Fondazione Ricerca Fibrosi Cistica - ETS

italian cystic fibrosis research foundation

THE FFC RICERCA'S WEBINARS

9, 15, 16 JANUARY 2025

CALLS AND RESEARCH FACILITIES

THURSDAY
9 JANUARY 2025
at 12 PM
Ermanno Rizzi
FFC Ricerca Scientific Board
FFC Ricerca's calls for applications

WEDNESDAY
15 JANUARY 2025
at 12 PM
Valeria Capurro
G. Gaslini Institute, Genoa
Primary Cells Culture Facility

THURSDAY
16 JANUARY 2025
at 12 PM
Alessandra Bragonzi
San Raffaele Hospital, Milan
CFaCore - CF animal Core Facility

Fondazione Ricerca
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FFC Ricerca
Research facilities:

Primary cell cultures service
(Servizio Colture Primarie - SCP)

Dott.ssa Valeria Capurro

Fondazione Ricerca Fibrosi Cistica - ETS
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ISTITUTION

The primary cell culture service was born in 2012 from the collaboration between Cystic Fibrosis Research Foundation (FFC Research) and the Medical Genetics laboratory of the Giannina Gaslini Institute.
The facility provides a collection of primary human bronchial epithelial cells (HBECs; obtained from both Cystic Fibrosis (CF) and non-Cystic Fibrosis (non-CF) bronchi) to researchers.

AIM

The Cell Culture Facility provides **the most relevant biological model of the airway epithelium** for studies related to Cystic Fibrosis (CF) to investigate the epithelial physiopathology and to evaluate therapeutic strategies.

BIOLOGICAL MODELS

There are various types of **immortalized epithelial cell lines** derived from the human bronchial and tracheal epithelium.

These cells can be easily cultured in large amounts to perform functional and biochemical experiments.

However, they do not reproduce perfectly native epithelium, often lack cell polarity and do not express relevant proteins (CFTR, ENaC).

THE BIOLOGICAL MODEL
Primary airway epithelial cells

Primary airway epithelial cells can be cultured on porous membranes to generate a **polarized epithelium with characteristics similar to the epithelium *in vivo***.

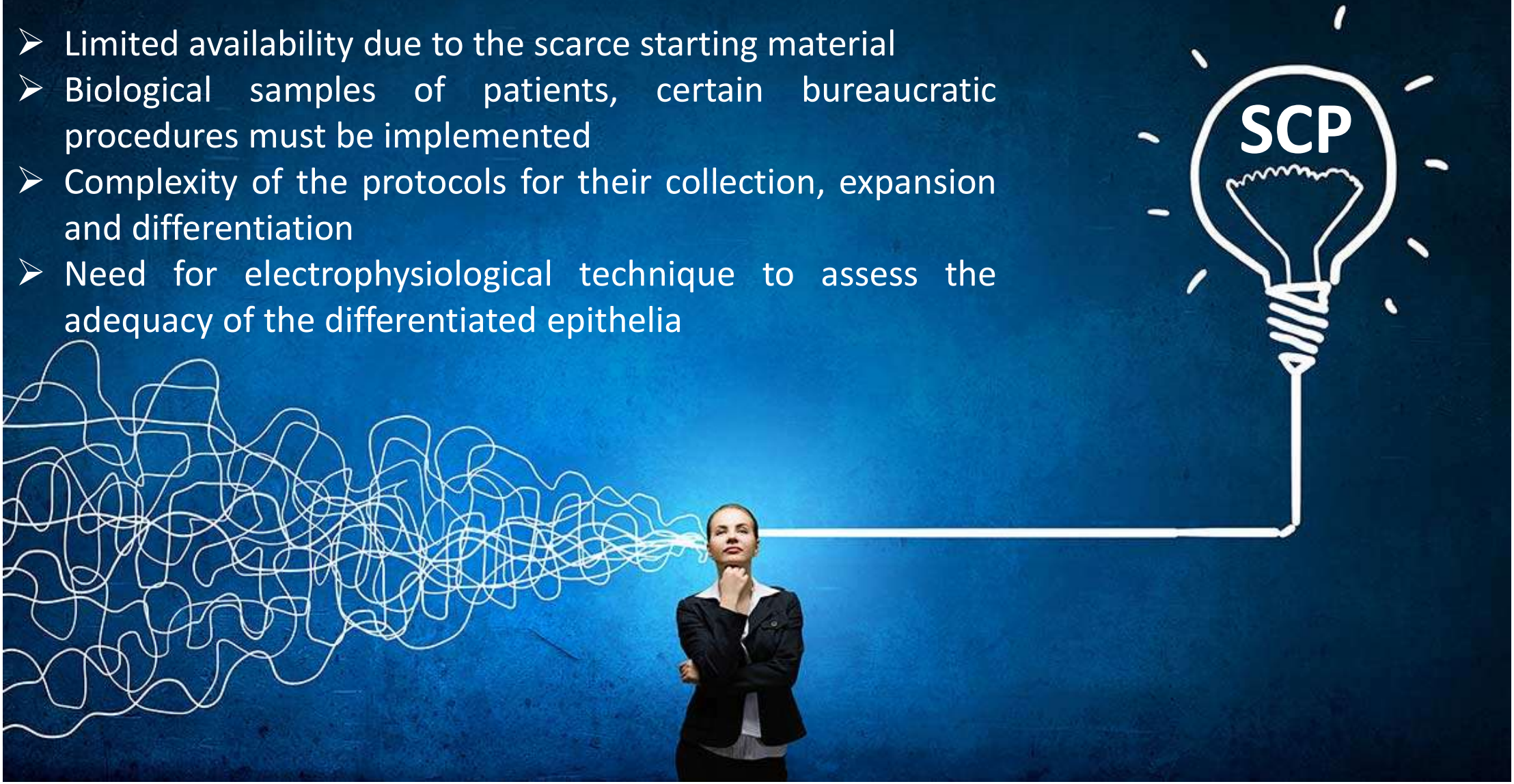
Under such conditions it is possible to study:

