



DELIVERABLE REPORT



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EUROoC

Interdisciplinary training network for advancing
Organ-on-a-chip technology in Europe

Deliverable 3.5: Successful EUROoC 3R Lab Tours

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Dissemination Level of Report

PU	Public	X
PP	Restricted to other program participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Abstract

Unfortunately, due to on-going restrictions in the course of the worldwide Covid19 pandemic, lab tours as a personal event were not feasible at this point. However, in order to transport the message, all ESR created a video about the project highlighting the benefits of the Organ-on-Chip technology with regards to the 3Rs. They virtually led through different labs within the project and introduce their projects. The video was published on the website and promoted via different social media channels. Our aim to attract as many stakeholders as possible and educate about the reduction, refinement, and replacement of animal testing was successfully reached.

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1 Planning of the video

The video was planned by all ESRs together with a selected group of supervisors. The ERSs were divided into different groups, each focusing on different steps and tasks. The group was led by the Fellow Representative of the Research Board. During regular meetings, the progresses were discussed and the current stage of the project evaluated. Regular rounds of feedback from PIs shaped the content suggested by the ESRs.

2 Content of the video

The video is structured as follows:

(1) Teaser:

Introduction to the video by asking the viewer to imagine a world where we can find the treatment for all diseases with just a small sample of blood.

(2) ITN network:

Presentation of all 15 ESRs and their location as well as a short overview of the MSCA-ITN EUROoC.

(3) Why is animal research done and what are the 3Rs?

Explanation of the complex human system and the challenge to study diseases with laboratory models only. Although animal experimentation offers unique opportunities in terms of tissue and organ interaction studies, the information we get from these models is inadequate to predict the outcomes in humans.

Introduction to the 3R principles: Reduce, Refine and Replace animal models. This includes better experimental design and adequate statistical planning (Reduce), better conditions for laboratory animals during experiments (Refine) and finally, the help of “engineered” laboratory models that might one day mimic how the human body works (Replacement).

(4) What are OoCs? And why could they in the future replace animal experiments so well?

Explanation of the development and investigation of organ-on-chip models that all ESRs are working on within the project. Organ-on-chip (OoC) models are small devices typically mimicking a specific organ on the microscale level for research purposes. By developing these devices, we aim to create a more reliable way to conduct human physiologically relevant research. OoC systems are designed to resemble human organs, to be able to investigate human physiology and diseases in a controlled microenvironment.

(5) Lab tours: How to make OoCs

Within the ITN network, the ESRs work on various OoC models to investigate several organs and diseases. They show how they make these OoCs, what they do with them and give some examples of the organs and diseases they study. The lab tours is structures into 4 different part:

(a) Chip fabrications (how to make chips and examples of fabrications methods)

(b) Chip seeding (how to put cells into the chips and how to mimic the several cell layers of a particular organ)

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- (c) Sensors (mimicking the environment the cells would be exposed to in our bodies. To control and monitor this, we can use fluidic pumps to control the flow of medium in and out of the chip and sensors to monitor the microenvironment)
- (d) Chip imaging/assays (starting of research: Various experiments can be carried out to answer different research questions).

(6) Example of Chips

OoC systems can mimic different organs and answer various research questions. As an example, the setup of the model and the research questions are explained for vessel chip, heart chip, liver chip, and gut chip.

(7) Final

The team of EUROoC hopes that we can reduce the need for animal models by replacing these with human specific OoCs in the future, to create more reliable research results to help patients all over the world, to increase animal welfare, and to create novel and ethically responsible science.

3 Outreach

The video was published on 11 February 2021 on our EUROoC website and is available [here](#). In order to underline the European network it stems from it is available in 9 different languages (as subtitles) representing the different nationality of the consortium (Danish, Dutch, English, French, German, Italian, Polish, Spanish, Swedish).

The video was promoted on our EUROoC LinkedIn and Twitter channel as well as by our partners. So far, we reached the attention of the following animal welfare stakeholders:

- The Swedish 3R center
- The 3R Center Tubingen (Germany)
- The European Animal Research Association (EARA)
- The European Organ On Chip Society (EUROoCS)
- Dutch Society for the Replacement of Animal Testing (dsRAT)
- The German Centre for the Protection of Laboratory Animals

Various reposts have reached a great number of individual persons and institutions in the area of animals experiments and alternatives according to the 3R principle.

