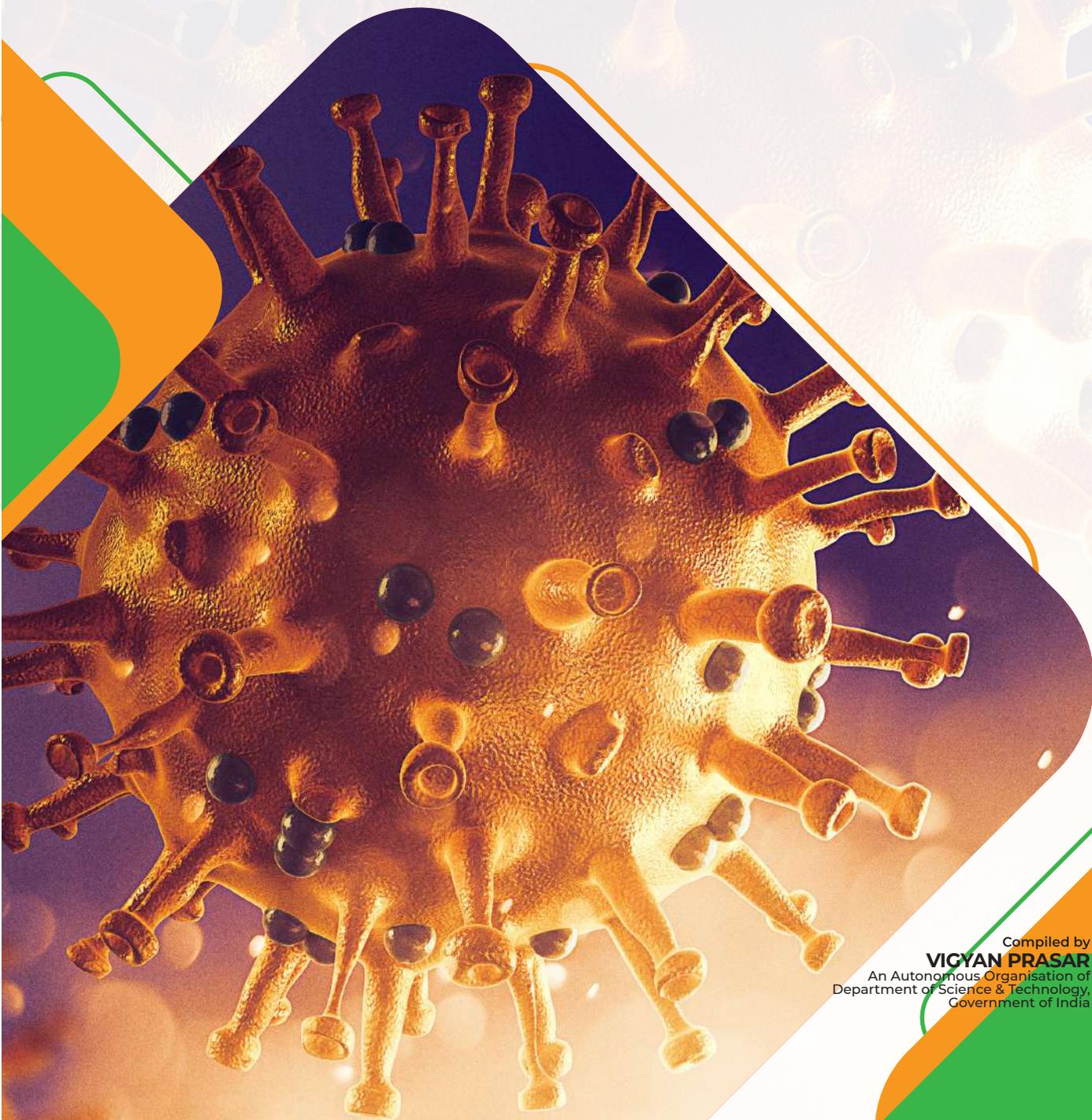


SCIENCE & TECHNOLOGY EFFORTS IN INDIA ON COVID-19

UPDATED WEEKLY | 30th July 2020



Compiled by
VICYAN PRASAR वि P
An Autonomous Organisation of
Department of Science & Technology, V प्र
Government of India



सत्यमेव जयते
FOREWORD

डॉ हर्ष वर्धन Dr Harsh Vardhan

स्वास्थ्य एवं परिवार कल्याण, विज्ञान और प्रौद्योगिकी
य पृथ्वी विज्ञान मंत्री, भारत सरकार

Union Minister for Health & Family Welfare,
Science & Technology and Earth Sciences
Government of India

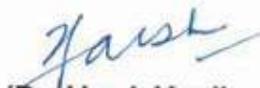
सबका साथ, सबका विकास, सबका विश्वास
Sabka Saath, Sabka Vikas, Sabka Vishwas

The 2019 Novel Coronavirus (SARS-CoV-2) has spread rapidly throughout the world and has assumed the proportion of a Pandemic. Given the lack of an efficacious vaccine as well as non-availability of suitable chemotherapeutic interventions, mankind is experiencing an unprecedented existential crisis.

2. The Ministry of Science and Technology and the Ministry of Health & Family Welfare, with their various departments, are contributing in various ways towards the national R&D efforts for developing solutions to combat COVID-19. The Department of Science & Technology under the Ministry has launched a nationwide exercise to map and boost development of COVID-19 solutions with R&D, seed capital and scale-up support. All academic and research institutions are being reoriented to focus on the development of diagnostics, vaccines, antivirals, disease models and other R&D to enable a cure for this dreadful disease. Around 15 labs of Council of Scientific & Industrial Research (CSIR), under the Department of Scientific & Industrial Research, across the country are working in close partnership with major private sector Industries, PSUs, MSMEs and other Government departments to develop solutions for COVID-19. The Department of Biotechnology (DBT) under the Ministry has also formed a consortium to support the development of Medical equipment, Diagnostics, Therapeutics, Drugs and Vaccines to meet the Healthcare Challenges. Indian Council of Medical Research (ICMR), under the Ministry of Health & Family Welfare has already isolated the virus strain successfully, which is a first step towards vaccine research. Similarly, various other organizations under Ministry of Human Resource & Development, Ministry of Defence, Ministry of Chemicals & Fertilizers, etc. are also contributing substantively to our R&D efforts. The private sector has also come forward in a big way to supplement these efforts.

3. With a view to spreading awareness about the S&T efforts of the Government of India as well as private sector in finding solutions for COVID-19, Vigyan Prasar - an autonomous institution under Ministry of Science & Technology and engaged in large-scale science communication and popularization activities - has compiled all initiatives being undertaken in this field.

4. This document "Science & Technology Efforts on COVID-19 in India" shall serve as a ready-reckoner for policy makers, scientists, researchers, scholars and other stakeholders who might be interested in understanding and keeping themselves abreast with the latest S&T efforts being made to develop solutions to combat COVID-19.


(Dr. Harsh Vardhan)

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PREFACE

The COVID-19 pandemic has posed one of the biggest challenges to the entire humanity. In the wake of its outbreak, our lives have changed in ways we had never imagined before. All indications are leading to the conclusion that we all would have to learn to live with coronavirus, and there might be no early tapering off of the disease. This would require an adjustment to a NEW NORMAL of several aspects of our day-to-day life.

In these critical times, access to authentic information is of paramount importance. Vigyan Prasar (VP) has been covering the pandemic since the early days with the science communication perspective, ensuring that science and safety are the primary focus. VP is a national level organisation of the Department of Science and Technology, Government of India, engaged in science communication and popularisation. The principal objective of VP is to serve India's science popularisation agenda. This is achieved through several strategically important two-way, stakeholder-specific approaches to communicate about principles and practices of science and technology and implications for development and quality of life. Science popularisation therefore serves as a robust knowledge-led tool to fulfil various mutually reinforcing public policy objectives.

For the benefit of the stakeholders and target audience, we are preparing and publishing compilation of the most relevant initiatives and efforts by the Government of India through its various Science Ministries, Departments, and Funding organizations, in the shape of a weekly e-Newsletter. These organisations are all geared for combating the COVID-19 pandemic. These research-driven and technology-based interventions have been initiated on war footing to fight out the outburst of the pandemic. Government of India, through its various wings, like Science Ministries, Departments, and Funding organizations, has invited Calls for Proposals (CFPs) and Expression of Interest (EoIs) to enhance research and development-related activities to battle the pandemic out as well as making the nation self-reliant.

We hope this initiative of Vigyan Prasar shall be a handy guide to scientists, researchers, and scholars, especially those who are interested in knowing various aspects of COVID-19 and contributing to the coronavirus warfare and making the nation Atmanirbhar. Atmanirbhar Bharat, the vision of New India, will be fulfilled with aggressive implementation of the Make in India initiatives and when we would be wholeheartedly 'Vocal for Local'.

