

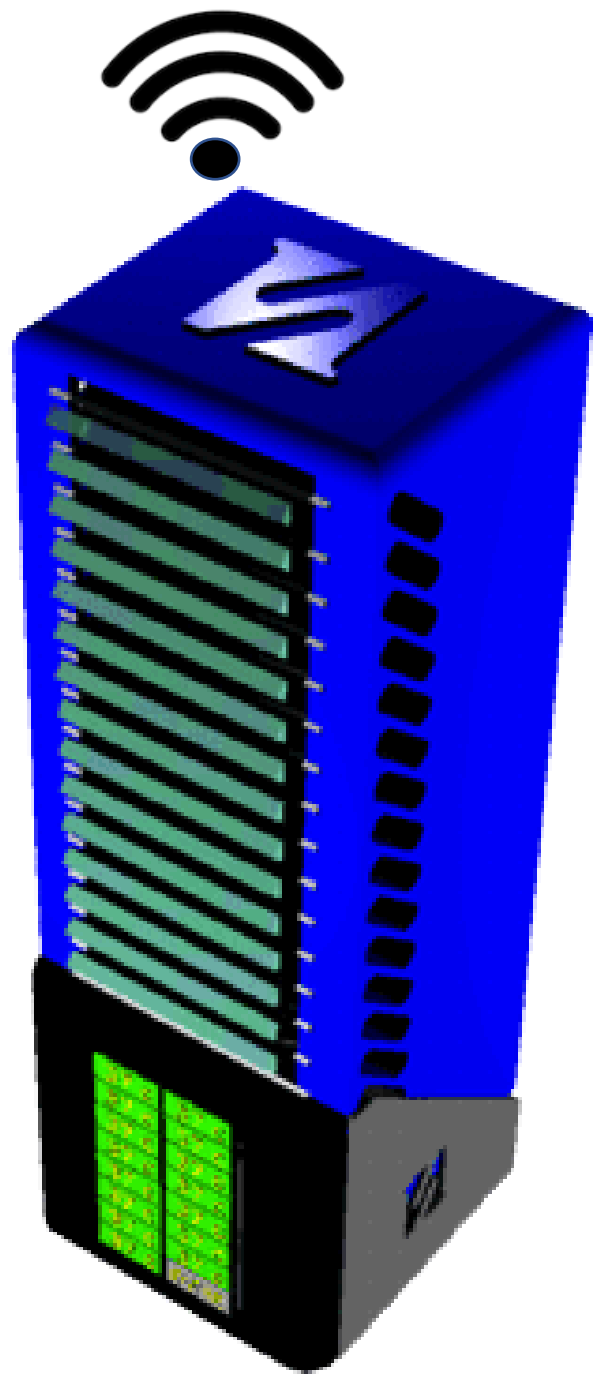
# QUOKKA

## The XV incubating system

Fully automatic with  
extensive recording  
capabilities and extra  
remote control.

The scientific cell culture  
“incubating system”

The system automatically controls in the medium Oxygen concentration at the tissues' natural level (physioxia), the CO<sub>2</sub> loss (buffer pH stability), and avoids media dehydration.



