

# A Gut-on-a-chip for the Study of Food Effects on Human Health

**Presented by**

Chiara Fois

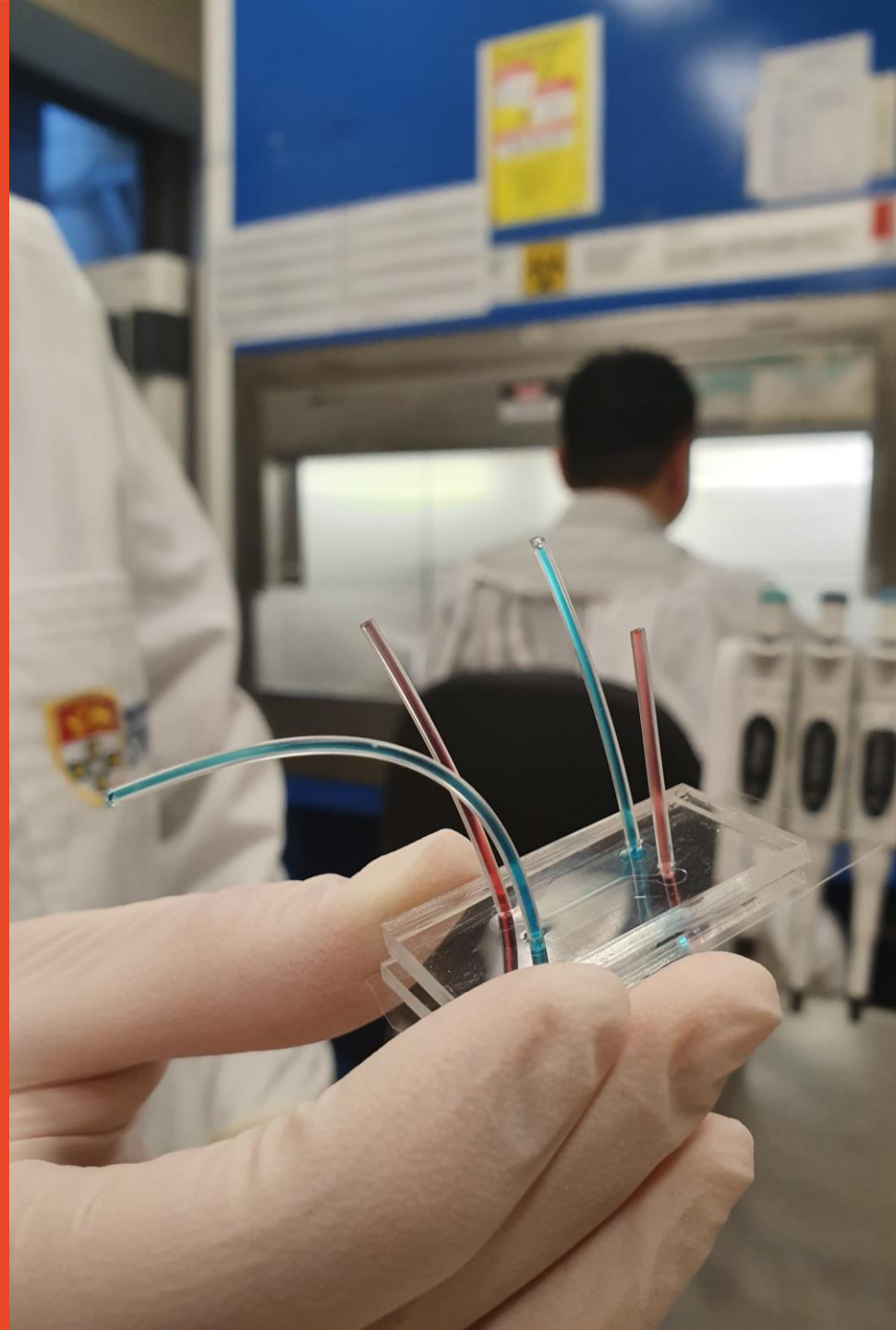
**Supervisors**

Prof. Fariba Dehghani

