SCIENCE & TECHNOLOGY EFFORTS IN INDIA ON COVID-19

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UPDATED WEEKLY

COMPILED BY:
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(AN AUTONOMOUS ORGANISATION OF
DEPARTMENT OF SCIENCE & TECHNOLOGY)
GOVERNMENT OF INDIA

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

सत्यमेव जयते

डॉ हर्ष वर्धन
Dr Harsh Vardhan

स्वास्थ्य एवं परिवार कल्याण, विज्ञान और प्रौद्योगिकी व पृथ्वी विज्ञान मंत्री, भारत सरकार
Union Minister for Health & Family Welfare, Science & Technology and Earth Sciences Government of India

FOREWORD

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 COVID19.

(Dr. Harsh Vardhan)

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PREFACE

At the fag end of 2019, China informed the World Health Organization (WHO) regarding the occurrence of cases of pneumonia of an unknown cause in Wuhan City in Hubei province. On January 9, 2020, WHO issued a statement saying Chinese researchers have made the preliminary determination of the virus as a novel coronavirus. Since then, several lakhs of positive cases and more than one lakh deaths have been reported due to COVID-19 across the world. Lockdowns, curfews, sealing of hotspots of outbreak area, massive airport screenings, quarantines, and social distancing have become the norm across the globe.

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 and journalistic flavour, ensuring that science and safety are the primary focus. VP is a national level organization of the Department of Science and Technology, Government of India, engaged in science communication and popularization. The principal objective of VP is to serve India's science popularization 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 popularization therefore serves as a robust knowledge-led tool to fulfil various mutually reinforcing public policy objectives.

For the benefit of the stakeholders, we have prepared a compilation of the most relevant initiatives and efforts taken by the Government of India through its various Science Ministries, Departments, and Funding organizations. These organizations are geared for combating the epidemic of COVID-19. 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.

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 in whatever minuscule way and people at large.

Vigyan Prasar
New Delhi

Dr Harsh Vardhan elected as Chair of Executive Board of WHO

22nd May 2020, New Delhi

The Union Minister of Health & Family Welfare Dr Harsh Vardhan has been elected as Chair of the Executive Board of World Health Organization for the year 2020-21. This took place today during the 147th session of the Executive Board, in a meeting that was virtually held. He has replaced Dr Hiroki Nakatani of Japan.

Accepting the Chair of the Executive Board, Dr Harsh Vardhan paid tribute to the lakhs of people who have lost their lives due to the global COVID-19 pandemic. He requested all dignitaries present on the occasion to give a standing ovation to all the frontline health workers and other COVID Warriors by saluting their dignity, determination and dedication.

"I feel deeply honoured to have the trust and faith of all of you. India, and all my countrymen, too, feel privileged that this honour has been bestowed upon us," he stated. Acknowledging that this is a great human tragedy and the next two decades may see many such challenges, he stated that "All these challenges demand a shared response, because these are shared threats requiring a shared responsibility to act." He further added that "while this is the core philosophy of our alliance of member nations that comprise WHO; however, it needs a greater degree of shared idealism of nations." He said that "The pandemic has made humanity acutely aware of the consequences of ignoring the strengthening and preparedness of our healthcare systems. In such times of global crisis, both risk management and mitigation would require further strengthening of global partnerships to re-energize interest and investment in global public health."

Dr Harsh Vardhan also shared India's experience of combating COVID-19. He noted that "We have a mortality of 3 per cent only. In a country of 1.35 billion, there are only 0.1 million cases of COVID-19. The recovery rate is above 40 per cent and the doubling rate is 13 days."

As the new Chair of the Executive Board of WHO, Dr Harsh Vardhan underlined the need for higher commitments in respect of diseases that have plagued humankind for centuries, collaborations for supplementing each other by pooling of global resources, an aggressive roadmap to curtail deaths from diseases that can be eliminated, a fresh roadmap to address global shortages of medicines and vaccines and the need for reforms. "I am sure that constant engagement with member states and other stakeholders will reinforce reforms and help accelerate progress towards achieving sustainable development goals and universal health coverage with the most productive, efficient and targeted utilization of resources. I will put myself to work to realise the collective vision of our organisation, to build the collective capacity of all our member nations and also build a heroic collective leadership," he stated.

Dr Harsh Vardhan stated that WHO believes in the principle that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition. "We, therefore, commit to work with the Member States; the Organization and the global community of partners for the efficient, effective and responsive discharge of public health obligations," he added.

Dr Harsh Vardhan, while taking charge as the Chair of the EB, also shared his thoughts on the future health scenario of the world. "I believe that health is central to economic performance and to enhancing human capabilities. However, public health policy must be based and guided on a proper understanding of nature. This is also the underlying principle of the Indian traditional systems of medicine based on holistic health and wellness, which I have lived and experienced," he said. He also outlined the policy of India towards 'Universal Health for All' through national flagships programmes such as Ayushman Bharat with its twin pillars of Health & Wellness centres (HWCs) and Pradhan Mantri Jan Arogya Yojana (PMJAY), being led by the dynamic and visionary Prime Minister Mr Narendra Modi.

Reminiscing about his long-standing association with WHO, he expressed his gratitude for the strong support of WHO in India's fight against Polio. "If it had not been for the support and morale boosting by friends in WHO, I would not have achieved what I did. If, today, Polio stands eradicated from India, I must admit, it could never have been possible without the perseverance of WHO," he stated.

Dr Harsh Vardhan has also been a member of several prestigious committees of WHO like Strategic Advisory Group of Experts (SAGE) and the Global Technical Consultative Group (TCG) on Polio Eradication. He has also served as an Advisor to the WHO.

The Executive Board of WHO is composed of 34 technically qualified members elected for three-year term. The main functions of the Board are to implement the decisions and policies of the Health Assembly and advise and facilitate its work.

This is another feather in the cap of Dr Harsh Vardhan's illustrious career. He earned his graduation and post-graduation in medicine from G.S.V.M. Medical College, Kanpur in 1979 and 1983, respectively. He has been associated with public service since 1993 when he was elected to the Delhi Legislative Assembly. He served his constituency continuously for five terms until he was elected to the 16th Lok Sabha in May, 2014 from Chandni Chowk constituency. From 1993 to 1998, he served as the Minister of Health, Education, Law & Justice & Legislative Affairs for the Govt. of NCT of Delhi. In 1994, as the Delhi Health Minister, he oversaw the successful implementation of the pilot project of the Pulse Polio Programme which involved the mass immunisation of 1.2 million children up to the age of 3 in Delhi, laying the groundwork for a Polio-free India in 2014. He has championed the passing and implementation of the Delhi Prohibition of Smoking and Non-Smokers Health Protection Act, 1997, which was later replicated by several States in the country.

Dr Harsh Vardhan has been the Union Health Minister in 2014 and later took over as the Union Minister Science & Technology and Earth Sciences. He was also Union Minister for Environment, Forest and Climate Change. He was re-elected to the 17th Lok Sabha and sworn in on May 30th, 2019 as Union Cabinet Minister and was given the portfolios of Health and Family Welfare; Science and Technology and Earth Sciences.

Digital Conference on
‘RE-START – Reboot the Economy through Science, Technology and Research Translations’,
organised to celebrate the National Technology Day

11th May 2020, New Delhi

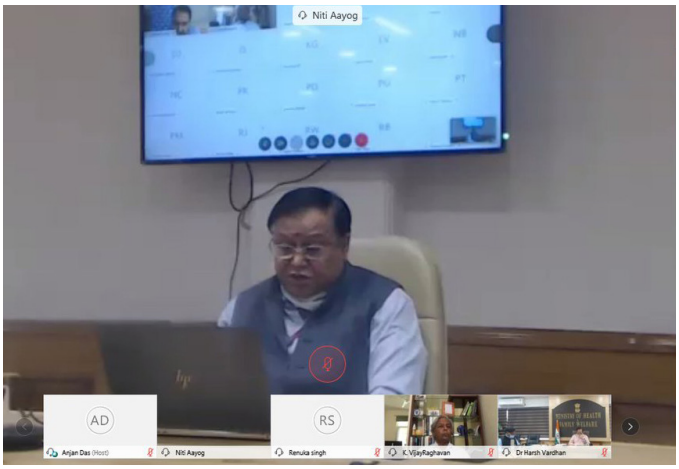
The Union Minister of Science & Technology, Earth Sciences and Health & Family Welfare, Dr. Harsh Vardhan said on 11 May, 2020 that India’s fight against Covid-19 is moving fast ahead strongly and steadily. He was addressing a Digital Conference, RE-START – ‘Reboot the Economy through Science, Technology and Research Translations’, organised to celebrate the National Technology Day. The Conference was organised by the Technology Development Board (TDB) a statutory body of the Department of Science & Technology (DST) and Confederation of Indian Industry (CII).

