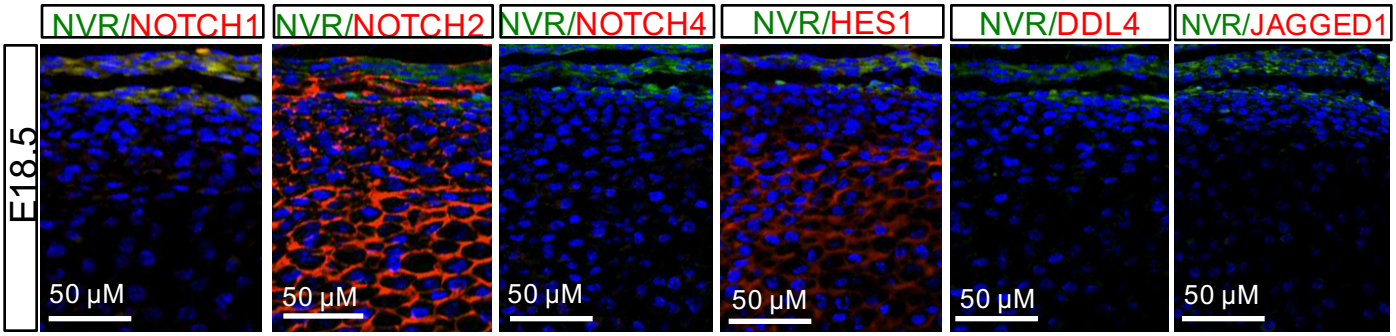
Supplemental Table 1: PCR Primers

Gene	**FWD or REV**	**Sequence**
Rn Gapdh	Forward	CCG CAT CTT CTT GTG CAG TG
	Reverse	GGT AAC CAG GCG TCC GAT AC
Rn Acan	Forward	CCA TGT GTG GGT GAC AAG GA
	Reverse	GCT CCA TTT GTG TGG CGA AG
Rn Sox9	Forward	TCT ACT CCA CCT TCA CCT ACA T
	Reverse	CTG TGT GTA GAC GGG TTG TT
Rn Col2a1	Forward	CAT AGG GCC TGT CTG TTT CTT
	Reverse	CCA TTC AGT GCA GAT CCT AGA G
Rn Runx2	Forward	GGACCGACACAGCCATATAAA
	Reverse	GCCTCATTCCCTAACCTGAAA
Rn Ocn	Forward	ATC TAT GGC ACC ACC GTT TAG
	Reverse	CAT ACT TTC GAG GCA GAG AGA G
Rn Pparγ	Forward	CTG GCC TCC CTG ATG AAT AAA G
	Reverse	AGG CTC CAT AAA GTC ACC AAA G
Rn Notch1	Forward	CTC AAC ACA CTG GGC TCT TT
	Reverse	ATT CTG ACA TGG GTT GGA GAT G
Rn Notch2	Forward	CTTACAGCTTCCCTCTGTCATC
	Reverse	CTCTGAGCAACCCTAGCTTATC
Rn Notch3	Forward	GCAAGCACTCACACACAATAAA
	Reverse	CTCTACTCTCTCTCTCCCTTCTTC
Rn Notch4	Forward	GGCAACAAAAGCACGAGGAG
	Reverse	GTGTAGTCCCGTCGTCTGTG
Rn Dll1	Forward	CTCTTCTGCAACCAGGGTAAG
	Reverse	CAGGAAGCCCAAGGTCAAATA
Rn Dll3	Forward	GTCCCAGGTTCCCACATTCC
	Reverse	CCAGACGATGGCAGAGAAGG
Rn Dll4	Forward	GCCTTCCTTCTGCATTGTTTAC
	Reverse	CCTCCTCCTTCTCCTCTTCTT
Rn Jagged1	Forward	AGAGAGAGAGAGAGAGAGAGAGA
	Reverse	CCAGAGAAGGGCCAAGATAAC
Rn Jagged2	Forward	ATGCCACACAGACCCTACCA
	Reverse	CAGCCCTCCTGACCCTATCT
Rn Hes1	Forward	ATT CTG ACA TGG GTT GGA GAT G

