

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

OT Masuda^{1*}, N Takei¹, H. Owaki¹, M Matsusaki², M Akashi², F Arai¹

¹Nagoya University, JAPAN, ²Osaka University, JAPAN



Rapidly assembling 3D tissues into tubular structure !!

1. Background



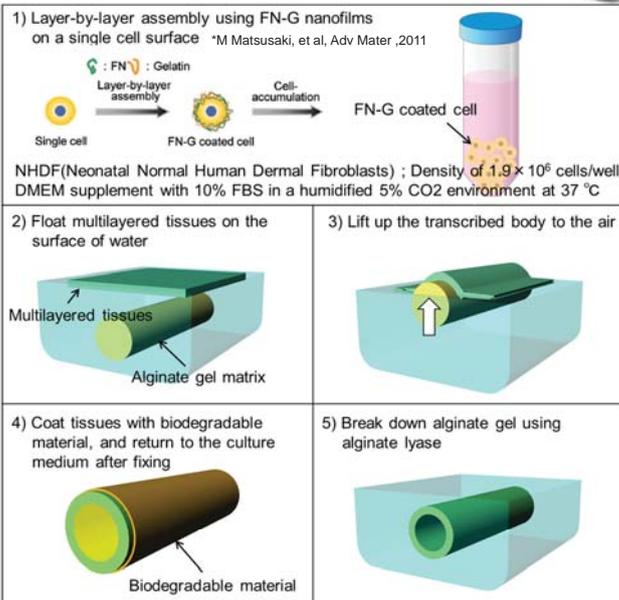
* T Masuda, et al, Biomedical Microdevices (2012)

- Rapid Assembly
- High Cell Concentration
- Multiple Tubular Structure

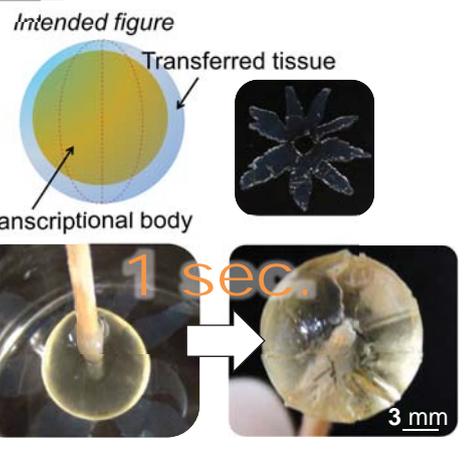
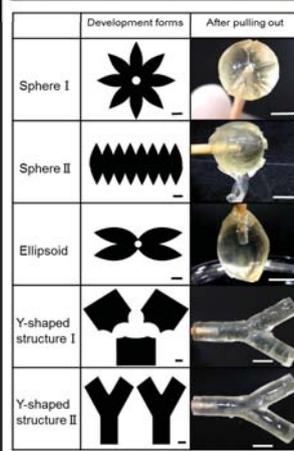


2. Design Concepts

What's a Water Transfer Printing ?



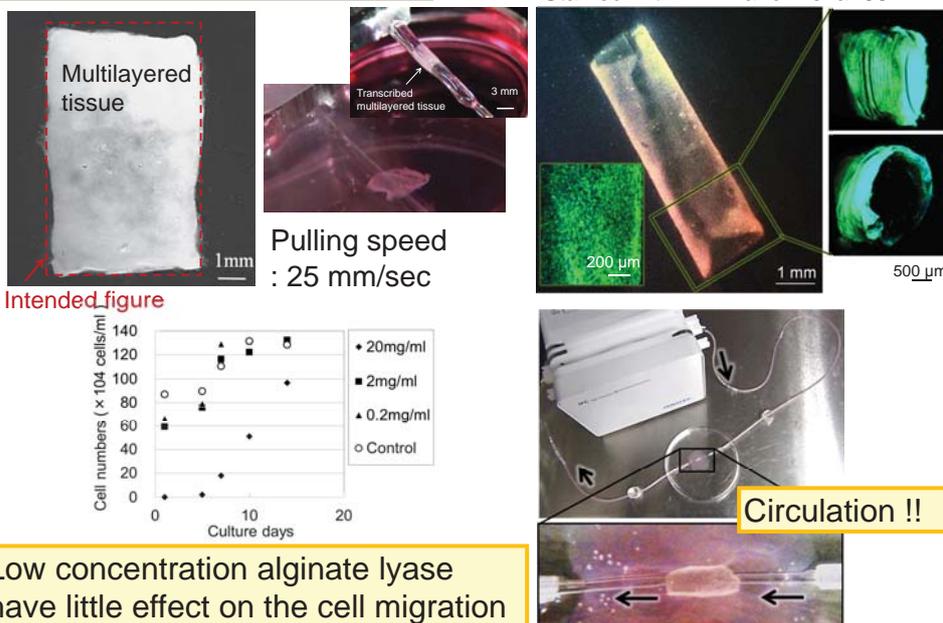
3. Developed Figures



	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)

High circularity of transferred tissue demonstrated excellent transcriptional behavior.

4. Results and Discussion



Low concentration alginate lyase have little effect on the cell migration

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

