

## Steady progress in regenerative medicine with precise temperature control

### MCO-170 series



CUSTOMER TESTIMONIAL - THE INSERM UNIT, INSTITUTE OF REGENERATIVE MEDICINE BIOTHERAPY (IRMB)

**Regenerative medicine is a ground-breaking field that is slowly gathering momentum in finding remarkable cell therapy solutions. Working in this highly specialized regenerative medicine arena requires top scientific skills and exceptional lab equipment.**

The Inserm Unit is a specialist research facility in Montpellier, France that is dedicated to stem cell research and immunotherapy. Staffed by 150 scientists and engineers, it is part of the Institute of Regenerative Medicine Biotherapy (IRMB), which is in turn associated with the University of Montpellier (CHU Montpellier). Headed by Romain Desprat, (PhD., MSc.), who is the Core Facility Manager, it focuses on continually enhancing its scientific and medical expertise on regenerative medicine. Romain has been in charge of the Unit for seven years and oversees not only scientific and research operations, but also the acquisition of funding from a wide variety of sources to progress its pioneering work. The additional reliability provided by three new incubators from PHCbi has enabled the institute to strengthen its expertise and enhance its knowledge of this fascinating specialist field.

The Institute is organized into four different teams, each specialized on specific areas of research. It is supported by national organizations in health biology that are dedicated to stem cell research, including ECELL France, a French Research Infrastructure for mesenchymal stem cell-based therapies, and INGESTEM, a research and development platform open to external users. Its work is also supported by national initiatives, such as Labex.

#### **Developing new techniques and finding innovative solutions in cell therapy**

The scope of the Unit's work includes developing a variety of potential initial treatments stages for diseases, such as rheumatoid arthritis. The institute employs a wide range of cutting-edge cell therapy techniques, including; cell reprogramming, ageing, epigenetic, mesenchymal stem cell biology, innovative immunotherapy, bioinformatics and molecular modelling.

Some of the most recent studies published from the Unit are focused on subjects such as: healthy DNA; somatic cell reprogramming; cellular senescence an important role in the aging process that is often associated with age-related diseases and tumor dormancy.



## CUSTOMER TESTIMONIAL - INSTITUTE OF REGENERATIVE MEDICINE BIOTHERAPY (IRMB) MCO-170AICUVH-PE

*The introduction of iPSCs production at clinical grade has allowed us to include the platform in European H2020 funding. iPSPine aims to study and develop a new advanced therapy drug (ATMP) of the future, based on a new approach to developmental biology involving induced pluripotent stem cells (iPSC) to be produced by the SAFE-iPS platform and whose differentiated cells will be integrated and biomaterials compatible. The iPSPine consortium will develop and carry out a proof of concept and a preclinical efficacy study in dogs.*

*Thus, our ambition through this project is to position INGESTEM/SAFE-iPSC at National- and European-level on the development of ATMP from iPSC. This European program represents one of the first programs dedicated to the implementation of all regulatory and scientific elements for the use of differentiated cells from iPSC to be produced by the Montpellier node.*



### **PHC incubators and ULT freezers considered the best choice**

The Unit has invested in equipment to carry out its research. It now has three PHCbi incubator models, which are the MCO-19AIC-PE, MCO-170MUVH-PE and MCO-170AICUVH-PE models. The incubators were purchased in (6 years). These incubators deliver reliable service for the whole laboratory. They are far more reliable and accurate than the previous appliances that the Unit used. They have also enabled the Inserm Unit to optimize its limited laboratory space, thanks to the stackability of the incubators. They are arranged on top of each other to occupy minimal space (with dimensions of 620mm x 750mm x 905mm).

The ULT freezers that it has purchased include a single MDF-DU500VX/502VX/502VH and two MDF-C2156VAN-PE units.