**QUOKKA**  
 The XV incubator

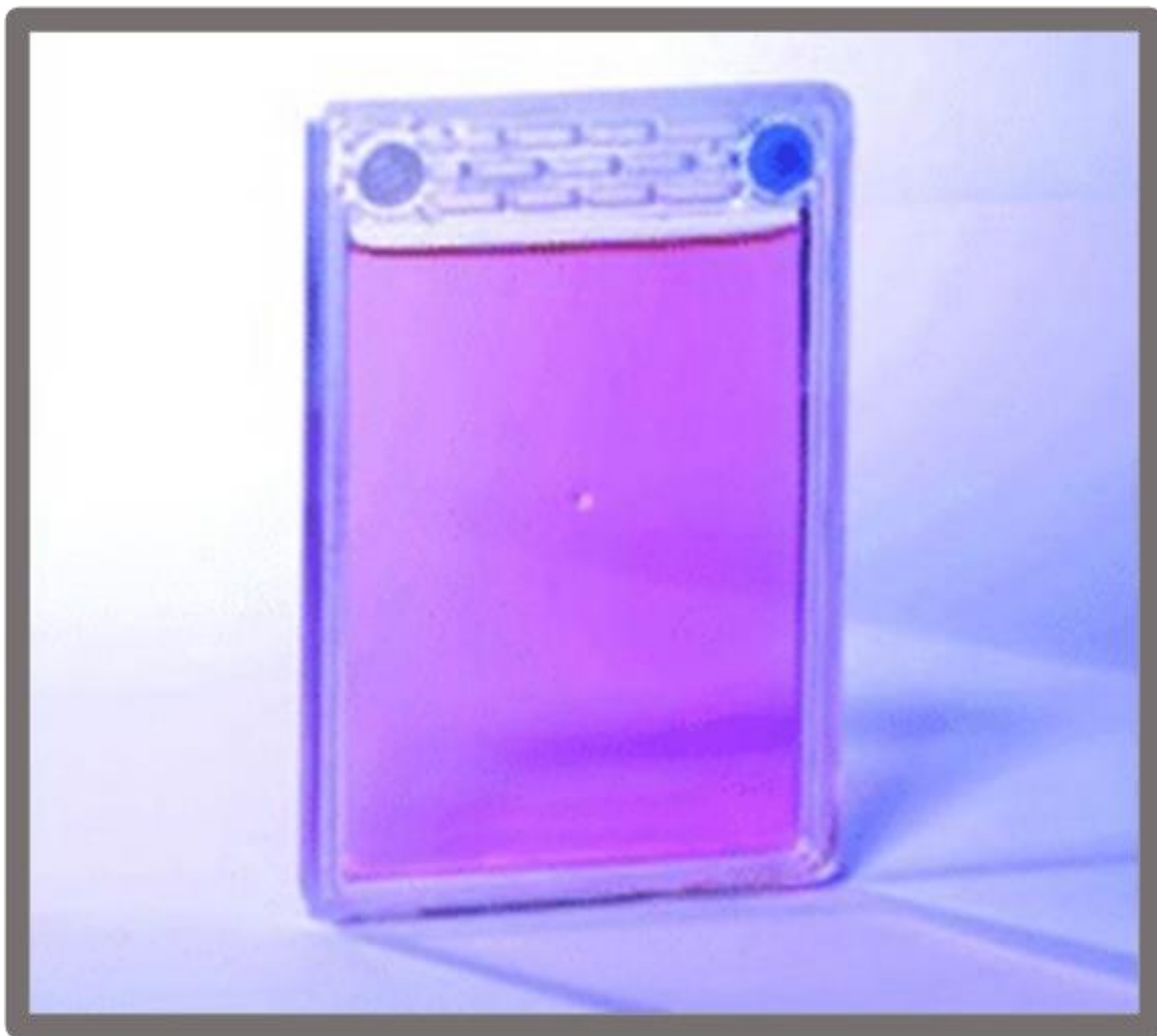
Selecting the most suitable incubator for your lab and work is not easy with so many options offered today in the market, and being all identical or very alike. Most regulate the temperature with minimal variation around the target, some may offer alternatively a cool or warm environment, some include a decontamination cycle, and a few, the extremely expensive ones include multi-gas-regulated atmospheres, which require the use of separate big, ugly, and heavy both CO<sub>2</sub>, Nitrogen, and O<sub>2</sub> high-pressure canisters standing near the incubator.

The XV incubator is a little magical device (12.6 inches tall, 8 inches deep, and 4 inches wide), and with smart control of the temperature with 0.1-degree Celsius precision.

It could be resident in your laminar flow hood. Host 15 separate cell cultures, and may be remotely controlled from your desk, adjusting all 15 separate cell cultures, which individually remember the respective users, the cassette identification code, the programmed temperature, the cell types growing in each culture, the dates, and the times. Staying up-to-date with the latest cell culture incubation technology the XV incubator is always as easy as replacing the old incubator with an “xv smart incubating device”.

