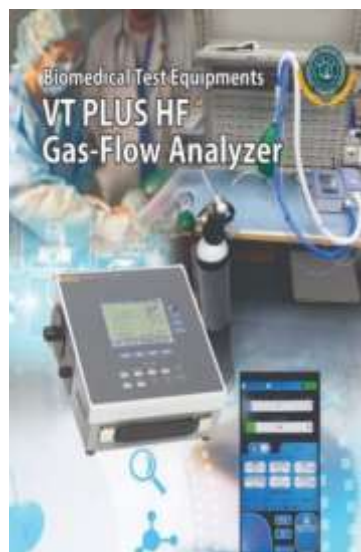


## PAKISTAN

- Pakistani innovation efforts to combat Covid-19 were highlighted in Technology Showcase exhibition held at COMSTECH Building, Islamabad on 30 April, 2020. The event was organized by the Ministry of Science and Technology (MoST) and inaugurated by the Prime Minister Imran Khan along with the Federal Minister for S&T Chaudhry Fawad Hussain. The Showcase was participated by number of dignitaries, R&D organizations and universities. Over 20 private and public sector entities including inventors and entrepreneurs participated in the event and displayed their products and technologies to combat Covid-19. Products included ventilators, sanitizers, disinfection gates, air purifiers, safety kits, testing kits and masks, and other PPEs. The PM was given a detailed briefing on the various products and the capacity of the organizations that were developing them.



- Pakistani entities have developed a range of products and services related to the Corona pandemic. These include medical equipment as well as AI technology for detection, monitoring and advanced medical treatment. Indigenous products that are readily available include several types of ventilators, air purifiers, oxygen concentrators, thermal cameras, UV disinfectant walk through gates, smart sanitizer dispensing machines, Wide range of Corona testing kits, masks, sanitizers, Face Shield, Googles-Eye Protection and Corona Symptom Detector Masks etc.





AERON Aerial Spraying Unit- Low Weight Drone 10Kg Pay Load Capacity (ASU), and N-ROVER Tele Operated Decontamination Robot – Unmanned Ground Vehicle for disinfection (TODR) have also been developed.



The leading organizations in this respect include National Radio & Telecommunication Corporation, Islamabad; PCSIR, Islamabad; NUST, Islamabad; NESCOM, Islamabad; DESTO, Islamabad; Zauq Innovation Research and Innovation Labs; Tech Medology; Zauq Innovation Research and Innovation Labs; and M&H Consultant (Pvt.) Ltd., Islamabad.

- The National Information Technology Board (NITB) has developed a “Covid-19 Gov Pk” application to provide awareness and take preventive measures for general public. The application also contains WHO informative videos.
- A Corona awareness Web Portal and Helpline 1166 has been launched by National Institute of Health and National Information Technology Board (NITB)
- The Ministry of S&T, the Pakistan Science Foundation and Higher Education Commission have launched calls for soliciting research projects to combat COVID-19 under RAPID Research and Innovation Initiative (RRII). Emphasis is on development of biomedical equipment, infectious diseases surveillance systems using big-data analytics and artificial intelligence etc.

**Ref:** i) Ministry of Science and Technology, Islamabad (<https://most.gov.pk/>)  
ii) COVID-19 Response (Brochure). National Radio & Telecommunication Corporation (NTRC), Islamabad (<https://www.nrtc.com.pk/>)

- **Drug development for treatment of COVID-19 and post COVID situations.**

Pakistan has established a nationwide network comprising 14 major research centers. Under this network, the Pakistan Randomized and Observational Trial for Evaluation of Covid-19 Treatment (PROTECT) study has been initiated. It is a randomized Controlled Clinical trial study to evaluate Hydroxychloroquine (HCQ) alone and in various drug combinations with Azithromycin and Ostelnavir for treatment of COVID. 100 patients have already been treated with the PROTECT protocol. Other OIC member states participation in PROJECT clinical trials includes Iran, Lebanon and Sudan.



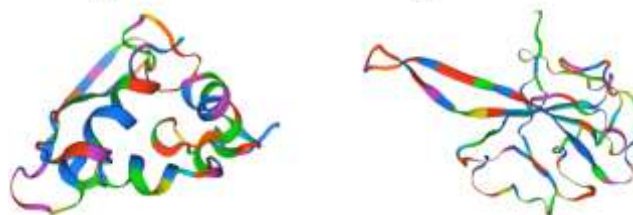
- **Initiatives to expand Pakistan's COVID-19 testing capacity.**

The National Institute of Virology (NIV), which was established in late 2019, has placed RT-PCR machines and trained virologists at local Hospitals to increase testing capacity. In the second phase, the BSL-III facility (5500 sq. ft) was promptly completed and large scale COVID-19 testing was initiated in Karachi. Presently (June 15, 2020) Pakistan's testing capacity has exceeded over 30,000 tests per day.



- **Determination of the Structure of the COVID-19 Virus Strain Found in Pakistan.**

SARS-CoV-2 Genome Project at Jamilur Rahman Center for Genomics Research, International Center for Chemical & Biological Sciences, Karachi University has sequenced the SARS-CoV-2 genome from Pakistan by using MiSeq next generation DNA sequencing system. It is the first indigenously sequenced complete genome. This genome was sequenced identifying 8 mutations as compared to the Wuhan sample. All samples from Pakistan are L type strains, with 4-9 variations compared to the Wuhan sample. Recently, sequencing of 5 SARS-COV-II genomes has been completed in various institutions of Pakistan.



Ref. i) <https://www.biorxiv.org/content/10.1101/2020.05.01.072942v1.full.pdf>

ii) Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/PAK/KHI1/2020, complete genome <https://www.ncbi.nlm.nih.gov/nucleotide/MT500122>