

BRAZILIAN Science, Technology and Innovation (STI) INSTITUTIONS RESEARCH ON COVID-19

(UPDATE 8 APRIL 2020)

CONTESTS AND CALLS FOR RESEARCH PROPOSALS

JOINT PROJECT CALL: CNPQ-MINISTRY OF HEALTH

Within the scope of the approved federal financial package of BRL 3.4 billion (around USD 680 million) for measures to combat the pandemic, the Ministry of Science, Technology and Innovation and Communications of Brazil (MCTIC), through the National Fund for Scientific and Technological Development (FNDCT), will receive BRL 100 million (or USD 20 million) to finance research networks, activities from national science and technology institutes and public calls from the Brazilian National Council for Scientific and Technological Development (CNPq) and the Funding Authority for Studies and Projects (Finep).

Based on these resources, a joint public notice from CNPq and the Ministry of Health of Brazil (MoH) was launched, for financing BRL 50 million (BRL 30 million from FNDCT plus BRL 20 million from Ministry of Health; or USD 10 million, in total) for 7 lines of research: (i) treatments; (ii) vaccines; (iii) diagnosis; (iv) pathogenesis and natural history of the disease; (v) disease burden; (vi) health care; and (vii) prevention and control. Proposals can be submitted until April 27 through the electronic Carlos Chagas Platform. The final result will be announced on June 15th. The public notice is available at:

[http://www.cnpq.br/web/guest/chamadas-publicas?p_p_id=Resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_0ZaM & filtration = open & details = callDivulgated & idDivulgacao = 9382.](http://www.cnpq.br/web/guest/chamadas-publicas?p_p_id=Resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_0ZaM&filtration=open&details=callDivulgated&idDivulgacao=9382)

CALL FOR PROJECTS FOR PRODUCTION OF PERSONAL AND COLLECTIVE PROTECTION EQUIPMENT BY MCTIC

The Ministry of Science, Technology and Innovation and Communications of Brazil (MCTIC) has also launched a public call for accelerating and improving market solutions related to personal protection equipment and systems (PPE) and collective protection equipment and systems (CPE) for the safety of health workers and supporting staff in the hospital medical care chain combating coronavirus.

With a budget of BRL 5 million (or USD 1 million), the target audience for this public call includes companies of all sizes from the value chain of medical and hospital supplies and related chains or others that have applicable technologies in the equipment and systems mentioned, including startups and technology-based companies. Projects should preferably be conducted in partnership with research and development centers and institutes and universities. The funds will come from the National Fund for Scientific and Technological Development (FNDCT), which is

operated by the Funding Authority for Studies and Projects (Finep), a public company linked to the MCTIC.

EMERGENCY CALL FOR PROJECTS FROM FAPEMIG

The Minas Gerais Research Foundation (FAPEMIG) has launched an emergency call, with a budget of BRL 2 million (or USD 400,000), to finance research on COVID-19. FAPEMIG has also directed resources to the Vaccine Technology Center (*CT-Vacinas*), a laboratory of the National Institute of Science and Technology in Vaccines (INCT-V), located at the Belo Horizonte Technology Park (BH-TEC). One of the studies aims to explore the influenza virus as a vector, since it infects the same cells as Covid-19.

DISCLOSURE OF THE RESULTS OF THE CALL FOR PROJECTS BY FAPESP

The São Paulo Research Foundation (FAPESP) has released the first two projects approved by the call issued in March for the use of drugs to combat Covid-19. One of the projects aims to evaluate the effectiveness of two drugs in combating lung inflammation in critically ill COVID-19 patients. The other intends to evaluate the transmission dynamics of the new coronavirus in an Amazonian city where malaria is endemic.

FAPDF AND FINATEC PARTNERSHIP

The Federal District Research Foundation (FAPDF) and the Foundation for Scientific and Technological Enterprises (Finatec) signed a partnership for the development and implementation of research, innovation and extension projects to combat Covid-19. BRL 30 million (or USD 6 million) will be directed to three areas: (i) research calls launched by the University of Brasília (UnB); (ii) solutions for requests from the Health Department of the Federal District; and (iii) fostering of innovative productive sectors.

CALL FOR PROJECTS ON DIAGNOSTIC RESEARCH BY FAPESB

The Research Foundation of the State of Bahia (FAPESB) has issued an emergency call for research aimed at diagnosing, preventing and treating Covid-19. The public call will include resources in the tune of BRL 220,000 (or USD 44,000).

MECHANICAL VENTILATOR PROJECT BY USP

Researchers of the Polytechnic School (*Poli*) at the University of São Paulo (USP) are developing a project for a mechanical lung ventilator that can be produced by authorized manufacturers, rapidly and at low cost, to supply emergency units for patients affected by COVID-19. While a conventional respirator has a market price of minimum price BRL 15,000 (or USD 3,000), the ventilator designed by USP could be marketed for around BRL 1,000 (or USD 200). A team of about 40 researchers are involved in the initiative. Production could start in five weeks. The project has an “open source” license, for use by those interested in producing the ventilator. USP will be responsible for the project, but not for manufacturing, which will be conducted by the private sector.

