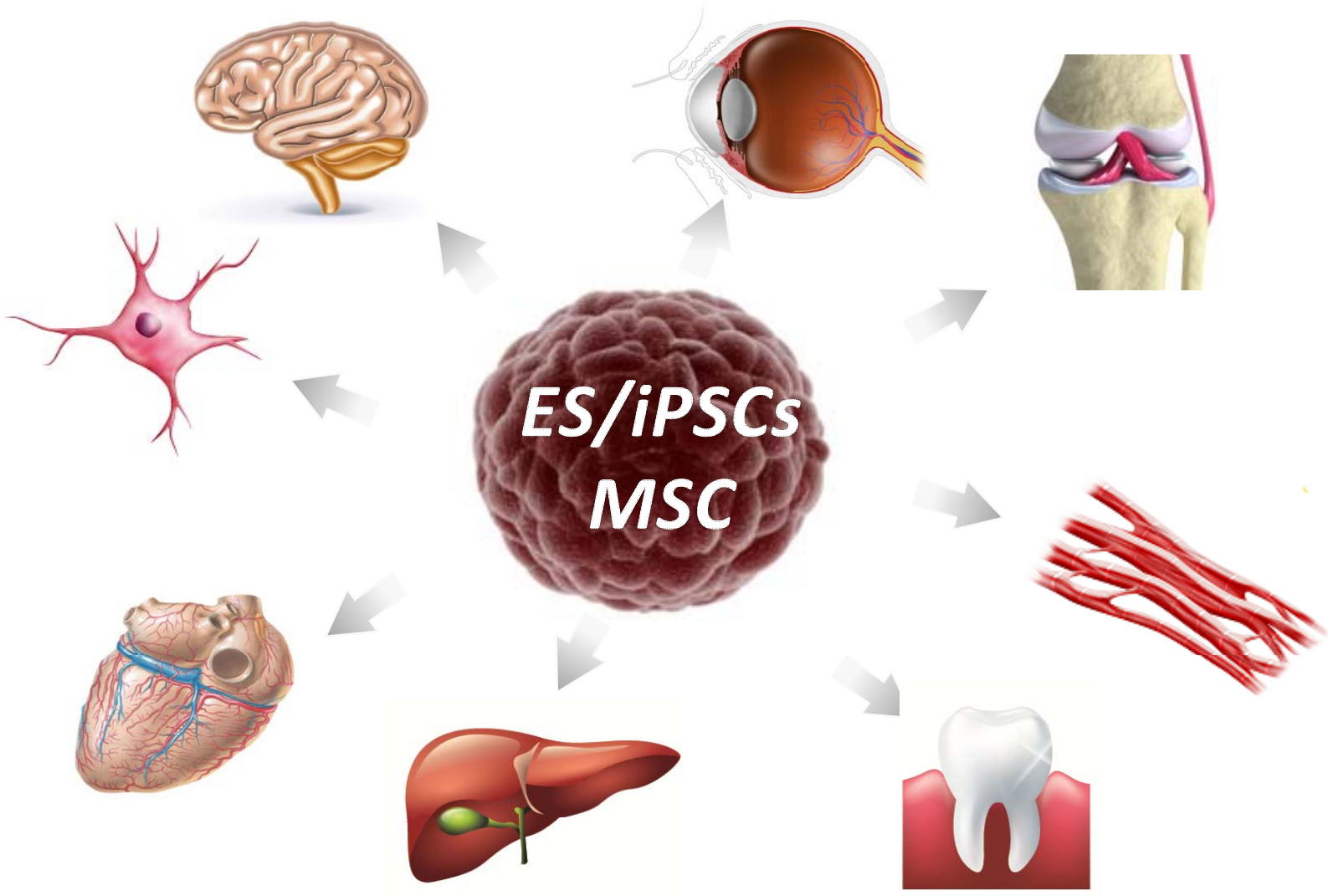
幹細胞研究での応用： 論文リスト



53報

https://www.sumibe.co.jp/product/s-bio/primesurface-proteo/primesurface-96u/index.html

Resetting transcription factor control circuitry toward ground-state pluripotency in human

【出典】

Takashima, Y., Guo, G., Loos, R., Nichols, J., Ficz, G., Krueger, F., Oxley, D., Santos, F., Clarke, J., Mansfield, W.*, et al.* (2014). Cell *158*, 1254-1269.

