Self-organized emergence of hyaline cartilage in hiPSC-derived multi-tissue organoids

Author Information

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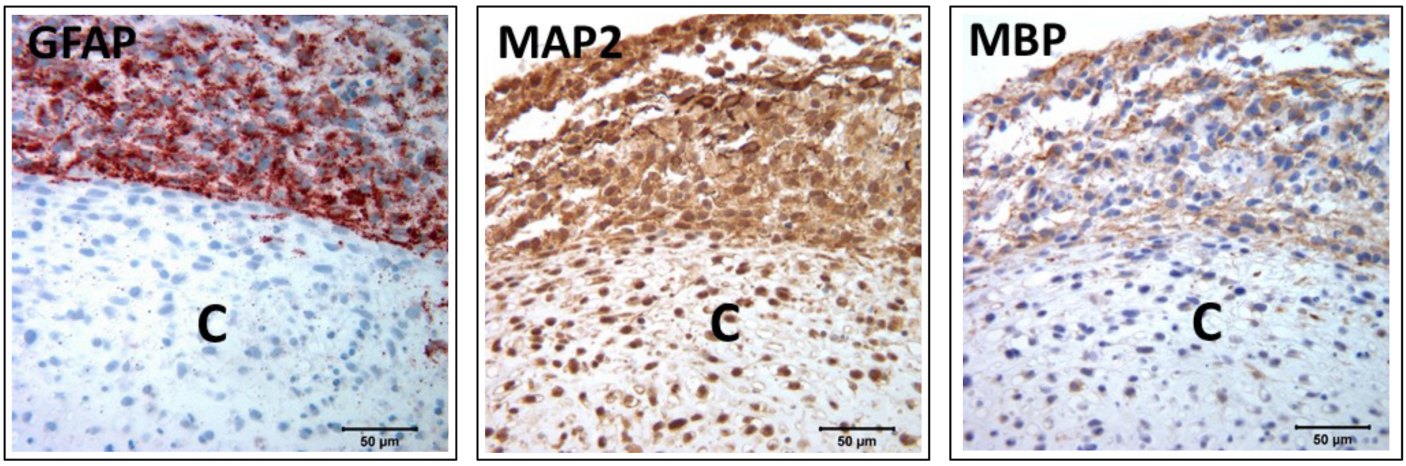
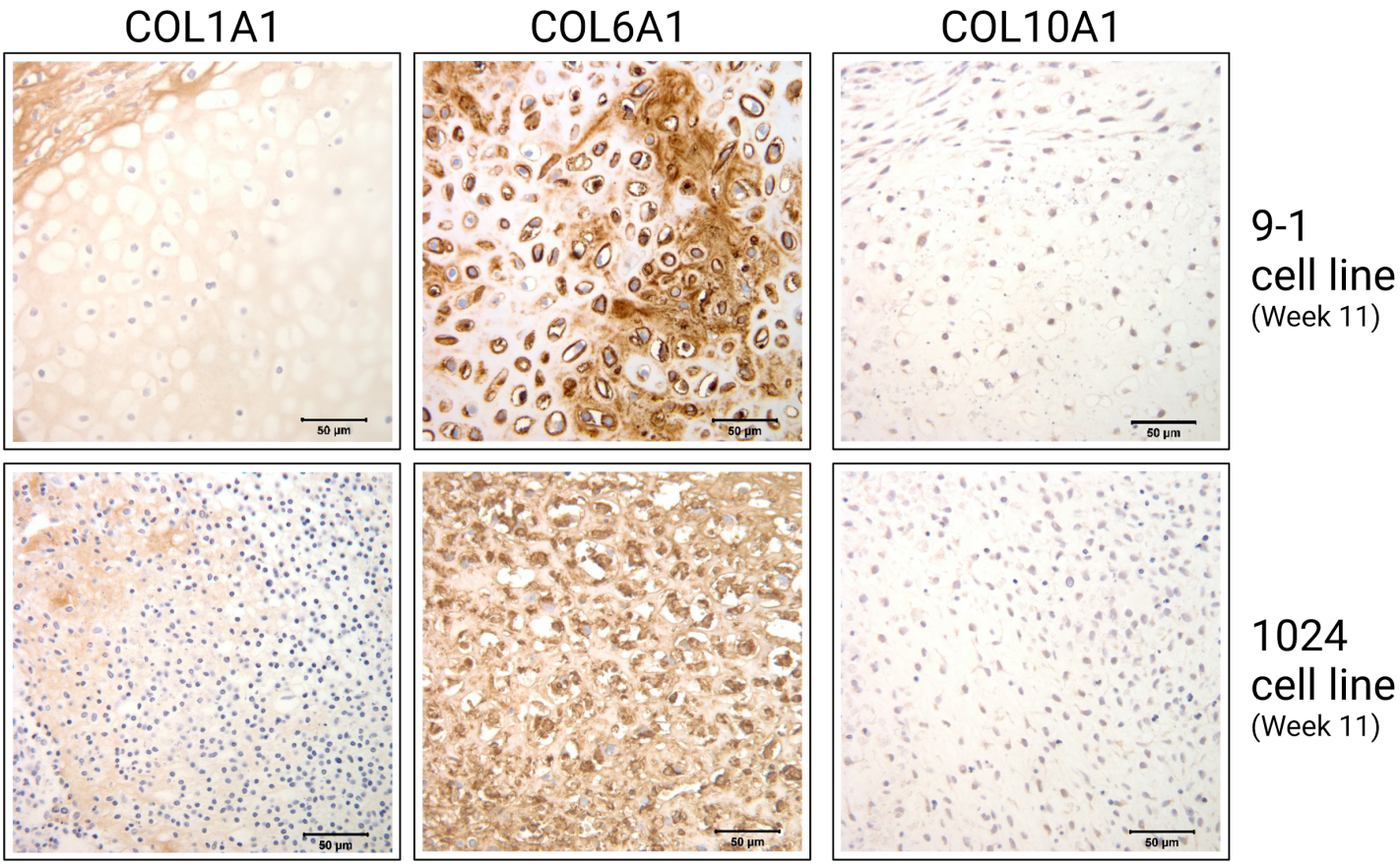
Fig. S1