DIAGNOSTICS TESTS CARRIED OUT BY EMBRAPA

The Brazilian Agricultural Research Corporation (EMBRAPA) will task 47 laboratories with carrying out up to 43,000 tests per day to detect Covid-19, with results in 24 hours, in collaboration with the Ministry of Health, Oswaldo Cruz Foundation (Fiocruz) and Adolfo Lutz Institute.

DEVELOPMENT OF TEST KITS BY THE AMAZON BIOTECHNOLOGY CENTER

The Amazon Biotechnology Center (CBA) is contributing to efforts related to diagnostic test kits and has developed antibodies and antigens for making these kits. It is an immunochromatographic test, similar to the rapid tests for detection of dengue or HIV, in which a few drops of blood or human secretion, such as saliva, are placed on the kit tape and the result comes out in a few minutes. The distinguishing feature of the test produced by the CBA is the use of domestic antibodies and antigens, which are more appropriate than the imported ones, due to the virus mutations. Upon approval of the regulatory bodies, CBA intends to be able to provide enough antibodies and antigens in 4 months, so that Brazilian companies can produce 30,000 quick tests per day.

DEVELOPMENT OF THE PROTOTYPE OF AN ARTIFICIAL RESPIRATOR BY SENAI AMAZONAS

The National Industrial Education Service of Amazonas (SENAI AMAZONAS) developed the prototype of an artificial respirator with support from Samel Clinical Centers and technicians from the Transire Institute of Technology and Biotechnology of the Amazon. The model works for both the invasive procedure, with intubation, and the non-invasive one, through the use of a mask. It is expected that, after regulatory approval of the equipment, it will be possible to produce up to 5 basic modules per day.

TECHNOLOGICAL SOLUTIONS AND BRAZILIAN STARTUPS INITIATIVES

COVID-19 PLATFORM FOR FIOCRUZ RESEARCHERS

The Oswaldo Cruz Foundation (Fiocruz) launched an electronic platform to allow access to surveys, situational maps and epidemiological reports, which is available to researchers (<https://portal.fiocruz.br/coronavirus-2019-ncov-informacoes-para-researchers-0>), and a podcast for providing information to the public.

CORONAVIRUS SUS

The Ministry of Health (MoH) has a website (<https://coronavirus.saude.gov.br>) for informing the public about the pandemic. The Ministry has also developed the application **CoronavirusSUS**, for iOS and Android, which provides information and recommendations to the public based on self-assessment of the health conditions.

WEBSENSORS - ARTIFICIAL INTELLIGENCE

The *Websensors* tool, developed with support of FAPESP and designed for data and text mining, is being used to analyze the evolution of the COVID-19 pandemic. By being able to extract data from news texts, in order to get information about "what happened", "when it happened" and "where it happened", *Websensors* enables the daily adjustment of the models on the spread of the disease. The information gathered on the pandemic is openly accessible at: <http://websensors.net.br/projects/covid19/>.

COVID-19 CHALLENGE OF 100 OPEN STARTUPS

The *100 Open Startups* program, an international platform that focuses on stimulating business between large companies and startups, launched the Covid-19 Challenge. The program calls companies for demands that will, in turn, be presented to startups, for development of solutions to combat the pandemic in the following areas: remote work (home office), health and care; retail, trade and logistics; education, information and awareness-raising; culture and entertainment; mobility; services for the elderly; access to laboratory supplies; mental, emotional and physical health; financial management; and support for communities.

TIMPEL

The startup *Timpel*, from São Paulo, developed an electrical impedance tomography device and software to monitor patients requiring artificial ventilation. The device minimizes the side effects of using mechanical ventilation and decreases the time of dependency on equipment by offering more objective criteria for its use, which otherwise would mostly rely on intuitive decision by the doctors. Developed through a project supported by FAPESP, more than 150 units of the device are already in operation in hospitals in Brazil, Europe, the United States, Japan and the Middle East.

BIOTECAM

Biotecam, an environmental biotechnology startup, had developed equipment to help cleaning polluted water. The technology will now be used to purify the air in places with gatherings of people infected by Covid-19. The use of the equipment is not a novelty in itself, but the difference presented by the startup to the market is the 50% reduction in energy consumption. Upon arrival of Covid-19, the scheme used for cleaning up water began to be adapted to purify the air and return it to the environment without the presence of the coronavirus. The initiative has been developed in partnership with the Federal Institute of Rio de Janeiro (IFF) and the Brazilian Industrial Research and Innovation Company (Embrapii). It is estimated that the level of disinfection is above 95%. For a field hospital, the estimated cost of manufacturing the equipment is BRL 50,000 (or USD 10,000), and it is expected that it will be ready in two months.

Geneva, 8 April 2020
