

# Workshop on ERC grants

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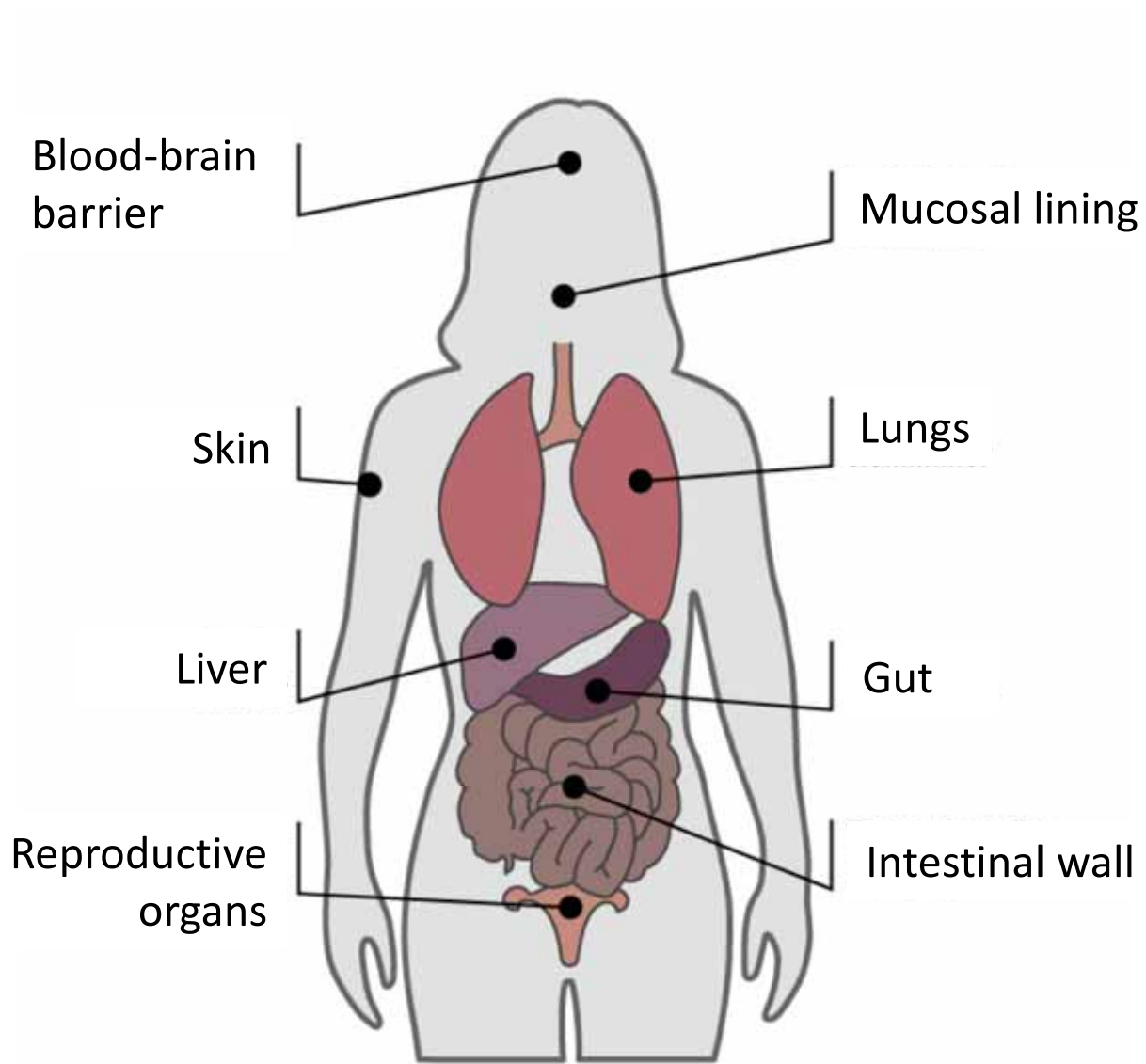


Sophisticated 3D cell culture scaffolds for Next  
Generation Barrier-on-chip In vitro models