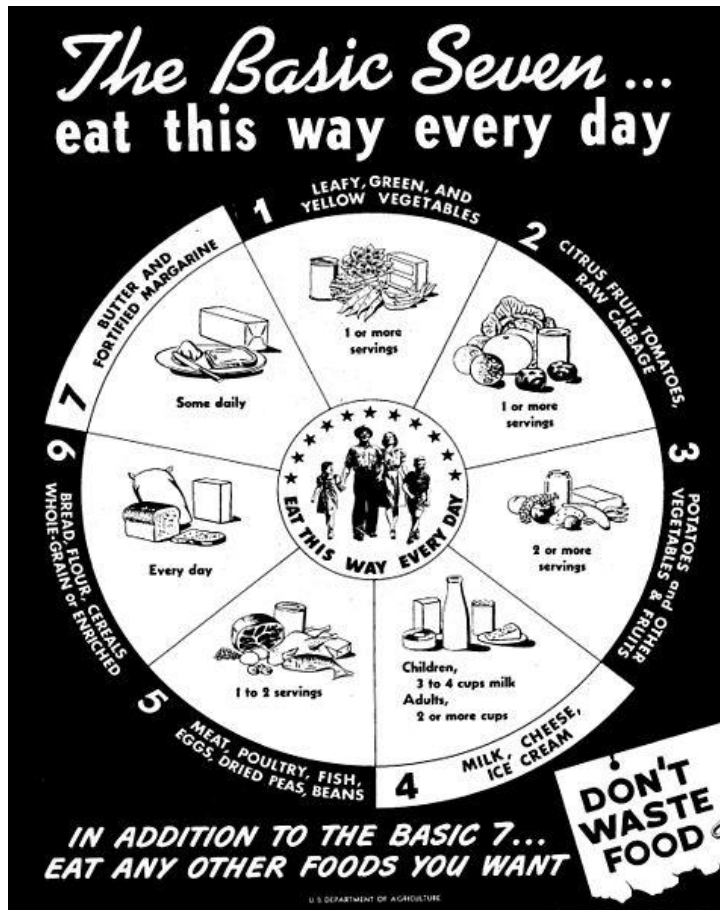
Adj. Prof. David F. Fletcher



THE UNIVERSITY OF  
**SYDNEY**



# Food for health

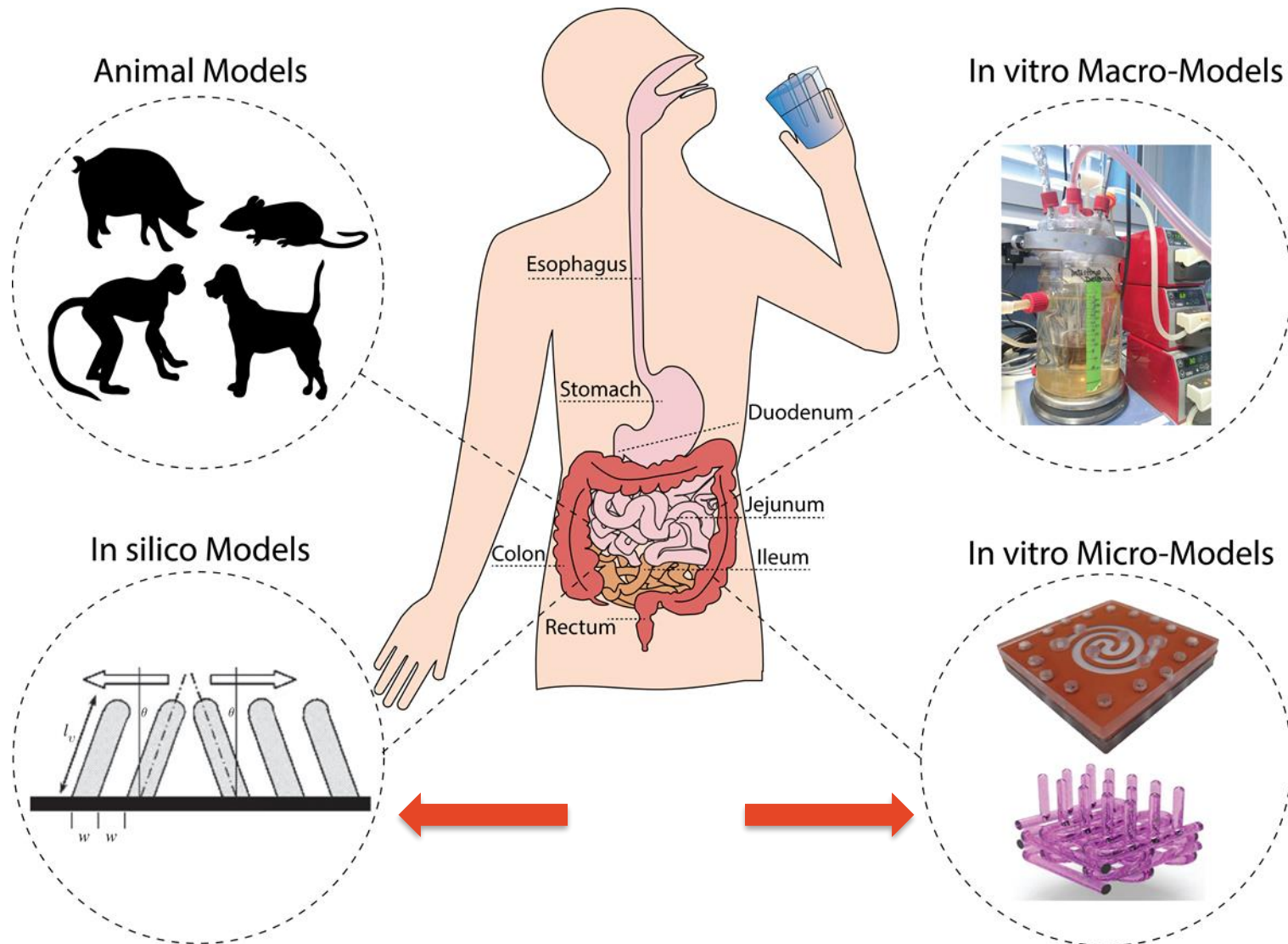