While applauding the Ministry of Science & Technology’s response to epidemics like COVID in the country, Dr. Harsh Vardhan emphasized that the S&T response reflects the collaborative spirit of the entire S&T ecosystem. “Indian Government, academia, scientists, start-ups, entrepreneurs and industry have been working relentlessly to find solutions to combat this pandemic. We must appreciate the efforts of our scientists, our entrepreneurs and our institutions working to find quick and deployable solutions for Covid-19. New discoveries, industry partnerships, and enhanced researches have thus been rapidly developed and adopted,” said the Minister.

“Within a short period of time, the nation has been able to mobilize a number of researchers to develop new testing kits, protective equipment, respiratory devices, etc.,” he added.

The minister also apprised the audience about the ‘COVID-19 Task Force’ set up by the Government to map the COVID-19-related technology capabilities. “Our Government has vigorously

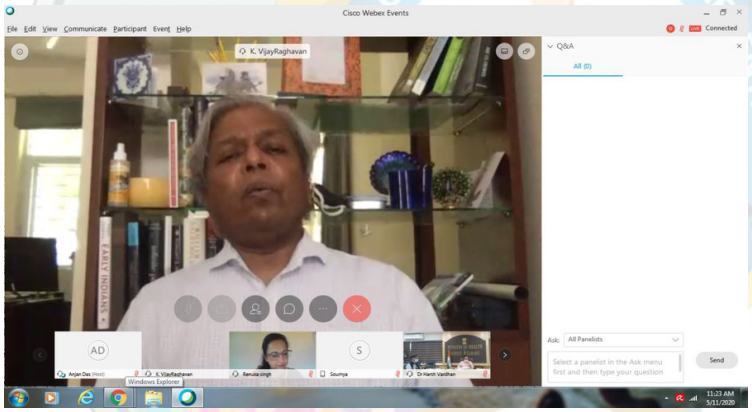
supported the 'Make in India' Programme. This has brought in scientific institutions and start-ups to develop the Covid-19 tests, masks, sanitizers, personal protective equipment (PPEs) and ventilators," he further added.



On the theme for the National Technology Day this year, Dr. Harsh Vardhan pointed out, "We need to mitigate the widespread economic impact and prepare for a stronger recovery using self-reliance as the new mantra. Thus, we look towards new opportunities to galvanize growth in the technological and industrial sector."

While delivering his special address, Dr. V K Saraswat, Member, NITI Aayog, pointed out the importance of new-age technologies and medical and manufacturing technologies in boosting the economy as the world adjusts to the new normal.

Principal Scientific Advisor to the Government of India, Professor K. Vijay Raghavan, pointed out how technology can change the way we live our lives and the way we do things in future, particularly so in the post-COVID era. He pointed out that this is an opportunity to gear up for the future that lies ahead, and a better-equipped R&D workforce and ecosystem will prepare India better for future challenges.



DST has stepped into its 50th year of existence. DST Secretary Professor Ashutosh Sharma thus underlined the significance of the National Technology Day in view of the challenges faced during these times of COVID-19. He further emphasized that the COVID-19 crisis had led R&D and technology development to work in various modes. The private-public model has encouraged R&D to greater heights. Plausible translations, prototyping, start-ups, and Industry have seen immense growth. According to him, rebooting the economy requires new age technologies, appropriate national missions, programmes and schemes to get into quick action. He added that wherever readymade solutions are not available, research and development needs to be more profound, relevant, speedy, impactful and strongly connected to industry. The lessons learnt now would continue to assist us in addressing the overarching challenges of the future—sustainable development, climate change, industry 4.0, anti-microbial resistance, etc.

Dr. Saumya Swaminathan, Chief Scientist, World Health Organization, highlighted the steps taken internationally to combat the pandemic and the way forward. Dr. Swaminathan appreciated the way India has tackled the COVID-1 challenge.

DG, CII, Mr. Chandrajit Banerjee; President, CII, Mr. Vikram Kirloskar; and Dr Neeraj Sharma, Secretary, TDB were also among those participating in the inaugural session.
In this occasion, Dr. Harsh Vardhan also inaugurated a virtual exposition of companies whose technologies have been supported by TDB. Various organizations and companies showcased their products in the exposition through a digital B2B lounge.

The conference has hence brought together Scientists, Technocrats, Government officials, Diplomats, WHO officials and dignitaries from national and international Industry, Research Institutions and Academic Institutions on a single platform to share their insights on the role played by S&T in the global healthcare crisis and to find solutions to address the current challenge.

The Conference also had technical sessions on 'Medicines & Medical Technologies'; 'Advanced Materials – New Technology Horizons'; 'Advanced Manufacturing Technologies for Sustainable Future & Global Innovation' and 'Technology Alliance for Global Economic Leadership'.

Website link:
https://dst.gov.in/india-well-poised-reboot-economy-through-st-dr-harsh-vardhan

DR. HARSH VARDHAN LAUNCHES 'AYUSH SANJIVANI' APP AND INTER-DISCIPLINARY STUDIES INVOLVING AYUSH INTERVENTIONS FOR COVID-19

7th May 2020, New Delhi

"The alliance between technology stakeholders will help the traditional knowledge of AYUSH to reach a large global population."

Dr. Harsh Vardhan, Union Health & Family Welfare Minister launched the 'AYUSH Sanjivani' App and two AYUSH-based studies related to COVID-19 situation on 7th May, 2020 in the presence of Shri Shripad Yesso Naik, MoS (I/c), AYUSH who participated through Video Conferencing from Goa.

Highlighting the importance of harnessing technology for COVID-19 response, the Union Health Minister said "The 'AYUSH Sanjivani' mobile app, which has been launched today, will help to generate data on acceptance and usage of AYUSH advocacies and measures among the population and its impact in prevention of COVID 19. It is developed by Ministry of AYUSH and MEITY and shall reach out to a target of 50 lakh people."

Dr. Harsh Vardhan stated that COVID-19 management has provided a potent platform for alliance between MoHFW, MoAYUSH and technology organisations such as CSIR, ICMR, and UGC to not only develop AYUSH interventions and solutions but also help in promoting AYUSH knowledge for the larger good of the global community. These organisations are joining hands today and

are being supported and guided by ICMR and DCGI in propagating the wholesomeness and holistic health benefits of the age-old traditional medicinal knowledge of Ayurveda, he added.
In addition to the App, Dr. Harsh Vardhan also launched two more scientific studies. One is the collaborative clinical research study on Ayurveda interventions as prophylaxis and as an add-on to standard care to COVID 19, which shall be a joint initiative of Ministry of AYUSH, MoHFW and the Ministry of Science & Technology through Council of Scientific & Industrial Research (CSIR) with technical support of ICMR. The Interdisciplinary Ayush R&D Task Force headed by Dr Bhushan Patvardhan, Vice Chairman, University Grant Commission (UGC) has formulated and designed clinical research protocols for prophylactic studies and add-on interventions in COVID-19 positive cases through thorough review and consultative process of experts of high repute from different organisations across the country for studying four different interventions, viz., Ashwagandha, Yashtimadhu, Guduchi Pippali and a poly herbal formulation (AYUSH-64). This includes the following two areas:

a. Ashwagandha for the Prophylaxis against SARS-COV-2 in subjects with increased risk during the COVID 19 Pandemic: A comparison with Hydroxychloroquine in the healthcare providers and
b. Effectiveness of Ayurveda Formulation as an adjunct to 'Standard of Care' for the Treatment of Mild to Moderate COVID-19: A Randomized, Open Label, Parallel Efficacy, Active Control, Multi-Centre Exploratory Drug Trial.

Dr. Harsh Vardhan also launched the population-based interventional studies on impact of AYUSH-based prophylactic interventions for prevention of COVID-19 infection in high risk population. The core objectives comprise of assessment of preventive potential of AYUSH interventions for COVID-19 and to assess the improvement in quality of life in high risk population. The study will be carried out through four Research Councils under Ministry of AYUSH and National Institutes in 25 states across the country and several State Governments covering approximately 5 lakh people. The outcome of the study is expected to pave a new horizon in understanding the preventive potential of AYUSH interventions during pandemics like COVID-19 through scientific evidence.