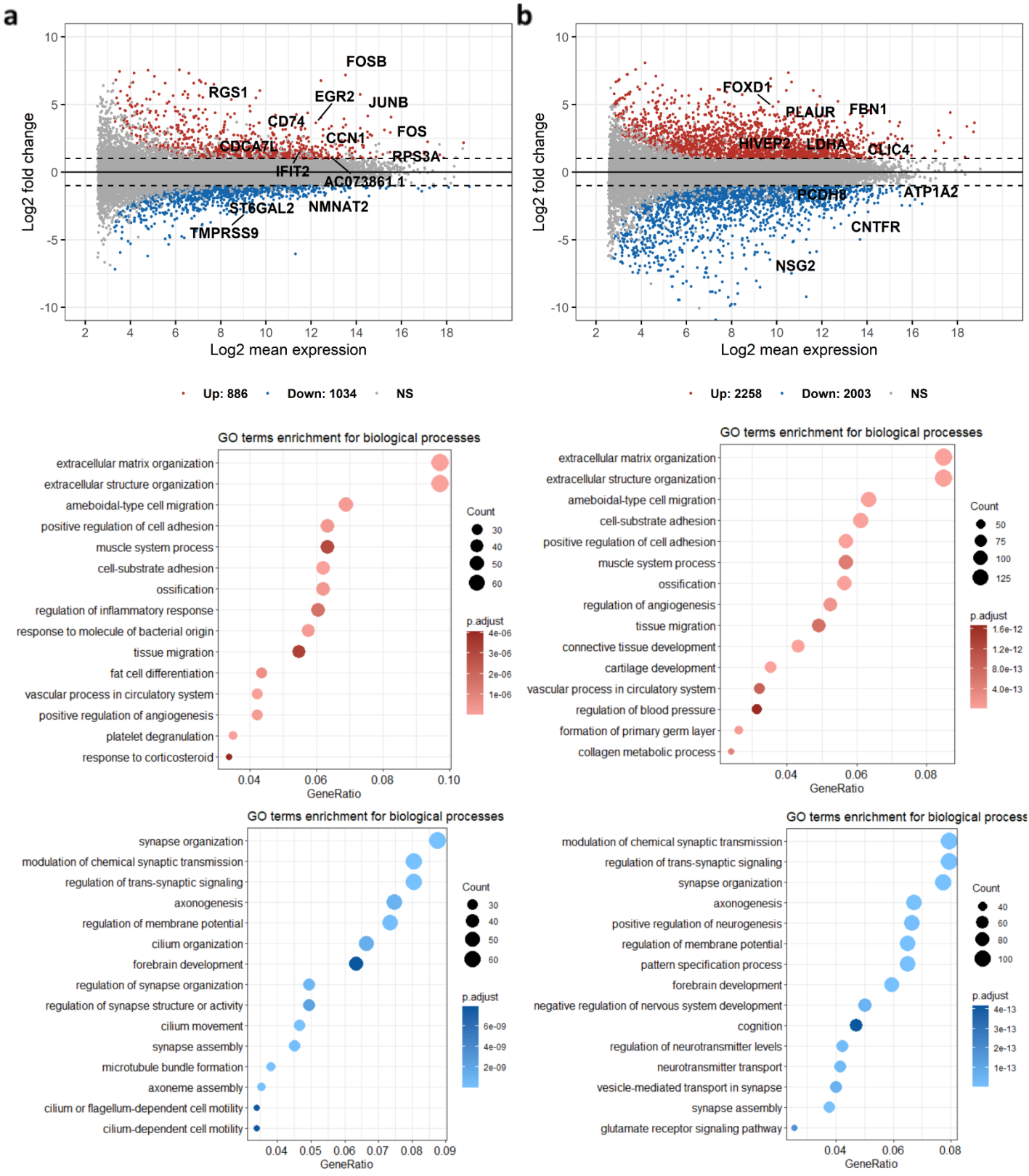
Immunohistochemical staining for brain cell lineages in 1024 MTOs at 8 weeks demonstrates strong labeling for glial fibrillary acidic protein (GFAP, astrocytes), microtubule-associated protein 2 (MAP2, neurons), and myelin basic protein (MBP, oligodendrocytes) in surface regions of the MTO adjacent to the chondrogenic region (C).