- The physiology of the epithelium and the alterations caused by CFTR loss of function.
- The efficacy of pharmacological and genetic therapies aiming at the correction of CF basic defect.
- The interaction between bacteria and epithelial cells and the mechanisms associated with the inflammatory response.
- The expression of proteins by immunofluorescence or western blot.
- Gene expression by RNA extraction followed by RT-PCR or microarray analysis.
- Efficacy or possible side effects of new compounds on the bronchial epithelium.

PROBLEMS

- Limited availability due to the scarce starting material
- Biological samples of patients, certain bureaucratic procedures must be implemented
- Complexity of the protocols for their collection, expansion and differentiation
- Need for electrophysiological technique to assess the adequacy of the differentiated epithelia

SOLUTION



SCP

- Cryovial of frozen bronchial epithelial cells
- Proliferative medium to expand cells by 1 or 2 passages depending on the researchers' needs
- Info on commercial differentiative medium or instructions on how to prepare a homemade differentiative medium with supplements provided by the service
- Detailed protocols for the correct culture and differentiation of the cells sent.
- The possibility for interested researchers to carry out a period of training at the Facility laboratories.
- The expertise of facility members

ADVANCE SERVICE

- Fully-differentiated epithelia, ready-to-use
- guaranteed level of differentiation, electrophysiological checks before sending
- interaction between researchers and the service to better direct the experiments to be conducted on epithelial preparations
- establishment of a real **scientific collaboration**

ADVANCE SERVICE 2.0

- Fully-differentiated epithelia, ready-to-use
- The epithelia are not shipped but remain in our laboratories to be tested
- Study the effect of compounds on transepithelial ion transport and on the activity of CFTR and other channels/transporters using Ussing chamber or similar systems
- establishment of a real **scientific collaboration**

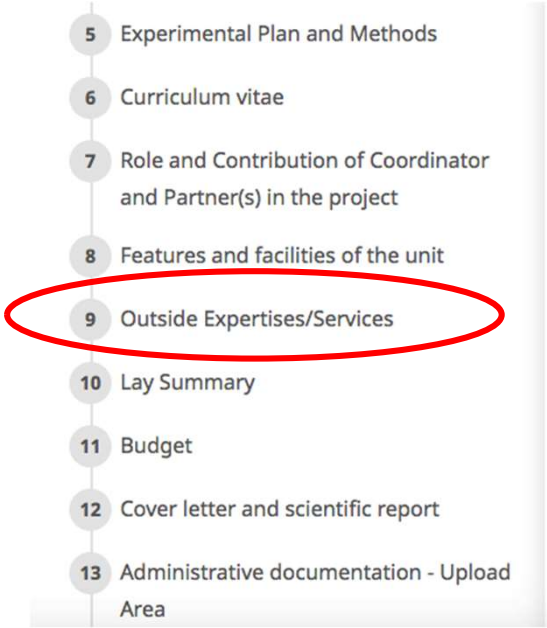
New call for projects for Cystic Fibrosis Research (FFC Research) how to involve the Service:

- the researcher who plans to include the SCP in his/her research project should **contact the facility** to verify that the model offered is the most suitable and that the experimental procedures are appropriate to it.