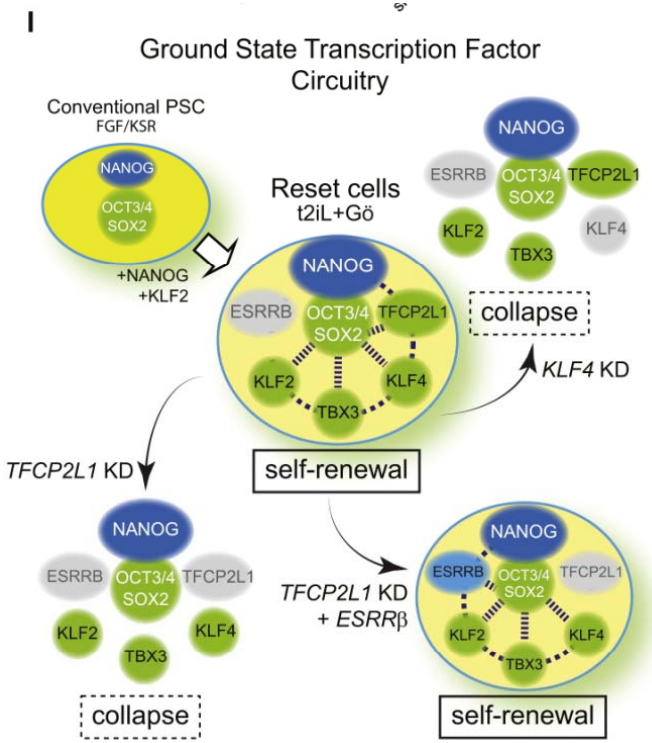


Figure 7. Resetting by Transient Transgenesis
(I) ESC express general pluripotency factors Oct4 and Sox2 plus an interconnected transcription factor circuitry that sustains self-renewal. Resetting induces expression of these factors in human PSC apart from ESRRB. Self-renewal is less robust in human, and knockdown of single components, TFCP2L1, or KLF4 causes collapse.