Fig. S2



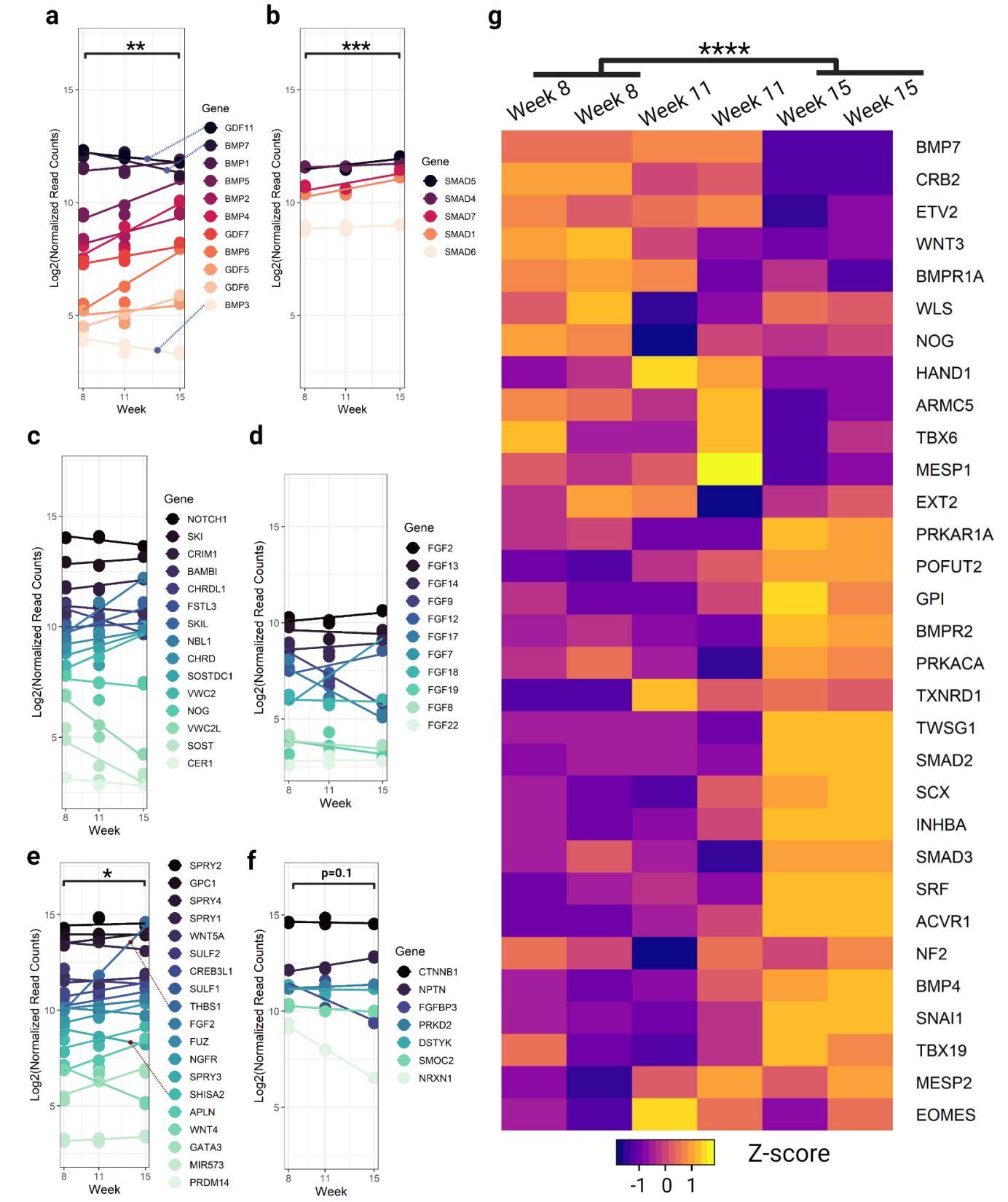
11-week MTOs from 9-1[1] and 1024 cell lines showing some peripheral weak to moderate staining for type I collagen (COL1A1), pericellular and some patchy matrix staining for type VI collagen (COL6A1), and negative staining for type X collagen (COL10A1).

