

Supplementary Figures

- *Journal:* Cells
- *Manuscript #:* cells-1018009
- *Title of Paper:* Characterization of early-onset finger osteoarthritis-like condition using patient-derived induced pluripotent stem cells
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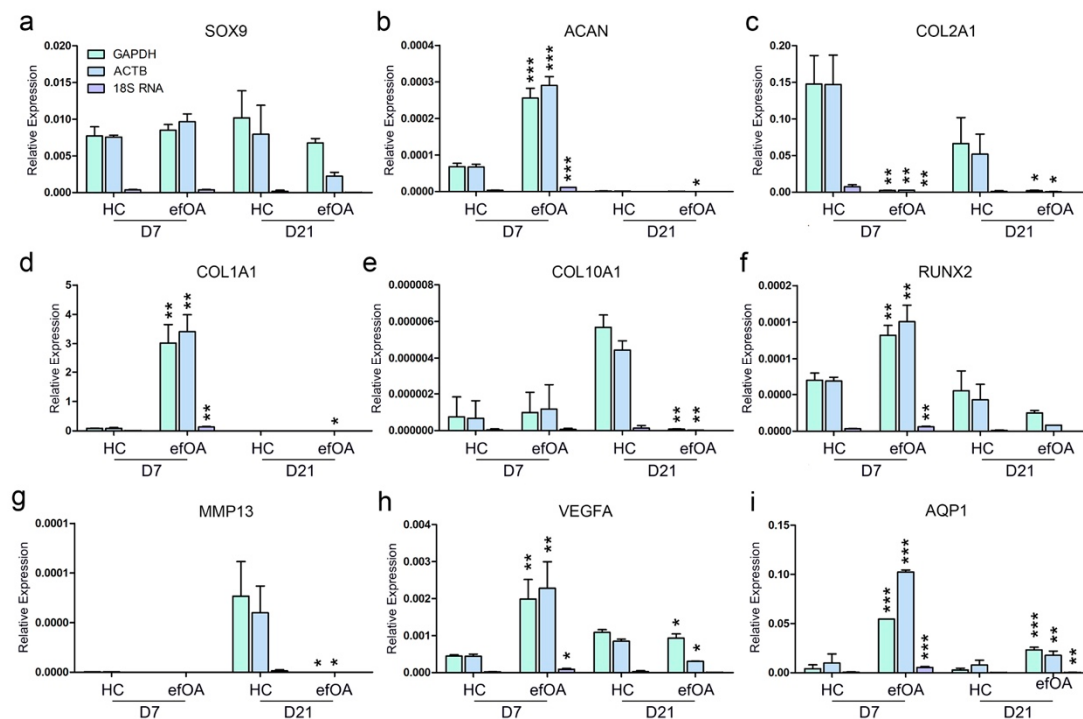


Figure S1. Gene expression confirmation using three different reference genes; *GAPDH*, β -actin (*ACTB*), and *18S RNA*. (a) Relative expression of *SOX9*. (b) Relative expression of *ACAN*. (c) Relative expression of *COL2A1*. (d) Relative expression of *COL1A1*. (e) Relative expression of *COL10A1*. (f) Relative expression of *RUNX2*. (g) Relative expression of *MMP13*. (h) Relative expression of *VEGFA*. (i) Relative expression of *AQP1*. Significant differences between the healthy control (HC) and early finger osteoarthritis (efOA) on each time point (day 7 and 21; D7 and D21) are each indicated by the asterisk symbol (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

