

Rapid Concentration of Multilayered Tissues on Curved Substrate by Water Transfer Printing

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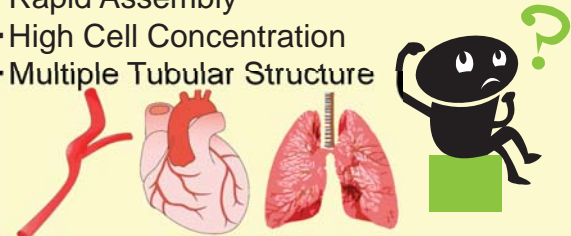
Rapidly assembling 3D tissues into tubular structure !!

1. Background



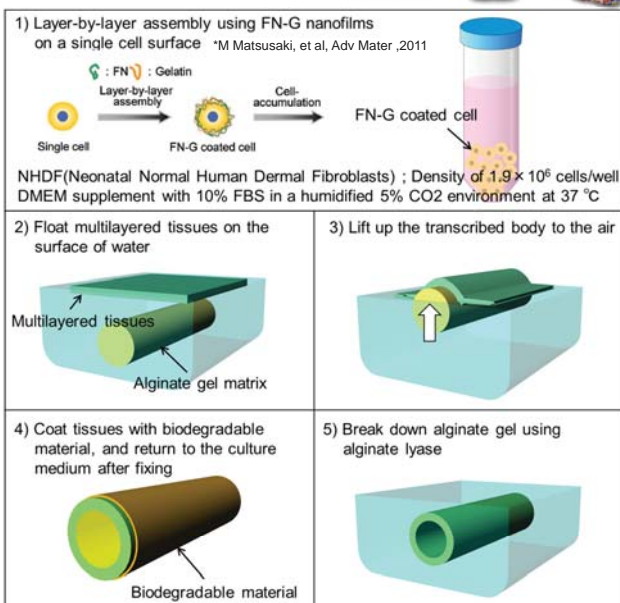
* T Masuda, et al, Biomedical Microdevices (2012)

- Rapid Assembly
- High Cell Concentration
- Multiple Tubular Structure

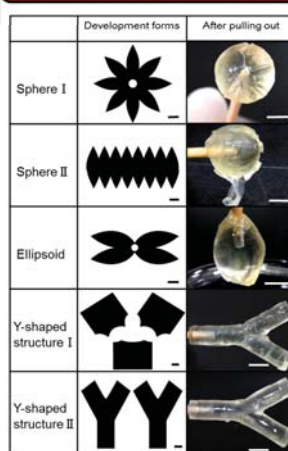


2. Design Concepts

What's a Water Transfer Printing ?



3. Developed Figures



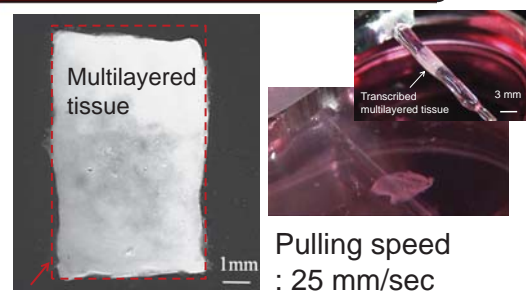
	Degree of circularity	Surface segmentation	Transcriptional behavior
Sphere I	0.17	good	good
Sphere II	0.14	good	poor
Ellipsoid	0.25	good	excellent
Y-shaped structure I	0.60	fair (3 parts)	fair (need fixation)
Y-shaped structure II	0.39	fair (2 parts)	fair (need fixation)

Intended figure

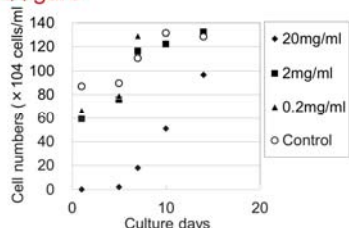


High circularity of transferred tissue demonstrated excellent transcriptional behavior.

4. Results and Discussion

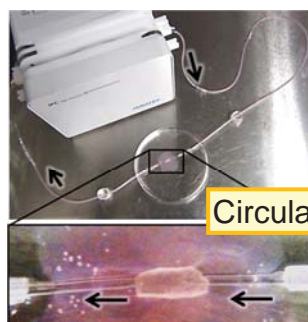
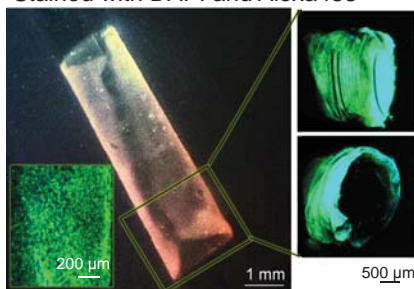


Intended figure



Low concentration alginate lyase have little effect on the cell migration

Stained with DAPI and Alexa488



Circulation !!

5. Conclusion

1. We proposed new 3D assembly techniques to fabricate a hollow tissue structure using by water transfer printing.
2. We succeeded in assembling three-dimensional multilayered tissue into tubular structure.
3. Fabricated tubular multilayered tissues used circulation model, such as artificial blood vessel.
4. These artificial hollow tissues would be used for drug efficiency evaluation and operative training as in vitro simulators.

Acknowledgement

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Reference

T. Masuda, et al., 16th International Conference on Miniaturized Systems for Chemistry and Life Science (microTAS) pp. 488-490, 2012

