Report on the Activities of the ECFS Basic Science Working Group (BSWG)

Mo04 Report – April 2018

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1. Goals

The renewal of ECFS Basic Science WG (BSWG) was approved in January 2018 with the following goals:

1) Widening the number of European scientists doing fundamental research on those areas of CF as ECFS members, in particular to attract, train and maintain younger investigators in the CF field;
2) Promote best practice procedures (through organization of workshops);
3) Develop a network (jointly with ECFS-TDN and Registry) for the creation of biobanks of CF patients' materials across Europe for the generation (e.g., primary cultures of epithelial cells, intestinal organoids, etc) and distribution of resources for CF research;
4) Production of consensus guidelines for standardization of research-derived laboratory techniques that can be applied to the clinic (e.g., novel biomarkers to be used in CF diagnosis or as "surrogate endpoints" for clinical trials, etc;
5) Prioritizing topics related to emergent needs in the field so as to create "task forces" (e.g., on assays to measure CFTR activity, drug discovery, etc);
6) Promotion of excellence in CF research by fostering European-scale research to avoid effort duplication at national level and fragmentation and to achieve competitiveness for EU consortia
7) Liaising with basic scientists in other societies (European Respiratory Society; United European Gastroenterology, UK Physiological Society) and patients associations (CFF-USA; Mukoviszidose e.V, CF Trust, Vaincre la Mucoviscidose, etc) to maximize and optimize efforts.

2. Activities

2.1. Meeting of the BSWG

The BSWG organized a session within the ECFS Basic Science Conference in Loutraki, Greece, 21 – 24 March 2018 on the topic "*Cystic Fibrosis: Beyond the Airways*", which took place on 22 March The purpose of this session was to bring attention of participants of the ECFS Basic Science Conference to "more forgotten" organs in CF disease. The session was chaired by Margarida Amaral and Jeffrey Beekman and the following topics were presented by the indicated experts as invited speakers:

1) **Intestine**: modelling *in vitro* intestinal organs - Sylvia Boj (NL)

2) **Pancreas**: CF-related diabetes - James Shaw (UK)
3) **Kidney**: Disturbed kidney acid/base physiology in patients with CF - Jens Leipziger (DK)

A report on this symposium will be published in the next issue of JCF (to be submitted 9 May).

2.2. BSWG Workshop

Still within the previous period of the BSWG it organized a "*Hands-on Workshop on Epithelial Systems: Physiology and Pathophysiology*", which took place at the Faculty of Sciences of the University of Lisboa (FCUL), Portugal, between 24 – 28 July 2017 (see Programme in Annex 1).

This workshop aimed to elucidate researchers from the CF community on the theoretical aspects of basic CF science, as well as provide practical training in the new techniques underlying current and novel biomarkers based on CFTR activity and other molecular and cell biology parameters.

The Workshop was initially open to 12 participants, but given that it received 28 applicants, it was decided to accept 19 participants: Australia (1), Belgium (1), Brazil (1), France (1), Germany (4), Italy (2), Ireland (1), Netherlands (1), Portugal (3), Switzerland (2), and UK (2).

The Workshop counted with the support of National Patients Organizations from France in the form of travel grants for participants from the respective countries (1), Germany (3) and The Netherlands (1).

Based on the very positive evaluations of the 2017 BSWG Workshop (see evaluation by participants in Annex 2), a "*3rd Hands-On Workshop on Epithelial Systems: Physiology and Pathophysiology*" will be organized again at FCUL, Lisboa (Portugal) 23 – 27 July 2018.

Annex 1 –Programme of the "Hands-on Workshop on Epithelial Systems: Physiology and Pathophysiology"