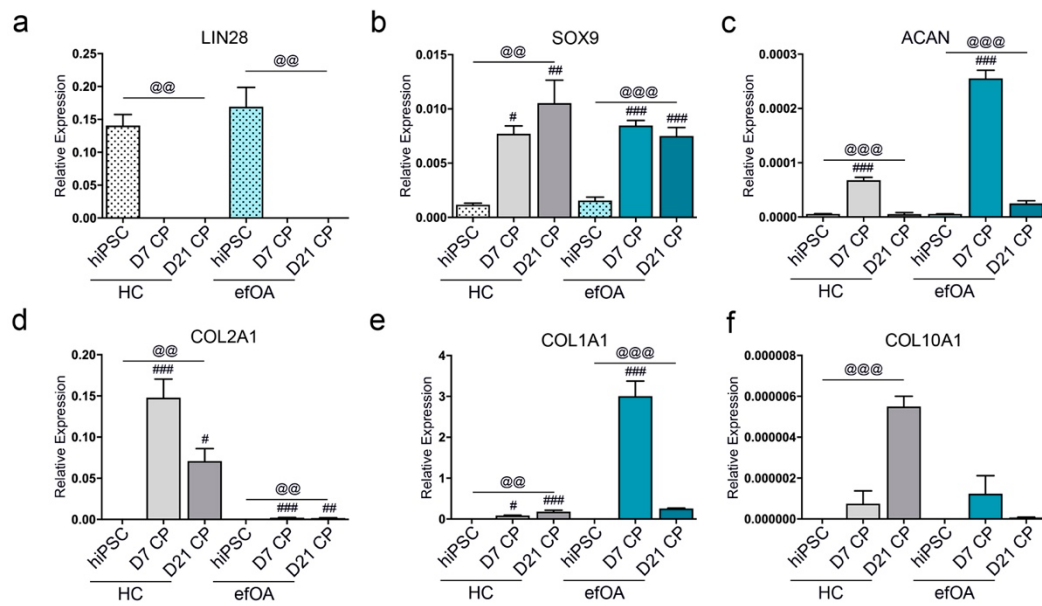


Figure S2. Confirmation of chondrogenic gene expression in human induced pluripotent stem cells (hiPSCs) and derived chondrogenic pellets (CPs). (a) Relative expression of *LIN28*. (b) Relative expression of *SOX9*. (c) Relative expression of *ACAN*. (d) Relative expression of *COL2A1*. (e) Relative expression of *COL1A1*. (f) Relative expression of *COL10A1*. Statistically significant differences between the hiPSC control and CPs on each time point are indicated by the hash symbol (# $p < 0.05$, ## $p < 0.01$, ### $p < 0.001$). The significance between each group analyzed using ANOVA was indicated using the at sign (@ $p < 0.05$, @@ $p < 0.01$, @@@ $p < 0.001$).

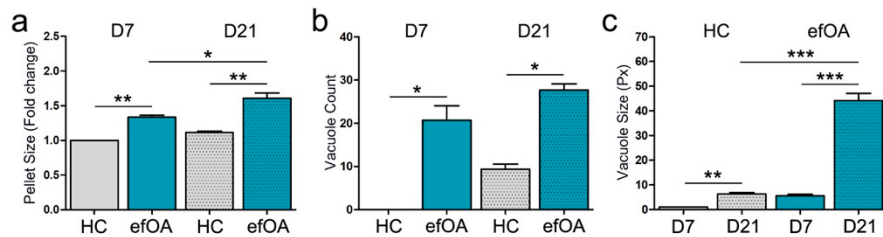


Figure S3. Further characterization of day 7 (D7) and 21 (D21) chondrogenic pellets (CPs). (a) Pellet size measurement of CPs. (b) Vacuole count in CPs. Statistical significance between healthy control (HC) and early finger osteoarthritis (efOA) CPs are indicated by the asterisk symbol (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$). (c) Measurement of vacuole size in CPs. The statistical significance was measured between D7 HC-CPs and other groups. The expression of each gene was normalized to that of GAPDH.

