

# 三次元アセンブリした積層細胞のオンチップ培養評価システム



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## 三次元アセンブリしたチューブ組織の培養・機械的特性を評価するには？

### Background



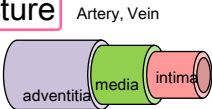
Biomimetic 3D tissue models are needed for

- efficiency of research and development
- animal protection

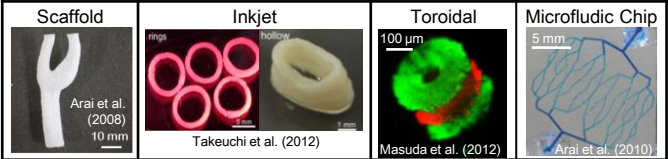


Tubular tissue structure

similar to blood vessels



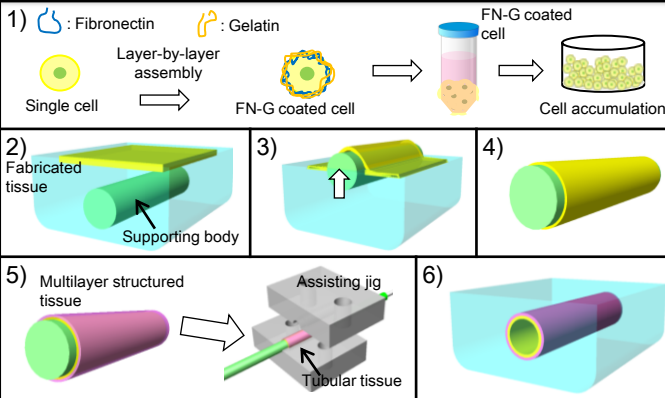
### Previous study of tubular models



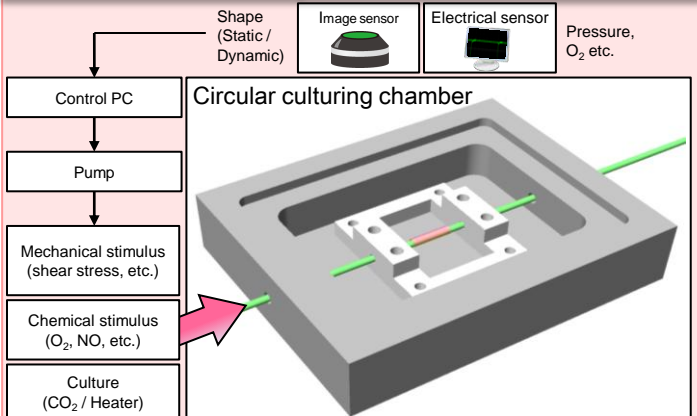
? How to get the mechanical characteristic of assembled tubular tissue? ?

### Concept

#### Fabrication of multilayer structured tubular tissue

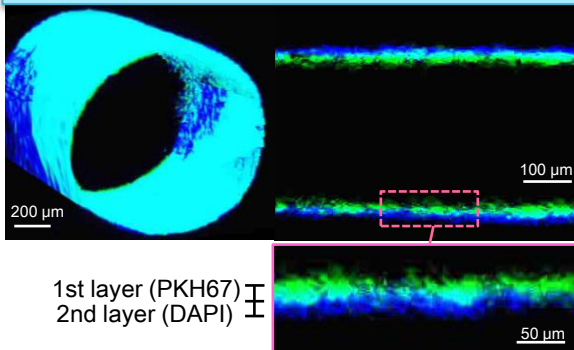


#### Evaluation of multilayer structured tubular tissue

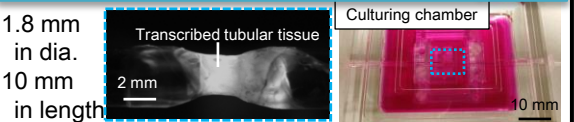


### Experiments

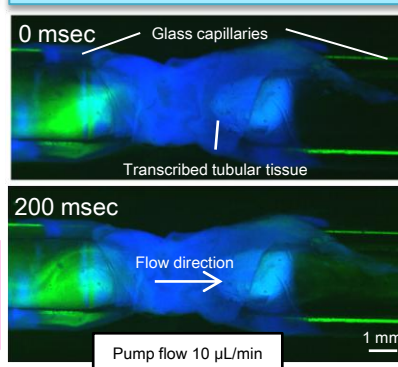
#### Double-layer structured tubular tissue



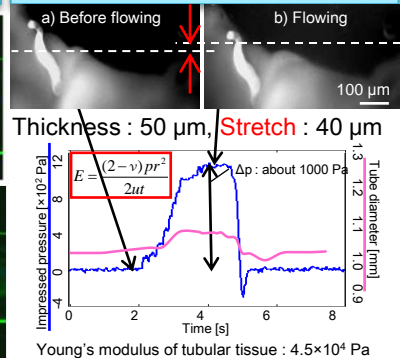
#### Connection of tubular tissue and pump



#### Circulation with fluorescent beads



#### Tissue stretches by flow in tubular tissue



### Conclusions

We set up the culturing / evaluation system.  
We succeeded in fabrication and circulation of the double-layer structured tubular tissue.

### Reference

Y. Yamagishi et al., "Three-Dimensional Assembly of Multilayered Tissues," 1st CIRP Conference on BioManufacturing, OS6-05, 2013.

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