BioSys-PhD

EPITHELIAL SYSTEMS: PHYSIOLOGY AND PATHOPHYSIOLOGY

Lisboa, Faculty of Sciences, 24-28 July 2017

BioISI Biosystems and Integrative Sciences Institute

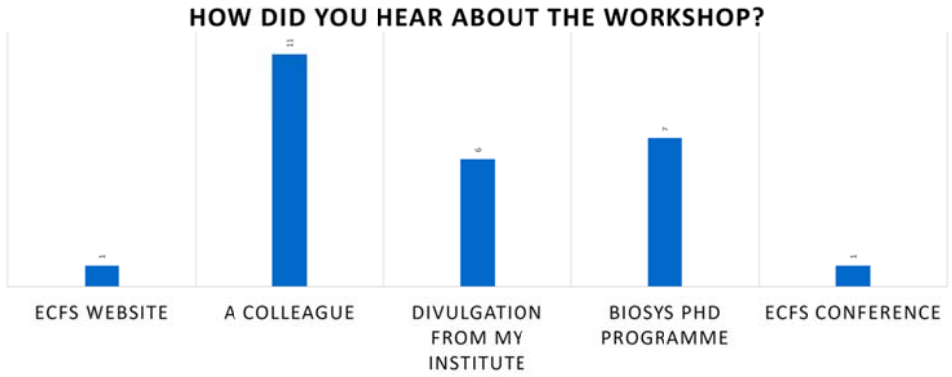
Time	Monday (24 Jul)	Tuesday (25 Jul)	Wednesday (26 Jul)	Thursday (27 Jul)	Friday (28 Jul)	Time
8.30-9.00						
9.00-9.30	Course Introduction	Lecture 03 RT	Lecture 05 KK	Lecture 08 MH	Lecture 10 MH	9.00-9.30
9.30-10.00	Lecture 01 MDA					9.30-10.00
10.00-10.30		Coffee Break	Coffee Break	Coffee Break	Coffee Break	10.00-10.30
10.30-11.00	Lecture 02 AK	Lecture 04 JB	Lecture 06 MG	Lecture 09 MG	Lecture 11 KK	10.30-11.00
11.00-11.30						11.00-11.30
11.30-12.00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	11.30-12.00
12.00-12.30	Research Seminar 01 AK	Research Seminar 02 RT	Research Seminar 03 JB	Research Seminar 04 KK	Research Seminar 05 MG	12.00-12.30
12.30-13.00						12.30-13.00
13.00-13.30	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break	13.00-13.30
13.30-14.00						13.30-14.00
14.00-14.30	Lab 01 - Immuno HB	Lab 03 - ASL RT	Lecture 07 FS	Lab 06 Swelling Assay MarneH & IS	Tutorial 01 MarneH & IS & HB	14.00-14.30
14.30-15.00			Lab 05 - Sweat Meas FS			14.30-15.00
15.00-15.30						15.00-15.30
15.30-16.00	Lab 02 - Nasal cells AK	Lab 04 - Organoids JB	Meet the Expert (Altern Cl channels) - MG			15.30-1600
16.00-16.30					Coffee Break	16.00-16.30
16.30-17.00				Coffee Break		16.30-17.00
17.00-17.30	Coffee Break	Coffee Break	Coffee Break		Tutorial 02 MH & KK	17.00-17.30
17.30-18.00	Meet the Expert (Nasal Cells and Charact) - AK, MDA	Meet the Expert (Organoids and ASL) - RT, JB	Meet the Expert (Trans app of Uss Chamb Meas) - KK	Lab 07 Ussing Chamber MH		17.30-18.00
18.00-18.30						18.00-18.30
18.30-19.00						18.30-19.00
19.00-19.30						19.00-19.30
19.30-20.00					Course Dinner	19.30-20.00