Elaborating on the import of these studies, Dr. Harsh Vardhan stated that these studies shall re-establish the importance of AYUSH pathies with the help of rigour of CSIR, ICMR and DCGI. "This is truly a momentous day. The technology alliance provides valuable opportunity for such knowledge-based solutions to continue to benefit us even after the COVID-19 pandemic has passed, by possible integration of AYUSH in the mainstream scientific efforts," he added. "Let us also understand that the modern pathies of medicine and science are not in competition with those of AYUSH, but they complement and strengthen each other in intrinsic ways," Dr Harsh Vardhan stated. "Under the leadership of our beloved Prime Minister, AYUSH advisories for enhancing immunity during COVID-19 pandemic have been acknowledged the world over," he said.

Shri Rajesh Bhushan, OSD/Secretary (HFW), Shri Vaidya Rajesh Kotecha, Secretary, AYUSH, Dr. Shekhar C. Mande, Director General, CSIR, Dr. V. G. Somani, Drugs Controller General of India, and other senior officers of MoHFW and AYUSH were also present at the launch event.

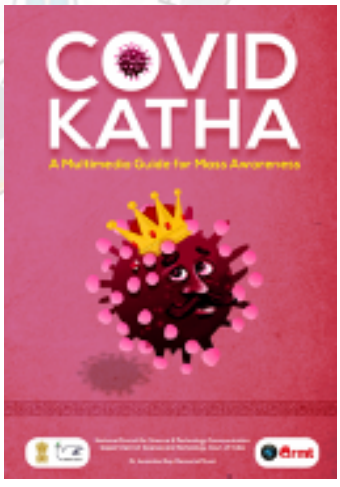
DST & ITS AUTONOMOUS INSTITUTIONS ELEVATED SCIENCE AND TECHNOLOGY IN INDIA TO INTERNATIONAL LEVELS — DR. HARSH VARDHAN

3rd May 2020, New Delhi

Union Minister of Science & Technology, Health & Family Welfare and Earth Sciences, Dr. Harsh Vardhan today interacted with Heads of all Autonomous Institutions (AIs) and Subordinate offices of Department of Science & Technology (DST) via Video Conferencing on the occasion of 49th DST Foundation Day (3rd May, 2020) about their S&T initiatives, particularly in relation to their endeavours for combating the COVID-19 outbreak.

The Minister also launched "COVID KATHA", a multimedia guide on COVID-19 on this occasion. As DST enters 50 years of serving the nation through Science & Technology, the Golden Jubilee Celebrations were also launched, initiating myriad activities in different parts of the country throughout the year.

Secretary (DST), Professor Ashutosh Sharma highlighted the major initiatives of DST, its vision for next five years and the steps DST is taking to identify and map technologies from R&D labs, academic institutions, start-ups, and MSMEs to fund nearly market-ready solutions for diagnostics, testing, healthcare delivery, and equipment and supplies to combat COVID-19.



Senior scientists and officials from National Science & Technology Entrepreneurship Development Board (NSTEDB), Science for Equity, Empowerment & Development (SEED) and from Statutory Bodies like Science and Engineering Research Board (SERB), Technology Development Board (TDB) and the Survey of India (SoI) spoke about the different initiatives being taken to tackle the outbreak. Similarly, Directors of Autonomous Institutions like the Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) and Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru, National Innovation Foundation (NIF), Ahmedabad and S. N.

Bose National Centre for Basic Sciences (SNBNCBS), Kolkata spoke about the preparations they have made to brace for the crisis.

During the interaction, Dr. Harsh Vardhan congratulated DST on the occasion of its 50th Foundation Day and said, "DST and its autonomous institutions have elevated Science & Technology in India to international levels and benefitted people across communities in myriad ways. DST provides the largest extramural research and development support in our country to strengthen national S&T capacity and capability through a competitive mode to scientists cutting across institutions and disciplines. DST's efforts have helped India attaining 3rd position globally after China and US in terms of number of publications in science citation index journals."

Praising the Indian scientists about their timely response in tackling COVID-19, he said, "Indian scientists have always risen to meet any challenge and this time also they have not disappointed the nation. We should remember that actions were needed with speed and scale at several fronts, which included: (i) Comprehensive mapping of our entire start-up ecosystem to identify and support relevant technology solutions ready for scaleup; (ii) Supporting industries and projects from academia and R&D labs working on modelling, properties of the virus and its impact, novel solutions, etc; (iii) Activation of relevant DST's autonomous institutions in providing solutions. I am happy that our DST scientists achieved that despite the fact that we are running against time. Of particular mention here SCTIMST, Thiruvananthapuram which has already come up with over 10 effective products, several of which are of a breakthrough nature and are being commercialized rapidly."

Dr. Harsh Vardhan said, "DST has contributed immensely to the S&T innovation space in our country over these 49 years. It has grown considerably with number of incubators and Start-Ups increasing significantly." He highlighted some significant initiatives of DST and enumerated, "Schemes such as Augmenting Writing Skills through Articulating Research (AWSAR) launched to encourage young scientists to write popular science articles on their research pursuits; programme called National Initiative for Developing & Harnessing Innovations (NIDHI) to boost innovation and start-up activity, Million Minds Augmenting National Aspirations and Knowledge (MANAK) to encourage young students to think innovatively, a National Mission on Interdisciplinary Cyber-Physical Systems, new international S&T collaborations to connect with the best global science projects abroad such as participation in Thirty Meter Telescope Project; and India-Israel Industrial R&D and Technological Innovation Fund of USD 40 million have uplifted India's science and technology efforts."

Making a special mention about the National Mission on Quantum Technology and Application (NM-QTA) announced by the Finance Minister during budget this year at a cost of Rs. 8,000 Crores, Union Science & Technology Minister said, "Launch of NM-QTA is a leap into the future to promote and foster R&D in Quantum Technologies and related areas like quantum computing, quantum cryptography, quantum communication, quantum metrology and sensing, quantum enhanced imaging etc. I am sure DST will make the country proud by bringing the fruits of this cutting-edge technology for the benefit of common people."

Concluding his remarks, Dr. Harsh Vardhan said, "The National policy on Scientific Social Responsibility which is being worked out by DST should be an embodiment of the principles of responsible innovation and social entrepreneurship which DST has imbibed over its 49-year journey. I am sure the document will inspire all the grantees of projects to reach out to stakeholders of Science and Society at large with all the tools, knowledge, manpower and infrastructure of S&T in the academia and R&D labs by choosing of one or more activities: scientific infrastructure sharing; mentoring/training of college/ university faculty; training on high end scientific skills and research; student internships; fostering research culture and many more."

Website link:
https://dst.gov.in/dst-its-autonomous-institutions-elevated-science-and-technology-india-international-levels-dr-harsh

THE COUNTRY WILL BE SELF-RELIANT BY THE END OF MAY 2020 IN PRODUCING INDIGENOUS RAPID TEST AND RT-PCR DIAGNOSTIC KITS — DR. HARSH VARDHAN

"At least half a dozen candidate vaccines are being supported of which four are in an advance stage."

- Dr. Harsh Vardhan

28th April 2020, New Delhi

Union Minister of Science & Technology, Health & Family Welfare and Earth Sciences, Dr. Harsh Vardhan, reviewed through video-conferencing the various initiatives undertaken by the Department of Biotechnology (DBT) and its Autonomous Institutes (AIs) and Public Sector Undertakings (PSUs) – BIRAC and BIBCOL to tackle the current COVID-19 crisis, especially with respect to progress made in indigenous development of vaccine, Rapid Test and RT-PCR diagnostic Kits.

Secretary, DBT, Dr. Renu Swarup informed that DBT has evolved a multi-pronged research strategy and action plan for immediate response as well as for long-term preparedness to tackle COVID-19. These multifaceted efforts include research towards development of candidate vaccines, therapeutics, and suitable animal models for COVID-19 as well as development of indigenous diagnostics and genomic studies on the host and pathogen. The DBT and its PSU, Biotechnology Industry Research Assistance Council (BIRAC) has announced a COVID-19 Research Consortium Call to support diagnostics, vaccines, novel therapeutics, repurposing of drugs or any other intervention for control of COVID-19.

During interaction with DBT scientists, Union Minister was informed about various computational methods being

developed by DBT labs/AIs to predict potential antiviral drug molecules. In another strategy, surrogates of the virus are being developed representing one or more critical steps in virus lifecycle and inhibitors are being tested. Work is in progress to isolate neutralizing antibodies either from the patients recovered from COVID-19 or from human antibody libraries. Also, various AIs of DBT are working on development of candidate vaccines which are at various stages of pre-clinical studies with an overall aim to demonstrate the proof of concept and immunogenicity and safety evaluation prior to clinical testing. At the moment, at least 9 of these studies are in early stages and one delivery and adjuvant system for improving the immunogenicity of candidate vaccine is at the advanced stage of development.