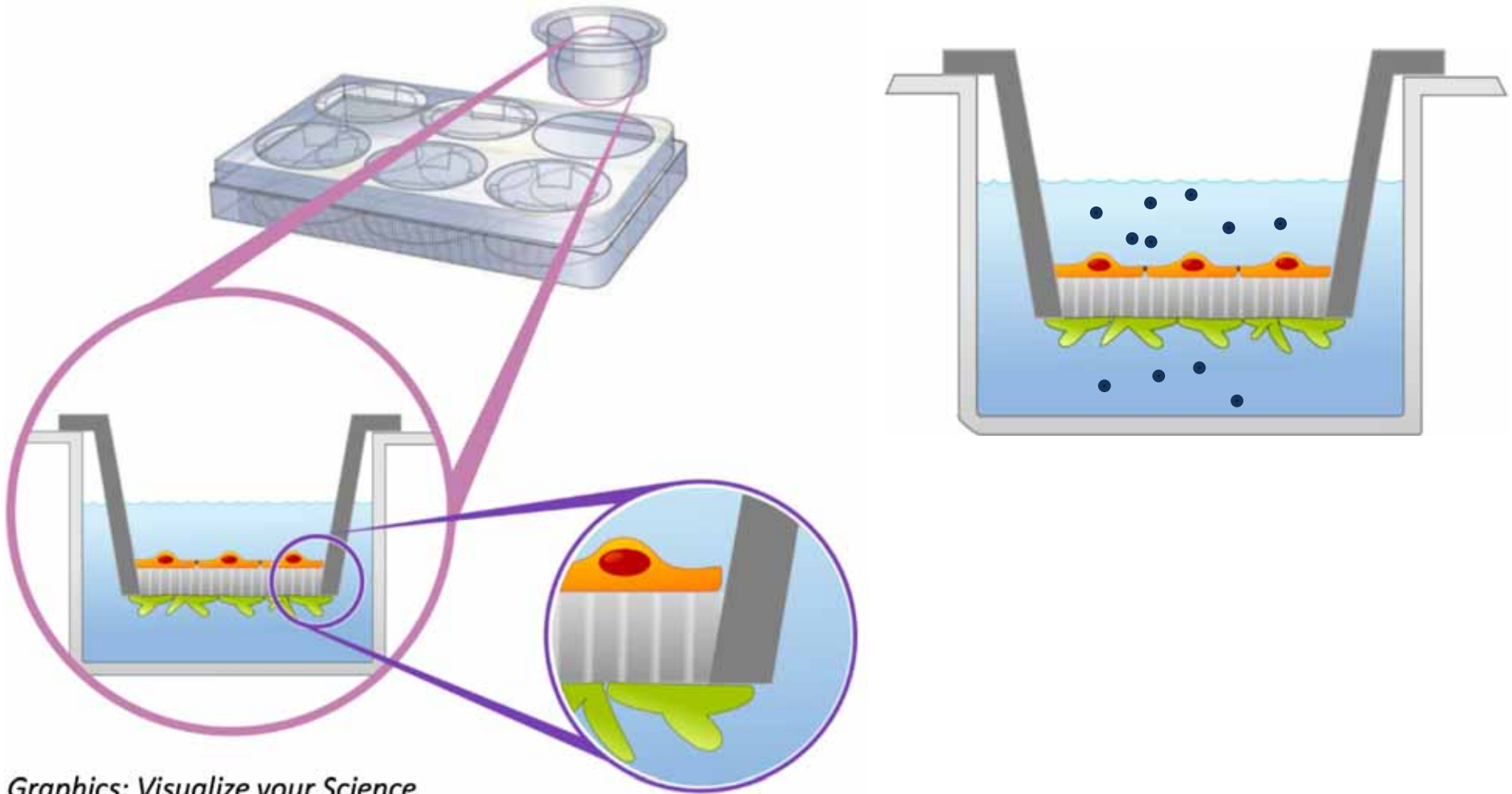
ERC Starting Grant 2018-2022

More than **10 million animals**  
are sacrificed **every year**  
in **Europe** alone for  
medical and pharmaceutical  
research