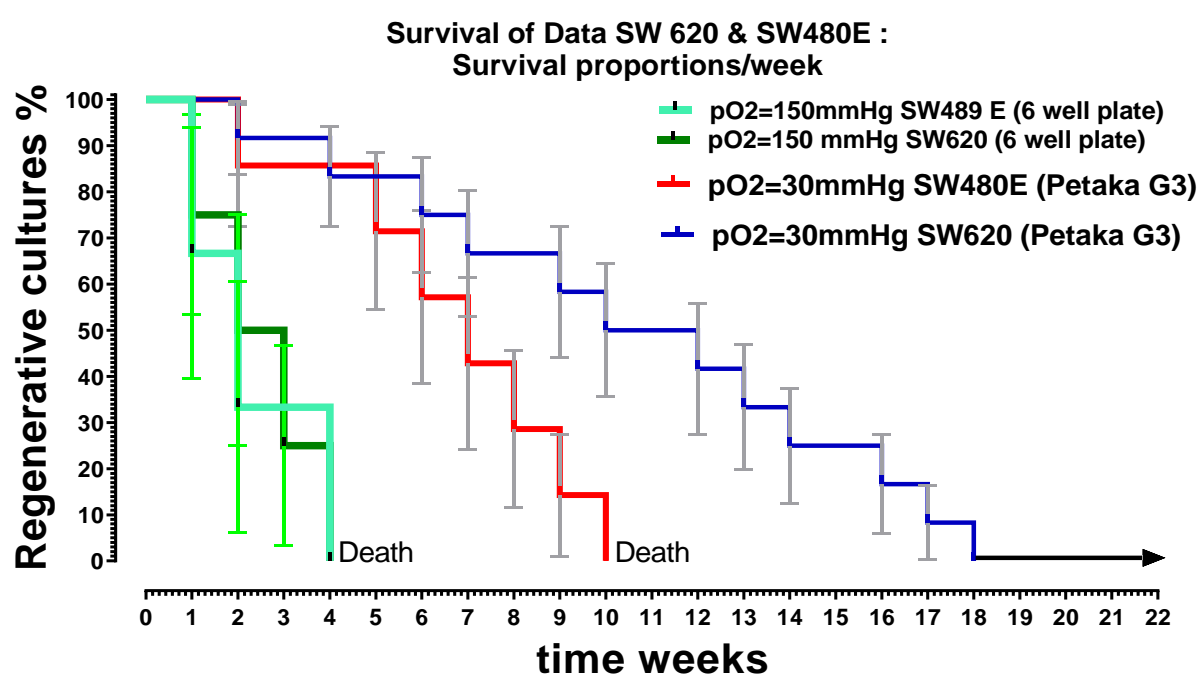


The Windows software running in a remote controlling user



**An extreme, but simple experiment, demonstrates how physioxia protects global cell functions;**

Normally cultures exposed for 1 month (4 weeks), without change of medium at atmospheric normoxia (pO<sub>2</sub> = 150 mm Hg), show 99% generalized cell death; a change of medium does not allow them to regenerate the monolayer in 7 days, however, when exposed to physioxia (pO<sub>2</sub> = 30 mmHg) they can maintain their regenerative capacity for more than 4.5 months (18+ weeks).