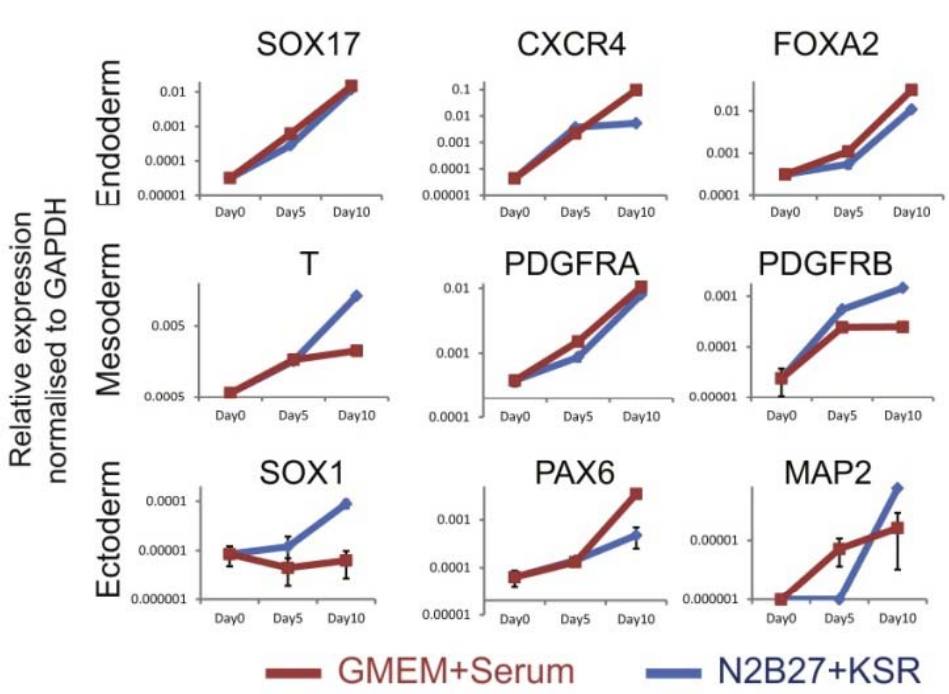
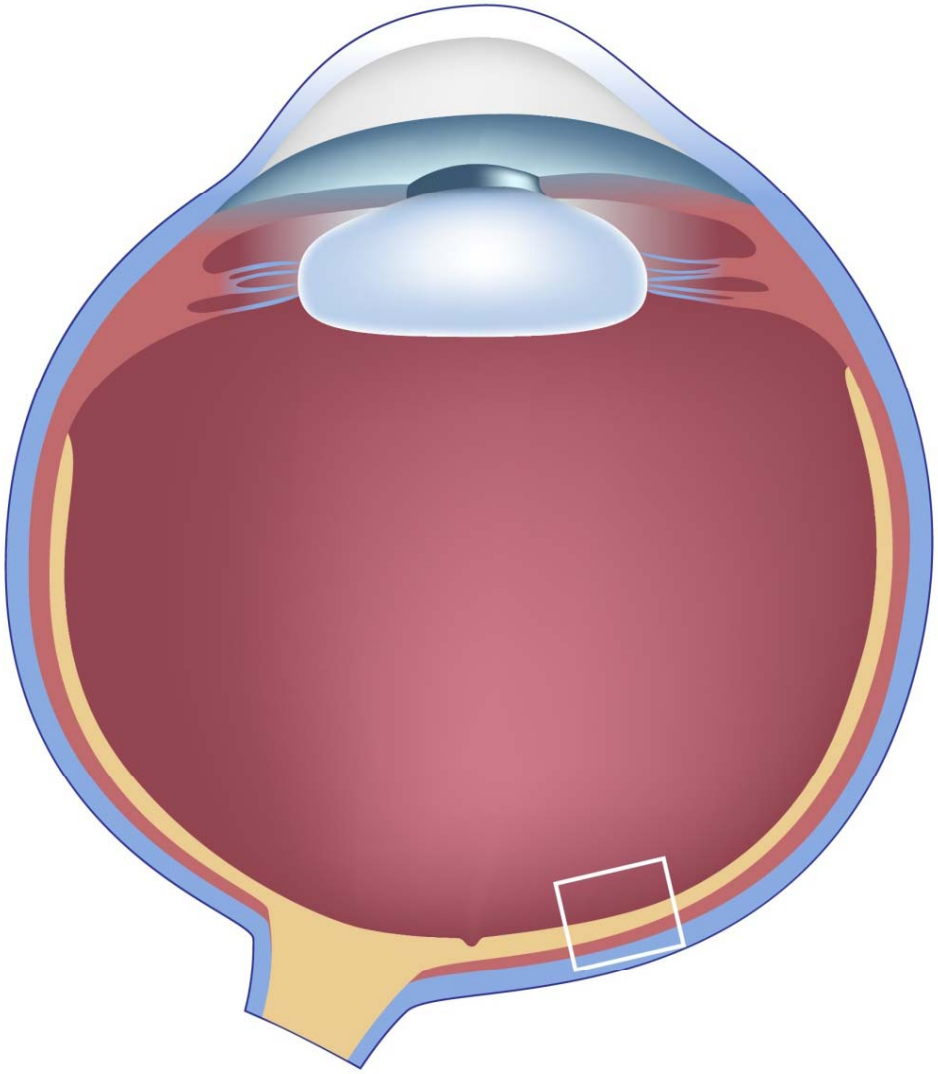