1946

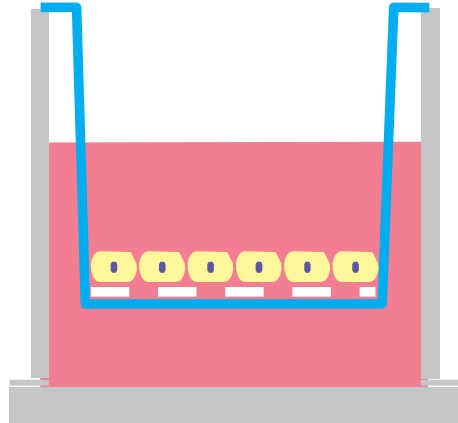


2019

# Models of the gut

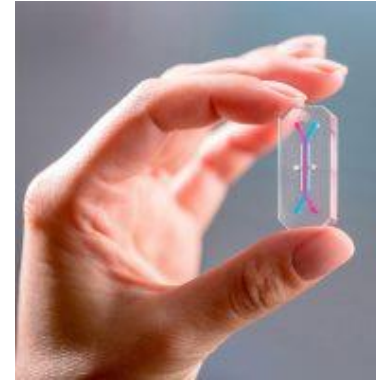


## Standard Static Culture



VS

## Microfluidics Organs on chips

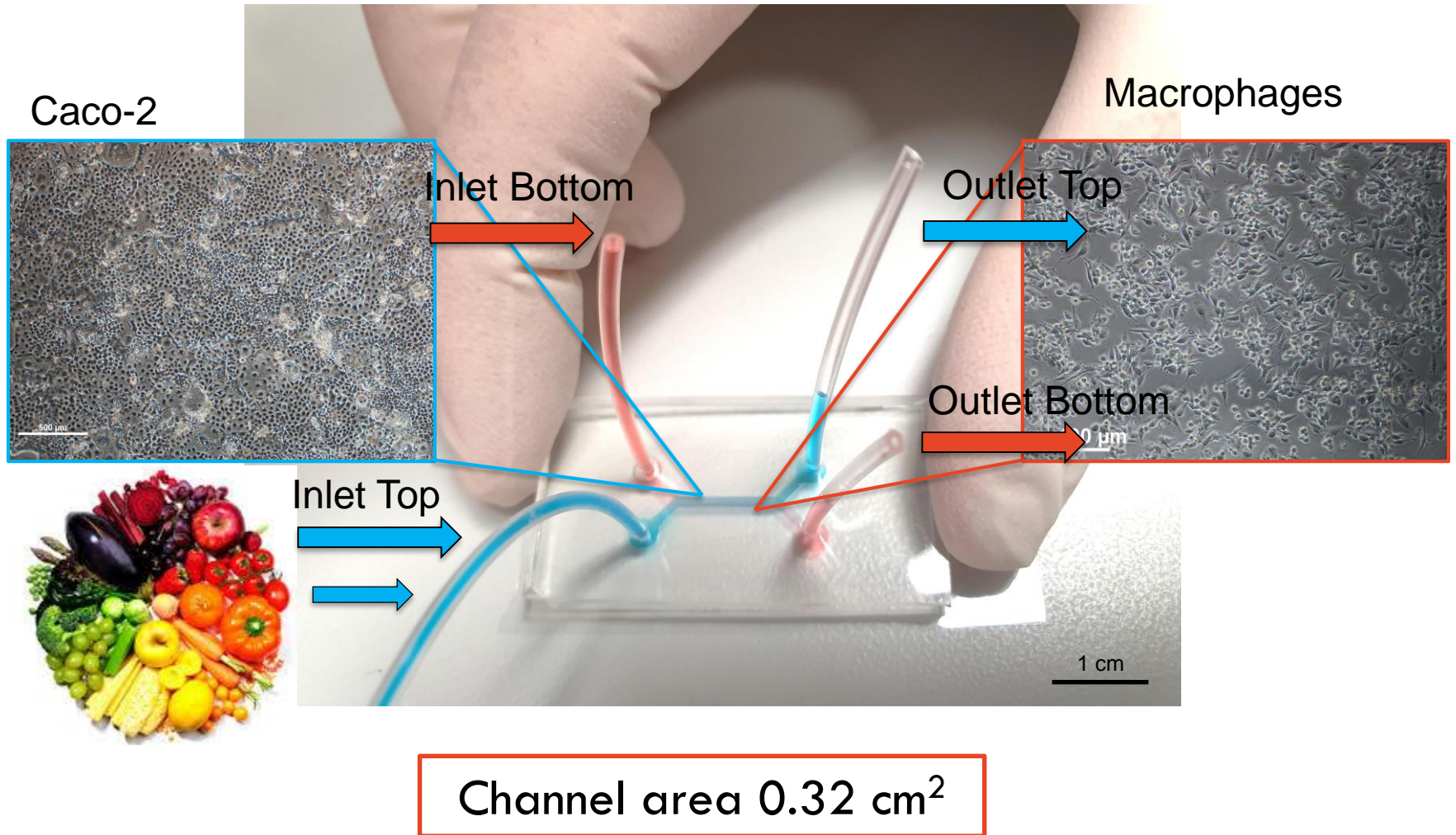


- Tests after weeks
- X No physiology
- X Cannot be customised
- X No flow of luminal content