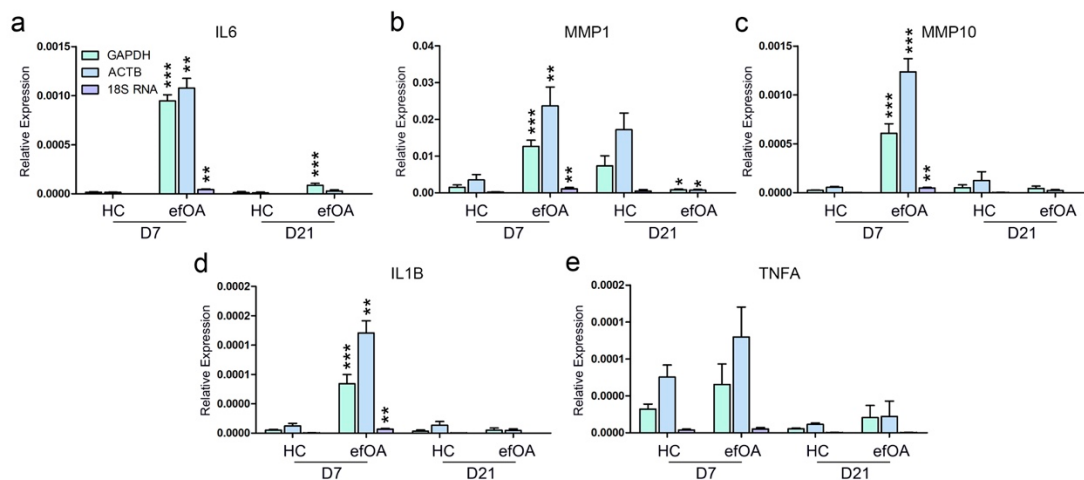


Figure S4. Gene expression confirmation using three different reference genes; *GAPDH*, β -actin (*ACTB*), and *18S RNA*. (a) Relative expression of *IL6*. (b) Relative expression of *MMP1*. (c) Relative expression of *MMP10*. (d) Relative expression of *IL1B*. (e) Relative expression of *TNFA*. Statistical significance between the healthy control (HC) and early finger

osteoarthritis (efOA) on each time point (day 7 and 21; D7 and D21) are each indicated by the asterisk symbol (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

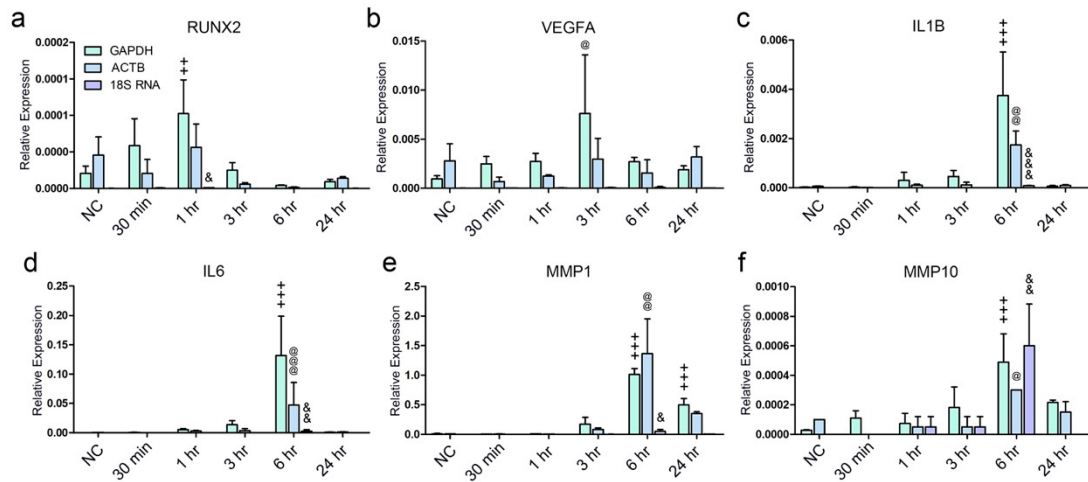


Figure S5. Confirmation of *RUNX2*, *VEGFA*, *IL1B*, *IL6*, *MMP1*, and *MMP10* expression using three different reference genes; *GAPDH*, β -actin (*ACTB*), and *18S RNA*. (a) Relative expression of *RUNX2*. (b) Relative expression of *VEGFA*. (c) Relative expression of *IL1B*. (d) Relative expression of *IL6*. (e) Relative expression of *MMP1*. (f) Relative expression of *MMP10*. Statistically significant differences between the normal control (NC) and the treatment groups are each indicated by the +, @, and & (One-way ANOVA, Dunnett's test, +, @, & $p < 0.05$, ++, @@, && $p < 0.01$, +++, @@@, &&& $p < 0.001$).