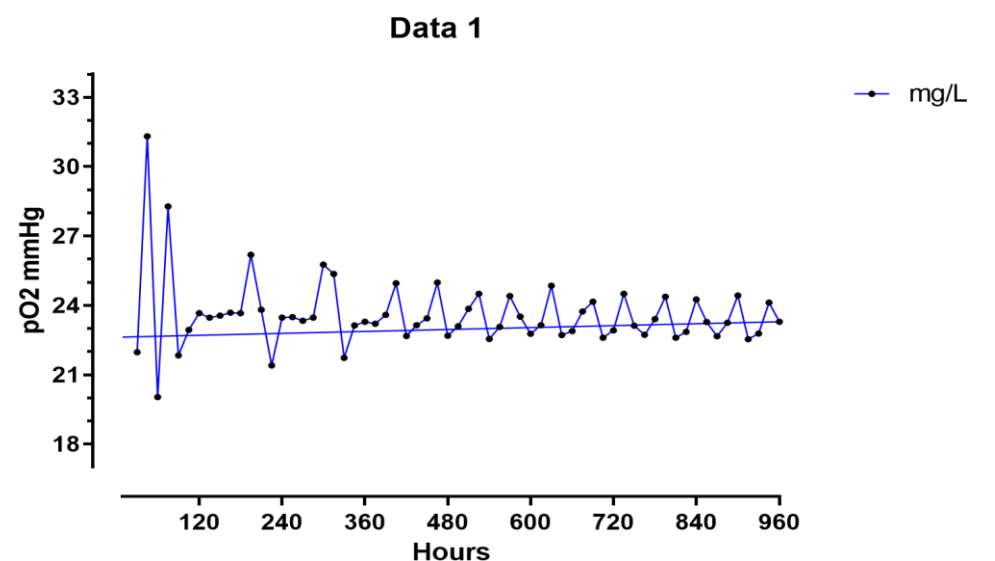


**Petaka G3 preservation of cell culture regeneration, of two tumor cell lines after weeks of starvation**

**Equilibrium of the physiological oxygen availability, in Petaka**

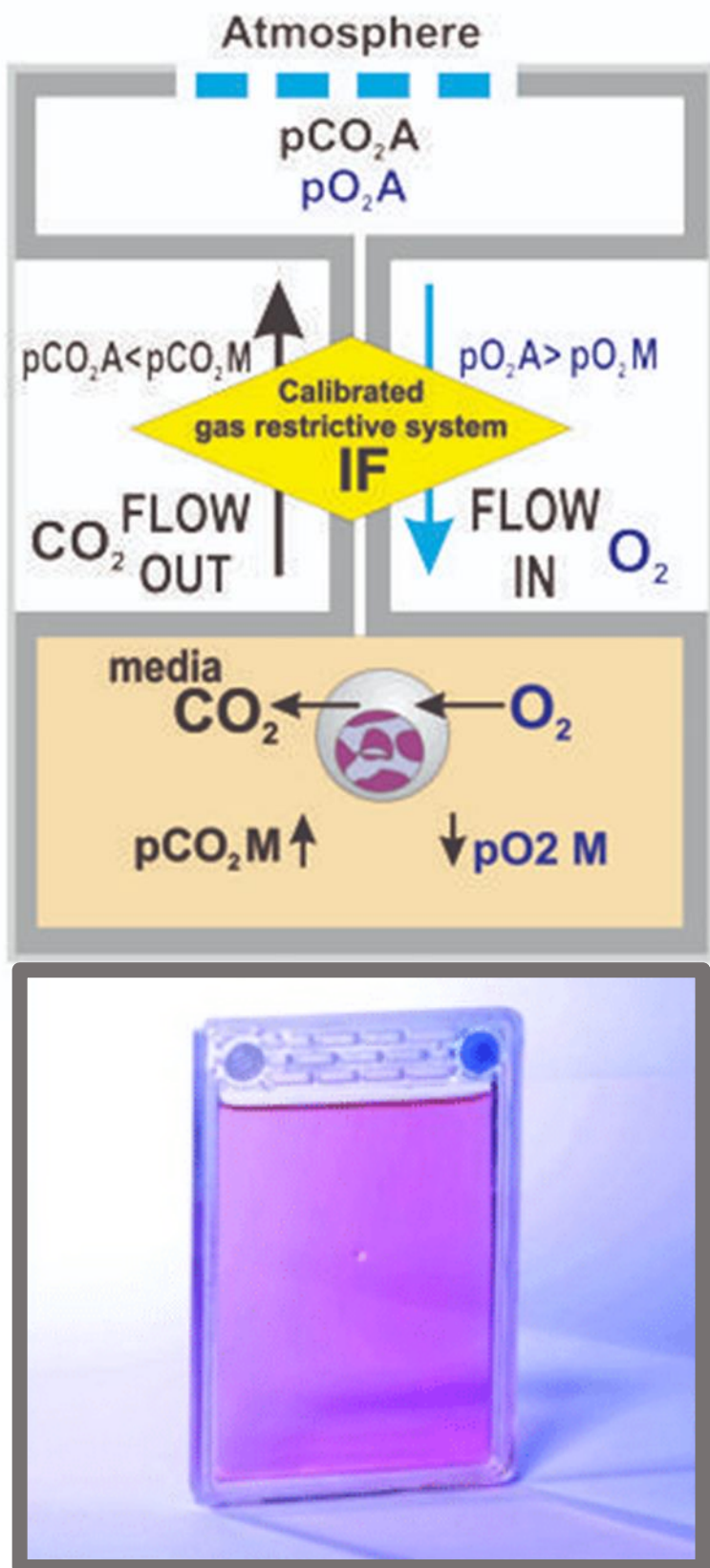
Research with cell cultures at physiological oxygen levels, suitable for natural tissues physiology (physioxia).

