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Patient-Derived iPSC Models of Interstitial Lung Disease: An Evaluation of the Open-ILD COST Innovator Grant Training School

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Introduction

A Training School Attendees

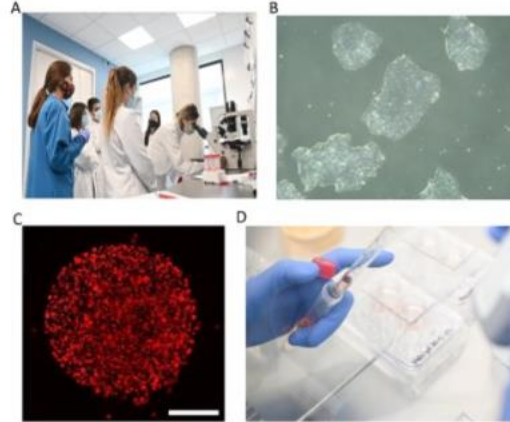


B Training School and Exchange Students

Host	Host	Number
Germany	Dresden	1
Germany	Paris	1
Germany	Paris	1
Turkey	Paris	1
Turkey	Munich	1
France	Dublin	1
Spain	London	1



Methods



Results

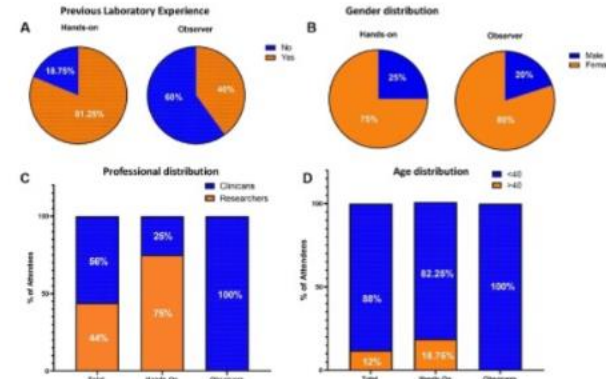


Figure 2: Impressions of the Training School
(A) Photo of trainer and group examining iPSC morphology under the microscope. Representative image of (B) iPSCs under the microscope and (C) IA2I organoids. (D) Still from training video generated during the Training School.

Figure 3: Analysis of Training School attendees
(A) Previous laboratory-based experience in cell culture in the Hands-on (n=16) and the Observer (n=10) based on survey results. (B) Gender distribution of all attending trainees in the Hands-on (n=16) and Observer group (n=15) based on inscription data. (C) Professional distribution of the trainees in the Hands-on and Observer group in % (n=26; 12 Researcher, 14 Clinicians) based on survey results. (D) Age distribution (<40 years or >40 years) of trainees in the Hands-on and Observer group in % (n=26; 23 <40, 3 >40) based on survey results.

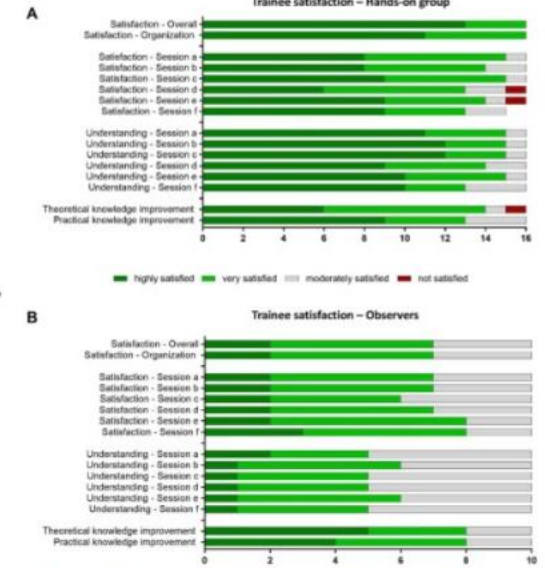


Figure 4: Trainee satisfaction with the Training School
Survey of trainee satisfaction with the Training School for (A) Hands-on trainees (n=16) and (B) Observers (n=10). Session a) Basic of iPSC Culture and Maintenance; Session b) Thawing iPSC; Session c) Freezing iPSCs; Session d) Differentiation of iPSCs; Session e) Evaluation of iPSC Culture and Differentiation; Session f) Evaluation of iPSCs, Macrophage and Lung Organoids.

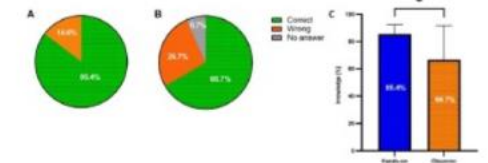


Figure 5: Knowledge of trainees after Training School
Knowledge survey after the Training Schools for (A) Hands-on group of trainees (n=16) and (B) Observer group of trainees (n=10). (C) T-Test of knowledge about iPSC culture of Hands-on cohort (n=16) vs. Observer group (n=15) as result of 9 multiple choice knowledge questions in the survey (* < 0.05; p=0.0457).

Interstitial Lung Diseases (ILD) are a group of rare lung diseases with severe outcome. To date there are no proven effective cures and the current state-of-the-art models fail to accurately recapitulate the diverse genetic causes of the disease.

Open-ILD is a COST Innovator Grant that aims to establish a first-of-a-kind open-access Biorepository of patient derived iPSCs and to train researchers in skills required to generate a robust preclinical model of ILD using these cells.

The described **Training School** was carried out as a novel hybrid teaching model at the RCSI, Dublin Ireland. A total of 31 attendees was divided in 16 Hands-on and 15 Observers.

- Participants were divided in Hands-on and Observer cohort
- Hands-on: working in Class II Biosafety Hoods to gain hands-on experience on iPSC culture supervised by a trainer
- Observers: follow via live video stream supervised by a trainer
- After the Training School, participants were asked to fill an anonymous evaluation questionnaire which was analyzed separately for the Hands-on participants and Observers

Running hybrid Hands-on and Observer teaching events is feasible and our study underlines the importance of this type of training program to appeal to a wide spectrum of interested clinicians and researcher in rare disease.

Conclusions

- The majority of participants were highly or very satisfied with the Training School.
- The Hands-on cohort retained significantly more knowledge of iPSC characteristics and culturing techniques compared to the Observer participants
- A video of state-of-the-art iPSC culturing techniques was generated for publication