*European commission (2013)*



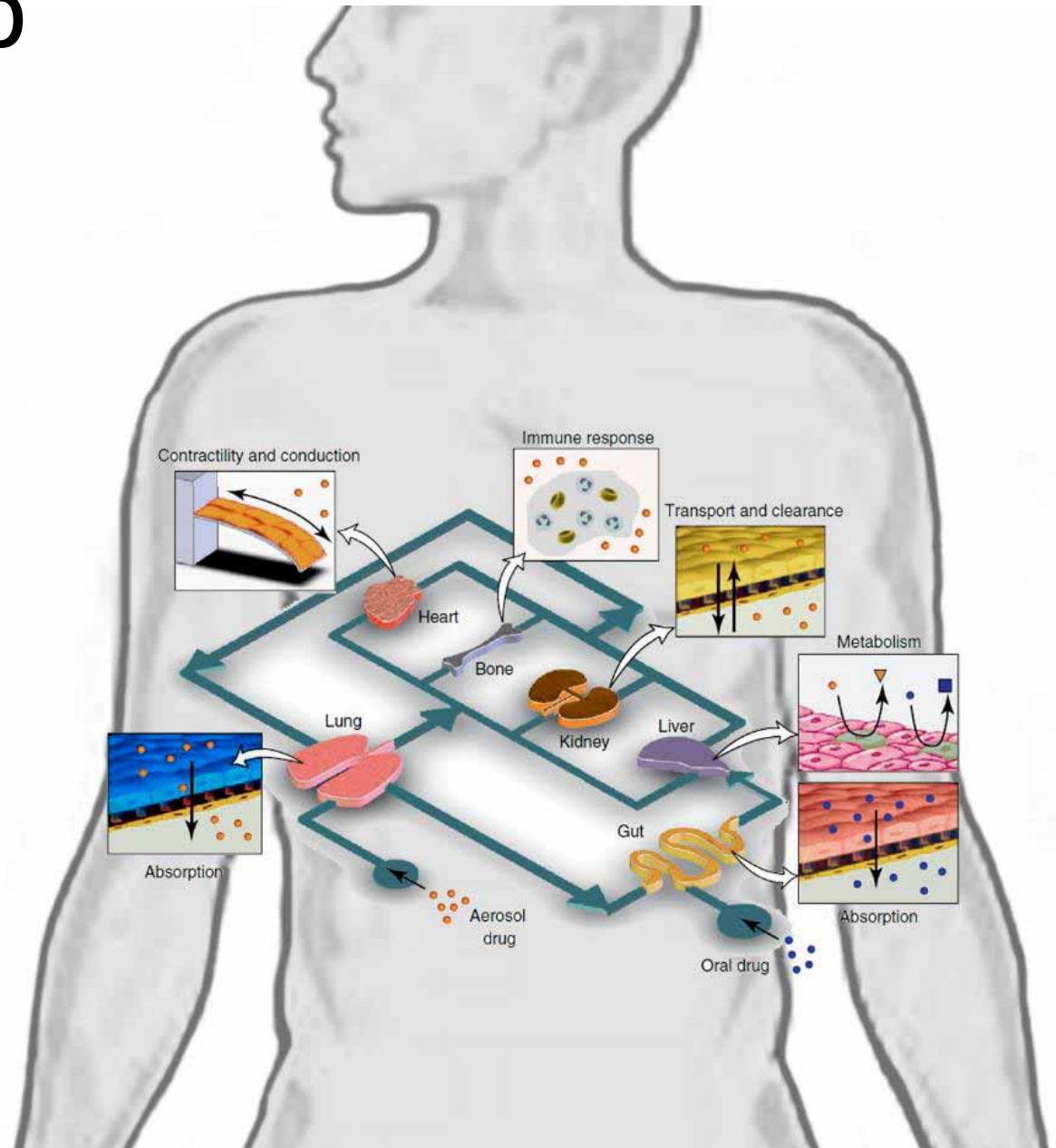
Graphics: Mats Kamsten, UU



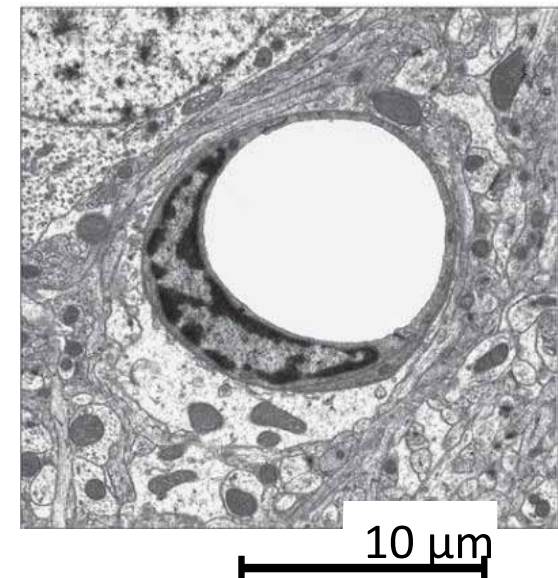
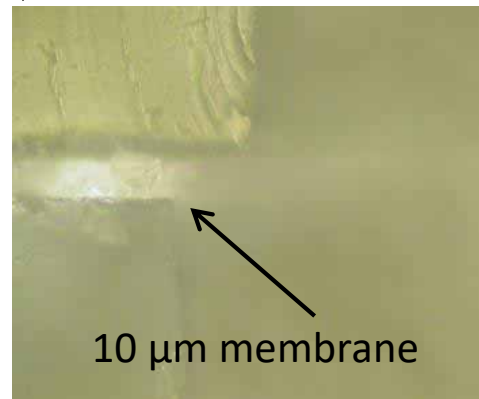
