ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

**EDMI** Microsystems and Microelectronics

**MICRO-614:** Electrochemical Nano-Bio-Sensing
and Bio/CMOS interfaces

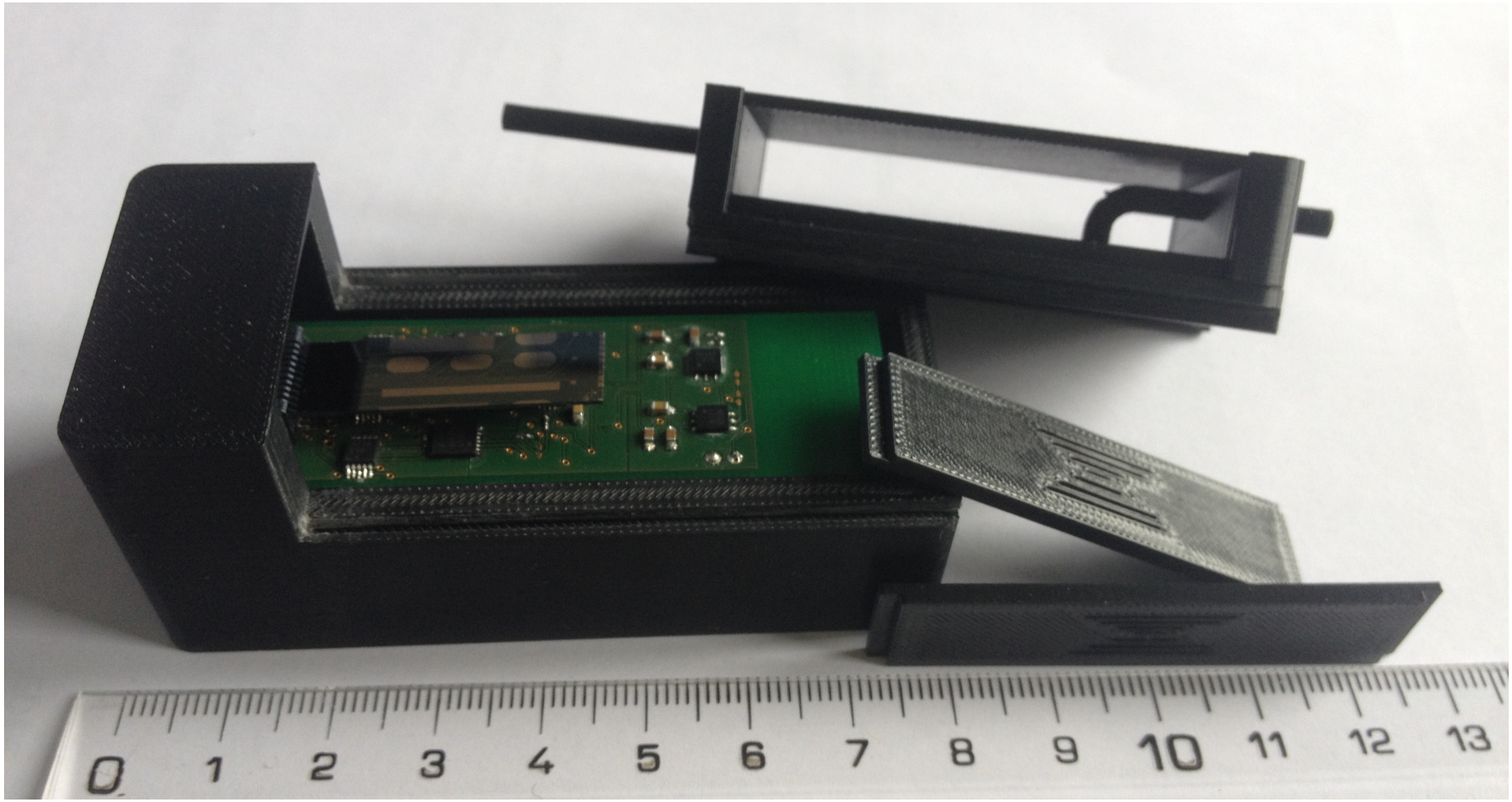
# Lecture #14
# APPENDIX on Lab-on-a-Chip
## Circuits for metabolites detection with multi-panel systems