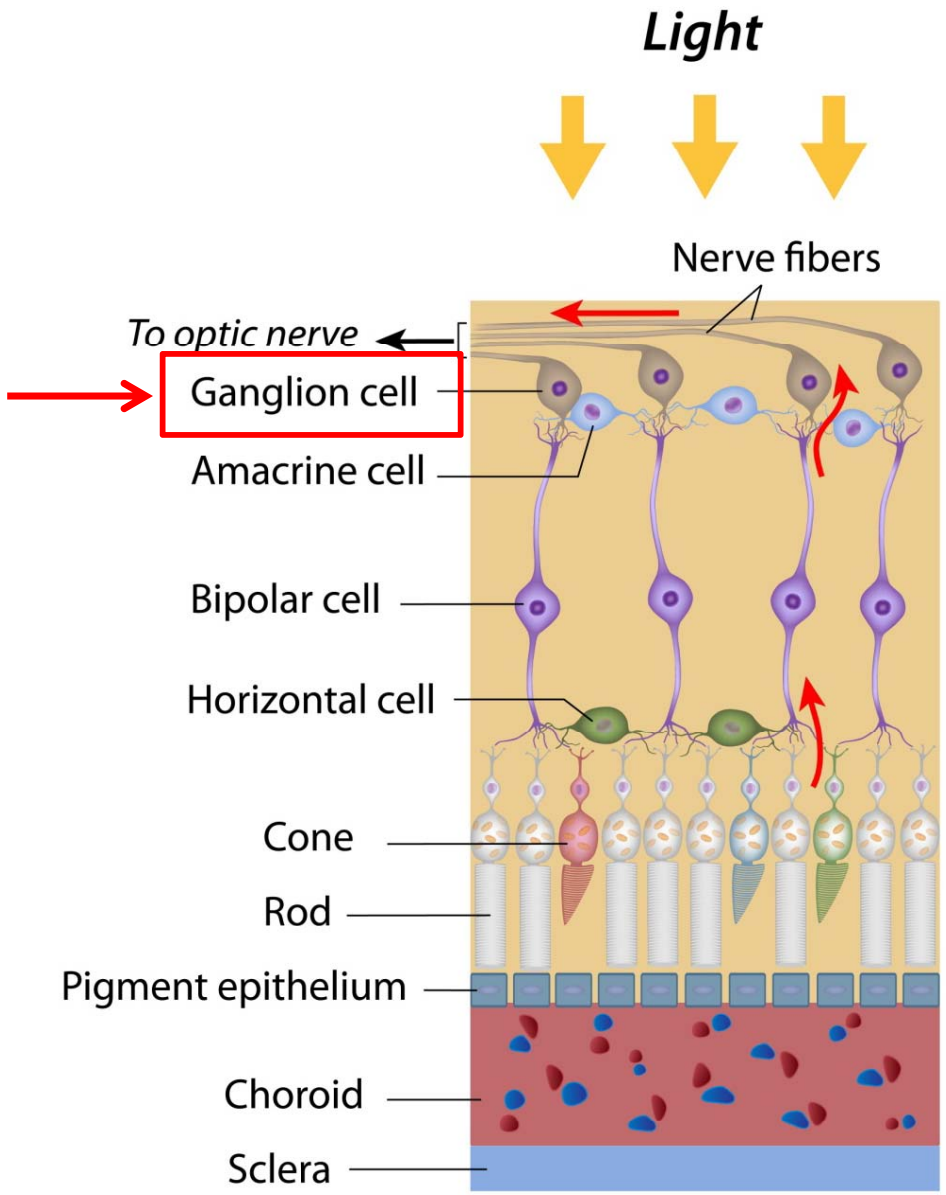