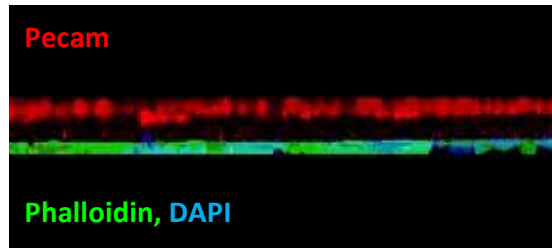
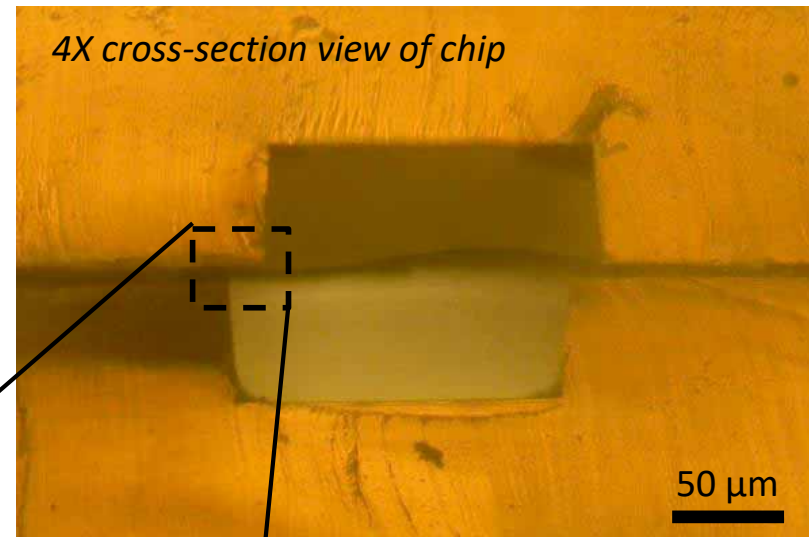
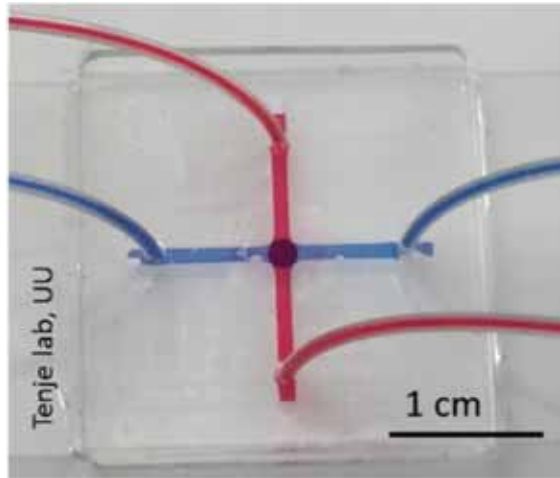
Graphics: Visualize your Science