# Monitoring in Intensive Care Units

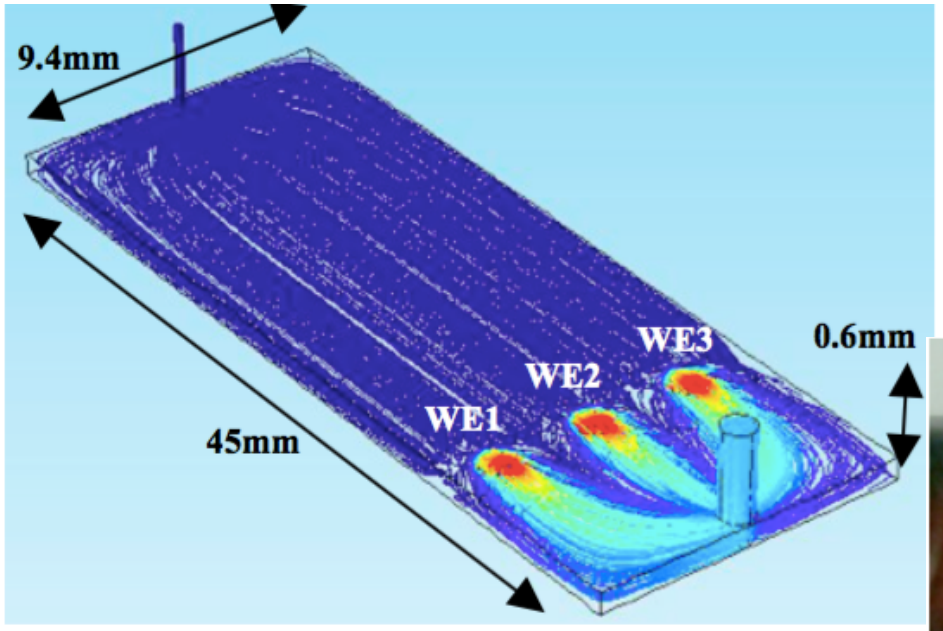

The whole system with the Android™ interface that allows connectivity too

# Monitoring in ICUs

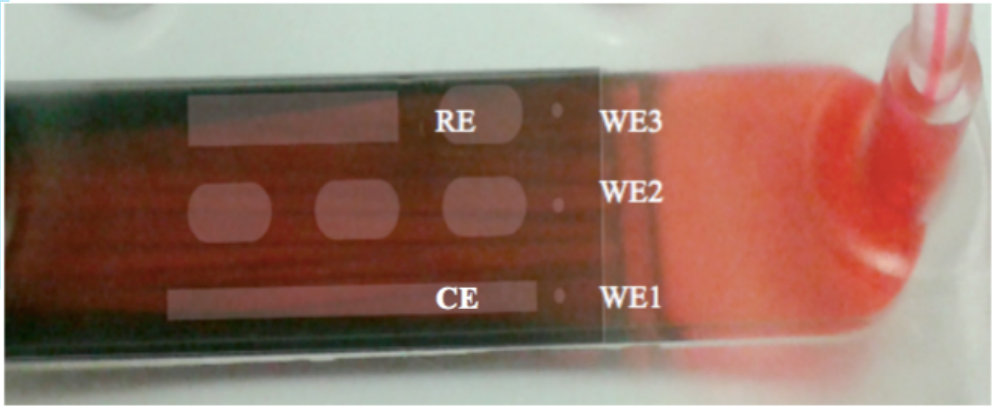