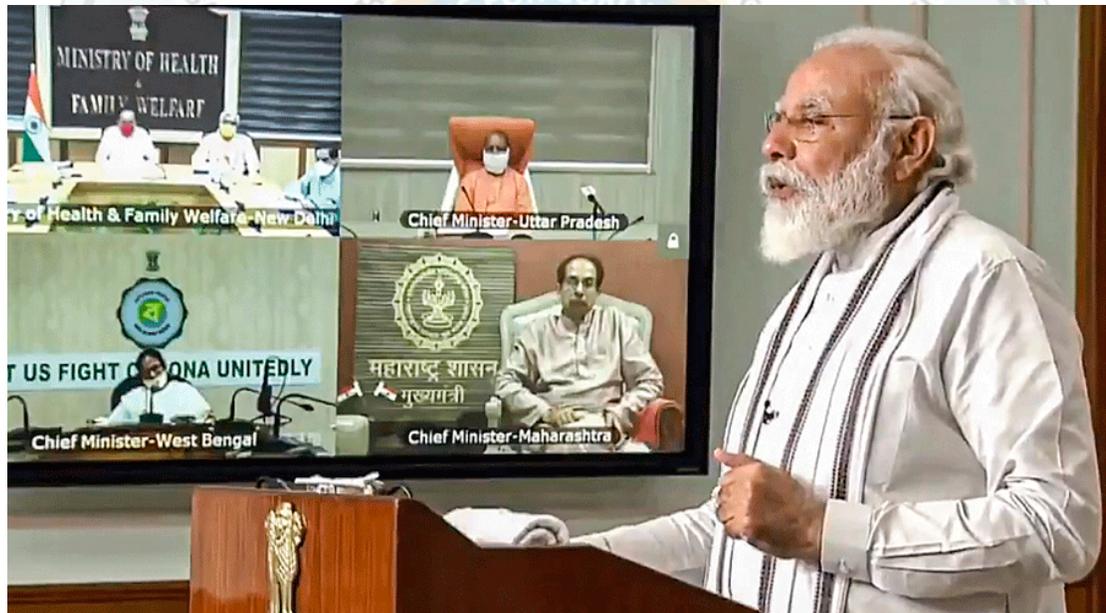
Vigyan Prasar
New Delhi

PM launches High Throughput COVID-19 testing facilities at Kolkata, Mumbai and Noida

27th July 2020, New Delhi

Prime Minister Shri Narendra Modi launched three high throughput COVID-19 testing facilities via video conferencing. These facilities are located at the National Institutes of Indian Council of Medical Research at Kolkata, Mumbai and Noida.

The Prime Minister said that these hi-tech, state-of-the-art testing facilities will boost the testing capacity by almost 10,000 daily tests. More number of tests will assist early detection and treatment, thereby helping fight the spread of the virus. He added that these labs will not be limited to testing for COVID-19, but in future, will also be able to test for Hepatitis B and C, HIV, Dengue and several other diseases.



Timely decisions

The Prime Minister underlined that due to timely decisions taken by the government, India is better placed vis-a-vis other countries in terms of deaths due to COVID-19. The recovery rate is also higher than other countries and is improving on a daily basis. The total number of people who have recovered from the virus is about to reach 10 lakh.



Corona-specific health infrastructure

The Prime Minister said that it was imperative for the country to develop corona-specific health infrastructure at a fast pace. He noted that the Centre had announced a package of Rs 15,000 crore at the beginning of this battle. The country now has more than 11,000 COVID-19 facilities and more than 11 lakh isolation beds.

While the country had only one COVID-19 testing centre in January, there are almost 1300 such labs now. He said that at present, more than 5 lakh tests are being conducted in the country daily, and efforts are underway to increase this capacity to 10 lakh in the coming weeks.

He noted that the country has become the second largest PPE kit manufacturer. The country has progressed from not having even a single PPE kit manufacturer as recently as six months ago, to having more than 1200 manufacturers now, who are producing more than 5 lakh such kits daily. He also highlighted that from being dependent on imports, now more than 3 lakh N-95 masks are being produced in the country daily, annual production capacity of ventilators has become 3 lakh and there has also been a significant increase in the production of medical oxygen cylinders. This has not only helped save lives but has also converted India from an importer to an exporter.

Talking about efforts to contain the spread in rural areas, the Prime Minister mentioned the need to develop new health infrastructure as well as boost the already existing health infrastructure facilities in the villages.

Ramping up human resource

Prime Minister said that apart from developing the physical infrastructure, the country has also managed to swiftly ramp up human resources including paramedics, ASHA workers, Anganwadis etc., who have played a significant part in controlling the spread of the pandemic. He also spoke about the need to work on continuously attaching new and retired health professionals with the health system in order to prevent fatigue from setting in our corona warriors.

Being safe during festivities

He forewarned people to be cautious during the celebrations of the festivals to come in order to keep the virus contained. He underlined that the benefits of PM Garib Kalyan Anna Yojana should reach the poor timely. He added that till the time a vaccine is not developed, do gaz doori, wearing masks and hand sanitization are the tools at the disposal of the people to keep them safe.

Union Minister Dr Harsh Vardhan said that labs to test for COVID-19 are now available all across the country. He also spoke about the Union Home Minister working along with Delhi Chief Minister in order to control the spread of the virus in the national capital.

Chief Ministers speak

The Chief Ministers thanked the Prime Minister for the launch of the testing facilities. Maharashtra Chief Minister Shri Uddhav Thackeray praised the leadership of the Prime Minister in the tough circumstances. He spoke about the 'chase the virus' initiative in Mumbai and also discussed establishing permanent infection hospitals.

West Bengal Chief Minister Ms. Mamata Banerjee appreciated the cooperative attitude of the Prime Minister towards the States, spoke about efforts to track cases, use of tele-medicine and also about the need to ramp up facilities in some of the existing labs in the State.

Uttar Pradesh Chief Minister Shri Yogi Adityanath expressed his gratitude towards the Prime Minister for his untiring efforts in this fight against the virus. He said that these labs launched today will dramatically reduce testing time. He mentioned about ramping up testing ability in the State and the plan to increase the number of daily antigen tests.

Background

These three high-throughput testing facilities have been set up strategically at ICMR-National Institute of Cancer Prevention and Research, Noida; ICMR-National Institute for Research in Reproductive Health, Mumbai; and ICMR-National Institute of Cholera and Enteric Diseases, Kolkata, and will be able to test over 10,000 samples in a day. These labs will also reduce turn-around time and exposure of lab personnel to infectious clinical materials. The labs are enabled to test diseases other than COVID-19 as well, and post the pandemic, will be able to test for Hepatitis B and C, HIV, Mycobacterium tuberculosis, Cytomegalovirus, Chlamydia, Neisseria, Dengue, etc.

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The e-newsletter is being published on a regular basis by collating all the inputs received till the preceding day of the release.

The older issues of e-newsletter are available in the Archival Section at <https://vigyanprasar.gov.in/covid19-newsletters/>

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SCIENCE & TECHNOLOGY EFFORTS ON COVID-19
BY

OFFICE OF THE PRINCIPAL SCIENTIFIC ADVISER (PSA)

KISAN Mitr: An initiative to support farmers become Atmanirbhar

The Office of the Principal Scientific Adviser (PSA) to the Government of India has launched an initiative called Kisan Mitr. It is a seven-phase project aimed at supporting farmers to become Atmanirbhar (self-reliant). The First Phase of the initiative was covered in previous edition of this newsletter dated 23rd July 2020.

PHASE II

The second phase provides a repository of livestock technologies to catalyze modernization of animal husbandry and solve information asymmetry. The platform provides filters to easily find livestock, technology, or research from ePashuHaat as well. The engagement stage of the platform independently helps young start-ups to showcase their livestock technologies and easily engage with market demand.

The Kisan Mitr platform receives a catalogue of technologies supplied by institutions such as IIT, IISER, CSIR, ICAR, MSME, start-ups, Gates Foundation, etc.

The demand is comprised of buyers from accelerators, incubators, industry, foundations, large FPO communities, and Women Self Help Groups (SHG). A few examples are NABARD DDMs, TAFE, ITC, Coromandel, Tata Chemicals, Rallis, Nagarjuna, etc.

Examples of a few technologies on the platform include DNA tests, Immunization techniques, Disease detection kits, Purification techniques, Pregnancy test kits, Business management apps, Organic medications, etc.

The Kisan Mitr platform facilitates an engaging exchange between the supply and demand sides through chat, video meetings, rating system, and feedback forms. The platform also bridges the collaboration gap between the research institutes and the industry primarily via competitions in which difficult problems from the industry are posed as a challenge to the scientific community.

To solve the cold start problem, NASSCOM and NIAM organize weekly webinars and convene both the sides to the platform. DD Kisan is considering televising the agricultural technologies in order to increase visibility and adoption of modern farming techniques and technologies across the country.

The project has received support from various departments of the government, as well as private sector organizations.

The next phases of the initiative will be covered in the subsequent editions of this newsletter.

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SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)

Bengaluru-based start-up brings mobile app for detection & risk assessment of COVID-19-infected individuals

Novel methods to supplement the early detection of disease and risk assessment of infected population to prioritise the conventional testing queue through mass screening is a crucial challenge the COVID-19 pandemic has thrown up. Combating the crisis needs technological solutions that can carry this out rapidly while minimizing risk for healthcare professionals.

The Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH), an initiative by the DST, has selected Bengaluru-based start-up Acculi Labs to develop a COVID-19 risk assessment profile called Lyfas COVID score. Acculi Labs is armed with 'Lyfas', a clinical-grade, non-invasive, digital functional biomarker smartphone tool for screening, early detection, root cause analysis, acute event risk assessment, prognosis, and home monitoring of chronic diseases which they have repurposed to Lyfas COVID score.

CAWACH, an initiative by the National Science & Technology Entrepreneurship Development Board (NSTEDB), DST, Government of India, is supporting market-ready innovations for the control of COVID-19 and start-up ideas to address associated challenges.

The new technology developed with support from the DST will detect the possible infection in an asymptomatic individual to prioritise the conventional testing queue as well as carry out a risk assessment of an asymptomatic individual to become symptomatic and risk assessment of an asymptomatic individual for recovery.

Website link:

<https://dst.gov.in/bangalore-based-startup-brings-mobile-app-detection-risk-assessment-covid-19-infected-individuals>

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

DEPARTMENT OF BIOTECHNOLOGY (DBT)

DBT-inStem makes video on ‘simple pooling’ method for COVID-19 testing

The DBT's Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem) and the National Centre for Biological Sciences (NCBS) are working hand in hand with the State Government of Karnataka to test for COVID-19 from April, 2020. The two institutions entered into a partnership with the Azim Premji Foundation (APF) in late May to augment their testing efforts.



This collaboration aims to develop new and innovative testing methodologies that will speed up the testing process to maximize the number of samples tested in an efficient manner; in addition to providing free-of-cost testing to a section of people. As part of this engagement, an instructional video was prepared to demonstrate the use of the technique of ‘simple pooling’ in testing, which can minimize costs and maximize the number of tests.

In locations where there is low prevalence of infection and asymptomatic cases and consequently most of the samples test negative, the ‘simple pooling’ strategy reduces time for COVID-19 testing and also saves reagents and resources. The technique involves random pooling of five samples each from a cohort of samples followed by RNA isolation and RT-PCR. If the pooled tubes show negative results for COVID-19 infection by RT-PCR, all the samples corresponding to the pooled tubes are reported as ‘negative’. However, if any pooled tube tested ‘positive’ for the infection, the five samples which were part of the tube are re-aliquoted and RT-PCR is performed on individual samples to identify the positive samples among them.

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Website link:

https://vigyanprasar.gov.in/wp-content/uploads/vigyan_samachar_dbt_01S_27July2020.pdf

<https://instem.res.in/>

DBT-CDFD tests over 8,500 COVID-19 samples in Telangana

The DBT's Centre for DNA Fingerprinting and Diagnostics (CDFD) Hyderabad, has entered into a Memorandum of Understanding with Nizam Institute of Medical Sciences (NIMS) for a joint project on genomic analysis of SARS-CoV-2 sequence in Indian patients.

The Hyderabad-based premier scientific institution, which is involved in COVID-19 testing for samples from Telangana, has also so far tested over 8,500 samples. It had started testing on COVID-19 samples on 18th April 2020 after due approval from DBT and Indian Council of Medical Research.



It was nominated by the Office of Director, Medical Education, Government of Telangana along with CSIR-CCMB and ESIC as a centre for pooling of samples from selected districts of Telangana with less than 2% prevalence of COVID-19 positive cases. Subsequent to an advisory issued by ICMR on 2nd April 2020, notifying that it has no objection to initiation of COVID-19 testing in laboratories operating under the DBT, CDFD had re-organised the infrastructure to create a designated COVID-19 testing laboratory, procured testing kits and personal protective equipment, and trained the manpower.

Senior scientists Dr Ashwin Dalal, Dr Murali Bashyam, Dr Rashna Bhandari, and Dr Harinarayanan are supervising and providing leadership to the task with support from the staff and students. Volunteers were trained at CSIR-CCMB and Osmania Medical College Koti, Hyderabad to conduct RNA preparation and RT-PCR analysis of samples received from different regions of Telangana.

It has, among other things, drawn-up detailed standard operating procedures for the COVID-19 testing facility set up at its campus. The document has been prepared based on inputs from different recommendations by the World Health Organisation, United State's Centers for Disease Control and Prevention (CDC), and the handbook prepared by the office of the Principal Scientific Advisor to the Government of India for COVID-19 testing in research laboratories.

It covers all aspects beginning from how the security guard of the Institute must receive the vehicle carrying samples at the entrance of the building to how the samples will be analysed and a report sent to the office of the district medical and health officer from where the specific sample had come. It also gives clear protocol for how the biohazardous waste produced in the process should be handled and disposed of, how to sanitise the work and how to protect those engaged in the analysis from getting exposed to the virus.

Contact Info: Varsha (scom@cdfd.org.in)

Website link:

<http://www.cdfd.org.in/>

https://vigyanprasar.gov.in/wp-content/uploads/vigyan_samachar_dbt_02S_27July2020.pdf

DBT-IBSD-JNIMS COVID-19 testing laboratory gets ICMR nod

Indian Council of Medical research (ICMR), New Delhi has given nod to the COVID-19 testing laboratory of the DBT's Institute of Bioresources and Sustainable Development (IBSD) and Jawaharlal Nehru Institute of Medical Sciences (JNIMS) at Imphal to start COVID-19 testing. The IBSD-JNIMS centre, which was accorded with essential approvals by DBT to facilitate



S. No.	Names of States	Test Category	Names of Government Institutes	Names of Private Institutes
18.	Manipur (8) Govt: 7 Private: 1	RT-PCR	509. SJawaharlal Nehru Institute of Med. Sciences, Imphal-East, Manipur 510. Regional Institute of Medical Sciences, Imphal 511. *#DBT-IBSD-Jawaharlal Nehru Institute of Medical Science, Imphal	228. Babina Diagnostics, Soibam Leikai, Ahongei Leirak, Porompat, Imphal East
		TrueNat	512. Intermediate Reference Laboratory, Lamphelpat 513. District Hospital, Senapati 514. District Tuberculosis Centre (DTC), Ukhrul 515. District Hospital, Tamenglong	
		RT-PCR	516. North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences, Shillong, Meghalaya 517. #Civil Hospital, Tura	
19.	Meghalaya (12) Govt: 11 Private: 1	TrueNAT	518. Pasteur Institute, Shillong 519. Civil Hospital, Nongstoin 520. M.C.H. Hospital, Zowai 521. Civil Hospital, Nongpoh 522. Civil Hospital Shillong, East Khasi Hills District 523. Khliehriat CHC, East Jaintia Hills District	

management of COVID-19, is now fully functional. ICMR approved the laboratory on 11th July 2020 for testing of COVID-19 samples.

The laboratory is all set to undertake independent testing as and when the samples are shared by the Government of Manipur. The coordinators for this laboratory are Dr Nanaocha Sharma and Dr S Indira Devi, Scientists from IBSD Imphal. They are being assisted by all scientists, volunteer research associates and scholars of the institute.

Contact Info: Prof. Pulok Kumar Mukherjee, Director (director.ibsd@nic.in)

Website link:
https://vigyanprasar.gov.in/wp-content/uploads/vigyan_samachar_dbt_03B_27July2020.pdf
<http://ibsd.gov.in/ibsd/home/index.php>

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR)

CSIR to carry study to ascertain airborne spread of COVID-19

After World Health Organization's recent acknowledgement that there is emerging evidence of airborne spread of the novel coronavirus whole scientific community has started looking for the mode of transmission of novel coronavirus with different perspective. Director General, CSIR, Dr Shekhar C Mande said in a blog post "Airborne transmission of COVID possible, wear masks in enclosed spaces". Is novel coronavirus really transmitting through air? To answer this question two CSIR labs, Institute of Microbial Technology (IMTECH) in Chandigarh and Centre for Cellular and Molecular Biology (CCMB) in Hyderabad, are gearing up to conduct study.

When we sneeze, cough, talk or sing droplets are sprayed from our mouth. Some of the bigger droplets drop to the ground like a ball thrown from a height. These larger droplets then settle on the surfaces. If the person is infected then inhalation of the droplets or touching the droplets on the surface can transmit the virus.

Like a feather that stays longer in the air, lifted up by air currents, smaller droplets remain suspended in the air for some time. If people at crowded places come in contact of these droplets there is a potential threat of spread through these small droplets.

The virus laden droplets are unlikely to be found in an open park or a public road. However, in enclosed spaces, an infected person can leave a trail of small droplets with virus suspended in the air. For finding such potential places one needs to actually study the air sample in the first place. "We are in talks with the state governments to allow us to go to some of the areas where there is possibility of virus, we can look for hospital ICUs, isolation centres or public transports," said Dr Sanjeev Khosla, Director, IMTECH, Chandigarh.

The air sampling is done through specialised machines. These have a suction pump that draws air. The air sample goes through a filter at the end of the instrument. The filter traps the airborne micro-organisms. "We will be taking in some amount of air from a particular area based on calculations that we would do that how far these air droplets can move and then try to see whether these air droplets have the virus and how far we can detect them," said Dr Khosla. To ensure that the machine doesn't get contaminated, the filters and the suction pump are cleaned up after every collection. The machines are patented devices and are being used to trap other micro-organisms too.