- Thick membranes in static environments
- 2D cell cultures on synthetic materials

# Organs-on-chip



# Barriers-on-chip



*3D cell culture scaffolds for Next Generation Barrier-on-chip*

# SONGBIRD aims

*Establishment of a microfabrication tool box*

## Materials

- thickness control
- mechanical stability
- biocompatibility

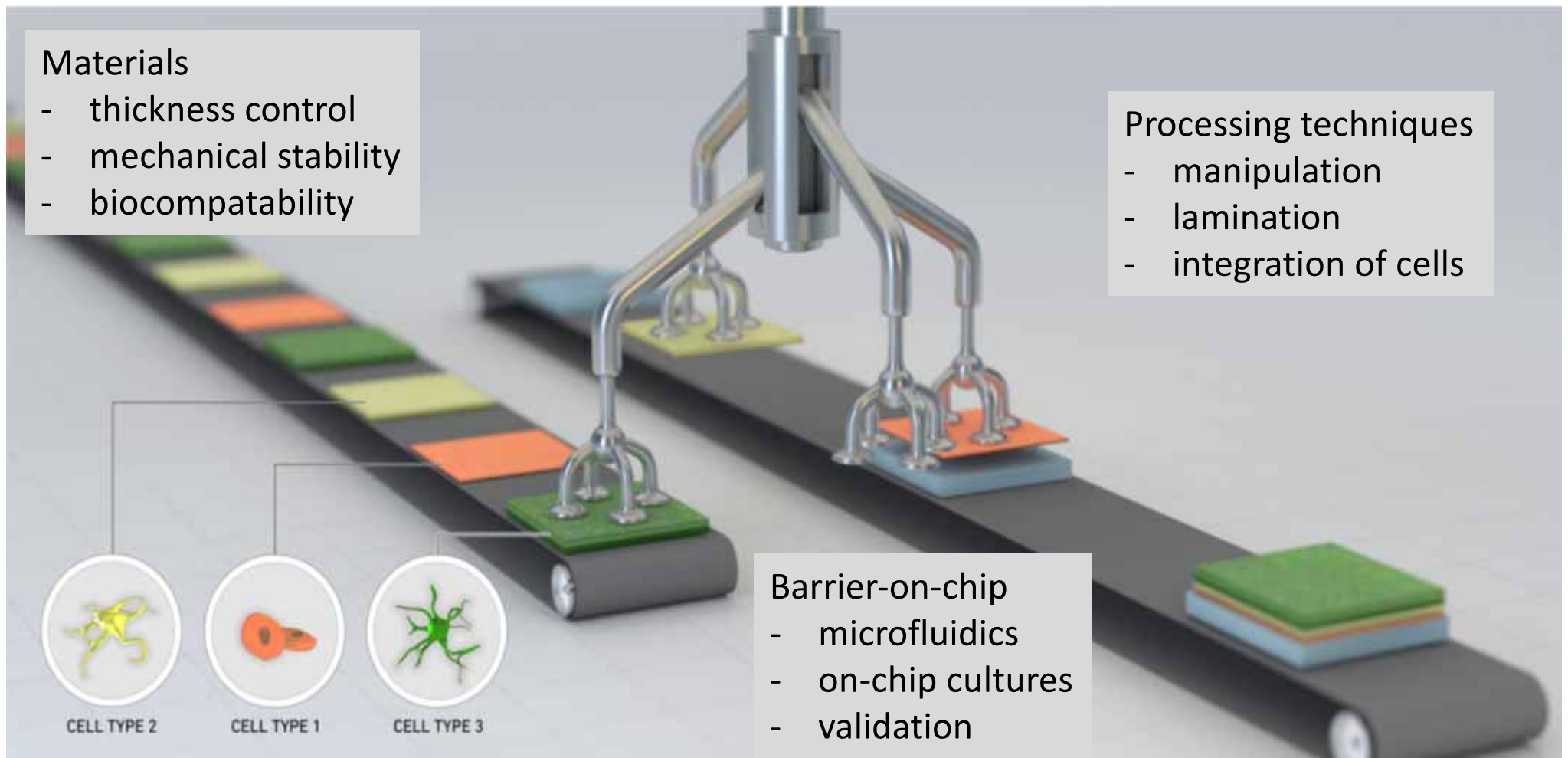
## Processing techniques

- manipulation
- lamination
- integration of cells



## Barrier-on-chip

- microfluidics
- on-chip cultures
- validation





# The success of SONGBIRD

- Builds upon previous research
  - What are your unique strengths? (Why me?)
- Clearly identified project idea
  - Don't forget the feasibility (How?)
