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co-operation



promotion of science



creativity on an amazing campus



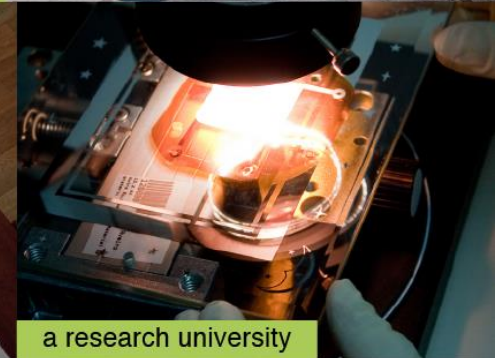
booming internationalisation



interdisciplinary instruction



a vast network



a research university

How knowledge is created, transferred and used... in companies... with the University of Aveiro



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UA and COVID-19

- Participated and continues to participate in regional and national efforts to combat the pandemic COVID-19

Need to widen and intensify screening for the new coronavirus (SARS-CoV-2)

Imperative need to keep a close watch on transmission chains

Respond to requests from health institutions in the region and the MTSSS





Available conditions (Ibimed Research Unit / DMC):

Set of new Molecular Medicine laboratories, including laboratories for the study of respiratory viruses

Virology projects - European project in partnership with the University of Leiden and Munich

4 laboratories with high biosafety level (BSL2), with negative pressure, filtered air with HEPA filters, BSL2 security level laminar flow chambers and UV sterilization systems

Laboratories with a thermal sterilization system of biological material that guarantees the destruction of consumables, reagents and biological samples used in the laboratory.

IBiMED researchers using these laboratories are subject to a biosafety exam and specific training.



Available conditions (Ibimed Research Unit / DMC):

- Equipment for automatic processing of existing clinical samples (automatic RNA extraction) reduces researchers' exposure to SARS-CoV-2 as much as possible

Researchers at iBiMED, in conjunction with other national scientists, use diagnostic kits recommended and approved by WHO and the North American Center for Disease Control and Prevention (CDC), in order to guarantee the autonomy of the screening laboratory in the event of a crisis of supply of commercial kits.



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Ongoing projects:

- *Very high throughput low cost test for the massification of SarS-CoV-2 screening*
- The proposed strategy for SARS-CoV-2 testing omits the viral RNA extraction step and proceeds directly to Reverse Transcription (RT), using patient-specific primers with barcodes, followed by Polymerase Chain Reaction (PCR) and Next-Generation Sequencing (NGS) of an amplicon library.
- By combining RT primers with barcoding and further indexes in library preparation, this strategy allows simultaneous testing of up to 4608 samples in a single NGS run and can be scaled up to 20,000 tests/run.



Ongoing Projects:

- *Integrated immunosensory system for fast and efficient screening of the SARS-CoV-2 CORonavirus*
- SENSECOR Project aims to develop Proof of Concept of an innovative and unprecedented system that integrates several units: immunosensory elements, immunoassay, mobile application for smartphone and signal conditioning module and data communication

(multidisciplinary team - biotechnology, genetic engineering, artificial neural networks, software and hardware development, optics, photonics, telecommunications and clinical pathology)



Ongoing Projects:

- *Optimal Control and Mathematical Modeling of the Covid-19 Pandemic (COMoMat-PandCovid19): contributions to a systemic health intervention strategy in the community*

The need to act immediately requires the use of mathematical models, taking into account the regional and national reality.

The theory of optimal control allows the definition of strategies that alter the behavior of these models, with a view to the rapid and effective mobilization and articulation of resources in health care, promotion of literacy on infection and consistent action in terms of adjustment to disease and protection of mental health.