While discussing genetic sequencing, Dr. Harsh Vardhan said, "These genetic sequencing efforts remind me of Polio eradication movement 26 years back. Towards the fag end of the Polio movement, active surveillance of the country was done to find out the cases of acute flaccid paralysis. That time also, genetic sequencing was used to establish the travel history of polio virus which eventually helped in the eradication of polio."

After the presentation, Dr. Harsh Vardhan appreciated the work being done by scientists and their innovative ways of finding solutions to mitigate COVID-19. "The sincere efforts of DBT scientists will enable the country to be self-reliant in production of RT-PCS and Antibody test kits by the end of next month. This will make it possible to meet the target of conducting one lakh tests per day by the end of next month," he said. He also exhorted scientists working on developing new vaccines, new drugs and medical equipment, to speed up their work. "Out of at least half a dozen candidates supported for vaccines, four are in an advanced stage and regulatory platform at one place has been constituted for speedy clearances," he said.

Dr. Harsh Vardhan also appreciated the BIRAC efforts in supporting over 150 start-up solutions of which over 20 are ready for deployment. He also released a hand sanitizer developed by another PSU of DBT, Bharat Immunologicals and Biologicals Corporation Ltd. (BIBCOL) which is engaged in manufacturing of various biological, pharmaceutical and food products. It is currently manufacturing formulations of Vitamin C and Zinc tablets to contribute towards the solutions for COVID-19. "A contribution of Rupee One towards commercial sale of each single bottle of this Sanitizer will go to PM Cares Fund," Dr. Harsh Vardhan said.

Dr. Renu Swarup, Secretary, DBT, senior officials, Directors of DBT-AIs, Senior Scientists and senior officials from BIRAC and BIBCOL participated in the meeting.

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DR. HARSH VARDHAN EXHORTS CSIR SCIENTISTS TO DEVELOP COVID-19 MITIGATION SOLUTIONS TO EFFECTIVELY COMBAT THE DISEASE

12th April 2020, New Delhi

- Genetic sequencing was crucial in eradicating Polio; it will help in COVID-19 mitigation also, said Dr. Harsh Vardhan
- These are times of war, deliver solutions before war ends, not a routine research project, states Dr. Harsh Vardhan
- COVID-19 will give boost to country's resilience and self-reliance and enhance indigenous capacity in developing critical healthcare equipment

Today Dr. Harsh Vardhan, Union Minister for Science & Technology held a review with DG CSIR, Dr. Shekhar C. Mande and all the CSIR lab directors through video conference of the steps undertaken by CSIR and its constituent 38 labs towards mitigation of Corona Virus outbreak in the country.

DG CSIR Dr. Shekhar C. Mande informed that Core Strategy Group (CSG) has been set up in CSIR and the five verticals have been identified under which the COVID-19-related activities are being carried out. These include: Digital and Molecular Surveillance; Rapid and Economical Diagnostics; New Drugs / Repurposing of Drugs and associated production processes; Hospital Assistive Devices and PPEs; and Supply Chain and Logistics Support

Dr Harsh Vardhan during video conferencing on research and developments initiatives on Covid-19 with the directors of CSIR labs

Systems. Dr. Mande also mentioned that 15 CSIR labs are working in close partnership with major Industries, PSUs, MSMEs and other departments and ministries at the time of the crisis in the country.

After briefing of all the efforts being made by the CSIR labs in finding a solution for COVID-19, Dr. Harsh Vardhan informed them about the steps being taken by the Government of India in combating COVID-19.

Dr. Harsh Vardhan exhorted CSIR scientists and said, "India has high expectations from its scientific community and I am sure that the community will rise to the occasion and deliver in this time of need". He appreciated that CSIR Labs were also participating in testing of swab samples of COVID patients and some of them have started doing genetic sequencing of the virus with a target of doing 500 sequencing in coming weeks. Dr. Harsh Vardhan said, "Genetic sequencing is very crucial in identifying the host response as well as identifying population vulnerability to the disease." He said, "These genetic sequencing efforts remind me of Polio eradication movement 26 years back. Towards the fag end of the Polio movement, active surveillance of the country was done to find out the cases of acute flaccid paralysis. That time also, genetic sequencing was used to establish the travel history of polio virus which eventually helped in the eradication of polio."

He also appreciated CSIR for partnering with MSMEs, Major industries, PSUs working on RT-PCR machines. He said, "Plasma-based therapy is very much needed at this hour. For this, we need to motivate the patients who have recovered from the COVID-19 to donate blood."

He also appreciated the work done by CSIR-NAL with BHEL and BEL on Ventilators, Oxygen Enrichment Devices and 3-D printed face shields, face masks, gowns and other protective equipment. "All these things will help us in next few weeks," he said.

Dr. Harsh Vardhan, however, cautioned CSIR scientists to develop COVID-19 mitigation solutions keeping fixed timeframe in mind. "These are times of war, CSIR scientists should work to deliver solutions before war ends, they should not treat it as a routine research project". He said, "COVID-19 has also come as a blessing in disguise as it will give boost to country's resilience and self-reliance and enhance indigenous capacity in developing critical healthcare equipment." He also appreciated the collaboration being done by the CSIR scientists using Video Conferencing tools and reiterated the scientists that while doing research they should continue observing social distancing and lockdown because till such time vaccine is developed by scientists to combat COVID-19, these two remain the most potent form of social vaccine.

Dr. Shekhar C. Mande, DG, CSIR, Dr. Anurag Agrawal, Director, Institute of Genomics and Integrative Biology (CSIR-IGIB) and Dr. Nakul Parashar, Director, Vigyan Prasar were present in the review meeting with the Union Minister. Directors of remaining 38 CSIR labs attended the meeting through Video Conference.

COVID INDIA SEVA TO PROVIDE SOLUTIONS TO COVID-19-RELATED QUERIES

Union Minister of Health & Family Welfare, Science & Technology, and Earth Sciences, Dr. Harsh Vardhan launched an interactive platform, COVID INDIA SEVA, on 21 April 2020. The initiative is aimed at providing real-time solutions to COVID-19-related queries. People can post their questions to the COVID INDIA SEVA twitter handle for getting swift replies from the team of trained experts. This initiative is aimed at enabling transparent e-governance delivery at large scale, especially in crises, like the ongoing outbreak of COVID-19 pandemic.

Dr. Harsh Vardhan, in a tweet, said that through this platform, trained experts would be able to share authoritative public health information swiftly at scale, helping to build a direct channel for communication with citizens. Commenting on the launch of the social handle, he said that Twitter has proved to be an essential service for both the government and citizens to interact and exchange information, especially in times of need.

The responses by the experts will be available for everyone and users will not be required to share any personal details or health records on this account.

Website link:

https://twitter.com/drharshvardhan/status/1252529868899708930?s=20

http://newsonair.com/Main-News-Details.aspx?id=386270

https://www.businesstoday.in/latest/trends/what-is-covid-india-seva-an-explainer/story/401619.html

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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/

SCIENCE & TECHNOLOGY EFFORTS TO DEAL WITH COVID-19
BY

OFFICE OF THE PRINCIPAL SCIENTIFIC ADVISER (PSA)

IIT Delhi & NCL Pune developing an ELISA-based assay for COVID-19 testing

Indian Institute of Technology Delhi (IITD) and National Chemical Laboratory (NCL) Pune join hands to create an economical process for manufacturing the antigens used in ELISA and home-based diagnostic kits to offer effective, quick, robust and affordable diagnostic solutions to fight COVID-19 outbreak. The initiative is being funded by Microsoft.

The two institutions are developing ELISA-based assays for qualitative measure of human anti-COVID-19 IgG and IgM antibodies in serum. Risks related to RT-PCR-based methods are minimized by developing IgG and IgM-based ELISA assays and home-based testing kits. ELISA for the detection of COVID-19 is helpful in diagnosis of current burden of COVID-19 patient samples in this ongoing pandemic. The resulting assay is expected to provide robust, quick, reliable and economical solution for mass testing of novel coronavirus. This novel expression system will aid private sector companies to provide home-based detection kits economically. This project is spearheaded by Prof. Anurag S. Rathore, Department of Chemical Engineering, IIT Delhi and Dr. Rahul Bhambure, NCL, Pune.