- Basic science even in engineering (PE7)
- Right timing, “hot topic”
  - How does it connect to the outside world (Why now?)

# Previous ERC experience

- Applied in 2014 => interview => B
- Not a clearly focused project idea
- Not a “logical next step” in my research
- Decided to wait until final chance (2017 call)
- Feedback from 8 reviewers (9 reviewers in 2017)

# Writing the proposal

- It will take a long time!
- Most of the work is done before writing
- Conceptualise your idea!
- Take advantage of your colleagues or experts
- Think about illustrations



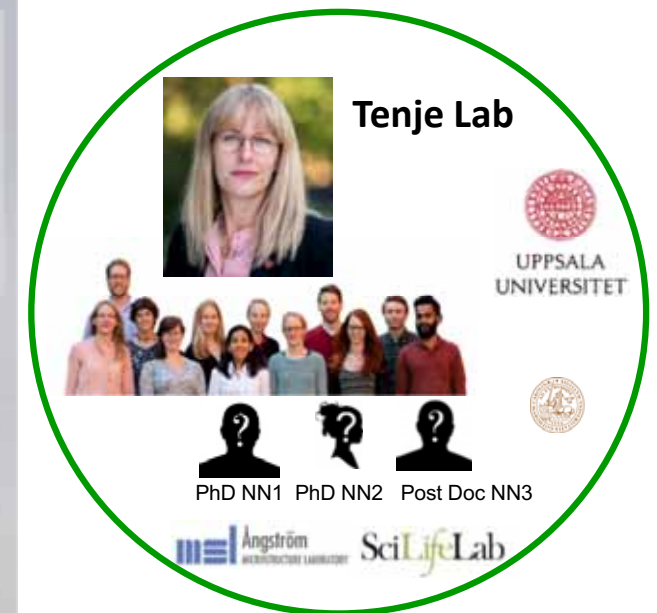
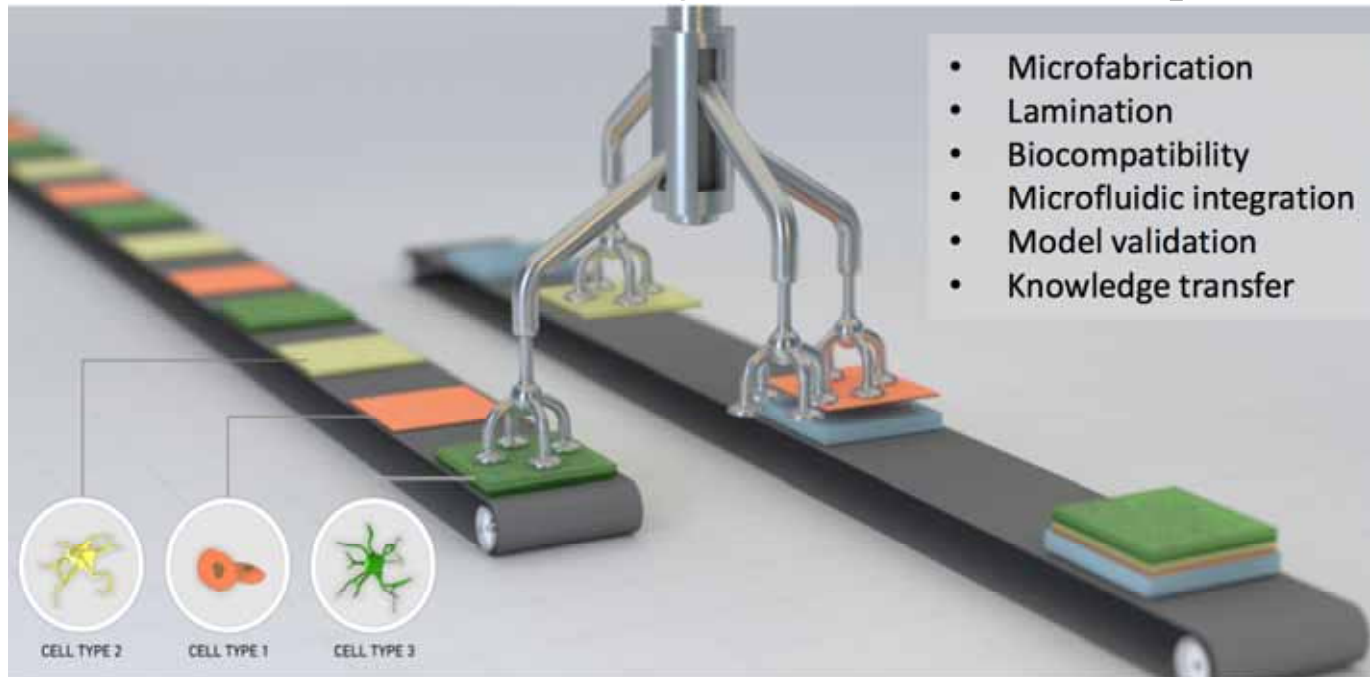
# Going for the interview

