

# *Cuban science races for Covid-19 vaccine*

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By Charles McKelvey

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Hundreds of Cuban scientists from many research centers, institutions, and university faculty departments are racing against the clock, working to save lives before they are taken by a new virus sweeping the world. With commitment and passion, Cuban scientists have adopted a life-style that knows nothing of the limits of the working day or weekends, defending their nation against an enemy that came into being four months ago on the other side of the planet. Although they are disposed by revolutionary vocation to cooperation and solidarity with all the world, the pandemic has put them in a race with some forty research institutions in the world, looking for that achievement, the creation of a vaccine, that would consolidate their nation as a world medical power.

On the April 9 evening television/radio news program La Mesa Redonda, Dr. Ileana Morales Suárez, Director of Science and Technological Innovation of the Ministry of Public Health, declared that the Covid-19 pandemic has provoked a challenge without precedent for science. She stated, "Our country has structured a coherent response that is based on the integration of various branches [of science], and did

so very early. I would like to explain that on a date as early as the end of January and the first days of February, we instituted group of scientists for developing research investigations and applications. This group is the scientific spearhead of our plan of measures of our country. As the pandemic spread in the world, we identified the need to find our own evidence for diagnosis, for treatment, for developing measures of response, and to help in the taking of decisions. This central group is composed of many persons: doctors, epidemiologists, statisticians, professionals, researchers of institutions, intensive therapists, pediatricians, virologists, immunologists, a large group. And later, there was created a group of experts, very solid persons of great prestige, which has fundamentally the mission of adapting the technology based on the knowledge and capacity that exists in the country and to look for applications, models, prognoses, etc. In this group we have epidemiologists, mathematicians, statisticians, computer scientists, and microbiologists; and professors and heads of the university faculties in mathematics, computer science, communication, physical geography, the social sciences, sociologists, demographers, the philosophical sciences as well as representatives of the Ministry of Science, Technology and Environment and the Cuban Academy of Sciences.

“So we have formed two groups that are working on two great tasks. The first is coordinating the knowledge and capacity that Cuba has. And the second is designing of interventions, from prevention to treatment.

“This is possible because of the scientific potential that the country has, developed since the triumph of the revolution by our comandante, including a system of science, a solid system of health, and a system of education, that has enabled us to have many persons with knowledge that have been incorporated in our group.”

On the Mesa Redonda program, Dr. C. Pedro Más Bermejo, Vice-President of the Cuban Society of Hygiene and Epidemiology, explained that the method of bringing together scientists from different fields and institutions, being used use to confront this epidemic, is the same that has been used in the past, for example, against dengue, neuropathy, which in certain moments was directed by Fidel, who, Más declared, “always was at the front of these groups, and in a certain manner is present in these moments.” He observed that there is “multiple participation from the community of scientists, and the dedication of young scientists is tremendous. All of this is possible for a country like Cuba, for the human capital that we have, created by the Revolution, and for the political will of our government and our president, something very important.”

On the Mesa Redonda program of April 10, Dr. Rolando Pérez Rodríguez, Director of Science and Innovation of BioCubaFarma, observed that the contribution of BioCubaFarma in confronting the pandemic has antecedents in the scientific pole of biotechnology, created by Fidel in the 1980s and 1990s. All of these institutions of the scientific pole had developed technologies and products to confront various infirmities. Today, BioCubaFarma is working on fifteen projects to combat Covid-19, including products for diagnosis, prevention, and treatment.

Pérez noted that Interferon Alfa 2B is used in treating the infirmity in its initial stage, in combination with other medicines. Interferon Alfa 2B is a product developed by Cuban microbiology, produced by the Center for Genetic Engineering and Biotechnology.

Pérez explained that the human immune system is the first line of defense against the infirmities. The logic of the intervention against any infirmity is to stimulate the immune system of persons at risk. Various products are presently in development, he noted. One is a possible vaccine that activates the immune system, which is being developed by the Finley Institute in Cuba. It is approved for a study this month with persons of high risk, which will begin in the next days. Another vaccine project is being developed in the laboratories of the Center for Genetic Engineering and Biotechnology, which in this case would be a specific vaccine, to produce immunity against specifically the virus Covid-19. This type of vaccine is always sought, but generally takes more time to develop.

Pérez noted that in the world there exist 41 vaccine projects, but only five have arrived to the first stage of study. “So,” he said, “we are in the same race as the rest of the world.”

On the April 10 program of La Mesa Reconda, Dr. Gerardo E. Guillén Nieto, Director of Biomedical Research of the Center for Genetic Engineering and Biotechnology of BioCubaFarma, declared that he arrives to the panel in representation of “a great number of centers, institutions, and researchers that are working without rest, without defined hours, and without weekends, with dedication and passion to do all that is possible to combat this epidemic. In these days, it is like the first days of the Center for Genetic Engineering and Biotechnology, when the comandante inaugurated the Center. In those days, we were a little more than twenty years of age, working in makeshift labs in our houses; and now another generation of young scientists is working with the same dedication, doing research in our laboratories. The Center is working on sixteen lines of research against Covid-19, in all levels treatment and prevention.

“With respect to a vaccine, we are finalizing a study for a product that seeks to stimulate natural immunity. The majority of persons do not become sick when there is a virus circulating, precisely because of natural immunity. This is why persons who are older or who have other illnesses are more vulnerable, because their natural immunity is reduced. So, if we can attain the strengthening of this natural immunity in the population in general as well as the persons who have the contagion, the health system of the nation would be able to advance, and we would be able us to win this battle. With this vaccine, we already able to affirm that we have had good results. We are doing clinical studies in two of our hospitals. This vaccine had shown that it stimulates the molecules of the immune system that are related to the strengthening of the immune response. This for us is really important news. . . . In addition to this vaccine, we are working on another that is specific to Covid-19. We have four different strategies that we are developing in this regard. . . . We also have a medicine that has had good results in treatment of persons in critical condition.”

As I listened to these dedicated scientists speaking on Cuban national television on Thursday and Friday of last week, I could not avoid thinking of Fidel’s address on January 15, 1960 to a gathering of Cuban scientists, where he declared that “the future of our country has to be necessarily a future of men and women of science; it has to be a future of men and women of thought.” In its response to the Covid-19 pandemic, Cuba has demonstrated that it has made real the dreams of Fidel.

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