IIT Delhi developing infection-proof fabrics

Indian Institute of Technology Delhi (IITD) is developing infection-proof fabrics to prevent hospital-acquired infections (HAIs) through its start-up Fabiosys Innovations Private Limited. The mission at Fabiosys is to make hospitals safer. The public healthcare facilities in developing countries like India have always been crowded. According to the statistics from Ministry of Health and Family Welfare (MoHFW), for every 100 hospitalised patients in developing countries, 10 patients get HAIs. This initiative is being funded by Huawei Telecommunications (I) Co. Pvt. Ltd.

The Fabiosys team has been working for the past 1.5 years for developing "infection-proof fabrics" to prevent HAIs. The fabric developed by Fabiosys kills around 99.9% of the pathogens in 1-2 hours. The team has developed an affordable novel textile processing technology which converts regular cotton fabrics into infection-proof fabrics. They take rolls of cotton fabrics and treat those with a set of their proprietary developed chemicals under a set of particular reaction conditions using the machinery already commonly available in textile industries. The fabric, after undergoing these processes, gains powerful antimicrobial functionality.

The Fabiosys Team is mentored by Prof. Samrat Mukhopadhyay, Department of Textile and Fiber Engineering, IIT Delhi with an expertise in textile chemical processing and professors from various departments of AIIMS Delhi.

IIT Madras start-ups' efforts to develop 'Portable Hospital Unit' funded by Wells Fargo

With a contagious disease such as COVID-19, it is essential to have smart health infrastructure to screen, contain and treat people. Unlike urban areas, rural areas do not have plenty of existing infrastructure that can be converted to hospitals. There it is difficult to construct buildings from scratch as the requirement is immediate.

Wells Fargo, an American multinational financial services company, is providing funding support to an IIT Madras-incubated start-up called Modulus Housing to tackle this problem. The start-up has developed a portable hospital unit that can be installed anywhere within two hours by four people.

Called 'MediCAB,' it is a decentralised approach to detect, screen, identify, isolate and treat COVID-19 patients in their local communities through these portable microstructures. It is foldable and is composed of four zones – a doctor's room, an isolation room, a medical room/ward and a twin-bed ICU, maintained at negative pressure.

The major advantage of decentralised micro infrastructures is that these can be used across the nation. These microstructures can be shifted to rural India. Hence, this can be one-shot two-kill scenarios and can be put to good use even after COVID-19 is eliminated from the country.

Tube Investments of India Limited (Murugappa Group) funds IIT Madras project for development of 'Doffing Units'

It has become paramount to ensure the safety of the frontline healthcare workers treating the COVID-19 patients. A key aspect of this is facilitating the safe removal of their Personal Protective Equipment (PPE).

Towards this, Murugappa Group has provided funding for an IIT Madras project to design and enable rapid construction of a modular 'Doffing Unit' for the safe removal of PPE. This project was undertaken in collaboration with the Chengalpattu Medical College and Hospital (CMCH) in Tamil Nadu where the doffing unit has already been deployed. The entire design, fabrication and deployment of the doffing unit took place remotely during the lockdown period.

'Donning' is the procedure of assembling PPE on the healthcare providers and 'doffing' is the procedure for removal of PPE. Such procedures will have to adhere to certain standard protocols to prevent further spread of infections.

It is therefore essential to have donning and doffing units for PPEs in hospitals providing treatment for COVID-19 patients. The World Health Organisation (WHO) has set standards for PPE and procedures to be followed for donning and doffing PPE. In resource-constrained settings, innovative designs are needed for rapid deployment of such units.

IBPL, Pune supports Venture Center and BMek develop and donate infrared digital thermometers

The non-contact IR thermometer is designed and developed by BMek Tech LLP and Protoshop at Venture Center using readily available modules to provide safe and quick temperature measurement of the forehead for primary screening during current COVID-19 emergency.

The design is made available open source wherein the complete knowhow with mass manufacturing ready hardware and software design is available to manufacturers for free. This is an effort to enable a large number of manufacturers to manufacture the thermometers and cater to their local needs. The technical details of this device are available for copying under the Creative Commons–Noncommercial-share Alike License at: http://www.protoshop.in/covid19/

Seven prototype units have been manufactured at Venture Center till date. One unit is being used at NCL Innovation Park gates, one unit at NCL Medical Center and five units were handed over to Pune Police. The design up-gradation is also going on. Now it is getting scaled up in partnership with NCL (National Chemical Laboratory) with BEL (Bharat Electronics Ltd.) Pune.

International Biotech Park Limited (IBPL) has generously supported this initiative. IBPL is the first public-private biotechnology park initiative in Maharashtra which is a joint venture between Maharashtra Industrial Development Corporation (MIDC) and TCG Real Estate, a 81-acre Park dedicated to biotechnology in the field of Life Sciences, Chemical, Pharmaceutical, Biotech products and process.

A glimpse of activities undertaken for development and distribution of IR thermometer

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)

DST initiates COVID-19 India National Supermodel for monitoring infection transmission & aid decision-making by policymakers

The DST has initiated a COVID-19 Indian National Supermodel to help monitor the future transmission of infection, thus aiding decisions involving health system readiness and other mitigation measures.

While the Government is keeping a close watch on infectivity and mortality, it is imperative to bring in a robust forecasting model for predicting the spread and enhancing disease surveillance. Numerous mathematical models for COVID-19 forecasting and surveillance are being worked out by investigators funded by DST-SERB (Science and Engineering Research Board) and other agencies.

Inspired by India's history of using mathematical models for disaster management planning of metrological events, DST has initiated this exercise to pool in expertise in the field and create one model for the entire country that will be subjected to rigorous tests required for evidence-based forecasting, routinely practiced in weather forecasting communities.

Website link:
https://dst.gov.in/dst-initiates-covid-19-india-national-supermodel-monitoring-infection-transmission-aid-decision

DST-SERB supports study for identification of structure-based potential antivirals against COVID-19

The SERB under DST has recently supported a proposed study by Prof. Pravindra Kumar from IIT-Roorkee for identification of structure-based potential antivirals against SARS-CoV-2.

The Study, to be funded under Intensification of Research in High Priority areas (IRHPA), will search for small molecule inhibitors targeting some of the most important viral replication enzymes. These enzymes are viral proteases

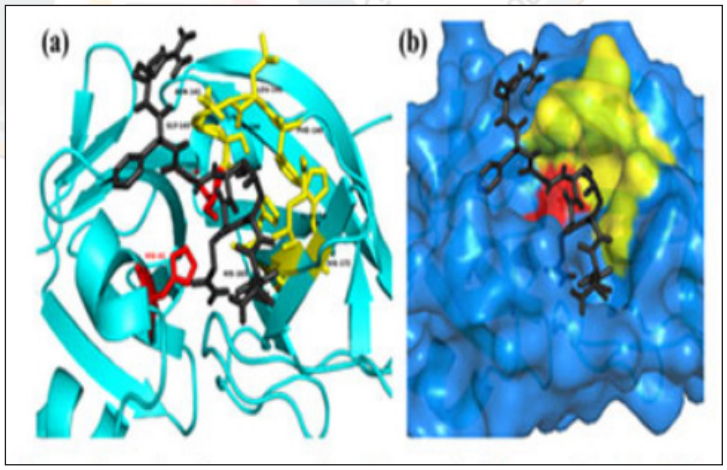
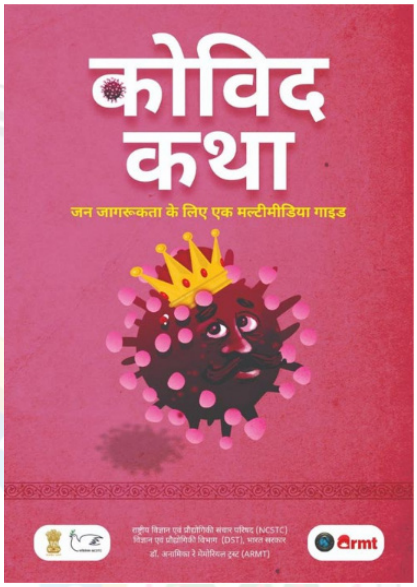


Figure: Three-dimensional structure focusing on the Mpro active site. The substrae peptide (black color) is shown to bound at the active site.

(papain-like protease & 3CLprotease), RNA-dependent RNA polymerase (nsp12), and the Methyltransferase or MTase (nsp14). Viral proteases, which are enzymes encoded by the genetic material (DNA or RNA) of viral pathogens, catalyze the cleavage of specific peptide bonds in cellular proteins.

