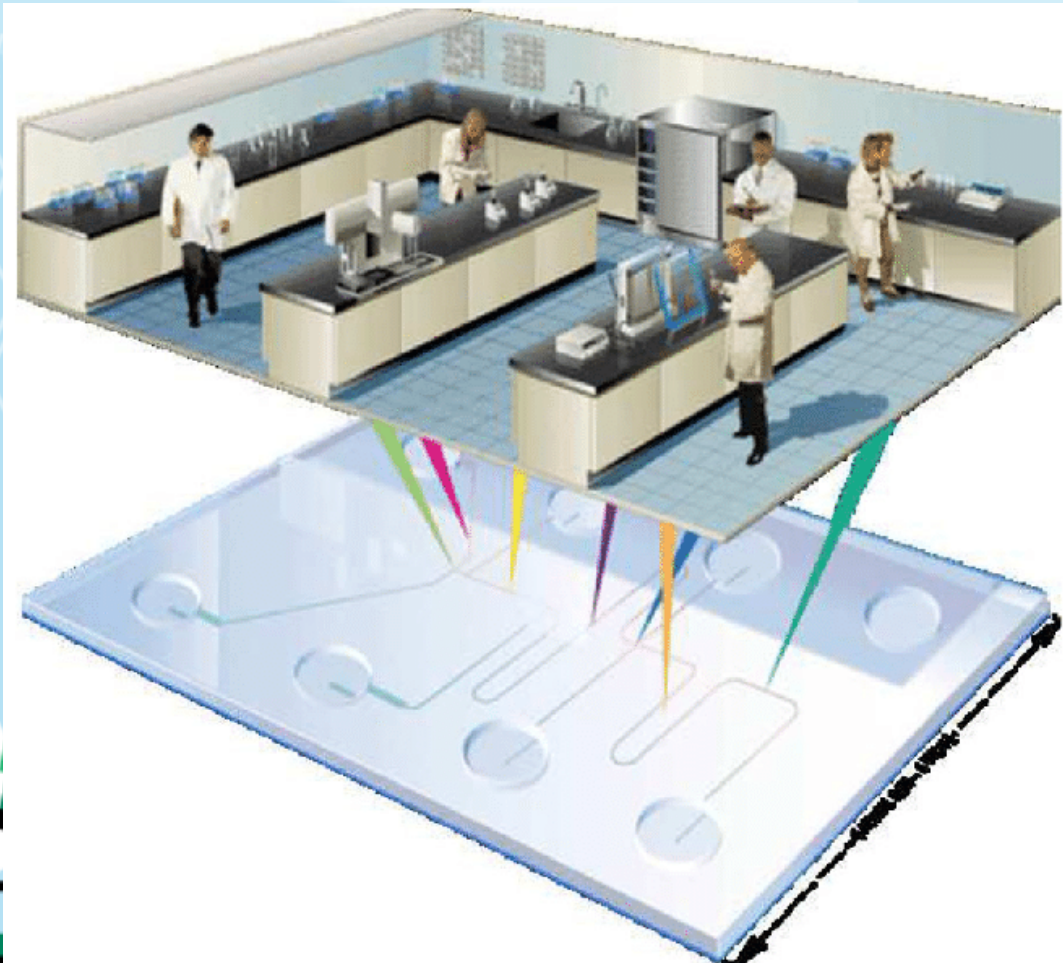


μ fluid cell culture

LagLivLab

DESIGN & BUILD a monitoring incubator

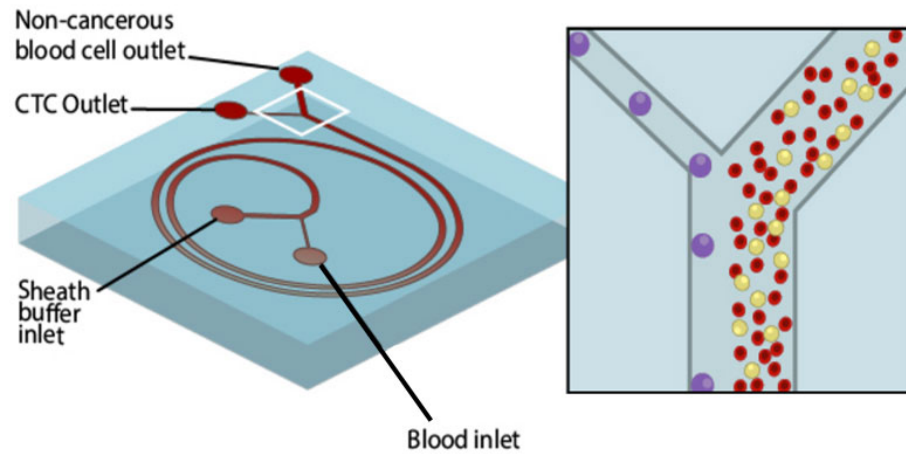
CULTURE CELLS



What is microfluidics?