	Reverse	CCA GAA TGT CTG CCT TCT CC
Rn Hes3	Forward	ACAAAGGAAGGTCCACAAGAG
	Reverse	AGAGGAGAGAGAGAGAGAGAGA
Rn Hes5	Forward	GCTCAGTCCCAAGGAGAAA
	Reverse	GAGGAGATGCGTCAGGTG
Rn Hes6	Forward	GGGAGGACACTACAGAAAGAAG
	Reverse	CTCATGCTCAGCCTCAAGAT
Rn Hes7	Forward	GGAGAAAGGAACAGGGAAAGAA
	Reverse	GAAAGGACAGGGAACTGGTATC
Rn Hey1	Forward	GGC TAT GGA CTA TCG GAG TTT G
	Reverse	TGG GAT GCG TAG TTG TTG AG
Rn Hey2	Forward	AGATCTCCACAGCAGCAATAAA
	Reverse	GTTGCCAAGCTGCCTTAAAC
Hs Notch1intra	Forward	CTCACCTGGTGCAGACCCAG
	Reverse	GCACCTGTAGCTGGTGGCTG

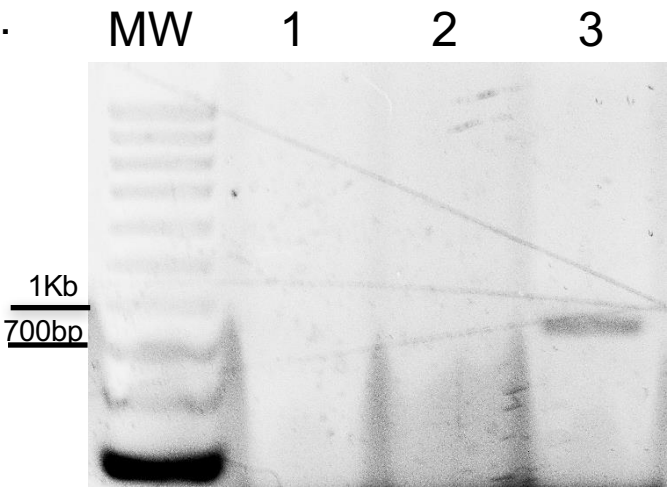
Supplemental Table 2: Antibodies used for immunohistochemistry

Primary Antibody	Source
Goat anti- Notch 1	R&D #AF1057 (1:100)
Rabbit anti- Notch 2	Abcam #ab8926 (1:100)
Rabbit anti-Notch 4	Homemade #Rb2-2AFR (1:100)
Goat anti- DLL4	R&D #AF1389 (1:100)
Goat anti-Jagged 1	R&D #AF599 (1:100)
Rabbit anti-Hes 1	Santa Cruz #H-140 (1:100)