4 Impressions

Please see below some impressions from the video.

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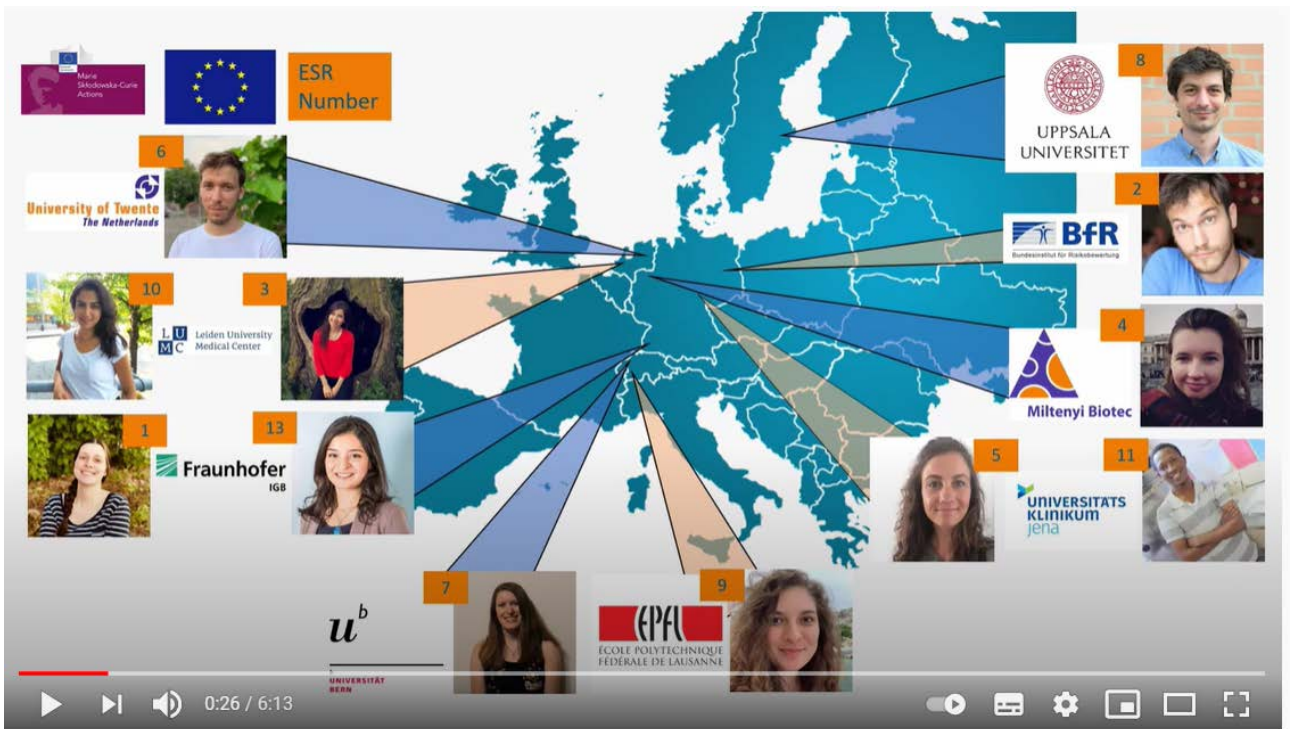
ORGAN-ON-CHIP AND THE 3R: A VIRTUAL LAB TOUR

Our 15 PhD students give you a virtual lab tour in 11 laboratories involved in the EUROoC International Training Network, where they are working on finding alternatives to reduce animal testing. You are guided through the processes of building and setting-up an organ-on-chip experiment for in vitro modeling and drug screening. 4 PhD students will highlight their chips and applications.



Figure 1 Video embedded on the EUROoC website

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Organ-on-Chip and the 3R: A virtual lab tour

348 Aufrufe • 11.02.2021

8 0 TEILEN SPEICHERN ...

EUROoC ITN

ANALYSEN VIDEO BEARBEITEN

Figure 2 Video on the EUROoC Youtube channel with currently 348 views

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