Once the sampling is done it would be analysed for presence of various pathogens including novel coronavirus. "But sampling may take time, as one has to repeat the experiments as contamination needs to be taken care of," said Dr Khosla.

Website:

<https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-1-23-July-20.pdf>

Cipla set to launch repurposed drug Favipiravir for COVID-19: CSIR

Cipla has scaled up the process in their manufacturing facility and approached Drug Controller General of India (DCGI) for permission to launch of a repurposed drug Favipiravir for COVID-19 in India. Given that DCGI has given restricted emergency use for Favipiravir in the country, Cipla is now all set to launch the product to help patients suffering from COVID-19. "Hopefully by August 1st this will be available in the market," said Dr S Chandrasekhar, Director, CSIR-Indian Institute of Chemical Technology (CSIR-IICT).

An off-patent anti-viral Favipiravir has been originally discovered by Fuji, Japan which has shown promise in clinical trials for treatment of COVID-19 patients, especially the mild and the moderate patients. It is an Active Pharmaceutical Ingredient (API). An active ingredient is the ingredient in a pharmaceutical drug or pesticide that is biologically active.

IICT has developed a cost-effective process using locally available chemicals to synthesize Favipiravir and transferred the technology to Cipla Limited.

The pharma industry buys very advanced drug intermediates also called as Key Starting Materials (KSM) from China or some other countries. After doing one or two synthetic operations these are made into final products. "We make KSM ourselves starting from chemicals manufactured locally, that brings down the cost of these products," said Dr Chandrasekhar.

"The technology provided by CSIR-IICT is very efficient and makes it affordable and allows Cipla to make large quantities of the product within a short span of time," said Dr Chandrasekhar.

DG-CSIR, Dr Shekhar C Mande said that CSIR is working with industry in developing quick solutions and products for mitigation of COVID-19 and this partnership with Cipla is an example of how CSIR is committed in bringing repurposed drugs on a fast track.

"We are taking up some clinical trials for repurposing of some other drugs too, that will take some time," told Dr Chandrasekhar.

Website:

<https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-1-24-July-20.pdf>

जल्द शुरू होगा वेंटिलेटर 'स्वस्थवायु' का चिकित्सीय परीक्षण

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) से संबद्ध नेशनल एयरोस्पेस लैबोरेटरी (एनएएल) के वैज्ञानिकों द्वारा विकसित वेंटिलेटर 'स्वस्थवायु' का चिकित्सीय परीक्षण जल्दी शुरू हो सकता है। यह चिकित्सीय परीक्षण बंगलुरु के मणिपाल हॉस्पिटल्स में किया जाएगा। एनएएल द्वारा जारी एक ताजा बयान में यह जानकारी दी गई है।

एनएएल में इलेक्ट्रॉनिक्स विभाग के मुख्य वैज्ञानिक डॉ सी.एम. आनंद



ने कहा है- इस उपकरण का परीक्षण कृत्रिम फेफड़े के मॉडल पर किया गया है। इसे नेशनल एक्रेडिटेशन बोर्ड फॉर टेस्टिंग एंड कॅलिब्रेशन लैबोरेटरीज (एनएबीएल) के इलेक्ट्रिकल सुरक्षा, कार्यप्रणाली, मूल्यांकन और जैव-अनुकूलता से जुड़े कड़े परीक्षणों में प्रभावी पाया गया है। यह उपकरण सेंट्रल ड्रग्स रिसर्च इंस्टीट्यूट (सीडीआरआई) और सेंट्रल ड्रग्स स्टैंडर्ड कंट्रोल ऑर्गेनाइजेशन (सीडीएससीओ) जैसी नियामक संस्थाओं में पंजीकृत है।

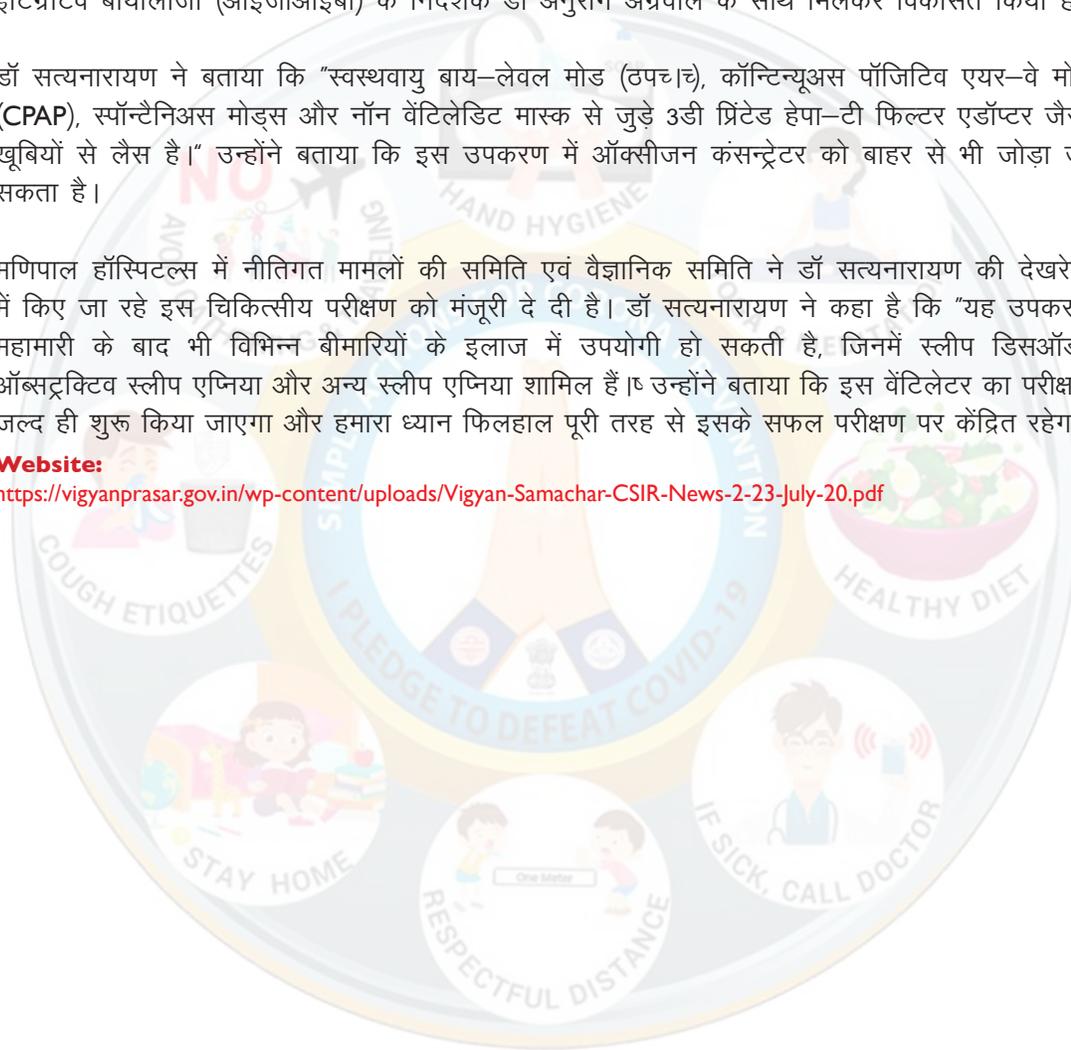
इसे विकसित करने वाले शोधकर्ताओं का कहना है कि यह वेंटिलेटर कोविड-19 समेत अन्य श्वसन संबंधी रोगों के उपचार में मददगार हो सकता है। इसका उपयोग बिना चीरफाड़ के आईसीयू जैसी चिकित्सा परिस्थितियों में भी किया जा सकता है। 'स्वस्थवायु' वेंटिलेटर को एनएएल के वैज्ञानिकों ने बंगलुरु के मणिपाल हॉस्पिटल्स के विशेषज्ञ डॉ सत्यनारायण और सीएसआईआर-इंस्टीट्यूट ऑफ जीनोमिक्स एंड इंटीग्रेटिव बायोलॉजी (आईजीआईबी) के निदेशक डॉ अनुराग अग्रवाल के साथ मिलकर विकसित किया है।

डॉ सत्यनारायण ने बताया कि "स्वस्थवायु बाय-लेवल मोड (ठपच।च), कॉन्टिन्यूअस पॉजिटिव एयर-वे मोड (CPAP), स्पॉन्टैनिअस मोड्स और नॉन वेंटिलेडिड मास्क से जुड़े 3डी प्रिंटेड हेपा-टी फिल्टर एडॉप्टर जैसी खूबियों से लैस है।" उन्होंने बताया कि इस उपकरण में ऑक्सीजन कंसन्ट्रेटर को बाहर से भी जोड़ा जा सकता है।