New call for projects for Cystic Fibrosis Research (FFC Research) how to involve the Service:

If you need **cells** and **medium (SCP - standard service):**

SCP should be listed as Service at **point 9** and the corresponding costs should be included in the budget under "Service" (costs for cell vials and/or medium)



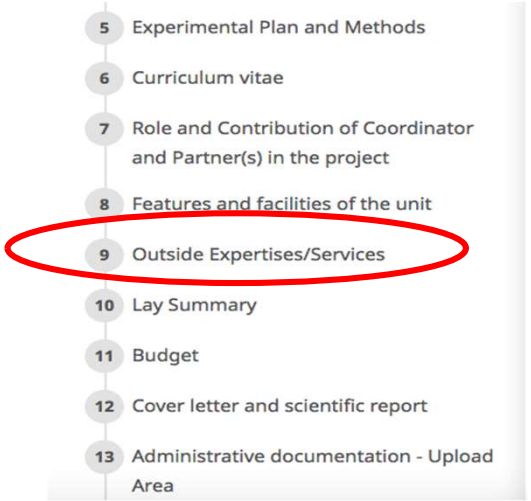
SERVICE COSTS	
1 vial of cells with coating solution	€ 125
1 vial of cells with coating solution plus LHC9/RPMI1640	€ 175
UltroserG for preparation of 500 ml of differentiative medium	€ 125
LHC9/RPMI1640, 500 ml	€ 150

New call for projects for Cystic Fibrosis Research (FFC Research) how to involve the Advanced Service:

If you need **differentiated epithelia (advanced service):**

SCP should be listed:

- as Service at **point 9** and the corresponding costs should be included in the budget under "Service" (costs for epithelia preparation)



ADVANCED SERVICE COSTS	
24 differentiated epithelia	€ 2000

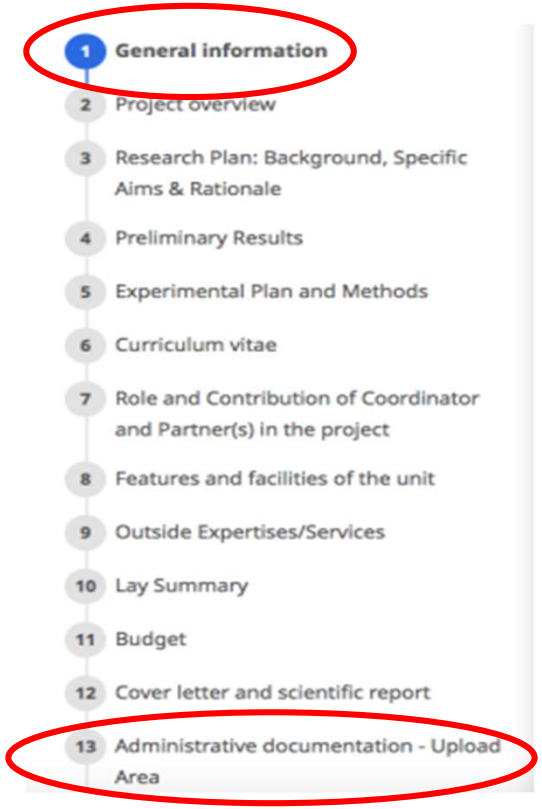
OUR COSTS TO GENERATE 24 EPITHELIA	
1 vial of cells plus LHC9/RPMI1640	€ 175
24 porous supports	€ 926
PneumaCult ALI	€ 464
Other consumables (ExPlus, reagents, Lab Plasticware, electrophysiological validation)	€ 435
TOT	€ 2000

New call for projects for Cystic Fibrosis Research (FFC Research) how to involve the Advanced Service:

If you need **differentiated epithelia (advanced service):**

SCP should be listed:

- as Service at **point 9** and the corresponding costs should be included in the budget under "Service" (costs for epithelia preparation)
- as External Collaboration at **point 1** (1 SCP person) with the Collaboration Letter uploaded at **point 13.**



As a scientific collaboration, the SCP person should be listed as co-author in any pubblication

FOR THE FUTURE

How to get access to the facility?

- the researcher must contact the service which will direct the researcher how to compile the request.

- the **request form** must be sent to the service, the researcher must provide a brief description of the experiments to be done on HBECs to address their technical feasibility.

CONTACTS:

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