F. Basilotta, et al., IEEE BioCAS 2015



# Monitoring of Glucose and Lactate in flux: the risk for cross-talk



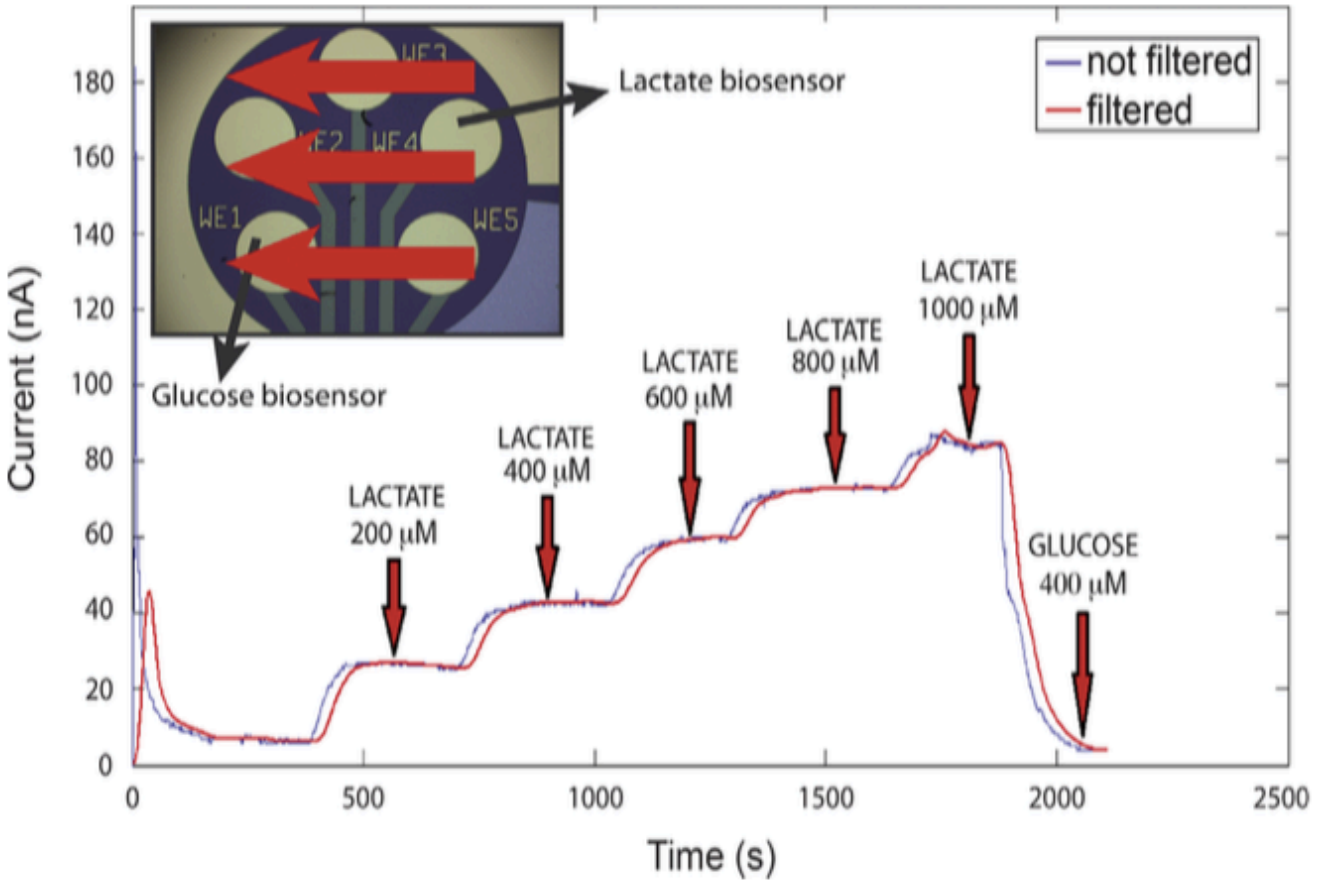

F. Basilotta, et al., IEEE BioCAS 2015, pp. 133-136