मणिपाल हॉस्पिटल्स में नीतिगत मामलों की समिति एवं वैज्ञानिक समिति ने डॉ सत्यनारायण की देखरेख में किए जा रहे इस चिकित्सीय परीक्षण को मंजूरी दे दी है। डॉ सत्यनारायण ने कहा है कि "यह उपकरण महामारी के बाद भी विभिन्न बीमारियों के इलाज में उपयोगी हो सकती है, जिनमें स्लीप डिस्ऑर्डर ऑब्सट्रक्टिव स्लीप एपनिया और अन्य स्लीप एपनिया शामिल हैं।" उन्होंने बताया कि इस वेंटिलेटर का परीक्षण जल्द ही शुरू किया जाएगा और हमारा ध्यान फिलहाल पूरी तरह से इसके सफल परीक्षण पर केंद्रित रहेगा।

Website:

<https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-2-23-July-20.pdf>



SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

INDIAN COUNCIL OF MEDICAL RESEARCH (ICMR) AND MINISTRY OF HEALTH & FAMILY WELFARE (MOHFW)

ICMR releases guidelines for operational mechanisms for establishing COVID-19 Biorepositories

In the backdrop of the COVID-19 pandemic, while it is of paramount importance to provide early diagnosis and treatment to all infected individuals, it is also critical to promote research and development for larger public health benefit. For development and validation of new diagnostics, therapeutics, or vaccines, access to different kinds of clinical samples from infected patients is an essential requirement. NITI Aayog has recently issued guidelines for sharing of biospecimens and data for research related to COVID-19. This document, released by ICMR on 23rd July 2020, in tandem lays down the brief processes and operational mechanisms for establishing COVID-19 biorepositories in the country.

Currently, there is no structured mechanism for collecting and storing these valuable clinical samples. In view of this, it is important to create designated biorepositories for collecting, storing, and maintaining clinical samples (Oropharyngeal/Nasopharyngeal swabs, Bronchoalveolar lavage, Sputum, Blood, Urine and Stool) of COVID-19 patients. Such samples will be used to develop validated diagnostics, therapeutics, vaccines etc. Additionally, the samples will be a valuable resource for research & development-related activities to understand the early predictors of disease severity, immunopathogenesis of the disease, etc.

Website Link:

<https://www.icmr.gov.in/cbiorn.html>



ICMR invites Expression of Interest for validation of rapid antigen detection assays for COVID-19

ICMR invites applications for validation of rapid antigen detection tests for COVID-19 from all manufacturers who have developed rapid antigen-based detection assays for Coronavirus wherein all manufacturers who have developed antigen-based assays have been invited for validation. The gold standard RT-PCR diagnostic test for COVID-19 has limitations in terms of

widespread availability. In view of this, there is urgent requirement of reliable and convenient rapid point-of-care antigen detection assays with high sensitivity and specificity. Such assays could be used as potential diagnostic tests in all possible public and private healthcare settings and made available for mass testing.

Contact Info: guptanivedita.hq@icmr.gov.in

Website Link:

https://www.icmr.gov.in/pdf/tender/Revised_EOI_for_Ag_kit_validation.pdf

<https://www.icmr.gov.in/tender.html>

DGHS releases advisory for Gated Residential Complexes with regards to COVID-19

Resident Welfare Associations functioning in gated complexes can play an active role in creating awareness about the COVID-19 disease, simple preventive measures that need to be followed, encourage early reporting and inform community about myths and stigma often encountered by patients, healthcare or other frontline workers. Accordingly, Directorate General of Health Services (DGHS) of Ministry of Health & Family Welfare (MoHFW) issued guidelines for Gated Residential Complexes with regards to COVID-19. This document outlines the preventive and response measures to be observed to minimize and contain the spread of COVID-19 in gated complexes.

The purpose of this document is to advise and guide RWAs/residential societies in

my GOV
मेरी सरकार

Advisory for **Gated Residential Complexes to Contain COVID-19** (1/8)

Specific Preventive Measures

- Posters/standees/AV media on preventive measures about COVID-19, common signs & symptoms to be displayed
- Early reporting & sanitization of premises, outside & inside the gated complex
- Provisions for hand hygiene to be made available at entry points & in work areas
- Thermal screening of visitors at entry points & only asymptomatic individuals to be allowed

Dated: 20 July, 2020

my GOV
मेरी सरकार

Advisory for **Gated Residential Complexes to Contain COVID-19** (4/8)

Activities to be Undertaken by RWAs

- Follow Govt advisories for the citizens and disseminate it further through notice board or social media/chat groups
- Maintain suitable linkages with nearest health facilities to handle any health contingencies such as any person developing symptoms
- Address myths & misinformation/fake news on the RWAs social media by verifying the facts from govt sources like mohfw.gov.in or mygov.in
- Address COVID-19 related stigmatization; ensure installation & use of Aarogya Setu App by residents

Dated: 20 July, 2020

my GOV
मेरी सरकार

Advisory for **Gated Residential Complexes to Contain COVID-19** (8/8)

Actions to be Undertaken if Gated Complex is Declared as Containment Zone

- Facilitate that all residents remain at home and shall only come out for meeting essential requirements
- Create awareness among habitants on public health measures such as hand washing, respiratory hygiene etc
- RWA/societies should provide volunteers to support residents for maintaining essential services

Dated: 20 July, 2020



prevention and control of COVID-19 transmission in gated residential complexes. Persons above 65 years of age, persons with comorbidities, pregnant women and children below the age of 10 years should be encouraged to stay at home only and keep contact with visitors/ guests to a minimum.

Website Link:

<https://www.mohfw.gov.in/pdf/AdvisoryforRWASonCOVID19.pdf>

DGHS releases guidelines for Gated Residential Complexes desirous of setting up small COVID care facility

The community living in gated complexes may like to create small COVID Care Facility within the residential complex managed either by the RWAs/Residential Societies or in collaboration with an NGO. This may be more acceptable to the residents and will help reduce the burden on existing facilities for managing suspect/pre-symptomatic/asymptomatic/very mild cases of COVID-19. Directorate General of Health Services (DGHS) of Ministry of Health & Family Welfare (MoHFW) issued guidelines for Gated Residential Complexes Desirous of Setting up Small COVID Care Facility by Resident Welfare Associations/Residential Societies/Non-Governmental Organizations (NGOs). This guidance document has been prepared to help RWAs/Residential Societies/ NGOs desirous of establishing a small COVID Care Facility, a community-based isolation facility, with their own resources.

Website Link:

<https://www.mohfw.gov.in/pdf/COVIDCareFacilityinGatedcomplexes.pdf>

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

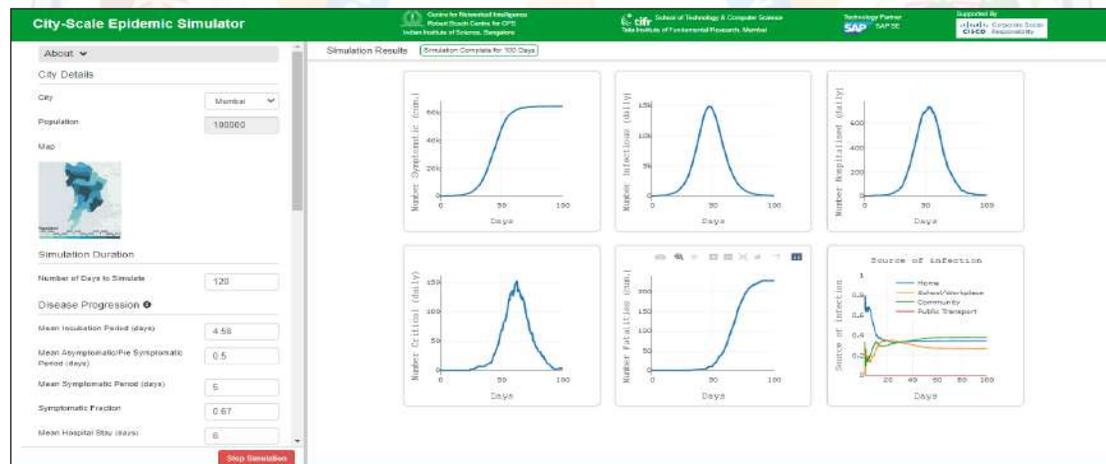
BY

SCIENTIFIC AND ACADEMIC INSTITUTIONS

City-scale Epidemic Simulator built by TIFR and IISc

Indian Institute of Science (IISc) and Tata Institute of Fundamental Research (TIFR) have developed a city-scale agent-based simulator, for studying the spread of COVID-19 in an Indian city. The simulator has been released as an open-source software.

The simulator creates a smaller scale city with 100,000 agents distributed across its municipal wards. The reduced size is so that it can run on your browser. The population distribution, employed fraction, age distribution, and household size distribution are based on the 2011 census data. Agents are assigned to households, schools or workplaces, and community spaces. The epidemic then spreads in a stochastic fashion based on meetings that happen in the interaction spaces in the synthetic city.