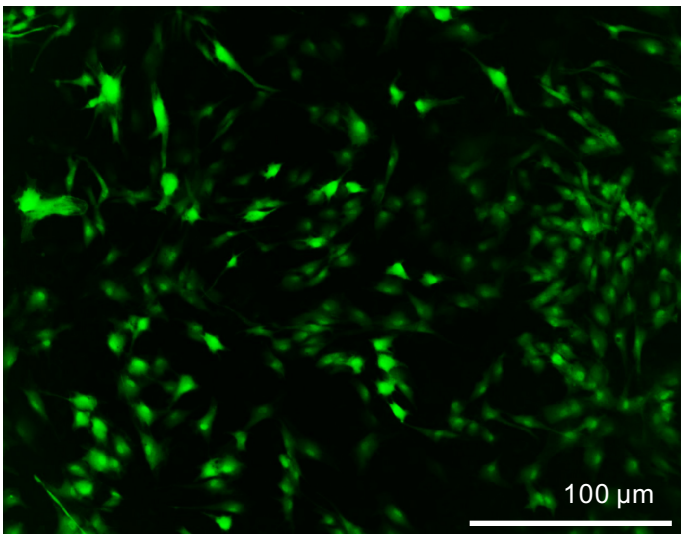


Supplemental Figure 1

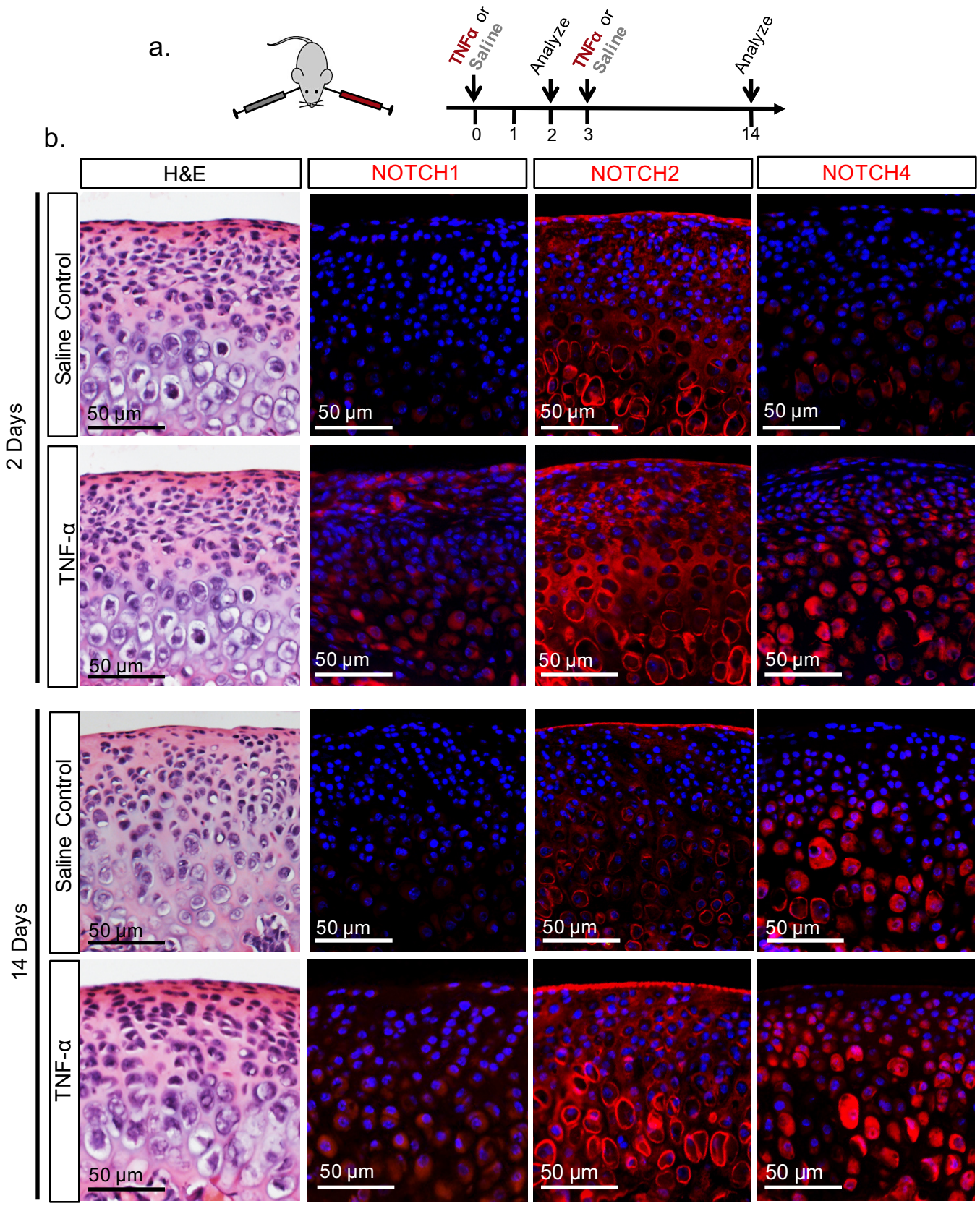
a.