*“The PHCbi incubators and ULT freezers provide a good value solution and increased reliability compared to our previous equipment,” said Romain. “Cost, reliability, security, performance and accuracy are the most important elements in our purchasing decisions.”*

### **Appropriate cost**

One factor in the eventual selection of the PHCbi equipment was its reasonable cost.

*“We are continually working to secure funding for our research. This fund raising is varied. It includes small amounts that are important for purchasing items of equipment, like the PHC incubators and ULT freezers, as well as funding individual PhD students and their projects. The amounts for these range from €50,000 euros per year funding for one PhD project to millions of euros for advanced equipment.”*

### **Meeting stringent regulation**

The unit adheres to standard laboratory protocols which are defined by EU and International clinical regulations. As the regulatory landscape evolves, these are set to be strengthened further over the next few years. Clinical grade production involves a double measurement in real time of all values (temperature, percentage of O<sub>2</sub> and CO<sub>2</sub>).

The incubators and ULT Freezers from PHCbi provide high-precision and performance to deliver to the current exact standards.

*“Of course, we follow industry guidelines, which are developing all the time. Within our specialized field, these guidelines are anticipated to change within a few years,” said Romain. “When we purchased the PHCbi units, we knew they could deliver to our high-quality standards for two- to three-years. And we consider this a very good return on investment. With an excellent relationship with our PHC representative, we provide input as to how the products can be improved further in the future with regard to meeting future industry quality standards.”*

### **Future protocols**

In future, the protocols of the Unit will change, as techniques are developed further and research projects progress. It is clear at the Unit that the way to move forward with equipment is to collaborate with equipment developers on new product ideas.

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“Our research is driven by the desire to enhance longevity, as well as provide new solutions to certain diseases,” said Romain. “I think that our facility will be even more integrated in the future with greater connectivity of equipment.”

### Guiding cutting edge science moves forward together with a highly specialized team

Romain Desprat is the Core Facility Manager at the Inserm Unit.

He drives the unit forward through his training and expertise in both the cellular biology side and financial aspects. He has studied for a Master's Degree and PhD in Cellular Biology from the Albert Einstein College of Medicine, in the Bronx, in New York in the US. A Master's Degree in Assurance Finance from the ESSEC Business School, Cergy-Pontoise, France. He also has a post graduate degree in Biotechnology and Therapeutics from the University of Paris Diderot, Paris, France, and a Diploma in Bioethics from the University of Bioethics, University de Droit, Paris South, France. Romain has had many scientific papers published, since he joined the institute.

Romain's Director are Dr. Lemaitre and Dr. Milhavet.

The work carried out at the institute is focused around academia with numerous studies to PhD and Master's Degree level undertaken at the Unit. There are three PhD students currently studying at the Unit. They are working on a number of PhD projects. Some of those that have recently been completed are a production of GMP iPSC through a H202 EU grant locally managed by Dr. Lemaitre and the INSERM team.

### Providing reliable capacity in incubation and ULT freezing

Incubators are a key piece of equipment at the Institute. The Unit has three CO<sub>2</sub> Incubators.

The following models:

#### MCO-19AIC-PE

#### MCO-170MUVH-PE

#### MCO-170AICUVH-PE

With a capacity of 165 litres and weighing 80 kg, the MCO-170AICUVH-PE occupies a of 620mm x 750mm x 905mm.

#### MDF-DU502VH-PE

The -80°C ULT Freezers from PHC include one VIP ECO ULT Freezer (model name MDF-DU502VH-PE) which has a capacity of 528 litres and occupies a space of 790mm x 882mm x 1993mm. This range of VIP ECO Freezers reduces environmental impact and saves money by achieving an optimum footprint, using natural refrigerants, and is designed for minimal energy consumption.

This model of freezer contains naturally occurring hydrocarbon (HC) refrigerants that provide more efficient cooling due to their high latent heat of evaporation. Inverter Compressors that maximize cooling performance under different conditions.

#### MDF-C2156VAN-PE

The Unit also has two MDF-C2156VAN-PE Cryogenic Freezers