- Controlling fluids in μm sized channels
 - no turbulence
 - diffusion is fast
 - surface tension is important
 - large gradients
 - size adapted to cells and microscopes

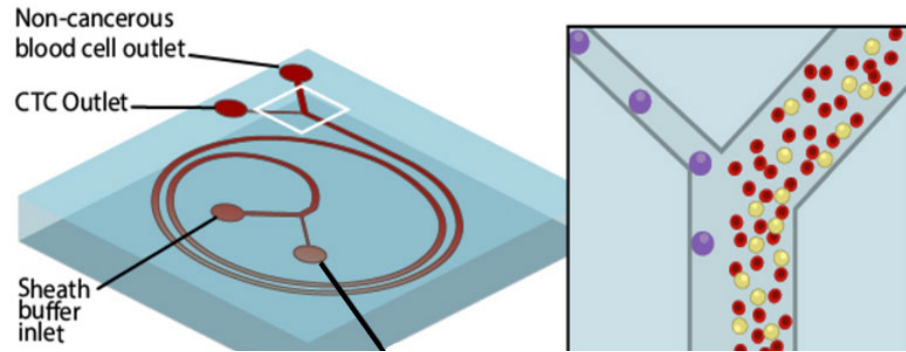
Spiral microfluidic chip for CTC isolation



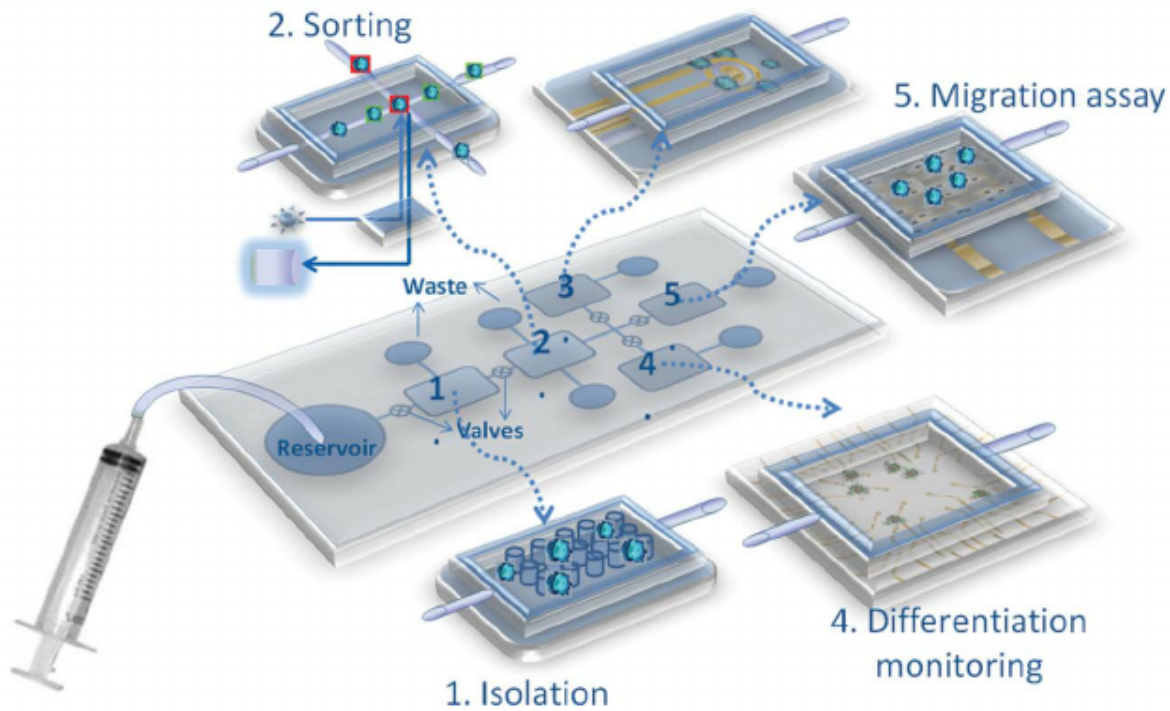