Website link:
https://dst.gov.in/dst-serb-supports-study-identification-structure-based-potential-antivirals-against-covid-19

NCSTC brings out popular COVID Katha in Hindi



The National Council for Science & Technology Communication (NCSTC), DST in association with Dr Anamika Ray Memorial Trust has brought out the Hindi version of the popular multimedia guide for mass awareness carrying important information on A-to-Z of COVID-19 pandemic.

The English version has already been released. In order to fulfil the great demand of the Hindi version of COVID Katha, especially from the Hindi heartland, the Hindi edition has been brought out with added and revised information for the benefit of the people.

Prof. Ashutosh Sharma, Secretary, DST while appreciating COVID Katha: A Multimedia Guide for Mass Awareness, has said that the interpretation of science in common man's language is important for awareness among laypersons and Hindi being largely spoken language the Hindi version of COVID Katha carries more value. Prof. Sharma said that science cartoons (scientoons) while carrying scientific messages and explaining the health concepts in a simple manner also add humour and amusement during the present health crisis when people feel stressed!

Website link:
https://dst.gov.in/ncstc-brings-out-popular-covid-katha-hindi

NECTAR's contribution to combat COVID-19

North East Centre for Technology Application and Research (NECTAR), an autonomous institution of DST, is organizing skill development and informative webinar series, especially for the displaced skilled and non-skilled workers of North East Region, who are now waiting for opening up of lockdown and for immediate work opportunity available locally. There are more than 10 lakh migrant workers from NE region working at different places in the country. Some of them have already returned and many of them are on the verge of retuning during post lockdown. Hence it is of utmost importance to make them self dependent after the lockdown as possibility of returning to their earlier jobs are very less. Hence, this webinar series has been initiated to find some solutions mainly for migrant workers of NE region. The webinar series has started from 11th May 2020 and already 8 lectures were given by experts on water treatment for COVID quarantine centres and Bamboo sectors initiative in NE, Concept of Hydroponics, Organic Horticulture initiatives, and prospects through MSME etc. Mostly talks were attended by state government officials, self-help groups and local NGOs of NER. All talks are initially available for concerned state government officials, so that they can take it further immediately after lockdown. Based on the outcome, NECTAR will initiate various skill development programmes for migrant workers in NE in collaboration with state government departments after lockdown. NECTAR has already inducted 14 North East-based students

from science and engineering background to participate in a large-scale agriculture crop study project in NECTAR through online mode especially due to restriction in lieu of COVID-19 pandemic.

Other lectures of webinar series would be delivered by eminent experts on Horticulture, Aquaculture, Food Processing Technology, Organic Agriculture farming, Fiber extraction technology, Green Technology Innovations for Generating Sustainable Livelihoods in North Eastern States. NECTAR, in its efforts to develop solutions to tackle the current COVID-19 crisis, especially with respect to progress made in indigenous development of technologies has come up with plasma-based sterilization and air purifier systems technologies.

A system has been initiated to develop technologies based on plasma sterilization for virus disinfections and/or destruction, relevant to COVID-19. The objects of interest for sterilization may be gloves, masks and aprons etc. using the technology. The method is clean and environment friendly as there is no chemical waste or contaminated water coming out. The system would be ready for testing by the 3rd week of June 2020.

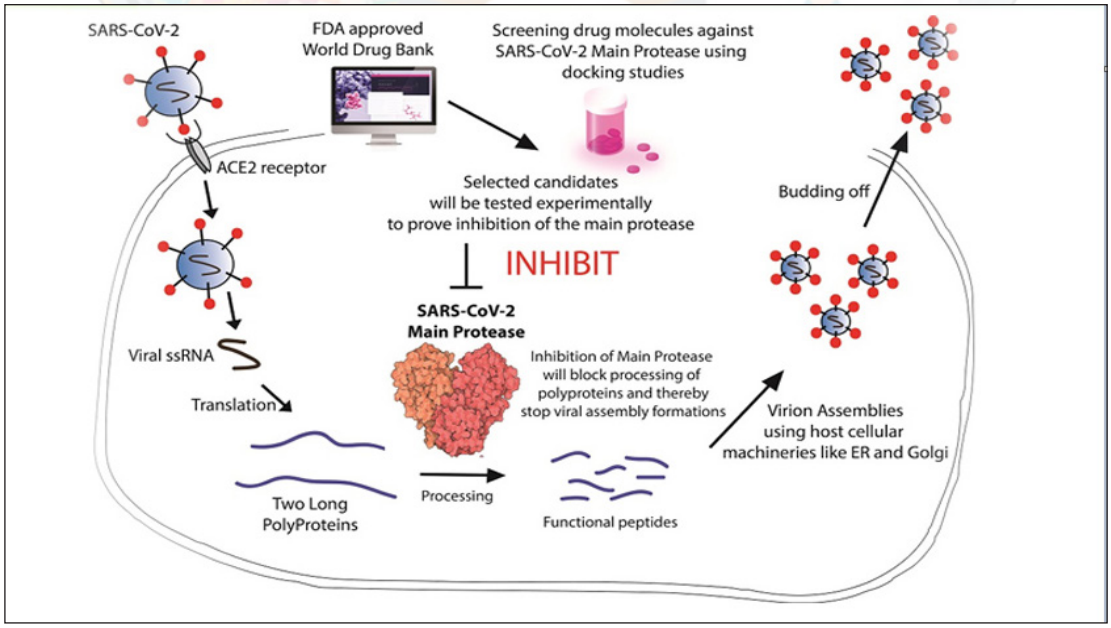
Plasma-based Discharge Purifier has also been developed to clean the contaminated air that gets in or gets out (to prevent environment contamination) of rooms, hospitals, labs etc. so that the virus is destroyed in it, and its further dispersion can be stopped. The system is getting ready in collaboration with M/S Aditya High Vacuum, Ahmedabad.

Contact Info: krishna@nectar.org.in

Website link:
http://www.nectar.org.in/

IIT, BHU to repurpose approved drugs from DrugBank database for treating COVID-19 by targeting SARS-CoV-2 main protease

The Science and Engineering Research Board has approved support for research at IIT (BHU) Varanasi to identify lead compound(s) from available and approved drugs for fast-track anti-SARS-CoV-2 drug molecule.



Scientists and healthcare professionals over the world are trying for a cure for the pandemic, which afflicts the world today. At present, available treatments are focused only on symptomatic relief to help the patient overcome the infection. Repurposing of pre-existing drugs could help circumvent both the time and money required to find an effective cure.

The research group of Prof. Vikash Kumar Dubey is working on developing new drug candidates against SARS-CoV-2 by exploring DrugBank (DrugBank is a database of FDA-approved drug compounds. This database will be used for searching drug against SARS-CoV-2) database compounds as an inhibitor of SARS-CoV-2 main protease, a key enzyme required for SARS-CoV-2 assembly and multiplication. They will be carrying out extensive computational and experimental studies to identify an inhibitor of SARS-CoV-2 main protease.

Website link:
https://dst.gov.in/iit-bhu-re-purpose-approved-drugs-drugbank-database-treating-covid-19-targeting-sars-cov-2-main

We need to examine knowledge chain to see how S&T will lead to Atmanirbhar Bharat: DST Secretary at Rajasthan STRIDE Virtual Summit

Professor Ashutosh Sharma, Secretary, DST, Government of India, stressed on the need to examine and strengthen the knowledge chain end to end to see how Science & Technology will lead to Atmanirbhar Bharat while speaking at the Rajasthan STRIDE Virtual Conclave, an initiative by the Department of Science & Technology, Government of Rajasthan organized on 30th May, 2020.

"Since there is a call for Atmanirbhar Bharat or self-reliance, it has to be responded with global quality. To become self-reliant, we have to build up on the strengths of India, which are its R&D, Design, workforce, huge markets, demographic dividend, its diversity, and data," he said.

Focusing on Science, Society and Self-reliance, Professor Sharma touched upon the learnings from the COVID-19 crisis. "In the last two months, great things have happened in terms of bringing solutions for COVID-19, be it designing world-class ventilators or new diagnostic methods. All this has happened because of a clear and present understanding of our needs and priorities and a problem-centric approach which involved both academia and industry as partners. We can build on our strengths and the lessons of COVID-19 with speed and scale by strongly connecting our knowledge generation systems with knowledge consumption for the benefit of both," he said.

