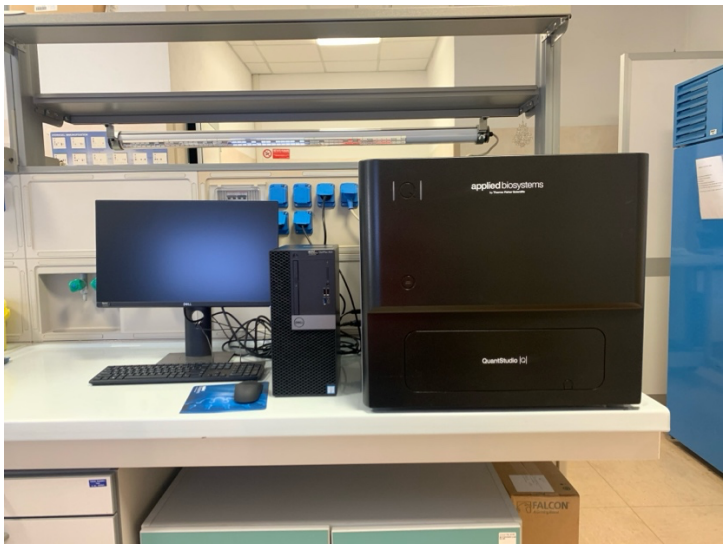
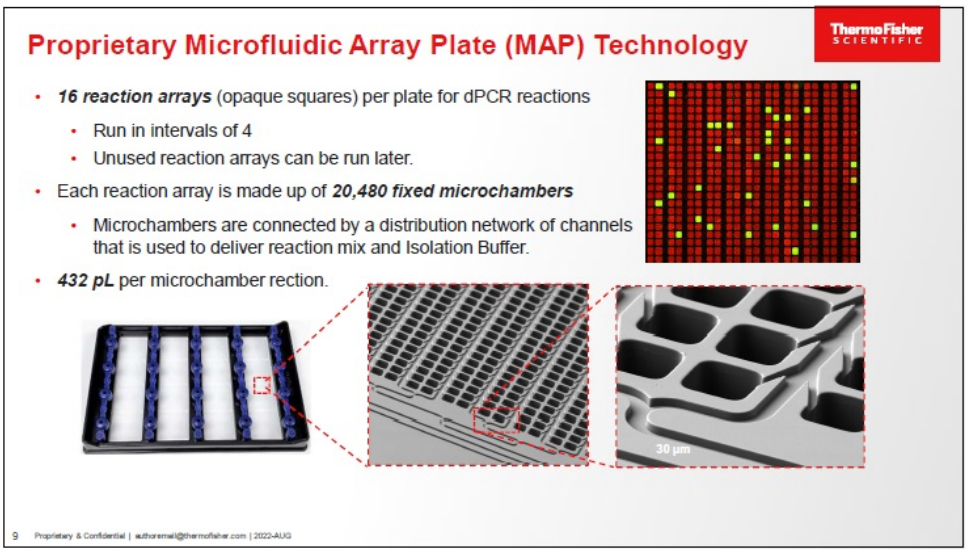
2023 Activity report

The Applied Biosystems™ QuantStudio™ Absolute Q™ Digital PCR System

Location: Department of Translational Medicine and New Technologies in Medicine and Surgery, Clinical Pathology Laboratory, University hospital of Santa Chiara, building 43.





The Applied Biosystems™ QuantStudio™ Absolute Q™ Digital PCR System enables precision quantification of target nucleic acid sequences through a patented microfluidic array technology.

General overview and management

Digital PCR (dPCR) is a nucleic acid quantification technique that allows absolute quantification without the need for standard curves. Bulk reaction mix is distributed or digitized into thousands (n=20480) of small independent reactions so that each micro-chamber contains either one or zero copies of the target. Statistical methods (Poisson Distribution) are then used to calculate the original concentrations based on the number of positive and negative micro-chambers. Microfluidic array plate (MAP) technology The Applied Biosystems™ QuantStudio™ Absolute Q™ MAP16 Digital PCR consumable used with the QuantStudio Absolute Q Digital PCR System uses microinjection molded plate technology to overcome common reagent distribution challenges of inconsistency and high dead volume. This novel approach provides many benefits, including precise micro-chamber volume (432 pL), consistent sample digitization, and greater than 95% of the loaded volume analyzed.

With the ability to multiplex using up to four optical channels (FAM, VIC, ABY, Cy5/JUN), the QuantStudio Absolute Q Digital PCR System enables more targets to be measured per sample, saving time and reagents.

The Digital PCR was delivered on July 2023 and testing took place on July 20, 2023. The instrument is under the responsibility of Prof. Maria Franzini The training course on the use of the QuantStudio™ Absolute Q™ Digital PCR System instrument was held on September 14, 2023, the following people participated in the course: prof. Maria Franzini (UNIPI), dr. Chiara Rossi (UNIPI), dr. Silvia Ursino (UNIPI), dr. Laura Marchetti (UNIPI), dr. Gaia Scabia (IFC CNR), dr. Mario Costa (IN CNR).

The software update was performed on February 27, 2024

Dates of use of the instrument

date	hour	name	afferent	Technical assistance
5/11/2023	2	Chiara Rossi	Dip. Patologia Chirurgica	NO
8/2/2024	2	Chiara Rossi	Dip. Patologia Chirurgica	NO
9/2/2024	2	Chiara Rossi	Dip. Patologia Chirurgica	NO
13/2/2024	2	Chiara Rossi	Dip. Patologia Chirurgica	NO
16/2/2024	2	Chiara Rossi	Dip. Patologia Chirurgica	NO
21/2/2024	3	Chiara Rossi	Dip. Patologia Chirurgica	NO
2/3/2024	2	Lorenzo Germelli	Dip. Farmacia	SI
8/4/2024	2	Lorenzo Germelli	Dip. Farmacia	SI

9/4/2024	2	Chiara Rossi	Dip. Patologia Chirurgica	NO
11/4/2024	2	Lorenzo Germelli	Dip. Farmacia	SI
8/5/2024	4	Lorenzo Germelli	Dip. Farmacia	SI
29/5/2024	4	Chiara Rossi	Dip. Patologia Chirurgica	NO
TOT hour	**29**			