Atmospheric normal oxygen is about 21% of air (normoxia). When 5% CO<sub>2</sub> is introduced in the incubator environment the O<sub>2</sub> levels are reduced to 19.95%, but always higher than physioxia. Automatic control of CO<sub>2</sub> and oxygen in the cell culture environment allows for the most accurate in vitro replication of in vivo physiology. The oxygen concentrations in the medium self-adjust to the consumption of the population of living cells, and in the expansion they consume the O<sub>2</sub> dissolved in the medium, the increase in the difference in tension forces the diffusion of O<sub>2</sub> towards the medium, restoring a balance between the two, adjusted to cellular consumption, without the need for electronics. There is no impact on the injection of gases or by opening and closing the chamber, which guarantees the consistency and reproducibility of the experiments.



The adjustment of the pO<sub>2</sub> depends on the cell type, number of cells, and their metabolism, not on the sensitivity of a sensor that responds only to the amount of oxygen in the air, without relation to the situation of the cells. The Petaka system also presents a ripple of one cycle every 2.3 days, but it always remains within its physiological limits, better than any feedback electronic system.



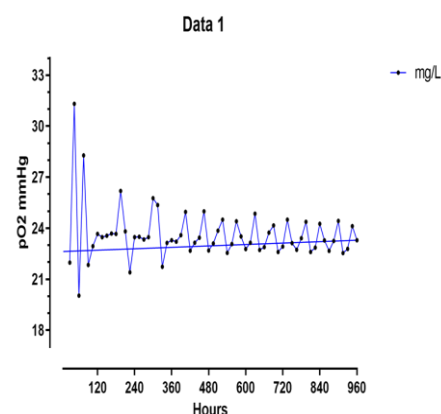


**Petaka G3 standing**

This basic quality of maintaining the level of physioxia, and a stable temperature for long time conditions (experiments of 1000 hours) is the cause of stability and conservation of both the phenotype and the genotype of the cells, including stem cells and iPSC

**pO2 mmHg**

Minimum 20.03 ~2.8% atmospheric  
 Maximum 31.31~4.4% atmospheric  
 Range 11.28  
 Mean 23.48 ~3.3% atmospheric  
 Std. Deviation 1.342