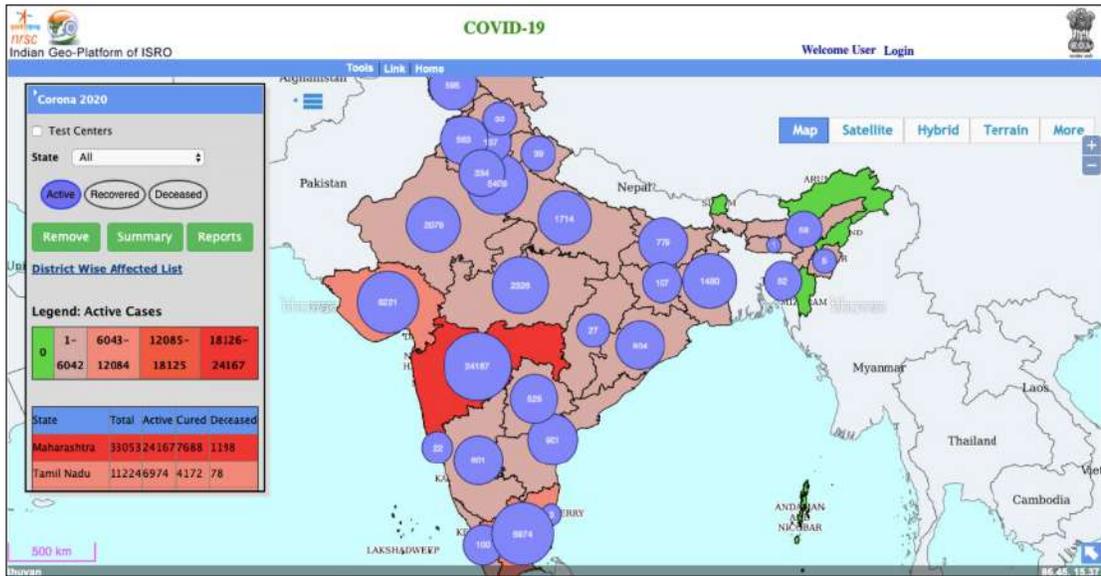
Contact Info: cni@iisc.ac.in

Website link:

<https://cni-iisc.github.io/epidemic-simulator/>

ISRO comes up with geospatial technology-based solution to combat COVID-19

Department of Space/ISRO is supporting various State Governments by providing Geospatial tools and location-based solutions to fight against COVID-19, including national level Coronavirus tracker. At the same time, ISRO also made an attempt to study various impacts due to lockdown in terms of status of atmospheric parameters and water. The department could carry out varieties of studies with different States using geospatial technology under



Bhuvan Geo-portal showing State-wise COVID-19 cases



Time series information on the COVID-19 cases in the country



Bhuvan Geoportal, deployed at NRSC, Hyderabad. These tools and services have been gainfully utilised by some of the State Governments in the country.

Monitoring and managing COVID-19 in our country is quite complex as it has a population of more than 1.3 billion, in addition to a huge population of livestock and pets. NRSC, ISRO customised Geo-portal and developed 'Bhuvan-COVID-19' at national level to track the pandemic and update common public on current situation.

The geoportal provides many other interesting graphic presentations at national level as part of sensitising common people on the COVID-19 situation on a regular basis, based on the data presented by MoHFW portal. While the COVID-19 dashboard depicts dynamic information of the status of the pandemic at national level, many state level applications were developed and deployed.

Website link:

<https://www.isro.gov.in/covid19>

<https://bhuvan-app3.nrsc.gov.in/corona/>

IIT Kharagpur develops innovative novel technology for COVID-19 rapid test

Researchers at Indian Institute of Technology (IIT) Kharagpur have brought forth an innovative novel technology for rapid test of COVID-19. This first-of-its-kind device will bring the testing for COVID-19 out from the walls of expensive laboratories and RT-PCR machines and enable testing at affordable costs for the under-served community across the world. The technology has successfully been validated against COVID-19 test results run on RT-PCR machine. This entire test with the extracted RNA from the patient saliva samples can be conducted in an ultra-low-cost portable device with the test results available in a customized Smartphone application for dissemination within 1 hour without requiring manual interpretation. All of this is possible at a cost of around ₹400 per test. The device is available for Rs. 2000 (will be lower for commercial production). The device has been proven to produce no false result with remarkable accuracy and sensitivity compatible to standard RT-PCR tests.



Website Link:

<https://kgpchronicle.iitkgp.ac.in/iit-kharagpur-researchers-develop-novel-technology-for-covid-19-rapid-test/>

CPCB releases revised guidelines for handling and disposal of COVID-19-related waste

In order to deal with COVID-19 pandemic, State and Central Governments have initiated various steps, which include setting up of quarantine centres/camps, isolation wards, sample collection centres and laboratories. Following specific guidelines for management of waste generated during diagnostics and treatment of COVID-19 suspected/confirmed patients are required to be followed by all the stakeholders including isolation wards, quarantine centres, sample collection centres, laboratories, ULBs and common biomedical waste treatment and disposal facilities, in addition to existing practices under BMW Management Rules, 2016. These guidelines are based on current knowledge on COVID-19 and existing practices in management of infectious waste generated in hospitals while treating viral and other contagious diseases, like HIV, H1N1, etc.



This revision-4 of guidelines issued by the Central Pollution Control Board (CPCB), on 17th July 2020, provide revised guidance on segregation of general solid waste and biomedical waste from quarantine centres/home-care/healthcare facilities treating COVID-19 patients and to recommend on disposal of PPEs.

Website Link:

https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/BMW-GUIDELINES-COVID_1.pdf

IIT Delhi study reveals Tea and Haritaki may act as potential therapeutic options against COVID-19

The COVID-19 disease caused by the SARS-CoV-2 has emerged as a worldwide pandemic and has caused huge damage to the lives and economy of more than two hundred countries. There have been worldwide efforts for developing cost-effective therapeutic options, which can curb the severity of the viral disease in humans, with minimal toxicity. In this context, medicinal plants may provide a way to treat the disease by targeting specific essential proteins of the virus.

Working in this direction, a team of researchers led by Prof Ashok Kumar Patel from the Kusuma School of Biological Sciences (KSBS), IIT Delhi screened about 51 medicinal plants on



3CLProtease (3-chymotrypsin-like protease) of the virus, which is necessary for processing the viral polyproteins and therefore has emerged as an interesting premise for the development of drugs targeting the virus. The targeting of this protein may therefore be able to halt the replication of the virus.

The experimental findings showed that aqueous extracts from Tea (Black and Green Tea, *Camellia sinensis*) as well as Haritaki (*Terminalia chebula*), which is commonly known as Harad in Hindi, have potential anti-viral activity via in-vitro inhibition of the proteolytic activity of the main protease of the virus 3CL pro showing potential therapeutic candidates for the SARS-CoV-2 infection, which should be further validated in in-vivo models.

Website Link:

<https://home.iitd.ac.in/news-tea-haritaki.php>

IIT Delhi developing home-based COVID-19 testing kit, supported by Wells Fargo

Wells Fargo International Solutions Private Limited through their philanthropic partner, United Way of Bengaluru (UWBe), has joined hands with IIT Delhi in the fight against coronavirus. IIT Delhi and Wells Fargo recently signed a Memorandum of Understanding (MoU) for the development of a peptide-based ELISA test for the detection of COVID-19 antibodies.



ELISA, short for serological enzyme-linked immunosorbent assay, determines whether a person possesses antibodies for COVID-19 in the blood. The test results can help the medical fraternity fight the disease in many ways; a significant way would be the identification of individuals with antibodies who can donate their blood as part of an experimental treatment of infected patients.

Website Link:

<https://home.iitd.ac.in/news-wellsfargo.php>

SCIENCE OUTREACH & POPULARISATION EFFORTS

Since the outbreak of COVID-19 pandemic, the Ministry has supported numerous research projects and technology interventions through its various Departments, Autonomous Organisations, Professional Bodies, Statutory Bodies, and Laboratories. In the expedition of science outreach and popularisation, a number of knowledge and information products have been generated and released.

Efforts from Ministries, Departments & Scientific Organisations

NITI Aayog launched a behaviour change campaign exploring the new normal in light of COVID-19

National Institution for Transforming India (NITI) Aayog, in partnership with Bill and Melinda Gates Foundation (BMGF), Centre for Social and Behavioural Change (CSBC), Ashoka University, and the Ministries of Health & Family Welfare (MoHFW) and Ministry of Women & Child Development (MoWCD) launched behaviour change campaign called 'Navigating the New Normal' and its website.

The website is concentrating on COVID-safe conduct, particularly wearing covers, during the 'Open' period of the COVID-19 pandemic. The website has sector-specific collaterals and guidelines for health, nutrition, and public transport (in metro cities). The campaign has two sections. The first is an online interface containing resources informed by behavioural science and the use of nudge and social norms theory, related to COVID-safe behavioural

COVID THE NEW NORMAL HOME SECTORS PRACTICES ACROSS SECTORS NITI Aayog

HOW CAN YOU ADAPT TO THE 'NEW NORMAL'?

ACCESS GUIDELINES AND MATERIALS DESIGNED FOR SPECIFIC SECTORS PROMOTE PROTECTIVE BEHAVIOURS ACROSS ALL SECTORS

HEALTHCARE FACILITIES **NUTRITION** **PUBLIC TRANSPORT - METRO**

norms during the ongoing Unlock Phase and the second is a media campaign concentrated on wearing of masks.