Detailed Programme

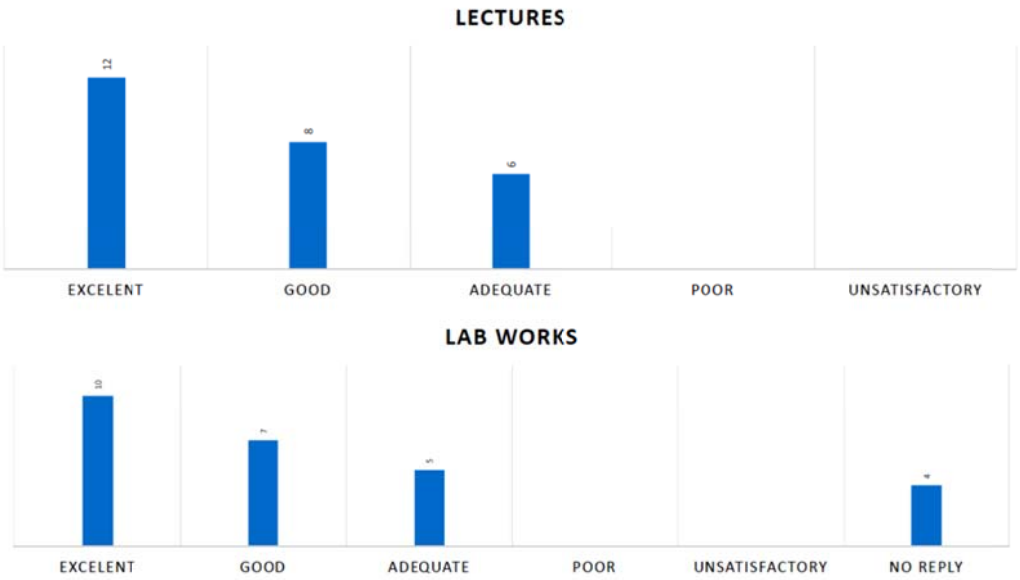
Class	Title	Room	Faculty	Institution
Lecture 01	Cystic Fibrosis: a Disease of Epithelial Tissues	Lecture room	Margarida Amaral	University of Lisboa (Portugal)
Lecture 02	Culturing Respiratory Cells	Lecture room	Anthony Kicic	University of Western Australia (Australia)
Lecture 03	Physiology of the Epithelial Cells	Lecture room	Rob Tarran	University of North Carolina (USA)
Lecture 04	Organoids as Model Systems to Epithelia	Lecture room	Jeff Beekman	University of Utrecht (The Netherlands)
Lecture 05	Physiology of Intestinal Epithelial Cells	Lecture room	Karl Kunzelmann	University of Regensburg (Germany)
Lecture 06	Physiology of Exocrine Pancreatic and Sweat Gland Epithelial Cells : focous on ion and fluid transport	Lecture room	Michael Gray	University of Newcastle (UK)
Lecture 07	β-adrenergic sweat measurements	Lecture room	Mª Fátima Servidoni	University of Campinas (Brazil)
Lecture 08	Measurement of transepithelial ion movement with the Ussing chamber	Lecture room	Martin Hug	University of Freiburg (Germany)
Lecture 09	Electrophysiology techniques: from tissues to cells and single-molecules	Lecture room	Michael Gray	University of Newcastle (UK)
Lecture 10	Functional diagnosis of Cystic Fibrosis by Ussing Chamber	Lecture room	Martin Hug	University of Freiburg (Germany)
Lecture 11	New aspects of epithelial physiology	Lecture room	Karl Kunzelmann	University of Regensburg (Germany)
Lab 01 (Rotates with Lab 02)	Immunefluorescence of Epithelial Cells & Tissues	Lab (C8) -- 8.1.79	Hugo Botelho & Margarida Quaresma	University of Lisboa (Portugal)
Lab 02 (Rotates with Lab 01)	Processing Primary Nasal Epithelial Cells: Conditional reprogramming	Lab (C8) -- 8.1.74	Anthony Kicic & Luka Clarke	University of Western Australia (Australia); University of Lisboa (Portugal)
Lab 03 (Rotates with Lab 04)	ASL Microscopy Measurements	Lab (C8) -- 8.1.74	Rob Tarran & Luis Marques	University of North Carolina (USA); University of Lisboa (Portugal)
Lab 04 (Rotates with Lab 03)	Culture of Murine Intestinal Organoids & Cryocuts	Cell Culture (C8) -- 8.1.74	Jeff Beekman & Íris Silva	University of Utrecht (The Netherlands); University of Lisboa (Portugal)
Lab 05	Measurement of β-adrenergic sweat rate using an evaporimeter	Lecture Room	Mª Fátima Servidoni & Verónica Felicio	University of Campinas (Brazil); University of Lisboa (Portugal)
Lab 06 (Rotates with Lab 07)	Organoids Swelling Assay	Lab (C8) -- 8.1.79	Marne Hagemeijer & Íris Silva	University of Utrecht (The Netherlands); University of Lisboa (Portugal)
Lab 07 (Rotates with Lab 06)	Ussing Chamber Analysis of Murine Native Tissues and Polarized Epithelial Cells	Lab (C8) -- 8.3.43	Martin Hug, Margarida Ramos & Nikhil Awatade	University of Freiburg (Germany); University of Lisboa (Portugal)
Tutorial 01 (Rotates with Tut 02)	Analysis of Organoids Swelling Assay Data	8.1.67	Marne Hagemeijer, Hugo Botelho & Íris Silva	University of Utrecht (The Netherlands); University of Lisboa (Portugal)
Tutorial 02 (Rotates with Tut 01)	Analysis of Ussing Chamber Data	8.1.69	Martin Hug, Margarida Ramos & Nikhil Awatade	University of Freiburg (Germany); University of Lisboa (Portugal)

Annex 2 – Evaluation by participants of the "Hands-on Workshop on Epithelial Systems: Physiology and Pathophysiology"