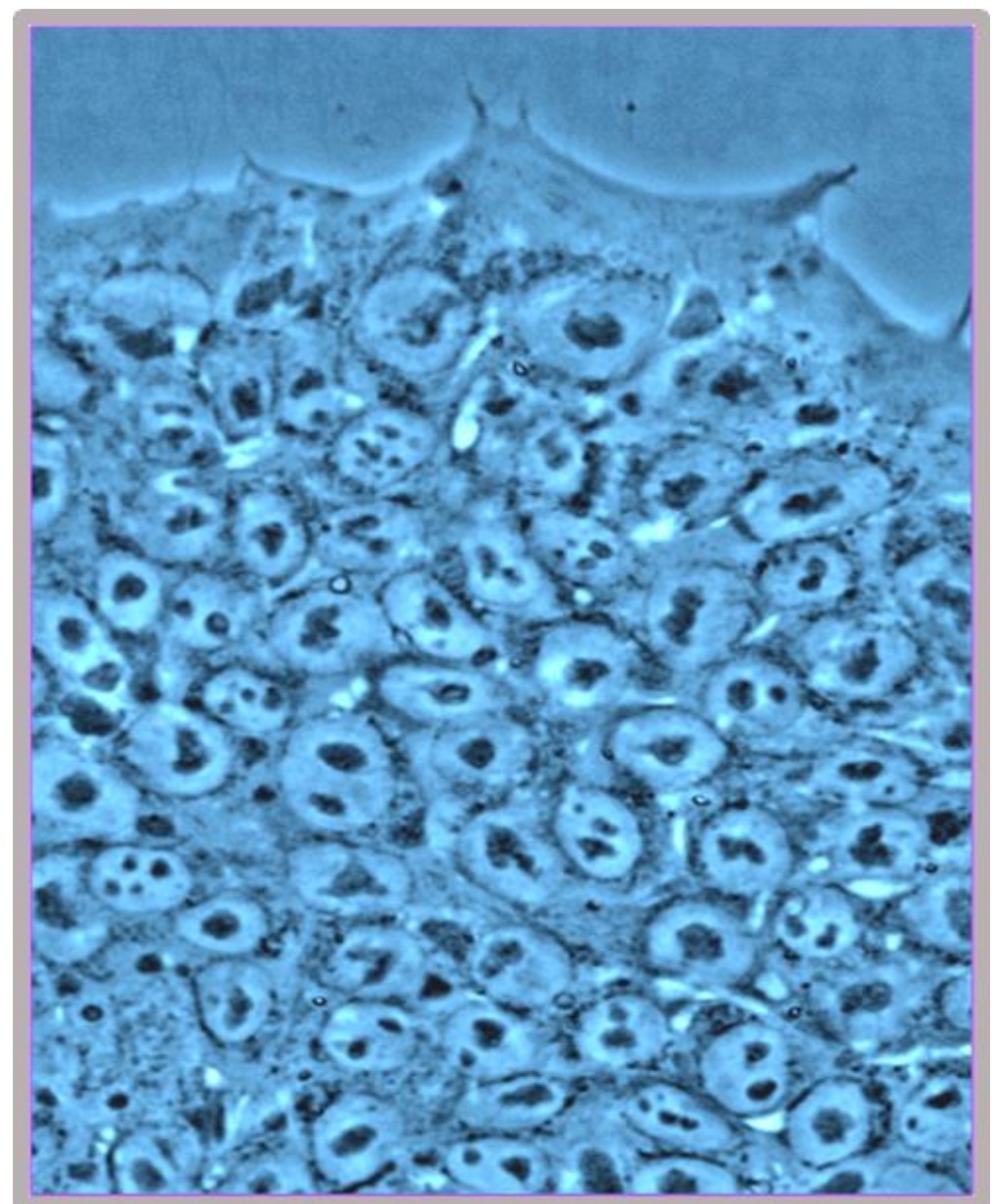


E:\COSES 2021\CELARTIA INC\petaka science

The XV is designed to work with the Petaka G3 cassettes because these cassettes have a structural system for self-regulating the diffusion of gases in the culture medium achieving singular features, basically:

1. Allowing oxygen entry that increases the pO2 of the medium when cells consume more oxygen, that is, in cell strains with higher OCR, and when the cell population increases. This performance allows them to maintain a balanced physioxia decided by the cell type and the number of cells, without the need for the displacement of oxygen from the incubator atmosphere with an excess of nitrogen.
2. Reduces the loss of CO2 from the bicarbonate buffer, consequently, it does not require a 5-10 % CO2 in the incubator atmosphere.
3. Retains water vapor, and prevents dehydration of the medium it does not require a saturated RH in the incubator atmosphere.

All this allows the incubator volume to be reduced until it fits the size of the Petaka itself, like a tight cover (150 mm,60 mm, 10 mm) .



**iPSC culture in Petaka G3**

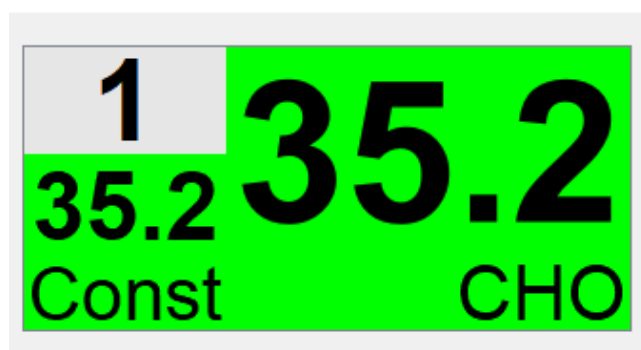


The XV device is more than a stack of 15 nests that act as 15 independent incubators, whose behaviors are programmed and commanded through its touch screen, which shows 16 tiles that correspond to the 15 nests plus one for general instructions, is a recorder of what happened in the lab, how were executed de experiments.



1		35.2	
35.2		35.2	
Const		CHO	
niche number	Actual temperature		
Target temperature	Actual temperature		
Incubation profile	occasional messages & errors	Cell type	

The tiles convey fundamental information and give access to other more elaborate information and control options for the user. Each tile is divided into zones that display different data. Tile colors also provide important information.



Control tail



Control tail, searching data status.