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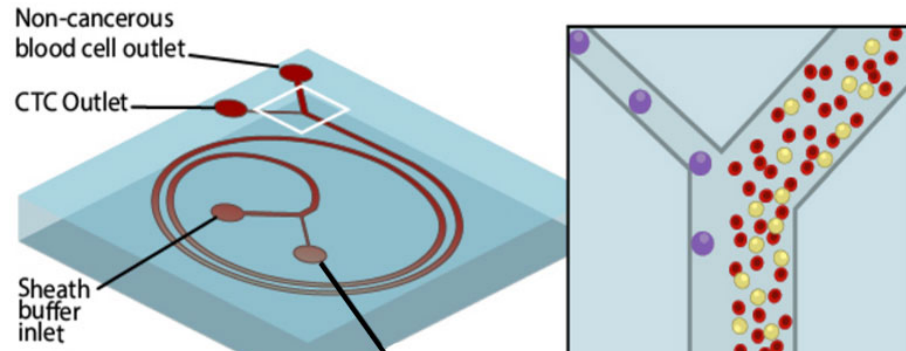
3. Viability test



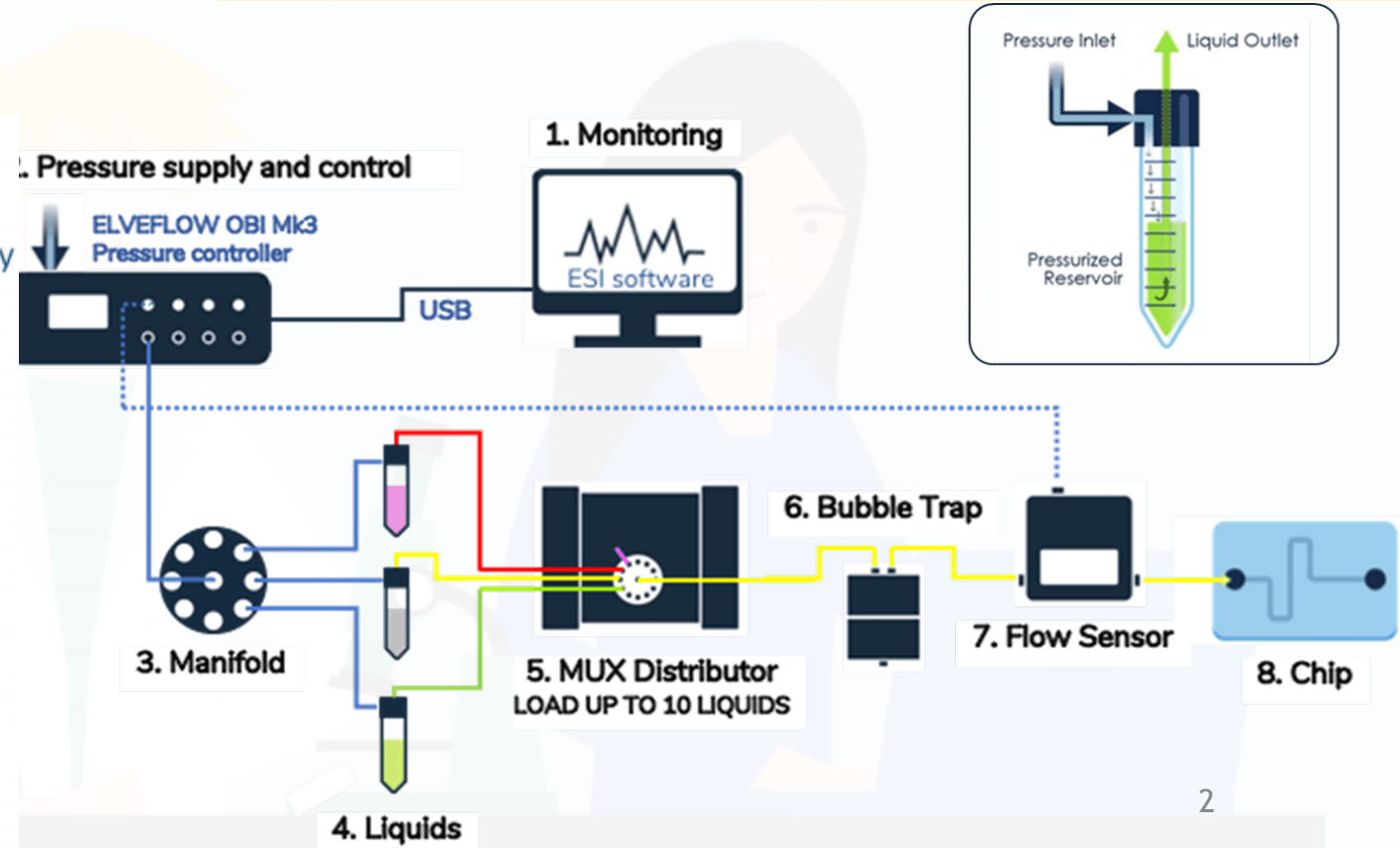
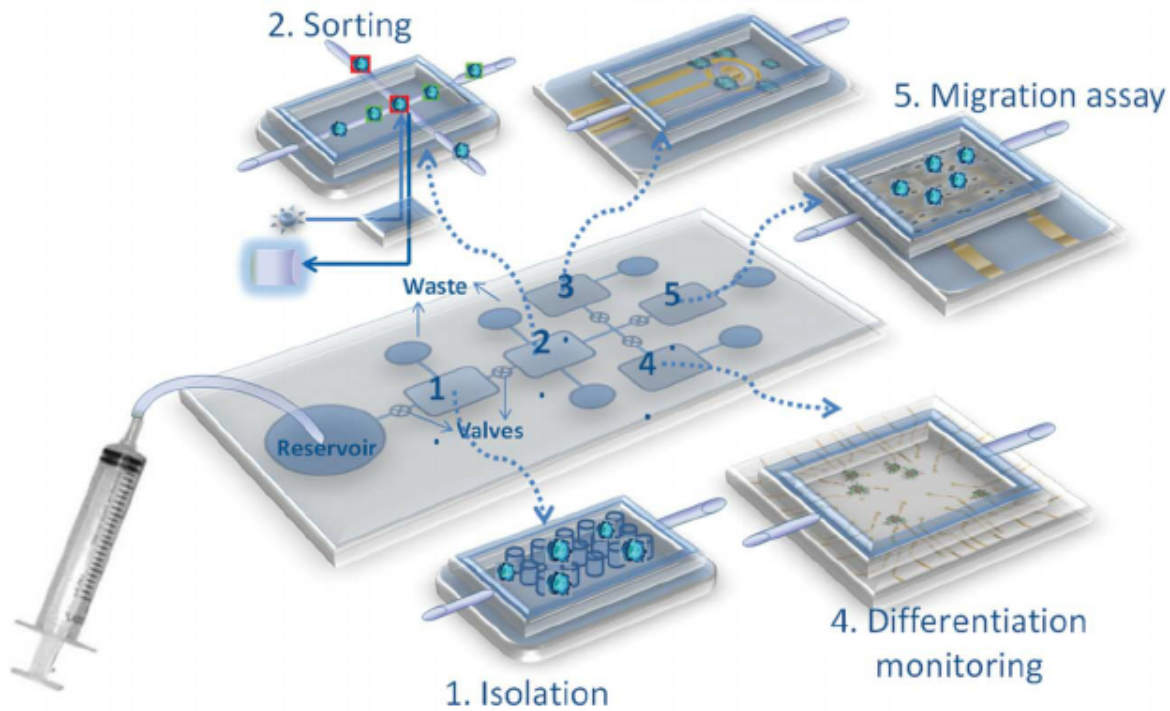
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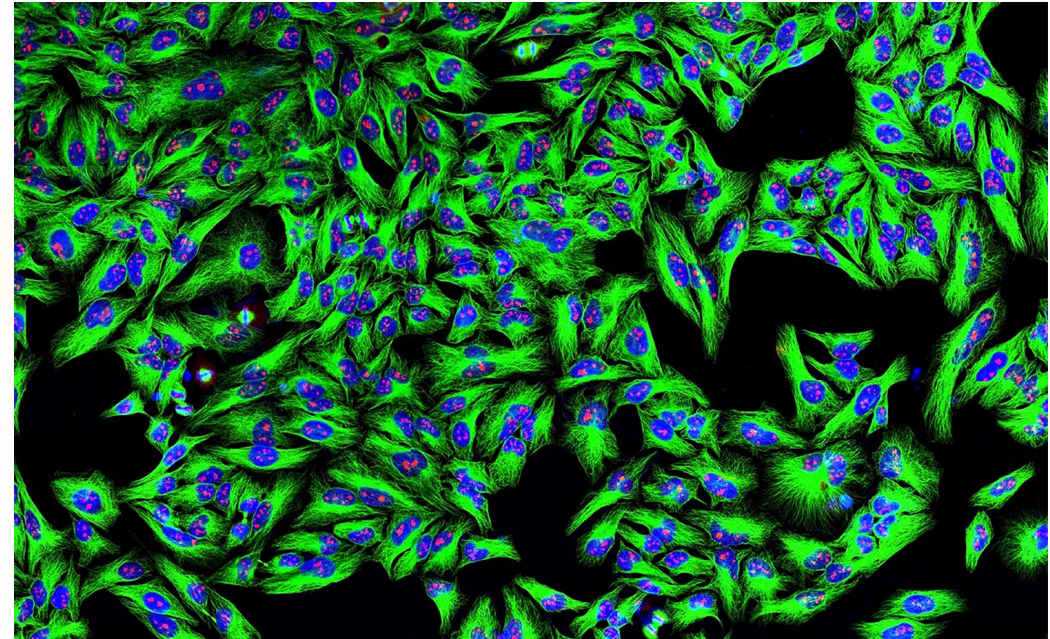