Figure 2. Differentiation
(A) Expression of lineage markers in embryoid bodies formed from reset cells in KSR or serum.

Structure of the Retina





Generation of retinal ganglion cells with functional axons from human induced pluripotent stem cells

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[1]Department of Ophthalmology and Laboratory for Visual Science, National Centre for Child Health and Development, Tokyo, Japan, [2]Department of Physiology, Faculty of Medicine, Saitama Medical University, Saitama, Japan.

【出典】Tanaka, T., Yokoi, T., Tamalu, F., Watanabe, S., Nishina, S., and Azuma, N. (2015). Sci Rep *5*, 8344.

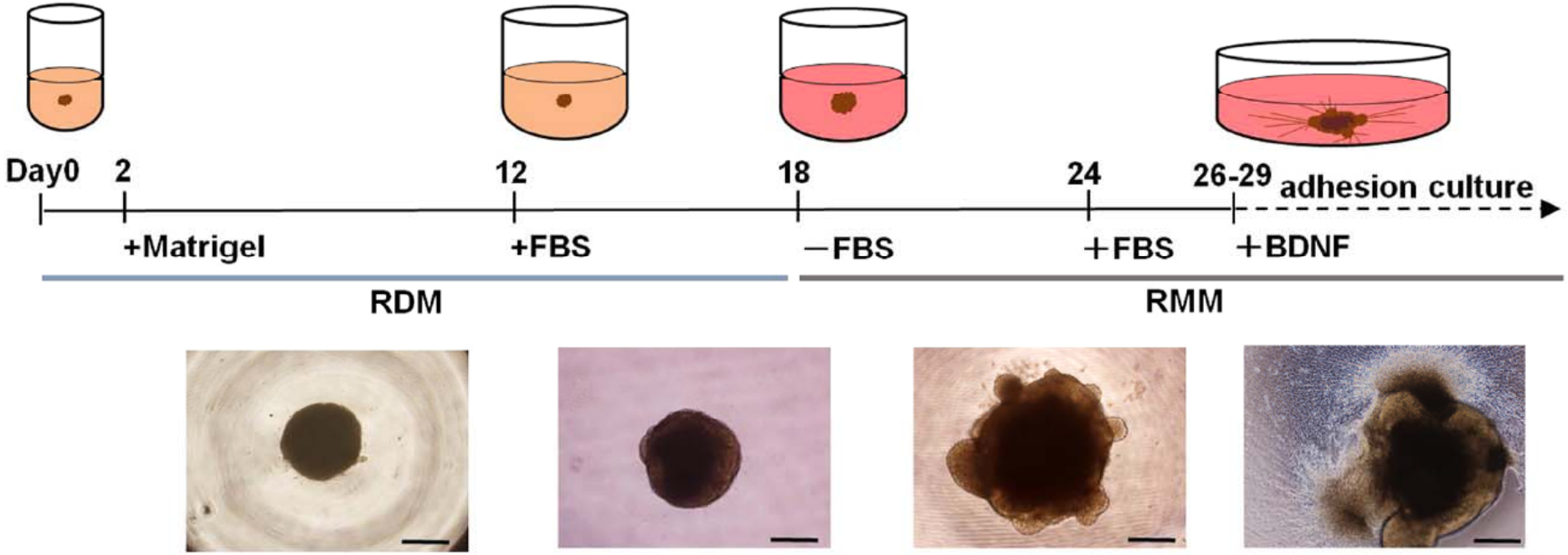

Figure 1 | Schematic diagram of the protocol for self-induction of retinal ganglion cells. This protocol consisted of a period of suspension culture (3D) followed by a period of adhesive culture (2D) and resulted in observation of axonal elongation from retinal ganglion cells (RGCs) from human iPSCs starting within 30 days. Two basal media, retinal differentiation medium (RDM) and retinal maturation medium (RDM) were used. Significant morphological changes occurred after a medium change fromRDMto serum-freeRMMon D18, at which point optic vesicles (OVs) appeared to extrude from the cultured cell aggregates. Beginning with the start of adhesive culture on D26–29, axons grew out radially from the mass of newRGCbodies. Phase contrast micrographs were taken on D6, D18, D24, and D30 and are shown in sequence from left to right. Scale bar, 500 mm.

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Simultaneous regeneration of full-thickness cartilage and subchondral bone defects in vivo using a three-dimensional scaffold-free autologous construct derived from high-density bone marrow-derived mesenchymal stem cells.

【出典】Ishihara, K., Nakayama, K., Akieda, S., Matsuda, S., and Iwamoto, Y. (2014). J Orthop Surg Res *9*, 98.

