



Editorial

Bioengineering applied to Covid-19 pandemic: from bench to bedside

Rogério Leone Buchaim^{1,2,*}

¹ Department of Biological Sciences, Bauru School of Dentistry, University of São Paulo, Bauru, SP, Brazil, 17012901

² Postgraduate Program in Structural and Functional Interactions in Rehabilitation, University of Marília (UNIMAR), Marília, SP, Brazil, 17525-902

* **Correspondence:** Email: rogerio@fob.usp.br.

The fact that you receive an invitation to edit a special issue of a scientific journal is extremely gratifying for researchers from any area of study or country. The theme selected for the journal *AIMS Bioengineering* was based on the importance at the moment of associating bioengineering with the pandemic by the new Coronavirus, currently called SARS-CoV-2 or COVID-19.

The discovery at the end of 2019 of a severe acute respiratory syndrome, the evolution of which is still studied and uncertain, often leading to death, aroused worldwide interest in vaccines that prevent contagion or drugs that enable the treatment and recovery of those infected. Thus, science was challenged and at the same time evidenced by the relentless search for therapies.

Bioengineering stands out in all stages of scientific events related to the disease, such as, for example, in diagnostic tests, hospital equipment such as respirators, new drugs and the long-awaited vaccine. The challenges, in order to be overcome, need constant integration of basic and applied sciences with professional clinical practice.

“Science or translational medicine” has been talked about for some time, being that science that comes out of the laboratory benches and goes directly to the clinical bench, daily, from the fronts to cope with diseases. The term began to be used by the National Cancer Institute of the United States (NCI) and later disseminated by research around the world. What is the effectiveness of an experiment if it does not have a fast and effective direction for improving the health of the population?

Since 2005, bioengineering has supported translational science with new discoveries and innovations in the areas of health in general, generating profound changes in the clinical research scenario. Pre-clinical research, integrated with the clinic, is one of the pillars of reliability of the results and an important step in the discoveries.

The studies carried out in translational research are generally divided into four stages: the first stage involves the discovery of a new product and its possible application in health; the second stage aims at evidence-based clinical application; the third stage proposes to disseminate clinical practice in health; the fourth step is to use it in practice and assess the health impact.

For translational science to take place, from the bench at the bedside, activities and professionals need interdisciplinarity and multiprofessionality. Only by breaking barriers of isolated action in health can the success so desired be achieved: the well-being and health of the world population.



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