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“Laboratory management in the advanced phases of Sars-Cov2 pandemics”

Project managers: Prof. Cassoni/ Prof. Cavallo

Coronavirus emergency has evidenced the need to potentiate and optimize technological and logistics resources of the Microbiology and Virology Laboratory of the City of Health and Science University Hospital of Turin, in order to warrant a rapid and efficient diagnostic workflow.

During the phase 1 and pandemic peak, and in the current development of pandemics, the huge activity volume has determined the processing and storage of a very high number of clinical specimens on which it will be possible to conduct studies aimed to increase our knowledge of viral biological behavior and genetic characteristics.

Therefore, it is proposed the acquisition of two freezers (-80°C and -20°C) for specimen preservation and storage.

In order to increase our knowledge of viral biological behavior, isolation techniques will be used, thus implying the need for a temperature- and ambient-controlled thermostat that will be located in a dedicated room already present at our laboratory and an optical microscope with related accessories.

With the aim of improving our knowledge of viral genetic characteristics (genome mutations that could modify contagiousness and virulence), the use of molecular biology techniques is mandatory. Although these techniques are already well established in our laboratory, technical supports are needed to implement and optimize functionality and applications, including centrifuges (at least three, one of which with refrigerated temperature), vortex mixers, laboratory lamps, dedicated mobile benches (at least two with adequate technical characteristics in terms of dimensions, robustness and mobility). Moreover, in order to investigate the viral spread and compartmentalization in different

body districts, it is proposed the acquisition of a sonicator (for pre-processing of particular clinical specimens).

The above-mentioned equipment will adequately concur to improve the laboratory efficiency in order to support diagnostic and research activities on Coronavirus and potentiate the preparedness for future emergencies.

Summary list of laboratory equipment for the project:

- -80°C freezer
- -20°C freezer
- CO₂ Thermostat
- Refrigerated centrifuge with accessories (adapters for tubes and different types of bottles)
- Two centrifuges with accessories
- Microcentrifuge with accessories
- Optical microscope with accessories
- Vortex mixers (approximately 5)
- Laboratory lamps (approximately 10)
- Laboratory mobile benches with robust metal structure for weights not lower than 150 kg, with rolling wheels (at least two): dimensions (Hight x width x depth: 90x200x80 e 90x150x80)
- Sonicator