- Practise on your presentation!
- Remember the “priority list”
- Stick to the guidelines (1 A4 hand-out, 5 min)
- Be confident
- Enjoy!

## **Problem formulation**

*Today, full advantage cannot be taken of in vitro cell culture studies because the cells do not behave naturally in artificial environments i.e. they lose their phenotype in static 2D cultures.*

## **The solution is to realise biological 3D barrier-on-chips**



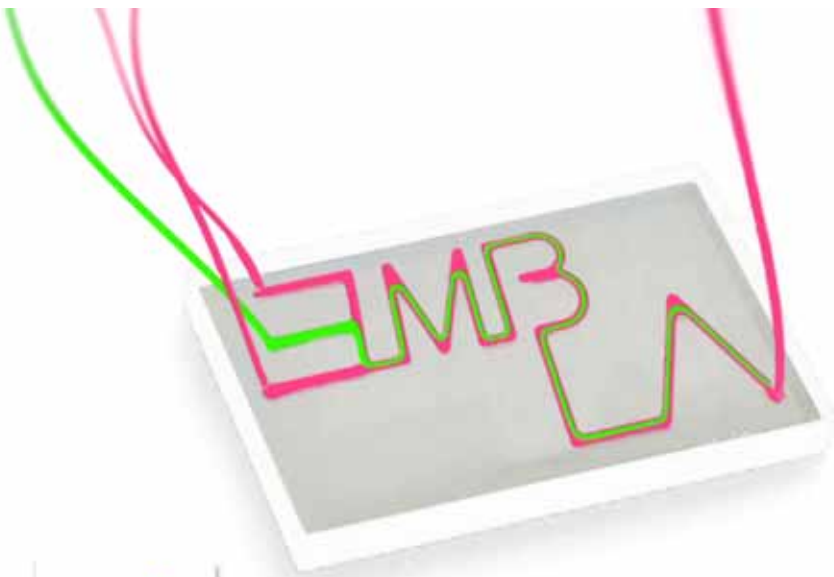
### **Why me? Why now?**

- *Expertise in microsystems engineering*
- *Experience with biomedical microsystems*
- *Access to necessary research infrastructure*
- *Organ-on-chip is an emerging research field*

### **Impact**

- *Increased precision in drug development*
- *Reduced animal testing and safer clinical trials*
- *Personalised medicines*
- *Biocompatible microsystems for life science research*

***Thank you and  
Good Luck!***



SciLifeLab

FORMAS