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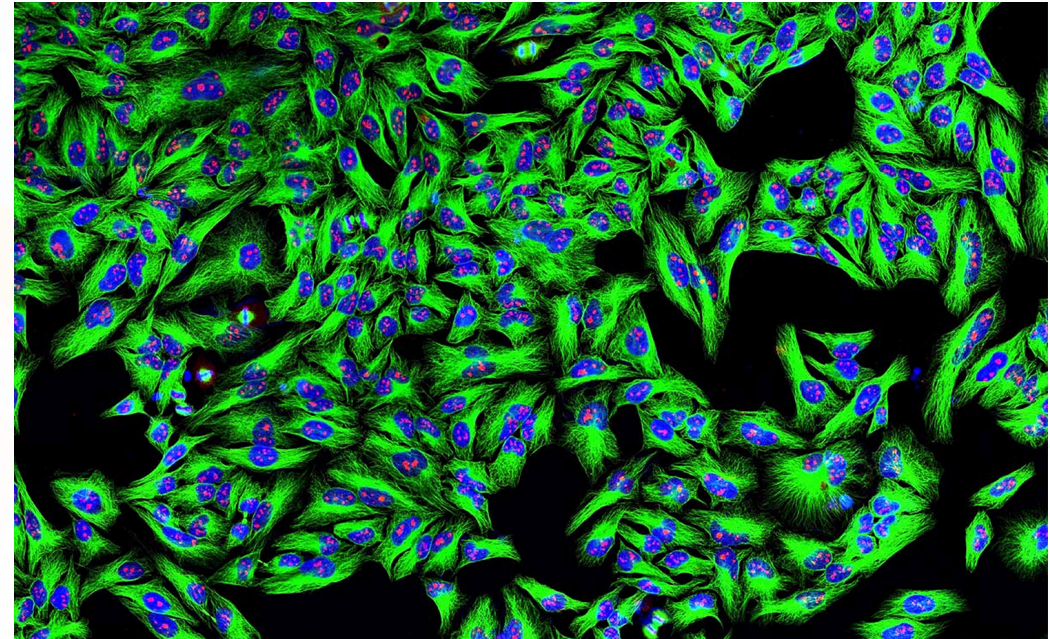
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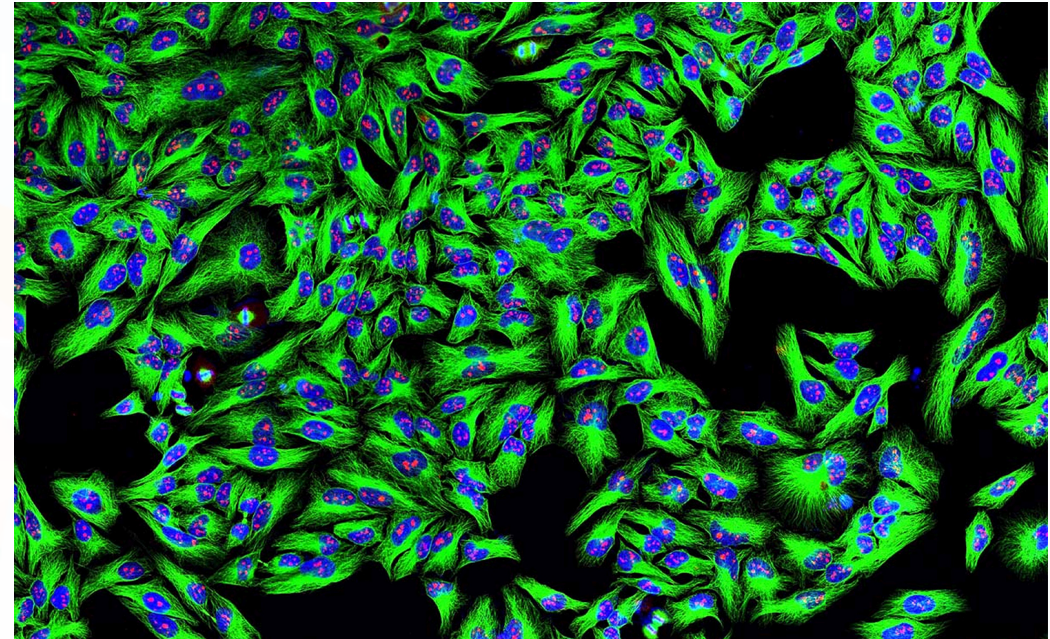
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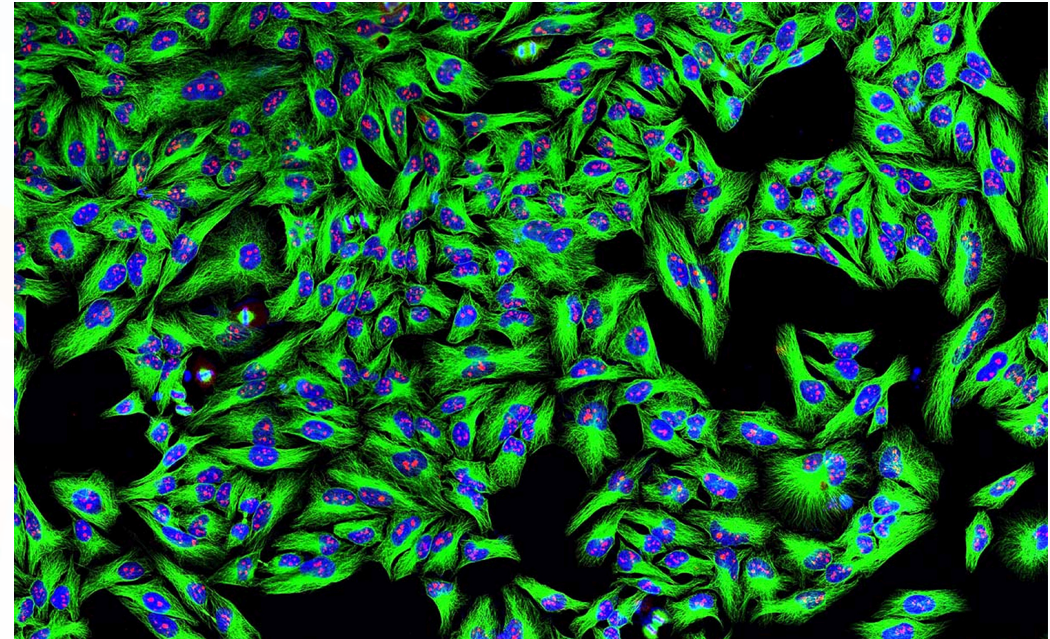
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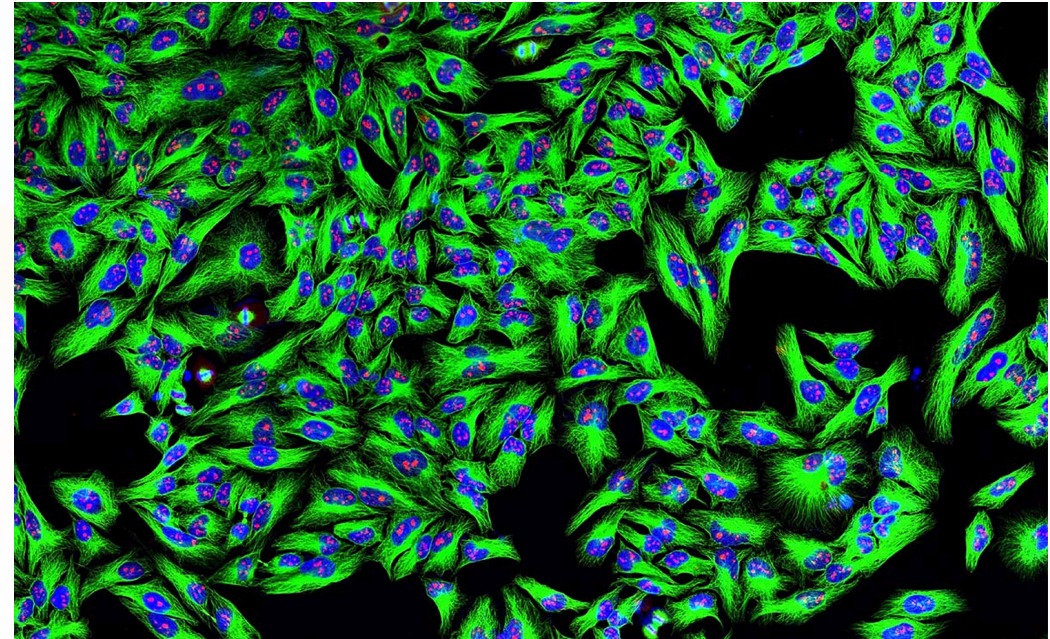