Simulations and fabrication (by 3D printing) of the fluidic system

# Right Flux with no interferences

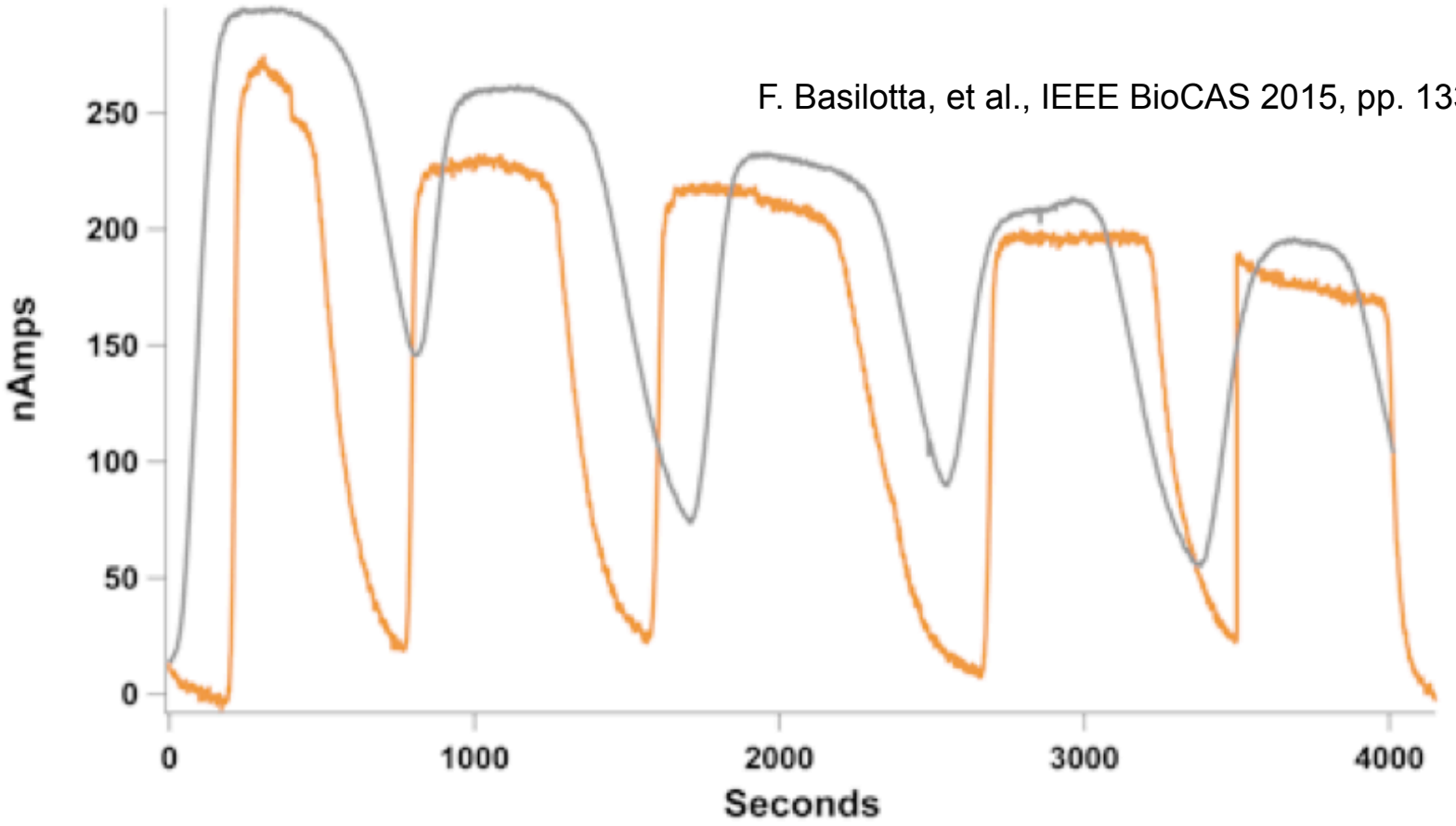
C. Boero et al. / Biosensors and Bioelectronics 61 (2014) 251–259




