

Materiali Intelligenti

Y1 e Y2

Paper of the week

- <https://www.dropbox.com/s/p2nxdd5209m7d3z/Kreigman-PNAS-a%20scalablepipeline.pdf?dl=0>
- <https://bit.ly/2voDtGT>

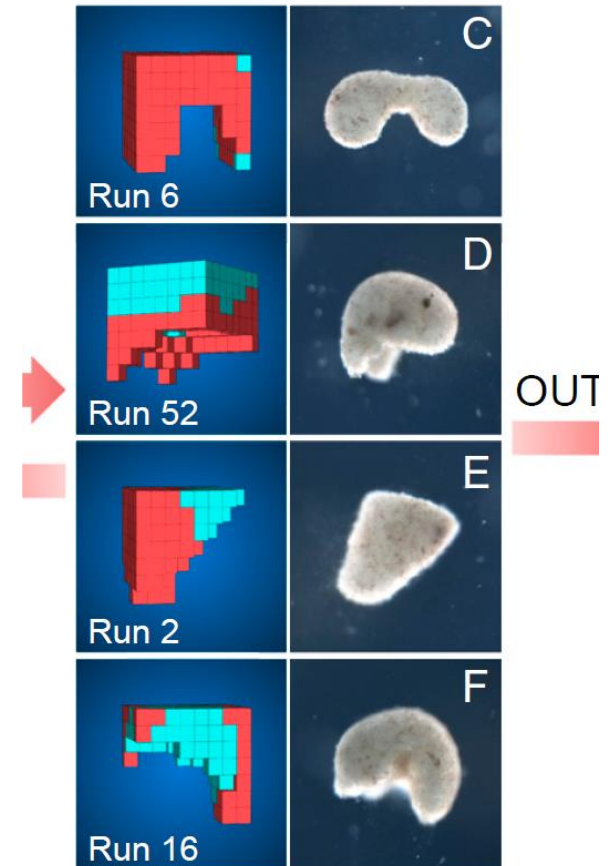
Xenobot: cellule xenopus

- Macchina biologica
- Programmato
- Fatto da cellule staminali estratte da un embrione
- Circa 1 mm (non e' una nanomachine, non usa nanotecnologie)