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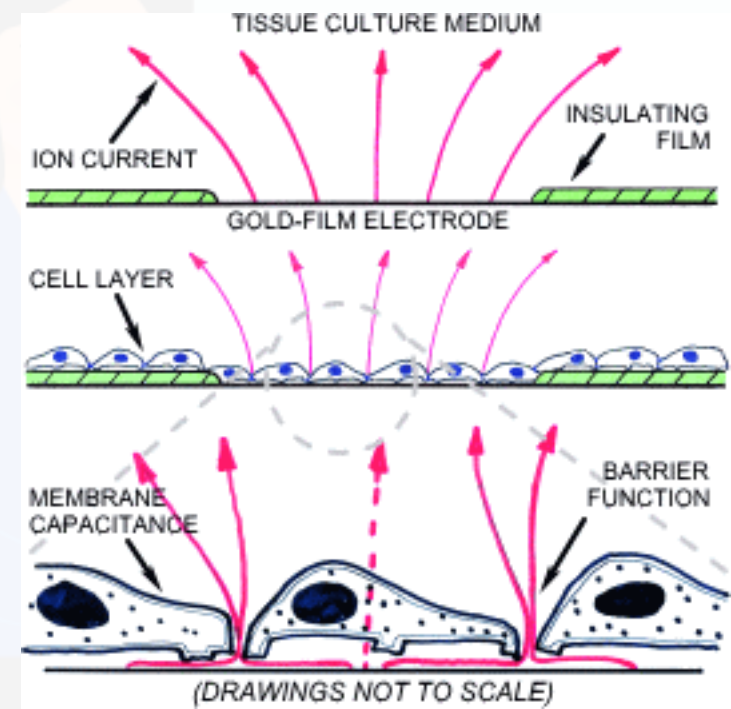
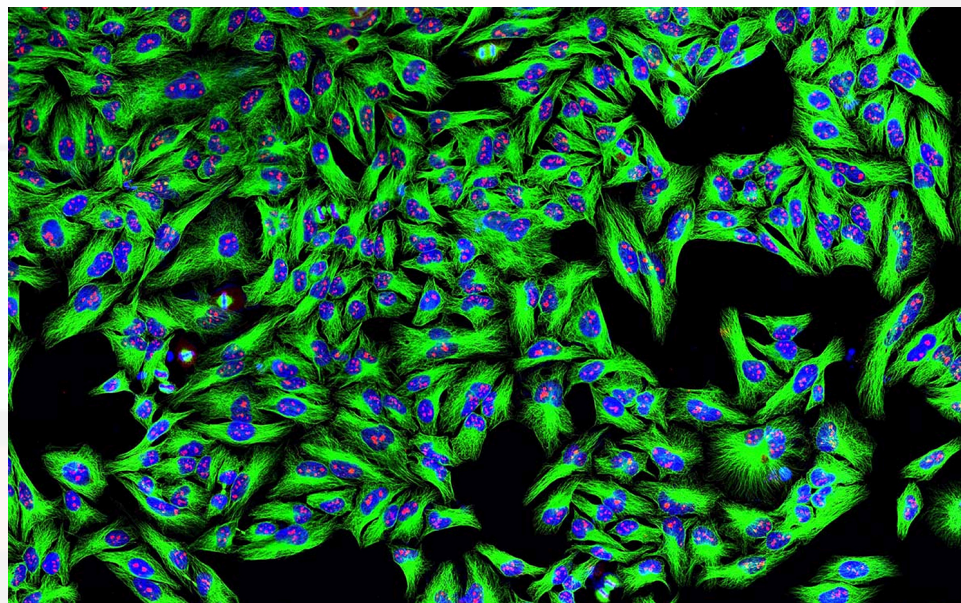
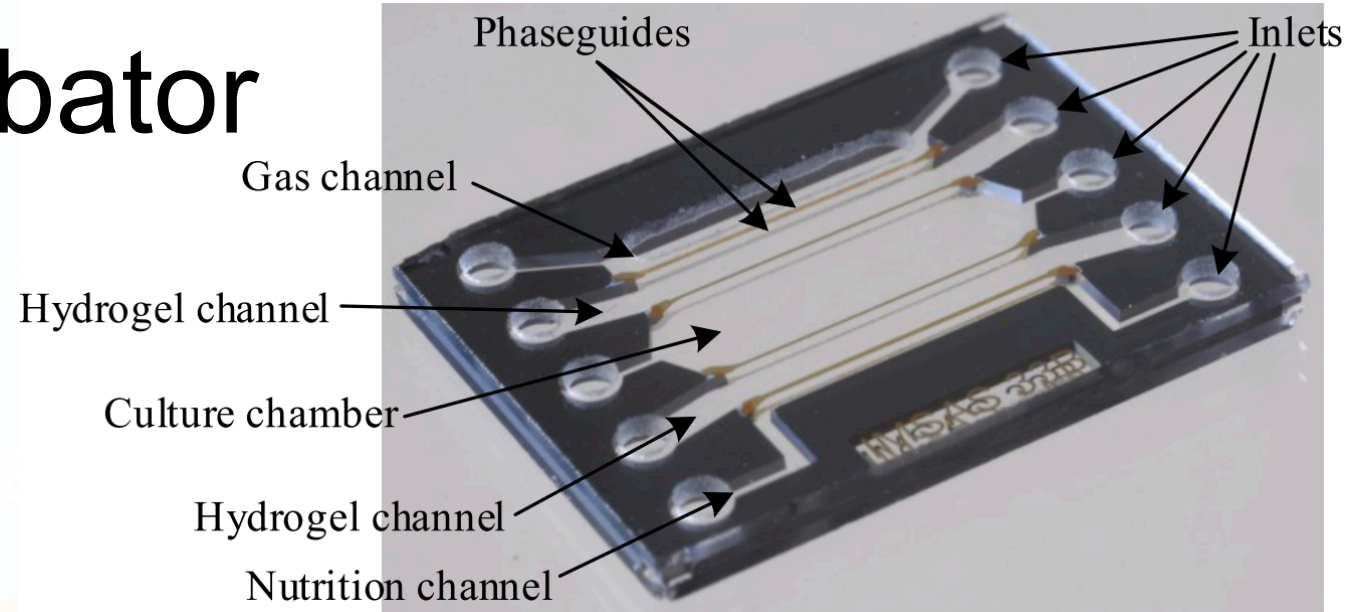
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- Move to new locations, new incubators or no incubator...
- Most time consuming task of biologist

μ fluidic monitoring incubator

- Immortalized animal cells that divide forever if they get
 - sugar, salts, proteins, antibiotics, vitamins,... in water (cell medium)
 - a surface to attach to
 - right O₂ and CO₂ concentration
 - **right temp: Peltier elements**
 - space: TrypLE + flow
- Continuous study:
 - microscopy
 - **impedance**
- **New** & useful standard techniques



Summary

- Environmental stimuli -> rapid changes in cells
 - also standard pipetting ++
 - induce rapid environmental changes
 - media
 - flow
 - electric field
 - temperature
 - sound
 - ...
 - while changing no other environmental condition
 - while immediately observing effect of changes
 - fundamental aspects of cell research
- Many cell cycles of immortal cells. **New: impedance monitoring**
- Differentiation of stem cells: fluorescence microscopy. **New: specific projects from HTH?**
- Simple design, many useful techniques