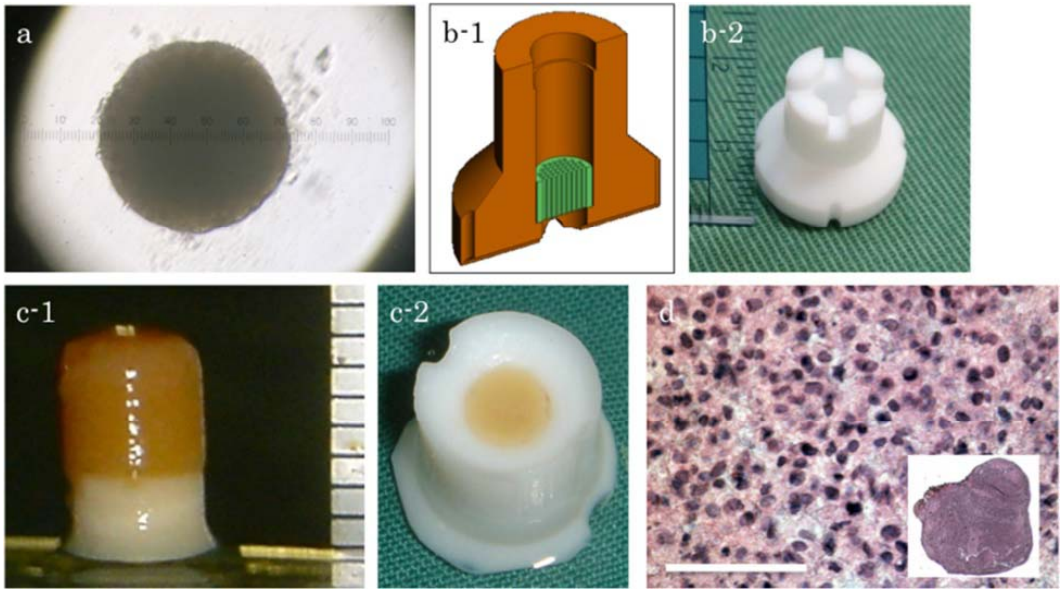
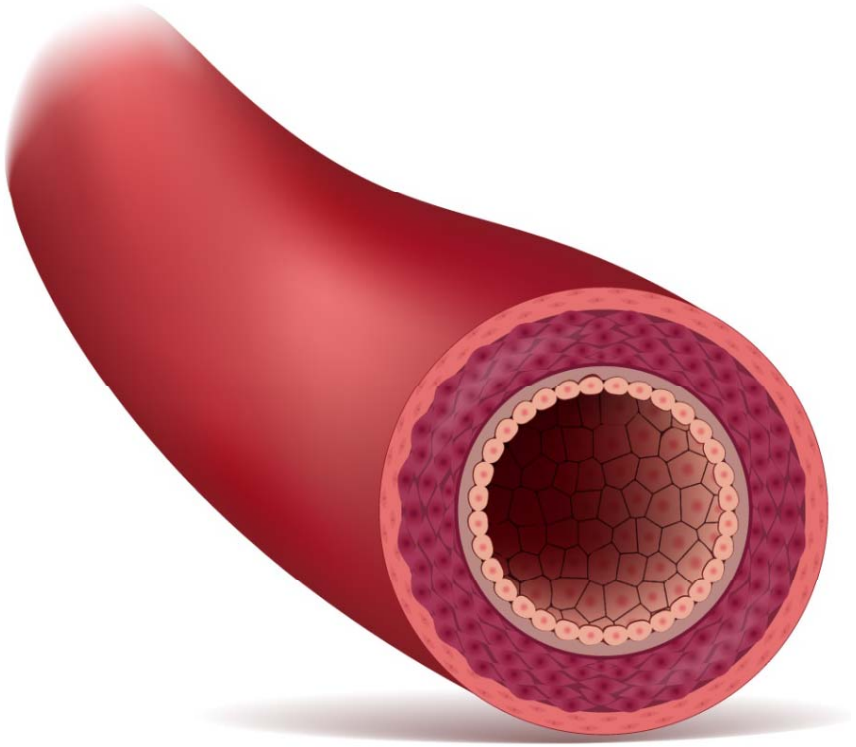


Figure 1 Manufacturing HDMACs. (a) BM-MSCs were isolated from bone marrow liquid aspirated from rabbits. After expansion, re-suspension, and incubation, the cells spontaneously aggregated into a spheroid-like structure. Each scale unit represents 1 μm. (b) A handmade tube-shaped Teflon mold with a diameter of 4.6 mm and a height of 5 mm. The spheroids described in (a) were loaded into this mold. Each scale unit represents 1 mm. (c) The tube-shaped mold was maintained under air-liquid interface conditions and incubated for a week. These loaded spheroids fused with each other, and a cylinder-shaped construct made with fused cells was obtained according to the inner shape of the mold. Each scale unit represents 1 mm. (d) Safranin O staining of HDMACs after 1 week of incubation. Scale bar =100 μm. (N = 1).

CYFUSE



Scaffold-Free Tubular Tissues Created by a Bio-3D Printer Undergo Remodeling and Endothelialization when Implanted in Rat Aortae.

【出典】Itoh, M., Nakayama, K., Noguchi, R., Kamohara, K., Furukawa, K., Uchihashi, K., Toda, S., Oyama, J., Node, K., and Morita, S. (2015). PLoS One *10*, e0136681.