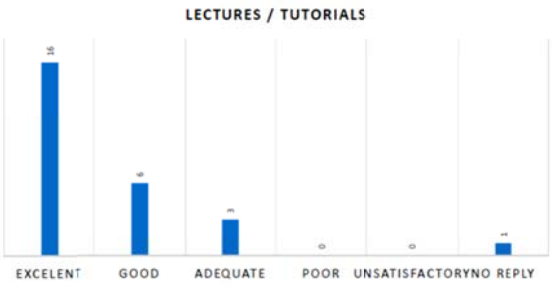
Information on the participants

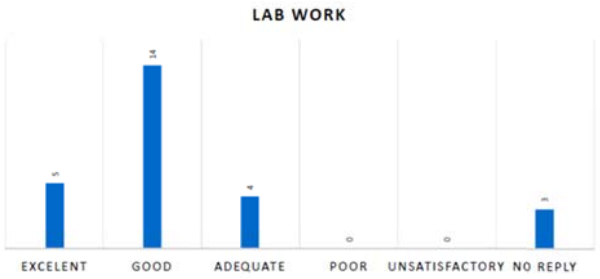


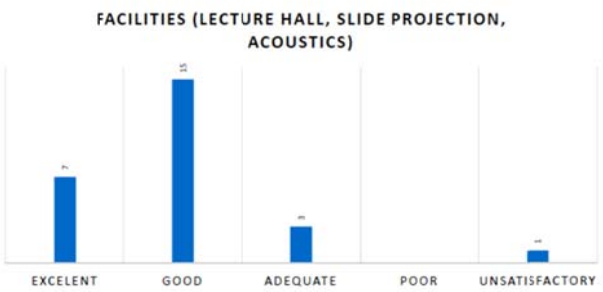
Organization of Programme



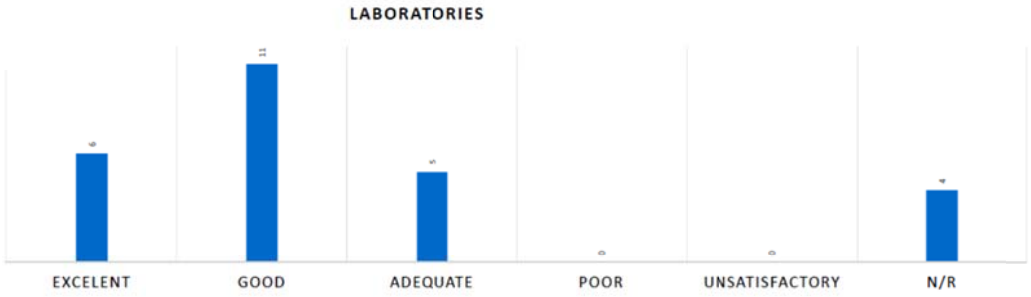
Quality of the programme

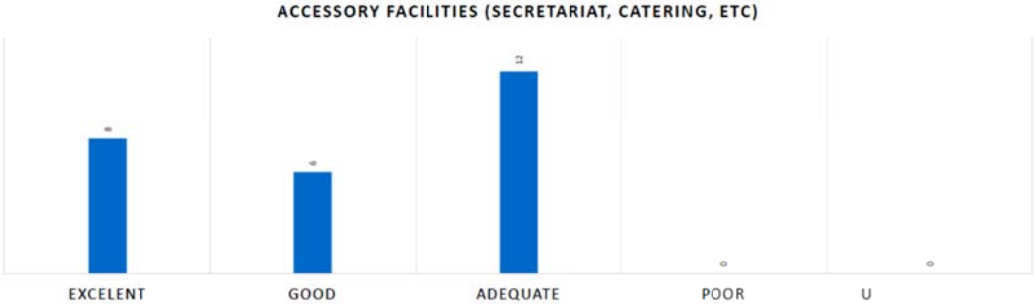




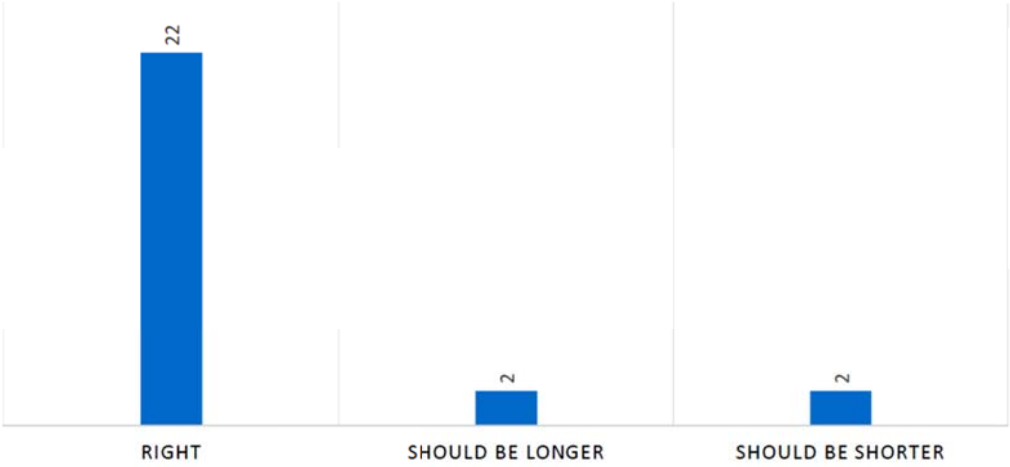


Quality of the programme





Duration of the workshop



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