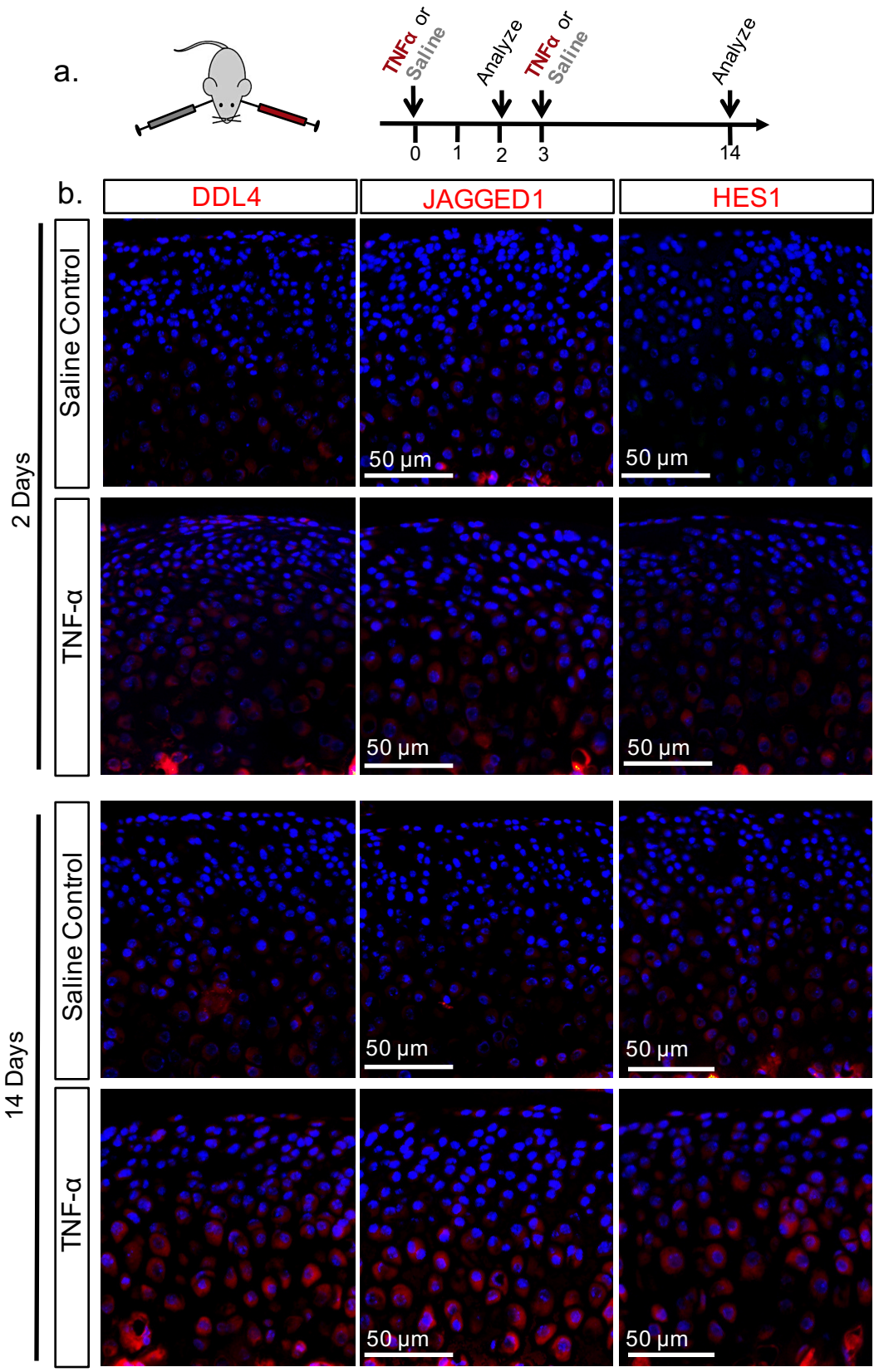
b.



Supplemental Figure 2



Supplemental Figure 3



Supplemental Figure 4