Chronoamperometry for glucose (grey) and lactate (orange) acquired with the fluidic system

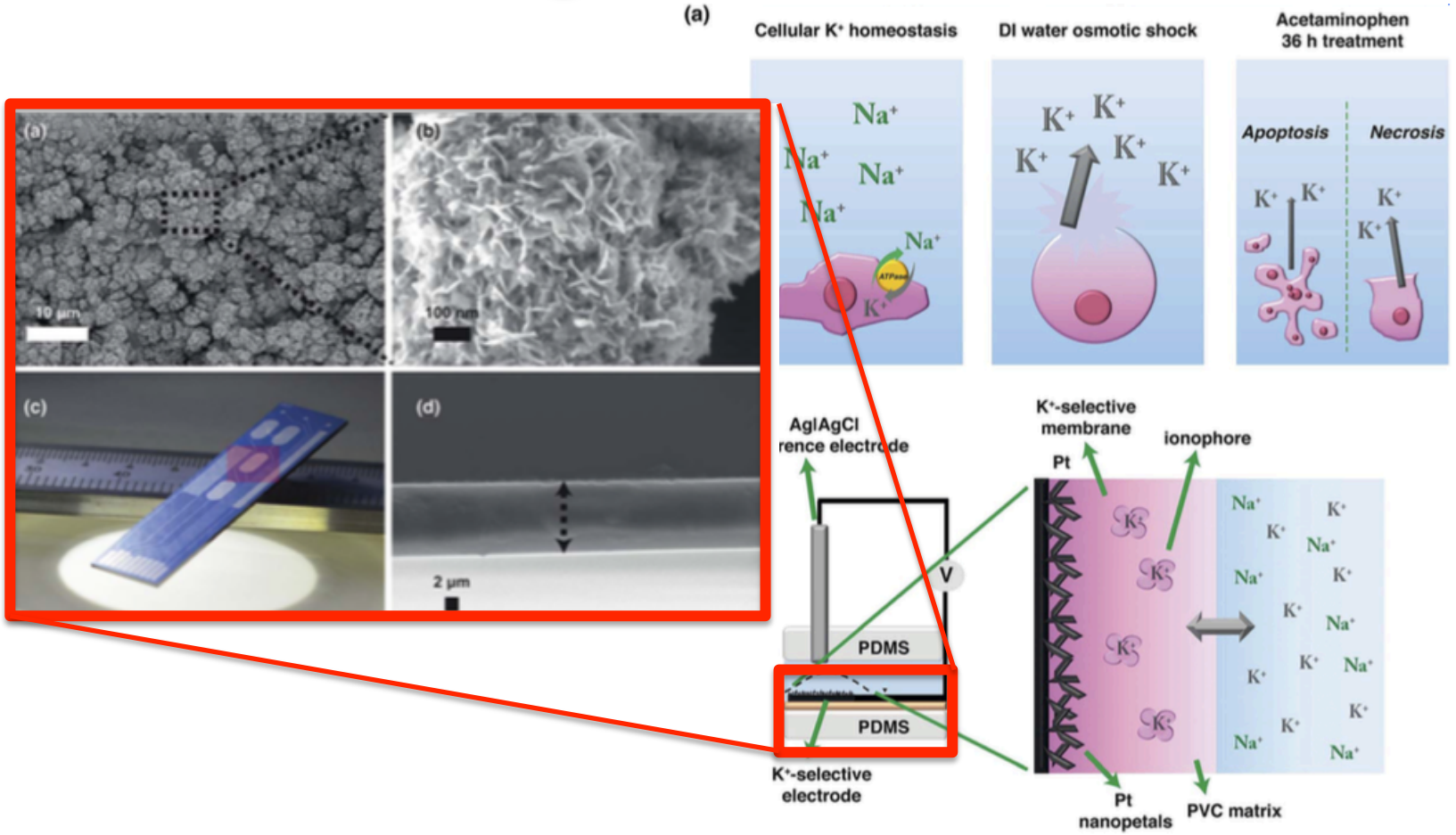
# Glucose and Lactate acquired in flux

F. Basilotta, et al., IEEE BioCAS 2015, pp. 133-136




Chronoamperometry for glucose (grey) and lactate (orange) acquired with the fluidic system

