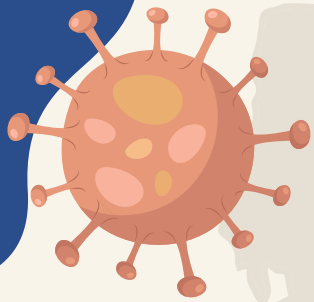
NAST **HEALTH SCIENCES DIVISION**

Statement



Scientific Research and Development as Drivers to Win the Race against COVID-19

The current COVID-19 problem caused by the SARS CoV2 virus has raised and continue to raise issues on how programs and strategies can better control and prevent the escalation of the problem. With the recent declarations of the World Health Organization that COVID-19 is already a global pandemic and the implementation of community quarantine and subsequently extended community quarantine initially involving the National Capital Region and eventually the whole of Luzon, we expect greater urgency for countries to implement programs and strategies to stem and arrest this epidemic. Almost all of these countries, and the Philippines is no exception, have proposed novel and sometimes radical measures as possible solutions. Almost all of them, however, are not based on scientific studies but largely on expert opinion and what we think worked and did not work during the SARS problem in 2003 and the pandemic influenza global pandemic in 2009.

Being caught in the midst of this ongoing epidemic and the consequent rapid rush of research institutions, both in the private and the public sector to find the magic cure for this disease, whether it be a drug or a vaccine to prevent transmission and infection of the virus, the research community should galvanize and unify efforts to spearhead researches that will address current health issues brought about by the COVID-19 problem.

Dealing with and confronting this problem will require a whole of government-led approach with involvement and engagement of the private sector and the general public. Networking and collaboration among and within these different groups will be the key. Researches, in particular, will be critical in the fight against the COVID-19 recognizing that this is a new disease with a potentially different behavior, progression, and effect on the health of individuals, the community, and the nation as compared to the other emerging pathogens.

We, at the **National Academy of Science and Technology**, fully support the current research initiatives of the government and the Department of Science and Technology. In the face of limited resources and paucity of knowledge concerning the virus and the disease it causes, researches are being developed and implemented in collaboration with various research groups both here and abroad to address various aspects of the COVID-19 problem. In the light of all these, we propose that the following researches be done or enhanced to identify and implement the most effective measures to address problem of COVID-19 in the following areas:

1) In the area of **epidemiology**, modelling studies, which are mostly mathematical, may help us better understand how the epidemic will evolve. Input of health data into these disease models, as the epidemic progresses, will be very important to provide government planners scientific projections on how this epidemic will progress. The data generated will be very helpful in forward planning by concerned government agencies to anticipate, prepare, and dampen the effects of this epidemic on different aspects of national life, including the economy.

2) In the area of **diagnostics**, whereas current tests are focused on the detection of the virus in affected patients, tests determining the presence of antibodies mounted by the human hosts should also be developed. These antibody-based assays will help determine the patients who were truly infected, whether symptomatic or asymptomatic. It may catch the cases missed by the tests for detecting infection as these tests may have been done too early or too late in the disease. The tests to detect antibodies will determine the true burden of disease and as well as provide added information on the infectiousness, transmission dynamics and progression of the disease. These tests may also be used for predicting chances for development of complications as well as mortality, especially if the antibodies are proven to be neutralizing antibodies.

3) In the area of **therapy**, the country should participate in clinical trials that would have already been initiated by other countries to help us better understand patient responses to this therapy and determine whether different genetic backgrounds, cultures, and environment may affect patient response. Moreover, participation in these multi-country studies can facilitate its availability in our country when the results become significant.

4) In the area of **prevention and the development of vaccines**, knowing more about the virus, its genetic makeup and how fast it mutates or changes will accelerate its development. Characterizing the molecular and genetic structure as isolated from patients in the Philippines can be contributed to the international database that will serve as references for vaccine development. This will ensure that the vaccines developed can induce protection against all of the circulating SARS CoV2 viruses isolated from patients anywhere else in the world.

5) In the area of **host factors**, genetic biomarkers may be identified that may either predispose or make people less susceptible to the infection. They may also be used to determine risk for severity of disease and complications.

In all of these initiatives, sharing of information within and among scientists, researchers, and institutions both here and abroad will help us **build on each other's strengths and accelerate the race for finding the solutions and the answers to many of our questions.**

Ultimately, winning the battle would depend on how much and how good we understand our adversary - the COVID-19 and the virus that causes it. To many, the virus is like an unknown enemy that works silently easing its way among and through susceptible populations, evading detection and prevention. The **experiences of many countries**, whether good or bad, will serve as valuable **learnings for all of us**. For one thing is certain, this epidemic will not be the only ones we will be confronting in the years to come. It has been established by scientists that in the area of zoonotic diseases that start from animal hosts before reaching humans, only half of viruses have been identified. Scientific **research and development** remain **our most effective weapon** to confront them and the SARS CoV2.