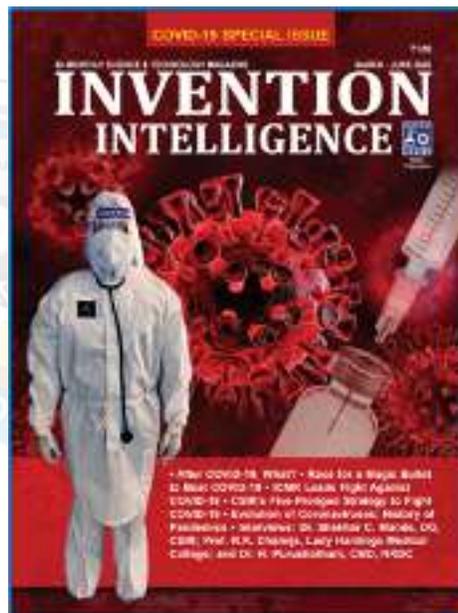
Website link:

<http://www.covidthenewnormal.com/>

<http://pib.gov.in/PressReleasePage.aspx?PRID=1634328>

NRDC publishes special edition of 'Invention Intelligence' on COVID-19

National Research Development Council (NRDC), an enterprise of Department of Scientific & Industrial Research (DSIR), has published a special edition of its bimonthly S&T magazine 'Invention Intelligence.' The edition covers various aspects related to COVID-19 pandemic outbreak, like the unfolding new normal. The main objectives of the magazine are to disseminate information and create awareness about new technologies, inventions, innovations, IPR issues, etc. among the masses and foster the spirit of inventiveness, innovativeness and entrepreneurship among the students, scientists, technicians, budding entrepreneurs, etc. Invention Intelligence focuses on topics of current public interest and national importance relating to science, technologies, inventions, innovations and intellectual property rights.



Contact Info: lnarayan@nrdc.in, cmdnrdc@nrdc.in

Website Link:

<http://nrdcindia.com/LatestDetail/36>

http://www.nrdcindia.com/assets/vendor/filemanager/userfiles/Invention_Intelligence/ICovid19SplEdn.pdf

Drug Discovery Hackathon 2020 launched for drug discovery against COVID-19

Drug Discovery Hackathon 2020 (DDH2020) platform welcomes all those who wish to join the open-source drug discovery Hackathon against COVID-19. DDH2020 is a joint initiative of All India Council for Technical Education (AICTE) and Council of Scientific and Industrial Research (CSIR) and supported by Office of the Principal Scientific Adviser (PSA), Government of India, National Informatics Centre (NIC) and MyGov India.

DDH2020 vision and mission is to establish 'Open innovation Model' for *in silico* drug discovery against COVID-19 virus and will cover the various processes in drug discovery, including but not limited to, *in silico* screening of molecules, lead optimization and identification of drugable non-toxic targets. The targets/tools/lead molecules identified through the process of DDH2020 will be further taken forward for synthesis followed by subsequent steps in routine drug discovery programme.

Objective of the Hackathon is to identify drug candidates that are effective against coronavirus SARS-CoV-2 by employing a Hackathon for *in-silico* drug discovery, followed up by chemical synthesis and biological testing.

The Hackathon consists of two major tracks:

Track-1: It will primarily deal with drug design for anti-COVID-19 hit/lead molecule generation using tools such as molecular modelling, pharmacophore optimization, molecular docking, hit/lead optimization, etc.

Track-2: It will deal with designing/optimizing new tools and algorithms which will have an immense impact on expediting the process of in silico drug discovery. Novel or refined tools/algorithms from Track-2 will help develop better models for predicting ADMET in silico, thus improving screening efficiency.



Last date of submission: 30th September 2020

Website link:

<https://innovateindia.mygov.in/ddh2020/>

MyGov India appeals to become a COVID WARRIOR by volunteering or donating for Fight Against Corona

MyGov India, in collaboration with National Disaster Management Authority (NDMA) and the Ministry of Health & Family Welfare (MoHFW), is calling upon individuals and organisations to volunteer or donate towards India's fight against corona.

As per the need, the person will be contacted by the concerned authorities of States/UTs/ Ministry of Health and Family Welfare for the donated medical supply items/equipment.

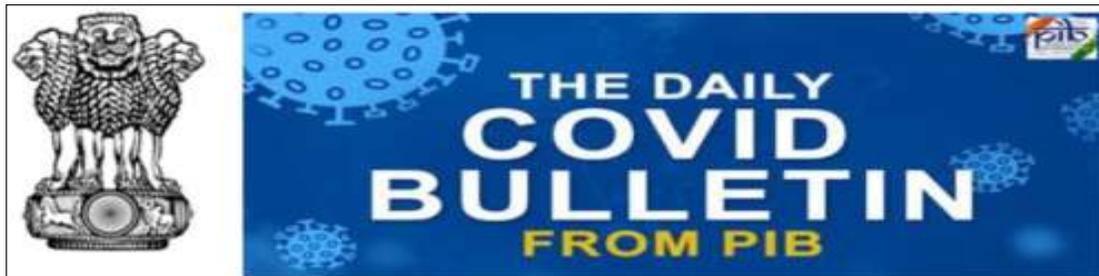


Website link:

<https://self4society.mygov.in/>

PIB releases daily bulletin on COVID-19

Press Information Bureau (PIB), Government of India releases a daily bulletin on COVID-19. The bulletin contains press releases concerning COVID-19, issued in last 24 hours, inputs from PIB field offices and fact checks undertaken by PIB.



- India's Case Fatality Rate continues to improve and is 2.28%.
- Total Recoveries cross 9 lakh, More than 30,000 Recoveries/day for 4th Successive Day.
- Recovered cases exceed the active cases (4,85,114) by 4,32,453 today.
- Ayushman Bharat- Health & Wellness Centres made their presence felt during the times of COVID.
- Shri DV SadanandaGowda launches four schemes for promotion of domestic manufacturing of bulk drugs and medical devices parks in the country.
- Vice President asks students not to get disturbed by the Covid induced disruption in academic schedule.

Website Link:

<https://pib.gov.in/PressReleasePage.aspx?PRID=1641580>

Government of India presents regular COVID-19 India factsheet

India's coronavirus cases are reaching 13-lakhs mark and as on 24th July 2020, 8:00 AM, stands at 12,87,945 cases out of which 8,17,209 have recovered. Government of India, through its Open Government Data (OGD) Platform <https://data.gov.in/> has taken the initiative to present the regular factsheet related to COVID-19.

The OGD platform is aimed at supporting Open Data initiative of Government of India. The portal is used by various Ministries, Departments, and their organizations, to publish datasets, documents, services, tools and applications collected by them for public use. It intends to increase transparency in the functioning of the Government and also opens avenues for many more innovative uses of Government Data to give different perspective.

Website Link:

<https://community.data.gov.in/covid-19-india-factsheet-as-on-24th-july-2020-800-am/>



Indian Scientists' Response to CoViD-19 (ISRC) to provide accurate science-based resources for activist groups working on the pandemic

Indian Scientists' Response to CoViD-19 (ISRC) started as a group of Indian scientists who came together voluntarily in response to the COVID-19 pandemic. The initiators of the group include scientists from Madurai Kamaraj University (MKU), Institute of Mathematical Sciences (IMSc), Tata Institute of Fundamental Research (TIFR), South African Radio Astronomy Observatory & Astronomical Society of India, National Institute of Mental Health and Neuro-Sciences (NIMHANS), Bengaluru and Ashoka University, Haryana.

It has now developed to incorporate in excess of 500 researchers, engineers, technologists, specialists, general wellbeing scientists, science communicators, columnists and various understudies; they hail from a scope of orders however essentially the physical and life sciences; they are subsidiary to prominent exploration foundations of science and innovation, colleges, schools, medical clinics and private labs. The group additionally incorporates Indian researchers from labs everywhere throughout the world.

The objective of their work is to support evidence-based action by national, state and local governments through data analysis and modelling from a scientific perspective, provide accurate science-based resources for activist groups working on the ground, to mobilise the academic community, including students at all levels, to participate in science communication and local action, and lastly to act as scientific interpreters for the public at large.



Contact Info: indscicov@gmail.com

Website link:
<https://indscicov.in/>

IIT Delhi reaches out to rural public impacted by outbreak of COVID-19 pandemic

Rural Technology Action Group (RuTAG) at Indian Institute of Technology Delhi (IITD) has brought forward the latest newsletter targeting the rural population impacted by reverse migration due to the outbreak of COVID-19 pandemic.

In the prevailing corona calamity, the worst-affected section of the population has been the large multitude of migrant labourers and small entrepreneurs. It is becoming increasingly evident that decentralized industrialization of the rural sector providing local employment stability to the rural population must be urgently taken up. This newsletter is the outcome of



several online sessions/conferences/workshops during lockdown period at various locations across India. It includes several rural technological innovations.