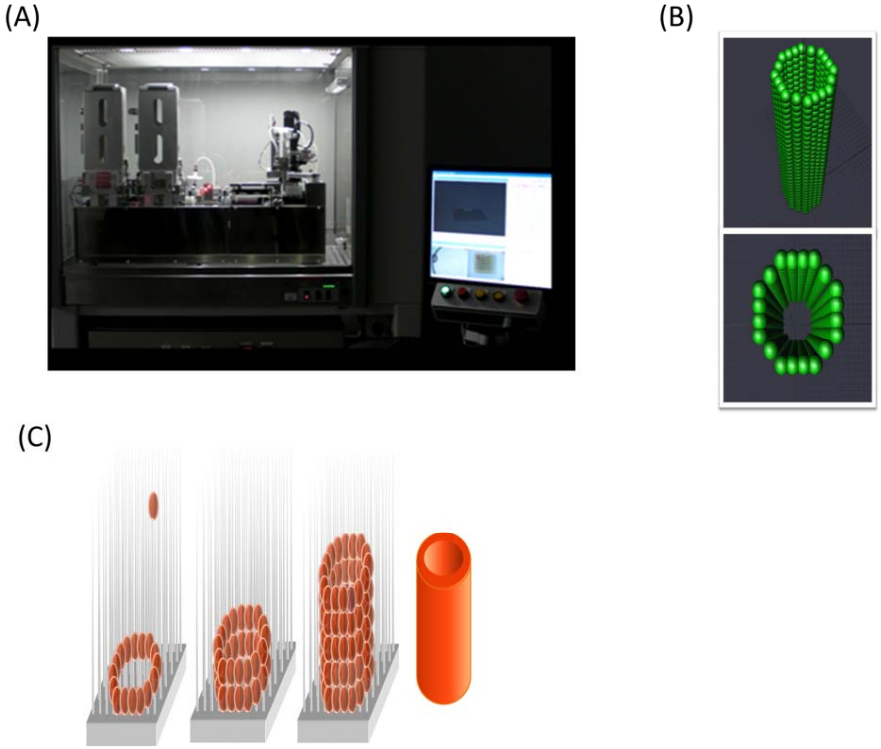


Fig 1. The system of lamination of the MCS (Bio-3D printer) (A) skewers the MCSs into needle-array according to a three-dimensional structure pre-designed on a computer system (C). It is possible to design a 3D tube-shaped structure, such as that plotted in green (B), on the workstation computers.

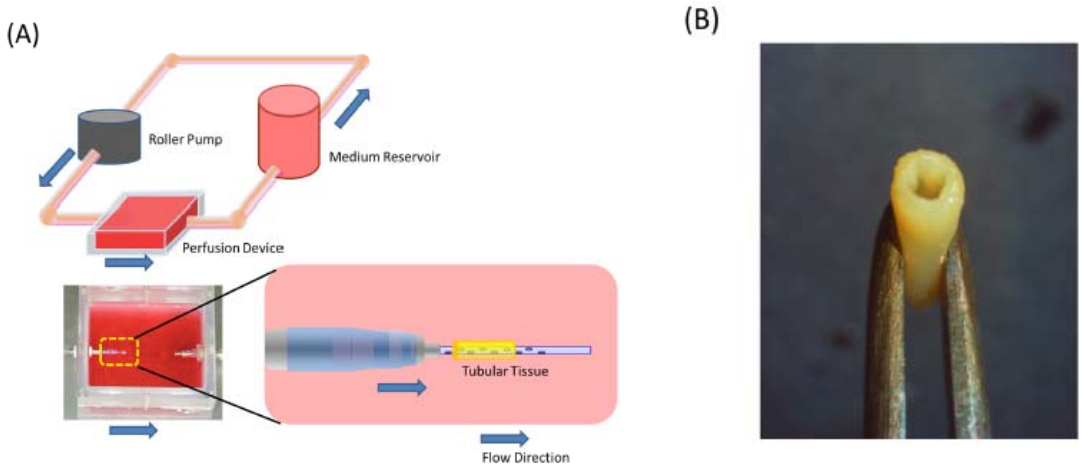


Fig 2. The schematic illustration of the bioreactor system (A). The vascular graft generated by the Bio-3D printer is cannulated by an outer 22 gauge
intravenous catheter (SURFLO: Termo, Tokyo, Japan) which has side holes, and is perfused by culture medium for 2 days before implantation. A scaffoldfree
vascular graft is generated from the MCSs(B).