- ✓ Three times faster
- ✓ Microphysiological
- ✓ Can be customised

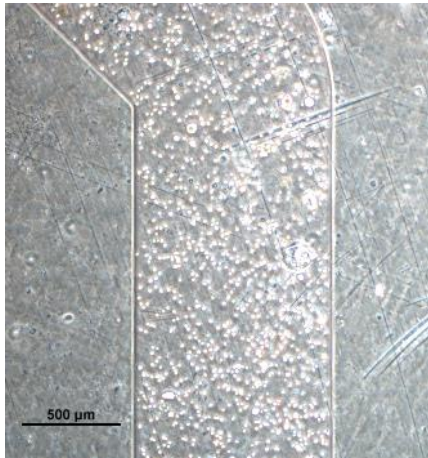


# Gut-on-a-chip

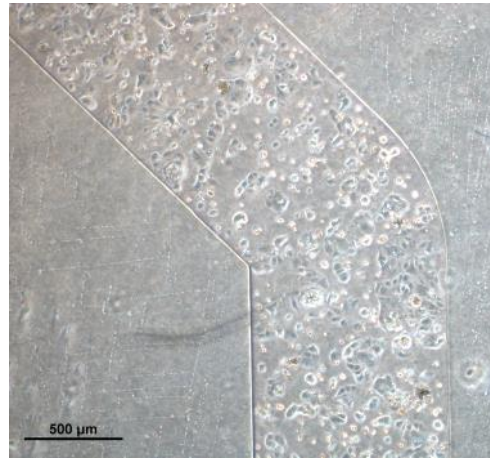


# Gut-on-a-chip

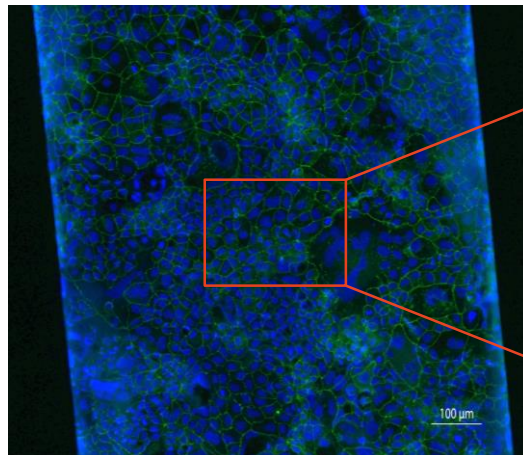
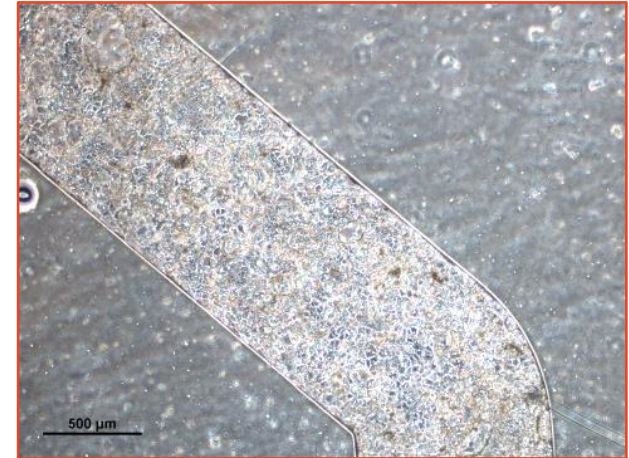
Day 0



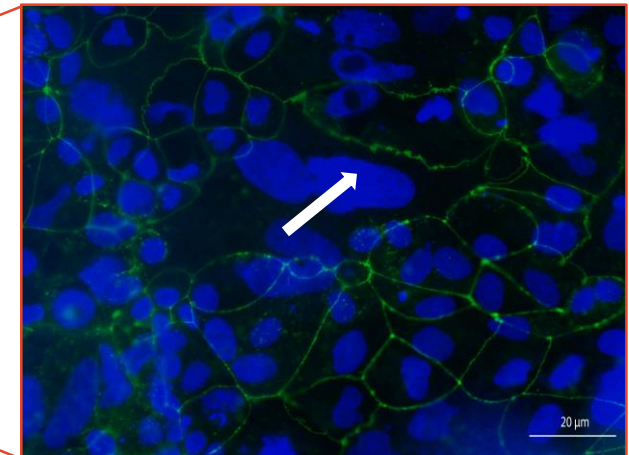
Day 1



Day 6 - Dynamic



DAPI (nuclei)  
Zonula Occludens





# Testing-on-a-chip



# Thank you!

- CAFE – Centre for Advance Food Enginomics
- Prof. Fariba Dehghani
- Adj. Prof. David F. Fletcher
- Dr. Peter Valtchev
- Dr. Jun Lae Cho
- A. Prof. Aaron Schindeler
- A. Prof. Laurence Macia