# Monitoring of ions: the case of $K^+$

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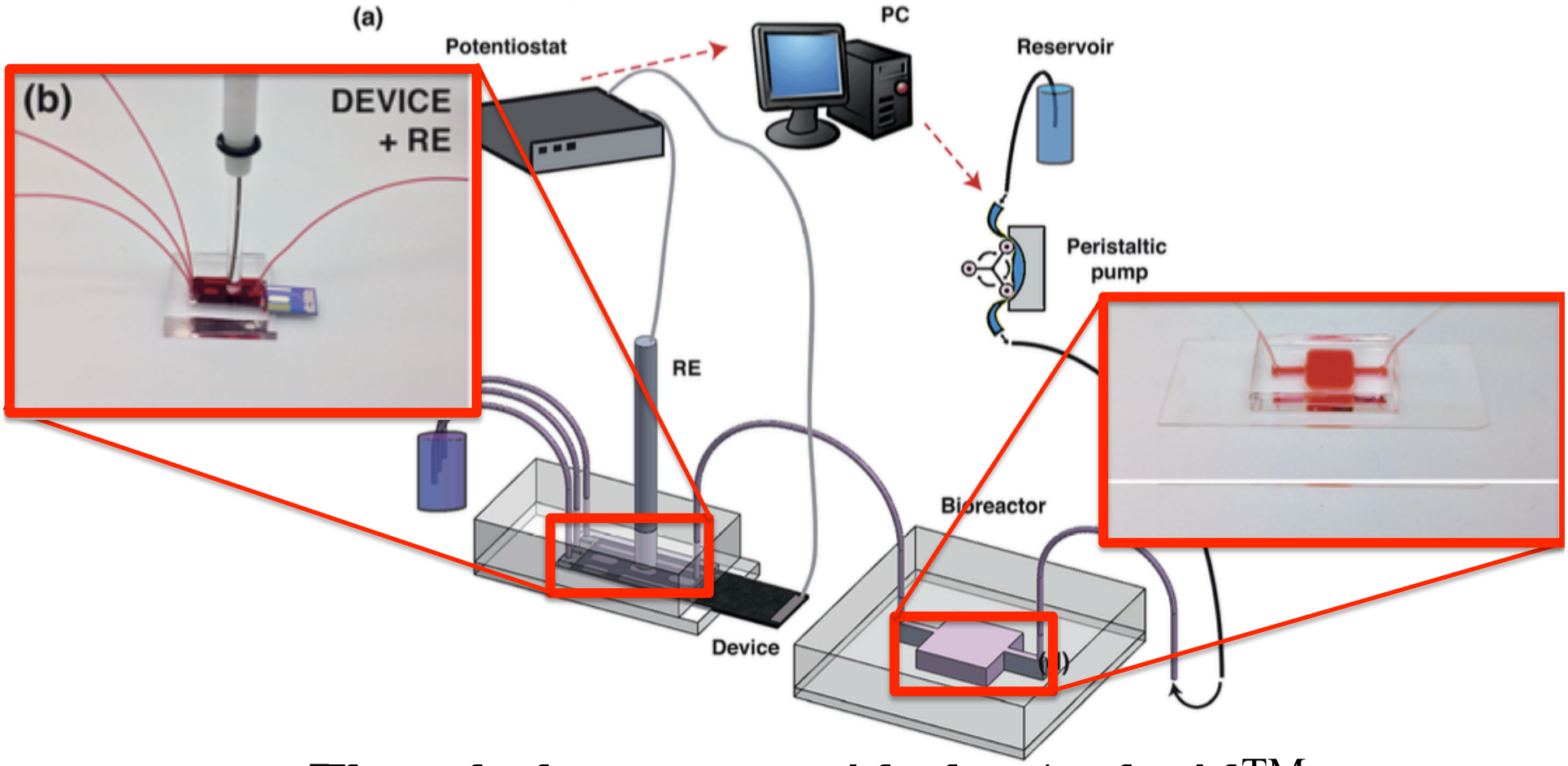
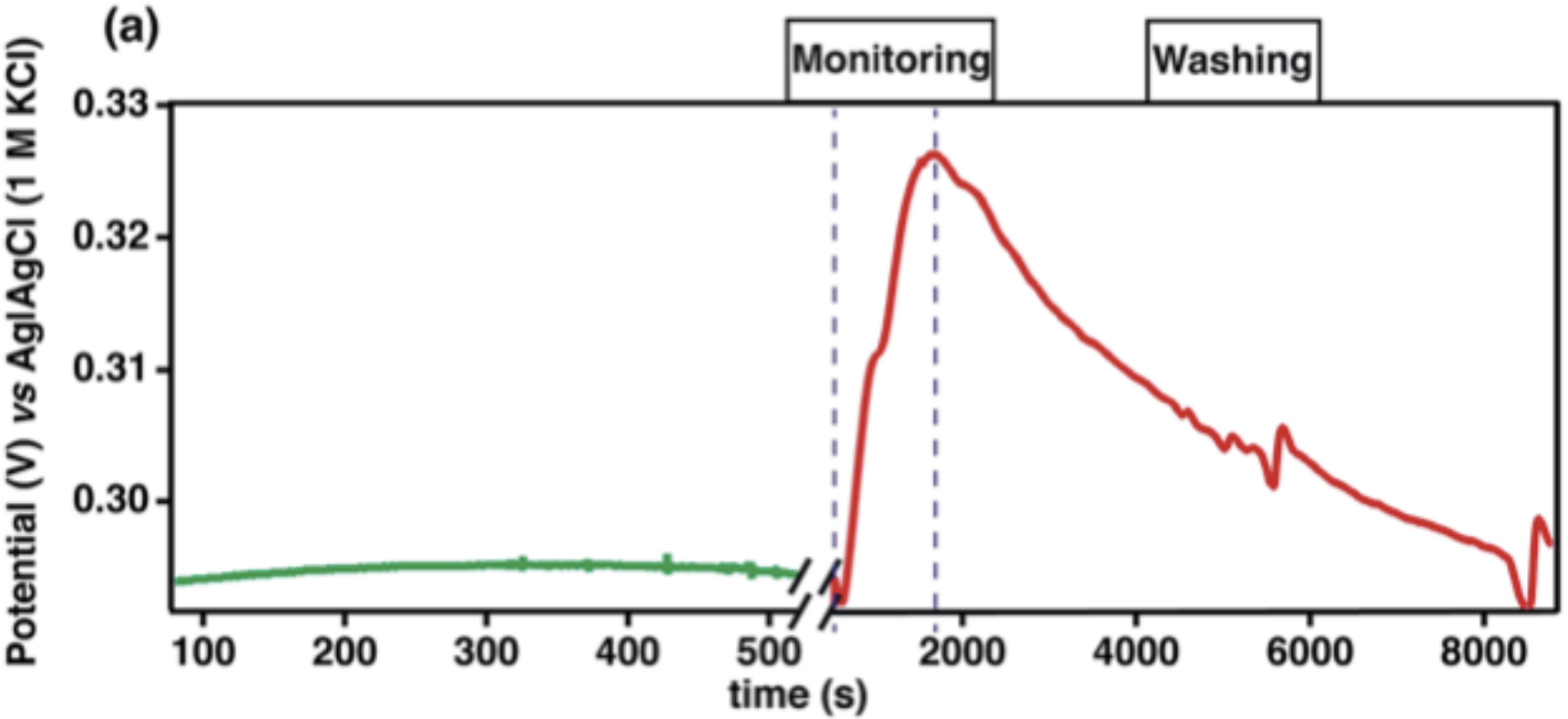