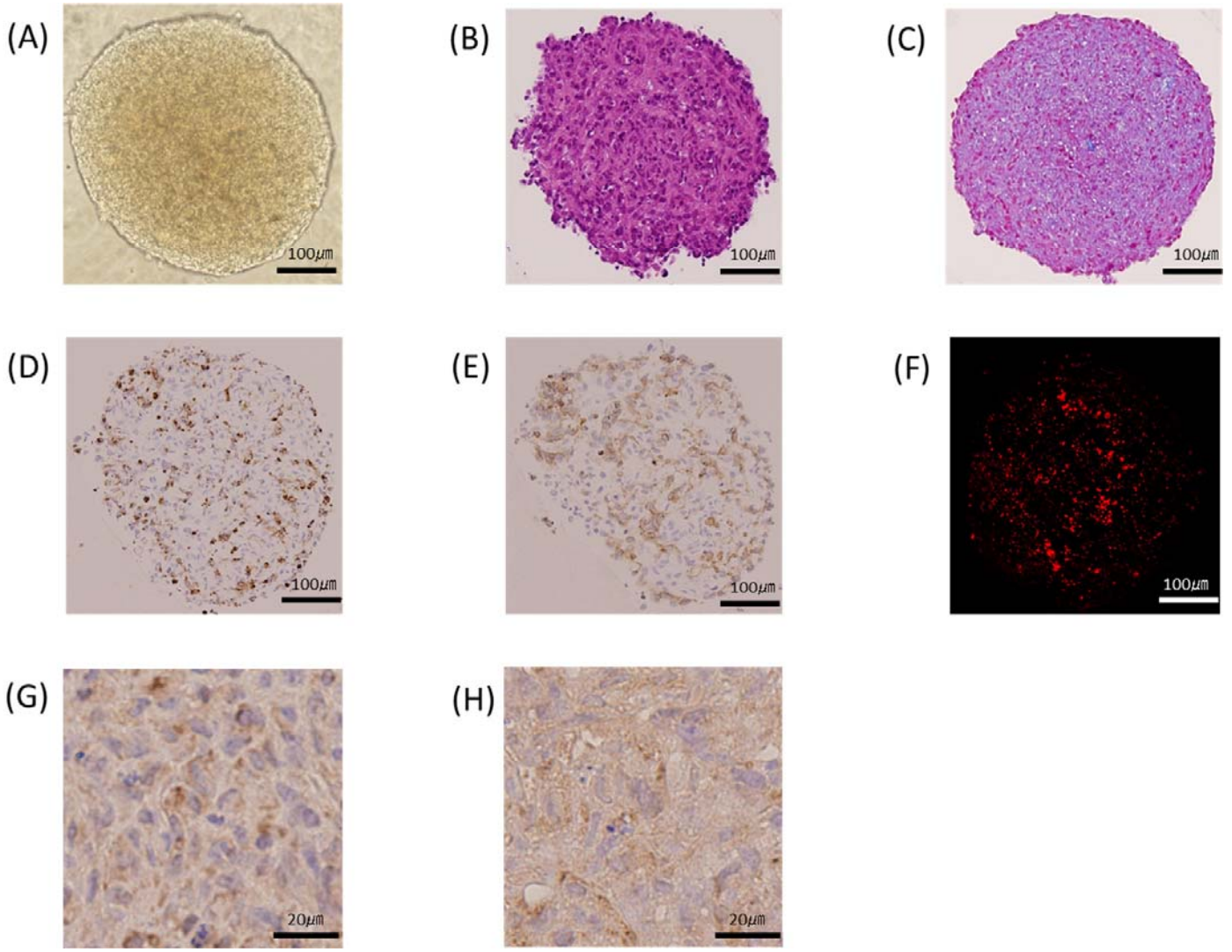


Fig 4. A phase contrast microscopy shows the spheroid morphology of a MCS (A). Spindle to polygonal cells are mixed in the MSC (B). Masson's trichrome staining reveals the extensive collagenous extracellular matrix (ECM) as blue (C). vWF, CD31 and CellTracker Red-positive vascular endothelial cells are distributed to all parts of the MCS (D-F). SMA and desmin-positive HASMC intermingle with the other cell types (G,H).