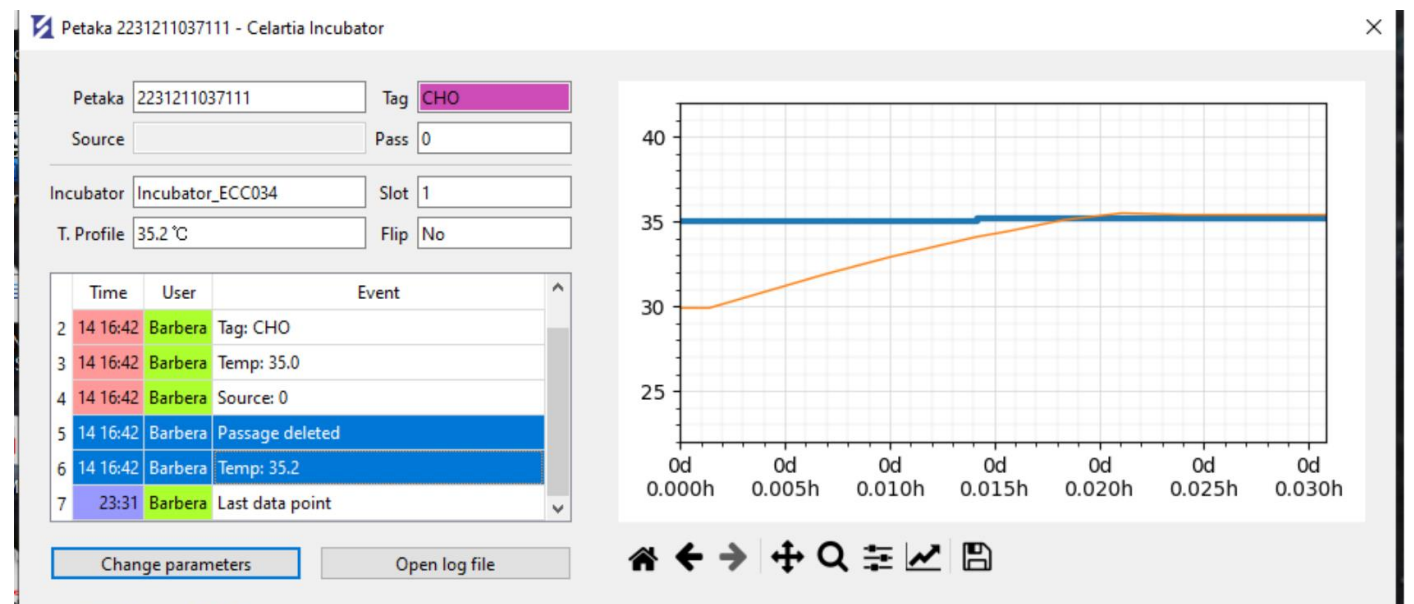


Warning tail shows inconsistencies in the process



The XV incubator does not shed heat and its straight lines do not interfere with the laminar flow, and this flow of clean air does not alter the functions of the incubator. It can be installed in the flow cabinet itself, which ensures the absence of contamination in cell culture procedures.

What's more, its WiFi connection allows it to be manipulated from a bench or a laboratory table with a laptop equipped with its own software, with which the tiles are displayed with the same information and operability with the hood closed. The software provides all the tools and active and retrospective data necessary to scientifically assess, discuss and report on running and completed processes.



Petaka #	First seen	Last seen	Tag	Temperature	Source #	Pass	Device	Slot	User	Details
1 2231211027960	22/08/24 14:42	22/12/07 10:56	Default	35.0	-	0	Incubator_ECB96C	8	Default	
2 2231211027961	22/08/24 14:42	22/08/25 17:15	STC	37.1	-	0	MyXV1	-	Barbera	
3 2231211021985	22/08/24 14:43	23/02/22 21:24	SW620	37.5	-	0	Incubator_ECB96C	-	Barbera	
4 2231211021984	22/08/24 14:43	22/12/12 12:23	HepG2	33.0	-	0	Incubator_ECB96C	-	Emili	
5 2231211027959	22/08/24 14:49	22/09/28 17:38	B16	37.5	-	0	MyXV1	-	Barbera	
6 2231211027958	22/08/24 14:50	22/09/27 10:44	HeLa	37.1	-	0	MyXV1	8	Barbera	
7 2231211027962	22/08/24 14:53	22/09/10 11:23	B16	37.0	-	0	MyXV1	3	Barbera	
8 2231211027957	22/08/24 15:02	22/08/29 18:44	A549	37.5	-	0	MyXV1	-	Barbera	
9 2231211021987	22/08/24 15:04	23/03/19 15:00	SW480	25.0	-	0	Incubator_ECB96C	4	Barbera	
10 2231211027963	22/08/24 15:05	22/08/24 16:37	EPA 23	30.0	-	0	MyXV1	-	Jhon	

86 petakas (no filter)

Filters: Contains, After, Before, Is, Is, Contains, Is, Is, Contains

Buttons: Display selected, Clear filter, Close