Letter to the Editor

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Disparity between scientific accomplishment and biotechnology availability in Brazil

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Abstract

Despite being among the world's leaders in scientific output, Brazil ranks 66th among countries in the production of reagents and supplies needed for state-of-the-art scientific analyses. The production of needed reagents and equipment for experimental analyses and patient diagnostics is sorely lacking within Brazil and explicit in this pandemic period caused by SARS-CoV-2. A significant fraction of resources from Brazilian funding agencies is now being transferred to companies in other countries for the purchase of essential scientific-related products. Is this sustainable? Therefore it is necessary to draw the attention of all the world and Brazilian society about this situation

Keywords

Brazilian biotechnology, Brazilian entrepreneurs, Brazilian scientists, Neglected technological investment, for-profit industries, start-up companies

Brazilian scientists are among the world leaders in biomedical research and development. For example, by mid-October 2020, Brazilian researchers have published 4000 scientific articles on the SARS-CoV-2 pandemic. This attests to the high degree of competence amongst Brazilian scientists.[1] However, in marked contrast to the exceptionalism of the country's scientific community, there remains an insufficient investment in biotechnology. The production within Brazil of reagents and

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equipment needed for experimental analyses and patient diagnostics is sorely lacking. To maintain a high level of scientific output to effectively satisfy the national demands of a country with 220 million people an adequate investment in technological investment is paramount.

Despite it being among the world's leaders in scientific output, Brazil ranks 66th among countries in the production of reagents and supplies needed for state-of-the-art scientific analyses, according to Benedito Aguiar,[2] ex-president of CAPES (Coordination for the Improvement of Higher Education Personnel). Therefore, Brazilian scientists are extremely dependent on other countries both for the development of biotechnological advances and for the availability and purchase of reagents and equipment that have become indispensable for the performance of productive research. This also holds true for the identification and development of diagnostics for the differential identification of multiple clinical illnesses and syndromes.

One of the most rapidly advancing technologies that is revolutionizing molecular diagnoses as well as the analysis of disease mechanisms involves nucleic acid amplification, modification and sequence identification. Currently, critical supplies to perform the relevant assays, as well as the equipment to analyse the experimental data, have to be imported. Major sources of critical supplies include companies in the United States, China, Japan, United Kingdom, Germany and France.[3–7] The current relatively weak Brazilian economy and low exchange rate further hinders the ability of scientific researchers to import adequate quantities of essential supplies. This deficiency in technological availability is strongly reflected in the absence of Brazil's participation in the production of a vaccine against SARS-CoV-2.

There is an urgent need for internal financing by Brazilian agencies such as FAPESP, CNPQ, FINEP to stimulate national entrepreneurship in biotechnology, especially associated with the laboratory products industry. In its absence, a significant fraction of resources from Brazilian funding agencies are now being transferred to companies in other countries for the purchase of essential scientific-related products. Is this sustainable? An investment in Brazilian biotechnology to develop laboratory diagnostics will be beneficial in multiple areas such as the production of vaccines, development of medicines and monitoring of treatments. In addition, the availability of financing will enable the initiation of start-up companies and attract the participation of Brazilian entrepreneurs in the development and expansion of for-profit industries. Efforts to integrate academia with the business sector will lead to a more rapid advancement of scientific knowledge in Brazil but also will provide added economic value to that knowledge, which will be beneficial to the well-being of the entire country.

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