Fig. S3.



Differential gene expression and gene ontology enrichment analyses (week 11 vs week 8 and week 15 vs week 11). **a.** Differential gene expression, gene ontology enrichment for upregulated and genes, gene ontology enrichment for downregulated genes between week 11 and week 8. **b.** Differential gene expression, gene ontology enrichment for upregulated and genes, gene ontology enrichment for downregulated genes between week 15 and week 11.

Fig S4.



Gene expression plots of gene lists of interests. **a.** Bone morphogenic proteins (BMP). **b.** SMAD proteins. **c.** BMP antagonists. d. Neural FGFs. **e.** Negative regulation of FGFR pathway (GO:0040037). **f.** Positive regulation of FGFR pathway (GO:0045743). **g.** Mesoderm formation (GO:0001707).

Table S9. Antibodies used for histology and immunohistochemistry.

Antibody	Type of Antibody	Manufacturer/Cat. No.	Dilution	Antigen Retrieval
Aggrecan (ACAN)	Goat polyclonal	R&D Systems, Cat# AF1220	1:200	None
Type I Collagen (COL1A1)	Mouse monoclonal	Sigma c2456	1:100	Proteinase K
Type II Collagen (COL2A1)	Mouse monoclonal	Developmental Studies Hybridoma Bank CIIC1	1:10	Pepsin
Type VI Collagen (COL6A1)	Rabbit polyclonal	abcam ab6588	1:400	Citrate
Type X Collagen (COL10A1)	Rabbit polyclonal	abcam ab58632	1:400	Typsin
Glial Fibrillary Acidic Protein (GFAP)	Rabbit polyclonal	Dako Cat.#Z0334	1:1000	None
Microtubule Associated Protein 2 (MAP2)	Chicken polyclonal	abcam ab5392	1:4000	Citrate
Myelin Basic Protein (MBP)	Rabbit polyclonal	abcam ab40390	1:3000	Citrate

Reference:

1. Lindborg, B. A. *et al.* Rapid Induction of Cerebral Organoids From Human Induced Pluripotent Stem Cells Using a Chemically Defined Hydrogel and Defined Cell Culture Medium. 694–702 (2016).