Website link:
https://dst.gov.in/we-need-examine-knowledge-chain-see-how-st-will-lead-atmanirbhar-bharat-dst-secretary-rajasthan

Innovative disinfection & sanitization solutions by common people selected in NIF's Challenge COVID-19 Competition (C3)

National Innovation Foundation – India (NIF), an autonomous body of the DST, has recently supported two innovative disinfection solutions by common people which were received as a response to its Challenge COVID-19 Competition (C3).

A Vehicle Disinfectant Bay and a Foot-operated Height Adjustable Hands-Free Sanitizer Dispenser Stand are the two recently supported innovations under the campaign.

The Vehicle Disinfectant Bay is a device to disinfect vehicles automatically, which reduces time and energy by completing the disinfection process of a vehicle in a very short time without much effort. It consists of a frame, tank, motor, MCB Board, agronet, nozzles, valves, pipes, and fittings and works on the principle of spraying disinfectant liquid by using an AC motor technology for operation. It can be deployed easily at State Border/Checkposts, which are the entry point of vehicles in a State. It is already installed at two checkposts in the State of Sikkim - Rangpo Checkposts, East Sikkim, and Melli checkposts, South Sikkim.

The Foot-operated Height Adjustable Hands-Free Sanitizer Dispenser Stand is an ideal ubiquitous hygiene solution for residential, commercial, and industrial applications wherein one simply needs to press with the foot a pedal, and the sanitizer will be dispensed. Its height is adjustable as per sanitizer bottle size and it is steel epoxy powder coated. It also has non-skidding rubber shoes and has a special bottle holder made of high quality elastic. It can be deployed at malls, airports, theatres, banks, business parks, factories, educational institutions, bus depots or railway stations, hotels, restaurants, and so on. It is being commercialized by Mumbai-based Vissco Rehabilitation Aids Pvt. Ltd, a leading manufacturer of orthopedic products and mobility aids.

Website link:
https://dst.gov.in/innovative-disinfection-sanitization-solutions-common-people-selected-nifs-challenge-covid-19

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

DEPARTMENT OF BIOTECHNOLOGY (DBT)

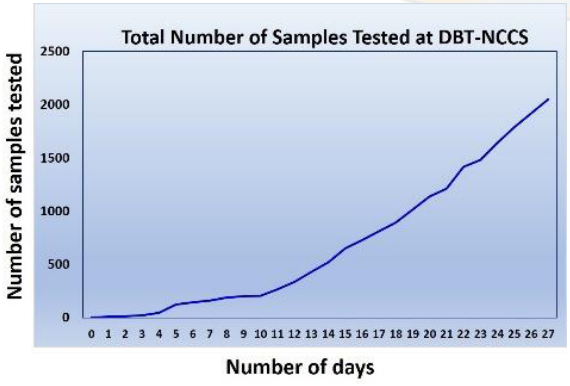
DBT-NCCS tests over 2000 samples for SARS-CoV-2 in a month

Given the highly communicable nature of COVID-19, testing as many people as possible is crucial for controlling its spread and for appropriate management of the disease in the population. A large number of samples are required to be tested every day in Maharashtra as it is the worst affected state in the country.

To facilitate this ongoing COVID-19 surveillance, the National Centre for Cell Science (DBT-NCCS) in Pune, an autonomous institution of the DBT, Government of India, was identified as one of the Government labs designated to carry out testing.

DBT-NCCS began testing samples for SARS-CoV-2 towards the end of April, 2020 with samples received from Pune district. However, ten days into testing, samples were sent to this centre from other districts of Maharashtra as well, causing a huge surge in the number of samples to be tested. Undaunted by this task, the team at DBT-NCCS accelerated and doubled its efforts. Consequently, more than a hundred samples are being tested every day. Over 2,000 samples have been tested by this centre in less than a month.

DBT-NCCS, which is primarily involved in conducting basic research in cell biology, made extensive and speedy preparations to begin functioning as a diagnostics centre soon after it was approved as a diagnostics facility by the DBT, the Indian Council of Medical Research (ICMR) and the Maharashtra State Government.



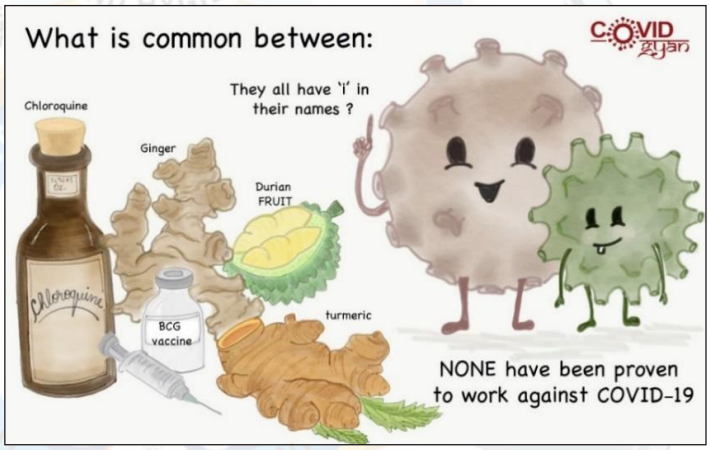
This included reorganization of some of the research laboratories, procurement of supplies like PPE and kits, formulating and validating a standard operating procedure (SOP), getting technical and scientific staff trained at ICMR-NIV for COVID-related biosafety measures and sample testing, registering the facility with the appropriate authorities, and conducting mock testing. The tireless and diligent efforts of several scientists and technical and other staff have played a big role in this endeavour. A short video shared on the NCCS social media and website offers a glimpse into the activities of the diagnostics team. Furthermore, DBT-NCCS has also contributed to COVID-19 surveillance by providing assistance to other research organizations for setting up testing centres on their respective campuses. This includes IISER-Pune, which recently began operations, as well as ARI, and CSIR-NCL.

With accelerated efforts, DBT-NCCS has tested over 2000 samples for COVID-19 in less than a month's time.

Website link:
https://www.nccs.res.in/

Artwork to demystify COVID-19

An artwork has been prepared by Michelle Ninochka D'Souza, a PhD student in the DBT's Institute for Stem Cell Science & Regenerative Medicine (inStem) on COVID-19. D'Souza is part of Ravi Muddashetty's lab at the Centre for Neurodevelopmental Synaptopathies (CNS) in the Institute.



DBT-inStem is one of the founding partners of COVID Gyan, a pan-institutional website that has been proactive in COVID-19 outreach efforts. One of the many efforts of COVID Gyan website is weeding out myths. Infographics and artworks play a significant role in this pursuit.

Website link:
https://covid-gyan.in/infographics

COVID Gyan holds a sundowner session on 'Pandemic Parenting'

COVID Gyan, a pan-institutional website set up by the DBT-inStem, in collaboration with several other organisations, has been proactive in COVID-19 outreach efforts. It aims to create public awareness about COVID-19 (through infographics, posters, research articles, podcasts/ videos, etc.) and provides support to the wider community during this crisis. The Sundowner Sessions conducted in collaboration with Bangalore Life Science Cluster (BLiSc) every week, focuses on various topics relevant to the current scenario.

On May 21, a Sundowner Session was organised focused on the topic 'Pandemic Parenting', relevant to many in the community. The guest speakers were Prof. K.V. Subrahmanyam of Chennai Mathematical Institute (CMI) and Prof Vidita Vaidya of Tata Institute of Fundamental Research (TIFR), Mumbai. Rukmini Kumar Chawla, author and editor at Penguin Books and Nadiya Abbas, an eminent psychologist cum counsellor were the moderators of this session.

TFIR, Mumbai

There were nearly 70 participants from across the country and overseas. They narrated their stories and the speakers addressed how parenting is transforming and adapting during the pandemic, what are the challenges faced at home by kids of various age groups, and how to build empathy among the future generation for a better world. The 90-minutes discussion also delved into the concerns of children with special needs at home. The session saw participation from teenagers, their parents, and teachers who described their lockdown experience, and discussed the pros and cons of online education.

Website link:
https://covid-gyan.in/

DBT-CDFD to undertake a genomic study on COVID-19

Centre for DNA Fingerprinting and Diagnostics

The DBT's Centre for DNA Fingerprinting and Diagnostics (DBT-CDFD) has proposed to undertake a genomic study on the ongoing outbreak of COVID-19 in India. This study is being coordinated by National Institute of Biomedical Genomics (NIBMG), along with active participation from DBT-CDFD, DBT-National Centre for Biological Sciences (NCBS), DBT-Institute for Stem Cell Science and Regenerative Medicine (InStem), DBT-National Centre for Cell Science (NCCS) and DBT-Institute of Life Sciences (ILS). CDFD proposes to do a prospective study to sequence the SARS-CoV-2 genome from individuals testing positive for the infection. Efforts pertaining to sequencing of viral genomes from different parts of the country have been initiated under this programme.

