バイオニックシミュレータのための ハイブリッド循環系の構築



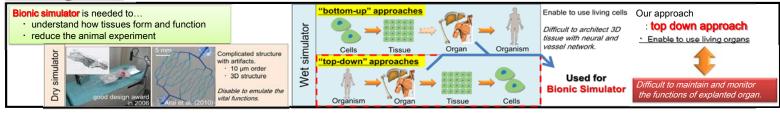
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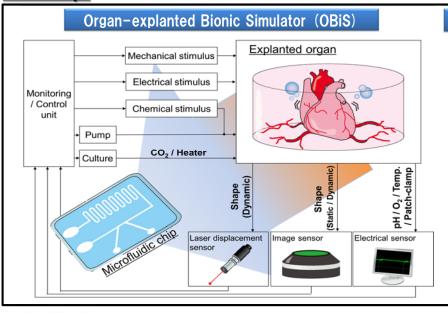
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胚の心臓とマイクロ流体システムをつないで

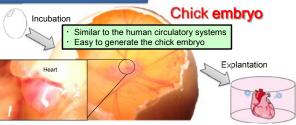
Background



2. Concept



Experimental model



Our challenging:

construction of circulatory system

- Supply to organs of nutrition
- Analysis of the secreted protein from the organs

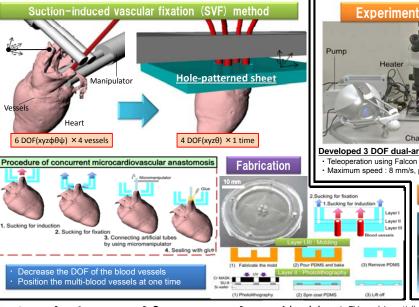


- · microvascular (D < 1 mm)
- concentrated in one place
- low stiffness

How to connect the microvascular to artificial tubes easily?

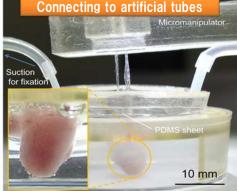
3. Methods

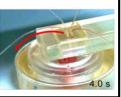
4. Experiments





Teleoperation using Falcon 3D haptic interface Maximum speed : 8 mm/s, position accuracy : 1 μm





5. Conclusions and future work

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- Choose the heart from chick embryo for Organ-explanted bionic simulator.
- 2. Propose concurrent vascular anastomosis technique by using suction-induced vascular fixation (SVF) method.
- Confirm the circulation through the artificial tubes and blood vessels led to the heart of chick embryo.
 - Examine the state of an explanted organ by circulating of the culture medium over the long term.