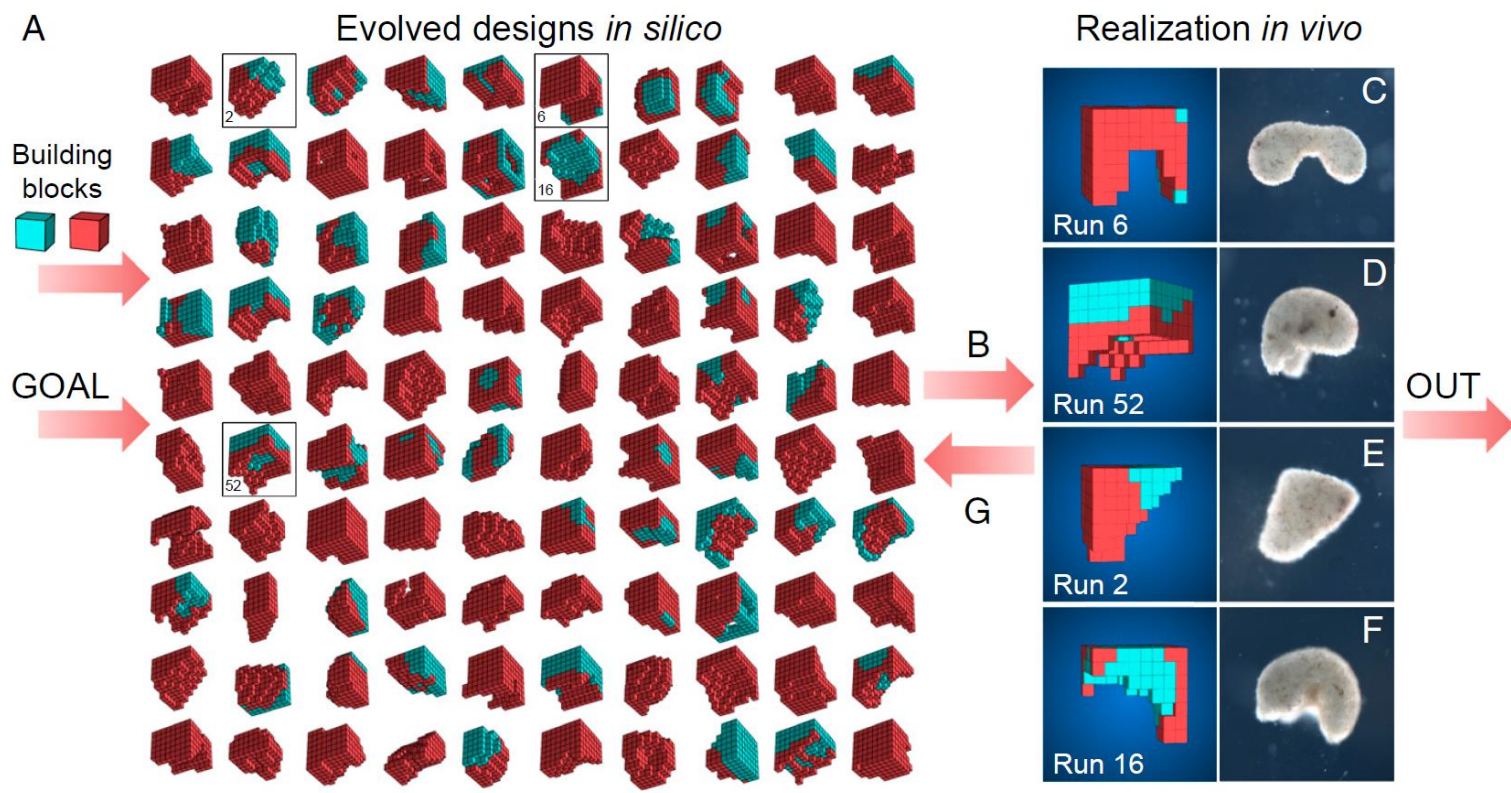


Componenti

- Cellule staminali progenitori
- Cellule cardiache e ectoderma
- Coesione cellulare spontaneo