The whole system with the Android™ interface that allows connectivity too

# Validation with Cells: Osmotic Shock

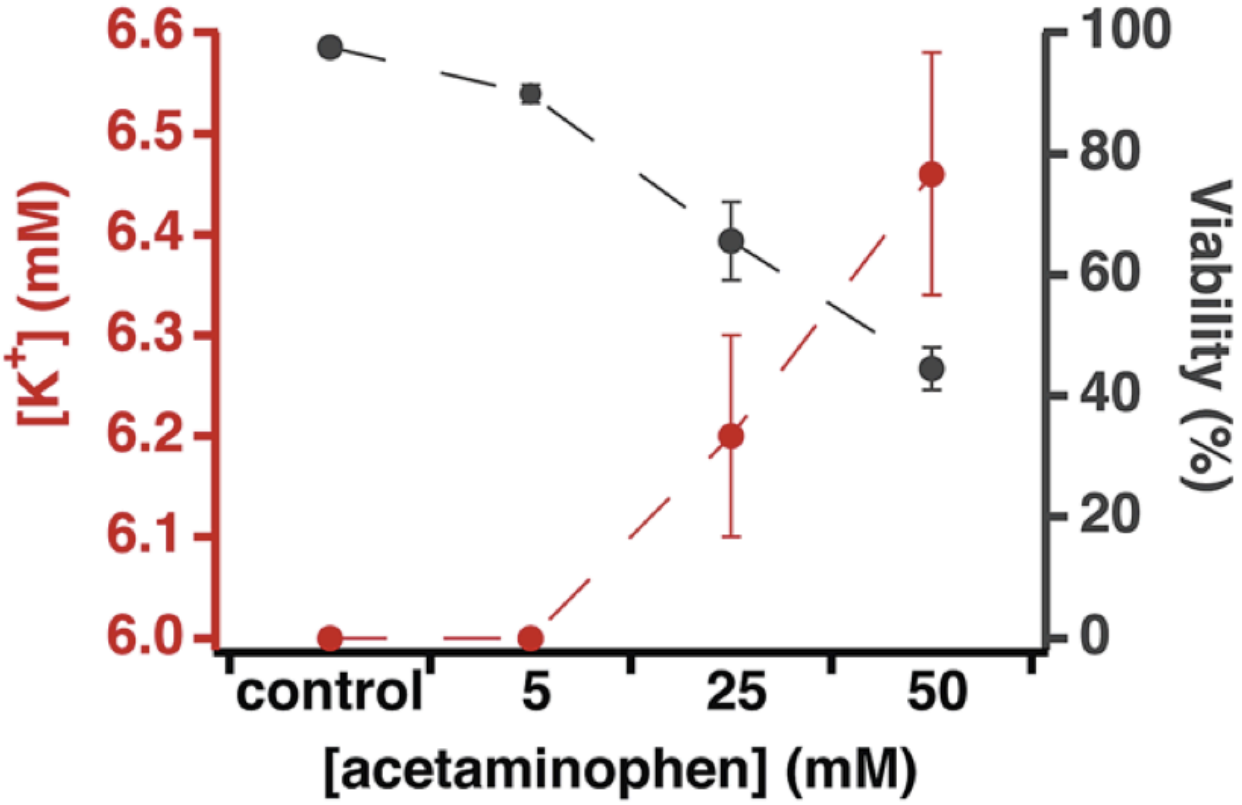



I. Taurino, et al., RSC Advances 6(2016) 40517-40526

$K^+$ acquisitions during cell osmotic chock

# Validation with Cells: Apoptosis

I. Taurino, et al., RSC Advances 6(2016) 40517-40526




$K^+$ acquisitions during cell Apoptosis