

Session 2- RS to 2025: Catalysing the integration of science and technology in drug development

Embedding 3Rs - Ultimate aim – Replacement of animals (under Directive 2010/63 EU)

Netherlands- [replacement of animals in chemical safety testing by 2025](#)

Recent examples – integration/innovation

1. High Throughput cell-based assays to prioritize and characterize chemicals and drugs
 1. NCATS: <https://ncats.nih.gov/ncgc>
 2. In vitro to in vivo computer extrapolation modeling
2. Organs-on-a-chip: *Engineering, biology and regulatory requirements*
 - a) FDA-DARPA-NIH MPS programme (2011)
 - b) Human-on-a-chip to patient-on-a-chip
 - i. E.g. Human liver used for food safety testing via CFSAN and Emulate Inc
 - c) Animal chips for animal testing
 - i. Canine gut model for drug absorption
3. Reduction and replacement methods for veterinary vaccine characterization
 - i. ELISA for batch potency testing of *Leptospirosis*



Image from NCATS

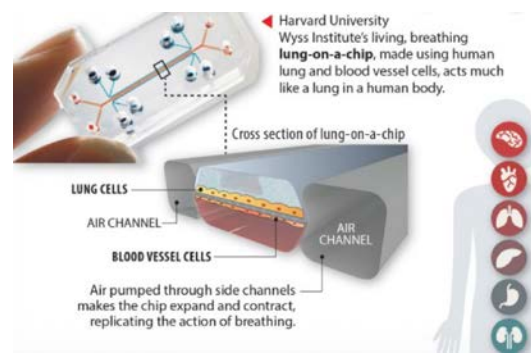


Image from Wyss Institute

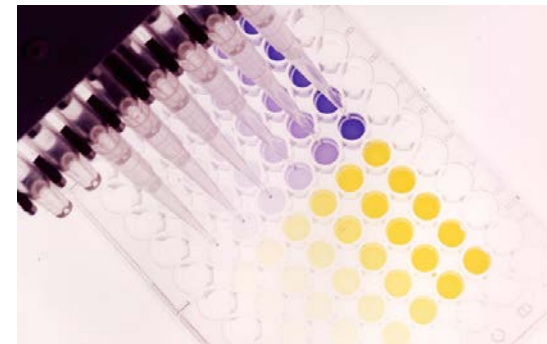


Image from ECVAM

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