- <https://www.pnas.org/content/117/4/1853/tab-figures-data>



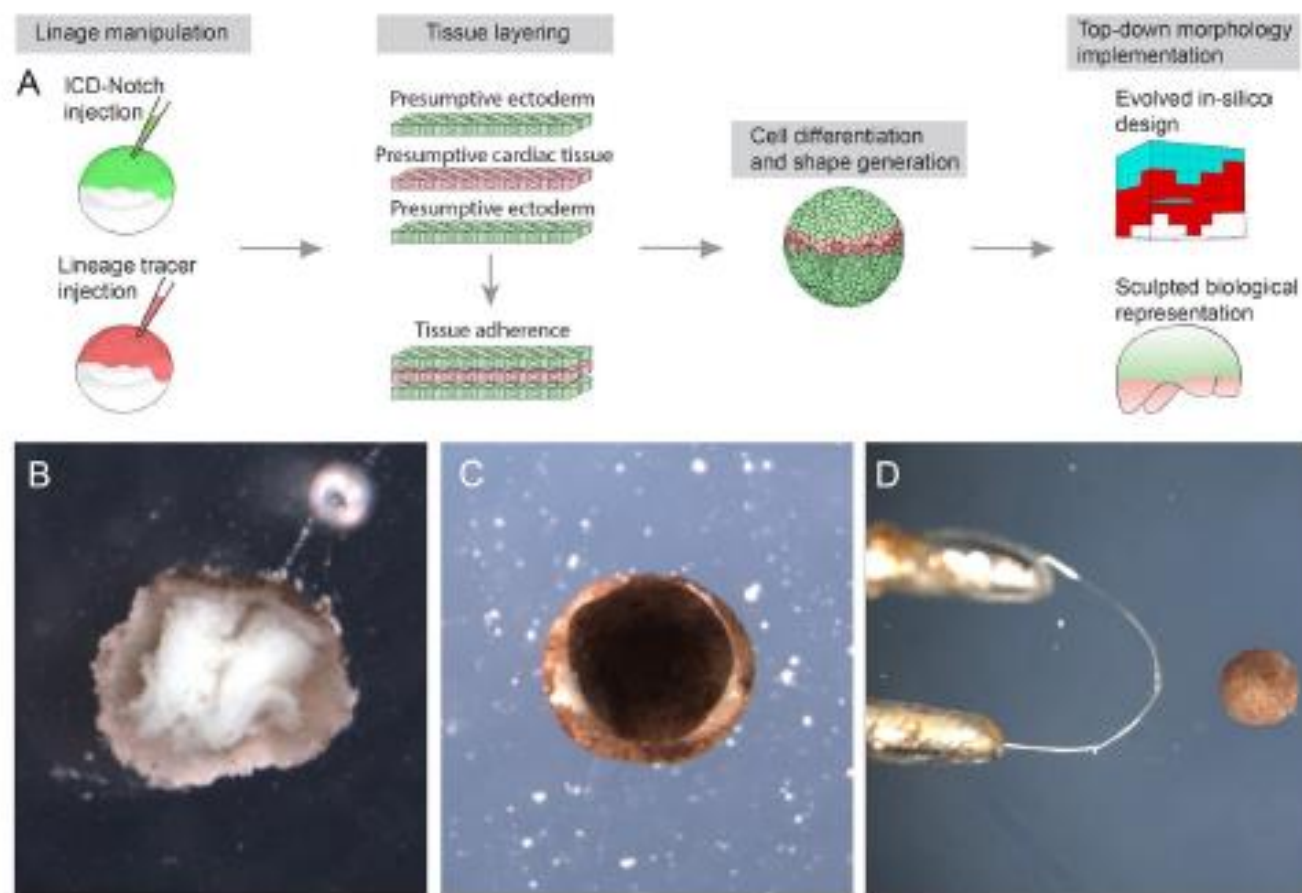
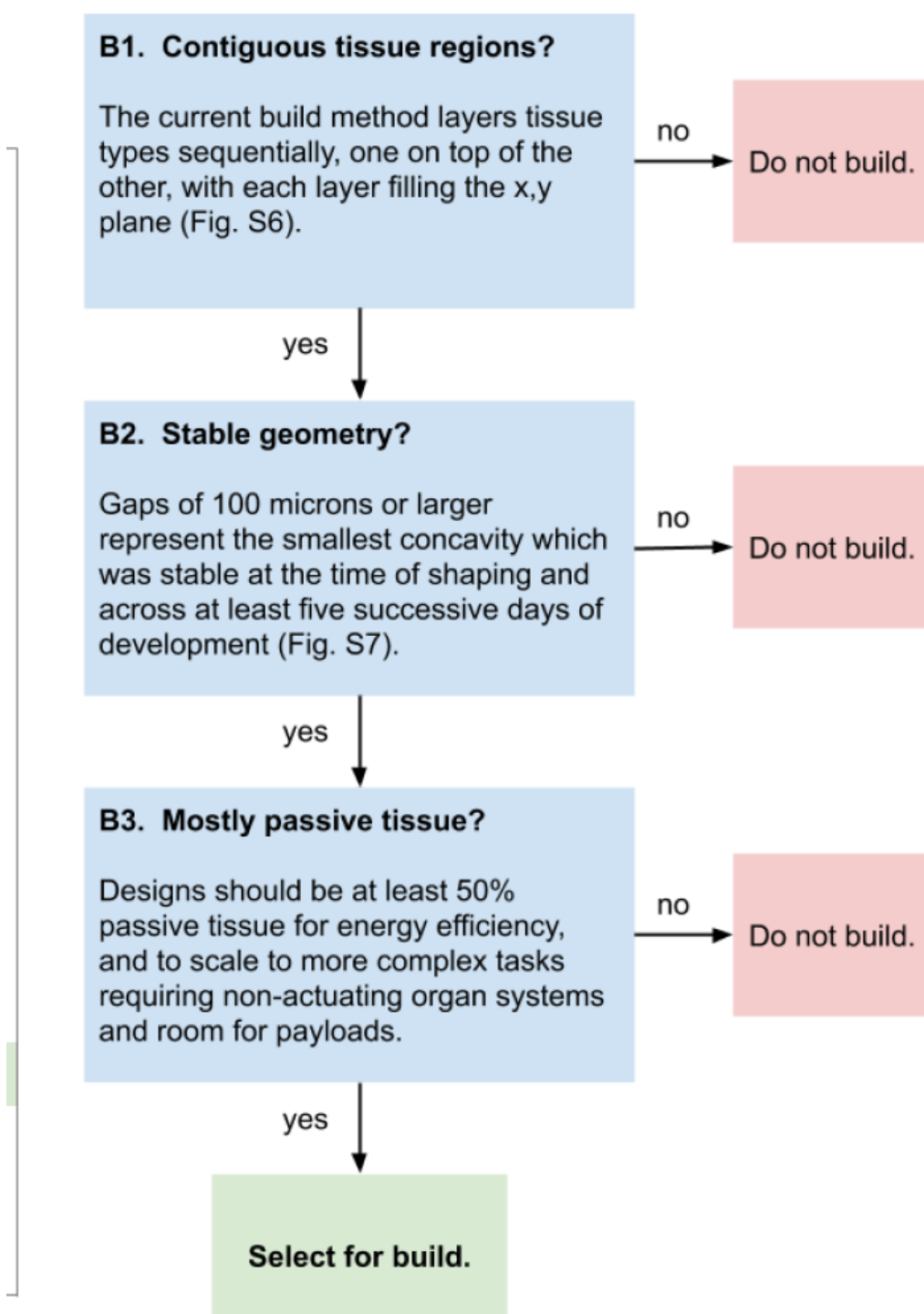


Fig. S6. Manufacturing cardiomyocyte-driven reconfigurable organisms. mRNA constructs are delivered to cleave stage *Xenopus* embryos which inhibit multi-ciliated epithelial cell differentiation and enable tracking of heart muscle tissue, allowing multiple cell types to be combined and intelligently shaped (*A*). Tissues are layered sequentially, first with an underlying layer of unspecified epithelium upon which cardiac progenitor tissue is deposited (*B*). A second layer of unspecified epithelium is layered and allowed to heal for an hour (*C*). Shaping is then applied to contractile regions using a microcautery electrode to produce the final shape (*D*).

Paper e supplementary

- Descrive il design e i principi fisici usati
- La contrazione cardiovascolare e' modellato come una contrazione random (randomized phase modulated contraction at 2 Hz)



Build filter: il filtro per proiettare le strutture o no (ho dimenticato di farlo vedere a lezione)

Discussione

- Comportamento emergente
- Limiti
- Applicazioni