Now, to reach out to the maximum number of target population, RUTAG division at IIT have started publishing their publications on rural technological innovations in the local languages, like Malayalam, Tamil, Kannada, Hindi, Bangla and Punjabi.

Contact Info: sahaiitd@gmail.com

Website Link:

<http://rutag.iitd.ac.in/rutag/sites/default/files/images/user38/RuTAG%20Newsletter%20July%202020.pdf>

CSIR-NISCAIR brings out weekly e-Newsletter on COVID-19

National Institute of Science Communication and Information Resources (CSIR-NISCAIR) is bringing out a newsletter dedicated for the COVID-19 outbreak. The newsletter covers stories and information on various aspects, like research, technology and innovation efforts to fight the pandemic out and related awareness and sensitisation information. The latest edition dated 28th July 2020 has been published.

Website Link:

<https://www.niscair.res.in/covidbulletin/view/13>

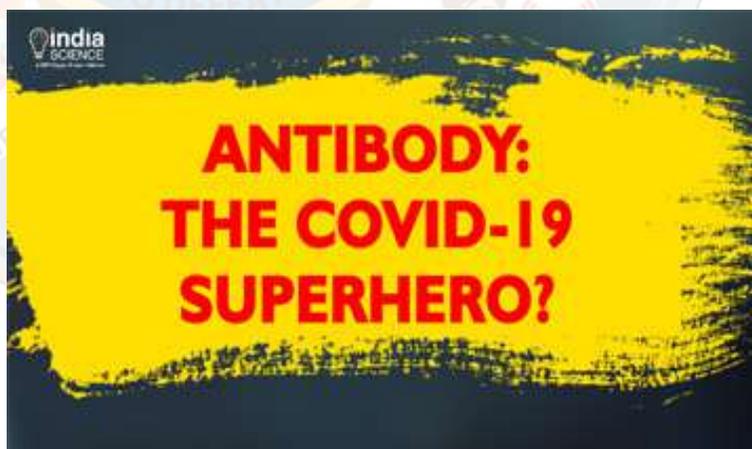
<https://www.niscair.res.in/covidbulletin>



Efforts from Vigyan Prasar

India Science Channel

India Science is an Internet-based Over-The-Top (OTT) Science TV channel. It is an initiative of the Department of Science and Technology (DST), Government of India, implemented and managed by Vigyan Prasar (VP), an autonomous organisation of the Department of Science and Technology. This 24x7 video platform is dedicated to science and technology knowledge



dissemination, with a strong commitment to spreading scientific awareness, especially with Indian perspectives, ethos and cultural milieu. The initiative is supported by the National Council of Science and Technology Communication (NCSTC), DST.

Science and Technology are the main driving forces of the nation and fundamental to progress and growth. So, the advantages of science and technology must reach all sections of society

through popular media of communication. India's large Internet user base of 500 million is split between 305 million urban Indians and 195 million rural Indians, all of whom need to be reached with authentic science and technology content. And to do so, the Internet is fast becoming the most accessible and preferred media for content delivery.



Since the occurrence of COVID-19, India Science has been working tirelessly to connect with the people, in the form of regular bulletins, documentaries, interviews, bytes and live sessions of scientists, doctors, experts, science administrators and policymakers. The following is a brief of the information products produced by India Science.



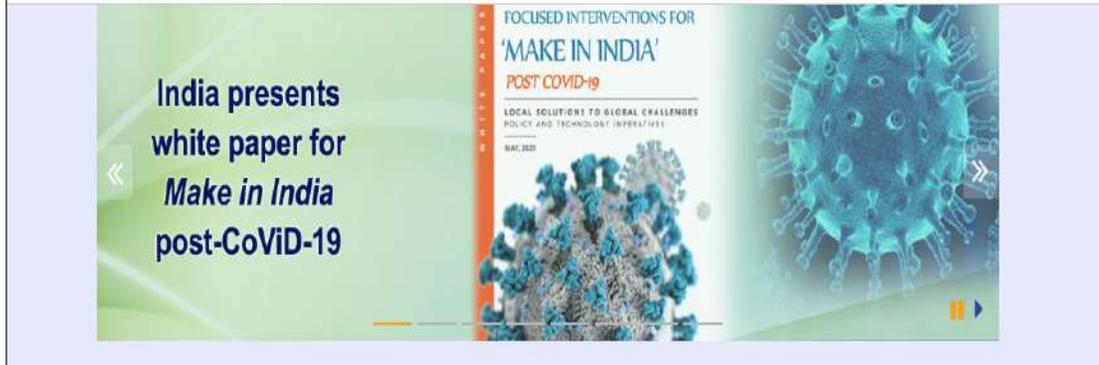
1. Weekly COVID-19 video bulletin: Produced in both Hindi and English language on a weekly basis from 7 July 2020, COVID-19 bulletin appries the audience about the latest development happening in S&T in India that are helping in managing and overcoming the challenges thrown up by the pandemic. Vigyan Prasar has produced daily COVID-19 Bulletin during 11 April to 06 July 2020.
2. COVID Explained: Short films to explain important research finding related to COVID-19 in layman's lingo produced on a weekly basis. The subjects chosen for this short film caters to the curiosity of common man related to COVID-19.
3. Facebook live sessions on interviews of various stakeholders and media with DST Secretary.

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Website link:
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India Science, Technology and Innovation (ISTI) Web Portal

The India Science, Technology and Innovation Portal (ISTI) is a one-stop window for information about developments in India on science, technology and innovation. The portal focuses on bringing all stakeholders and Indian STI activities on a single online platform; helping efficient utilisation of resources; highlighting functioning of scientific organisations, laboratories and institutions; aggregating information on science funding, fellowship & award opportunities spanning from school to faculty level; pooling together conferences, seminars and events; and projecting science in India with its major achievements. The ISTI web portal has been



developed by Vigyan Prasar, an autonomous organisation of the Department of Science and Technology (DST).

In the critical times of outbreak of COVID-19 pandemic, the web portal serves as a one-stop online information guide to bring together a collection of resources in response to the dCOVID-19. These resources are generated by efforts made by numerous initiatives and schemes taken up by several Departments and Ministries of Government of India. These are being implemented by public-supported research institutions in India. The content presented here relies on the best available scientific understanding of the disease and its transmission. The web portal provides all information related to COVID-19, its presentation of symptoms, transmission modes and mechanisms, and various models of protection of individuals, healthcare professionals & prevention from spreading to the community. The reasons, usefulness and impact of social distancing have been communicated in an easy-to-understand manner.

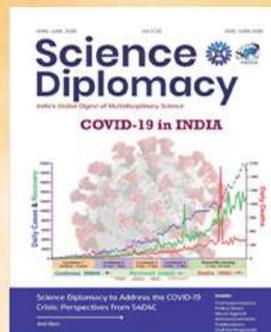
COVID-19 Updates

Week 30: July 20-26, 2020

IIT Delhi develops world's most affordable COVID-19 diagnostic kit –COROSURE



CSIR-NISCAIR publishes a special edition of 'Science Diplomacy' on COVID-19



Indian Railways creates Post COVID Coach to ensure safer journey



The Research and Development efforts made at the Ministry level and various funding organisations are enumerated here on as-and-when-available basis. The innumerable infographics have been provided here are sourced from various organisations for efficient delivery of the information and targeting the common people as the largest stakeholder. The frequently asked questions and myth busters are also answered here.

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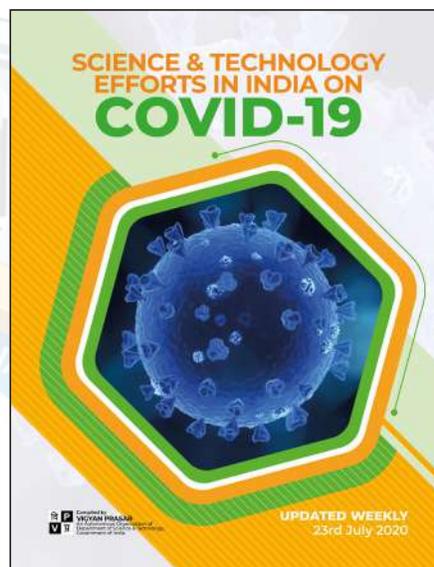
Website link:

<http://indiascienceandtechnology.gov.in/covid-19-the-pandemic>

Weekly Publication of e-Newsletter on COVID-19

For the benefit of its stakeholders and target audience, Vigyan Prasar is bringing out a weekly e-Newsletter on the most relevant initiatives and efforts taken by Government of India through its various Science Ministries, Departments, and Funding Organisations. These organisations are continuously striving for combating the outbreak of COVID-19. These research-driven and technology-based interventions have been initiated on war footing to fight out the outburst of the pandemic.

The e-Newsletter aims to be a handy guide to scientists, researchers, and scholars, especially those who are interested in knowing various aspects of COVID-19 and contributing to the coronavirus warfare and making the nation Atmanirbhar.



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Website link:

<https://vigyanprasar.gov.in/covid19-newsletters/>

<http://www.indiascienceandtechnology.gov.in/covid-19-the-pandemic/newsletter-archive>



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