Website link:
http://www.cdfd.org.in/

DBT-THSTI's Bioassay lab tests 6,980 COVID-19 samples

Translational Health Science and Technology Institute

The DBT's Translational Health Science and Technology Institute (DBT-THSTI)'s Bioassay Laboratory has tested 6,980 samples as on 20th May 2020 with samples coming from districts of Palwal (Civil Hospital), Gurugram (Civil Hospital), Nuh (Mandikhera Civil Hospital) and Faridabad (ESIC Hospital).

Following ICMR's approval, DBT-THSTI's Bioassay Laboratory was designated a COVID-19 testing laboratory. The Faridabad-based institute is the only DBT funded lab designated for COVID-19 testing in the state.

The team led by Dr. Guruprasad Medigeshi, Professor at DBT-THSTI and Bioassay Laboratory Director, has also trained staff from Faridabad's ESI hospital and Hasan Khan Mewati General Medical College, Nalhar, Nuh (HKMGMC) to enable them to test samples in the respective diagnostic departments. ESI hospital has been assisted for infrastructure development. The team from THSTI helped to operationalize a lab for COVID-19 diagnosis at ESI hospital to handle the increased number of tests to be conducted in Faridabad. A total of eight researchers from ESIC and HKMGMC have been trained to carry out testing, RNA extraction, running Real-Time-PCR assays, analysing data and final reporting.

Website link:
https://thsti.res.in/

DBT-RGCB developing therapeutics against COVID-19

Rajiv Gandhi Centre for Biotechnology

KRIBS BioNest, the bio-incubation centre of the DBT's Rajiv Gandhi Centre for Biotechnology (RGCB), housing 30 Biotechnology start-ups has introduced several products to combat COVID-19.

In addition, M/s. Avisa Biotech Pvt Ltd is developing marine extracellular polysaccharides as a potential therapeutics against the disease. Drugs against COVID-19 are the need of the hour. One candidate is a broad-spectrum extracellular polysaccharide (EPS) of marine protists. Carageenan, a similar marine polysaccharide, has been developed as a nasal spray against rhinitis, sinusitis, Influenza A and Influenza B viruses.

The target organisms for the polysaccharides are *Thraustochytrids*, a group of single-celled, marine, heterotrophic algae. The broad-spectrum antiviral properties of several strains of these microorganisms have been demonstrated against entero-, cytomegalo-, adeno-, Hepatitis

C, Influenza, Respiratory Syncytial and Herpes Viruses, using in-vitro assays. An Indian patent has been filed and is under review.

Many *Thraustochytrids* can be grown rapidly in bioreactors to yield high biomass and yields of EPS, making the product highly inexpensive. Researchers in the Institute have successfully grown a strain of *Thraustochytrids* in pilot scale 20L Fermenter at RGCB-Bionest, Kochi and have been able to extract considerable amount of EPS.

In-vitro studies followed by complete chemical characterization to identify active moieties are planned. These polysaccharides can be developed as a nasal spray to prevent COVID-19 infection to protect medical workers as well as individuals at risk of being exposed. Further toxicity studies in animal models are planned to develop it as a broad-spectrum oral drug and nasal spray.

Website link:
https://rgcb.res.in/

DBT-IBSD distributes sanitizers, facemasks to quarantine centres and frontline workers in Manipur

The DBT's Institute of Bioresources and Sustainable Development (DBT-IBSD) has distributed locally made hand sanitizers, bottled drinking water, 3-layered masks and face shields to different COVID-19 Community Quarantine Centres (CQCs) and other frontliners in Imphal West. The initiative of free distribution of the above items was taken by DBT-IBSD to help

Institute of Bioresources and Sustainable Development

meet the shortage of supplies faced due to the sudden influx of stranded returnees. The items were distributed to CQCs of Johnstone Higher Secondary School, Manipur College, Pishumthong, Jawahar Navodaya Vidyalaya Khumbong, Imphal West Police, Singjamei PS and Patsoi PS. The locally made face shields and hand sanitizers were distributed to Primary Health Centre (PHC), Khumbong. IBSD had also earlier lent one Real-Time-PCR to JNIMS and other consumables for testing COVID-19 to State Health Department. One RT-PCR and RNA Extraction equipment was also lent to RIMS. Moreover, IBSD also distributed hand sanitizers to few media persons, police and sanitary workers of Imphal Municipal Council, just before the announcement of the lockdown.

Website link:
https://ibsd.gov.in/

DBT-BIRAC to support study on efficiency of a recombinant BCG candidate vaccine against COVID-19

The COVID-19 pandemic is rapidly worsening in all parts of the world, overwhelming health systems with demand for care that exceeds deliverable capacity and is compounded by high disease rates among healthcare staff. SARS-CoV-2 vaccines are many months away from widespread mass deployability. A recombinant BCG may act to ameliorate disease severity and mitigate transmission. Even moderate individual efficacy can have dramatic impact at population level directly (by reducing severe disease burden on health systems) and possibly indirectly (transmission reduction). This would thereby help sustain health systems through the rapidly increasing crisis, using a safe, affordable and available vaccine.

Serum Institute of India Pvt Ltd (SIIPL) was awarded funding support under DBT's National Biopharma Mission for the phase III clinical trials of a recombinant BCG vaccine candidate for COVID-19. SIIPL has proposed to conduct a multisite, randomized, double-blinded, placebo-controlled trial to demonstrate the efficacy of recombinant BCG VPM1002 in reducing infection incidence and severe disease outcomes of COVID-19 among (1) high risk persons of advanced age or co-morbidities; and (2) high-exposure healthcare workers. Several non-clinical and clinical studies have been completed with VPM1002 in infants, adults and in HIV-exposed infants. The results acquired so far from various studies demonstrate that VPM1002 is much safer and probably more efficacious than the standard BCG.

Website link:
https://birac.nic.in/

DBT-BIRAC-supported start up comes out with fully automated hand hygiene device

Good hand hygiene is the first line of defence against diseases and other infections. At a time when the entire world is fighting against COVID-19, effective hand hygiene is one of the most prominent tools to control its spread. WHO and several other international organisations across the world have been emphasising on maintaining hand hygiene. The underlying rule is simple – wash your hands for 20 seconds at least.

At this crucial time when COVID-19 has been declared a pandemic, a lot of start-ups are stepping in as providers of potential COVID solutions to help healthcare professionals. BIRAC-supported start-up MicroGO has come up with an innovation called Goassure™ which is an IOT-enabled fully automated hand hygiene device that digitalizes the hand hygiene process.

The patent-pending technology assures minimum manual intervention and effort while maximising automation and hygiene. This innovation has a simple motto, "Clean hands, save lives". The product has an innovative design and is made of good durable material considering human safety operations. The innovation is literally plug-and-play with the product being very easy to install. The smart hand hygiene station assures that the users perform hand

hygiene as per the WHO recommended six steps of hand hygiene and notify the variation (or non-compliance) to the authorities/health officer/managers. The product is automated and contactless and is backed by real-time data monitoring.

This innovation has three variants:

- Goassure™ - K series Motion-based hand hygiene
- Goassure™ - P series Specialized tags-based hand hygiene with compliance monitoring
- Goassure™ -O series Opportunity vs. Usage-based hand hygiene monitoring with advanced compliance management and surveillance. The product has already been deployed at several airports and the company is in the process to deploying more of these at other airports to assure that hand hygiene is the utmost priority.

Website link:
https://birac.nic.in/

DBT-NIBMG, researchers exploring a new therapy for COVID-19

Dr Sreedhar Chinnaswamy, Intermediate Fellow of Wellcome-DBT India Alliance and Associate Professor at the DBT's National Institute of Biomedical Genomics (NIBMG) has been working from the last few years to understand the significance of a new class of Interferons (IFNs) called the Lambda IFNs (IFNLs, also referred to as type III IFNs) in human health and disease. IFNs are proteins released by cells in response to invading pathogens, mainly viruses. The IFNLs are important regulators of host innate immunity and are highly active at the epithelial surfaces that include large tracts of respiratory, intestinal, reproductive and also skin tissue. A deficiency of Lambda IFNs causes severe pathology in respiratory viral infections in experimental mice models. Even in the present SARS-CoV-2 infections, a significant role for them is envisaged and a Lambda IFN therapy as a cure for the infection is being discussed (Fig. 1).

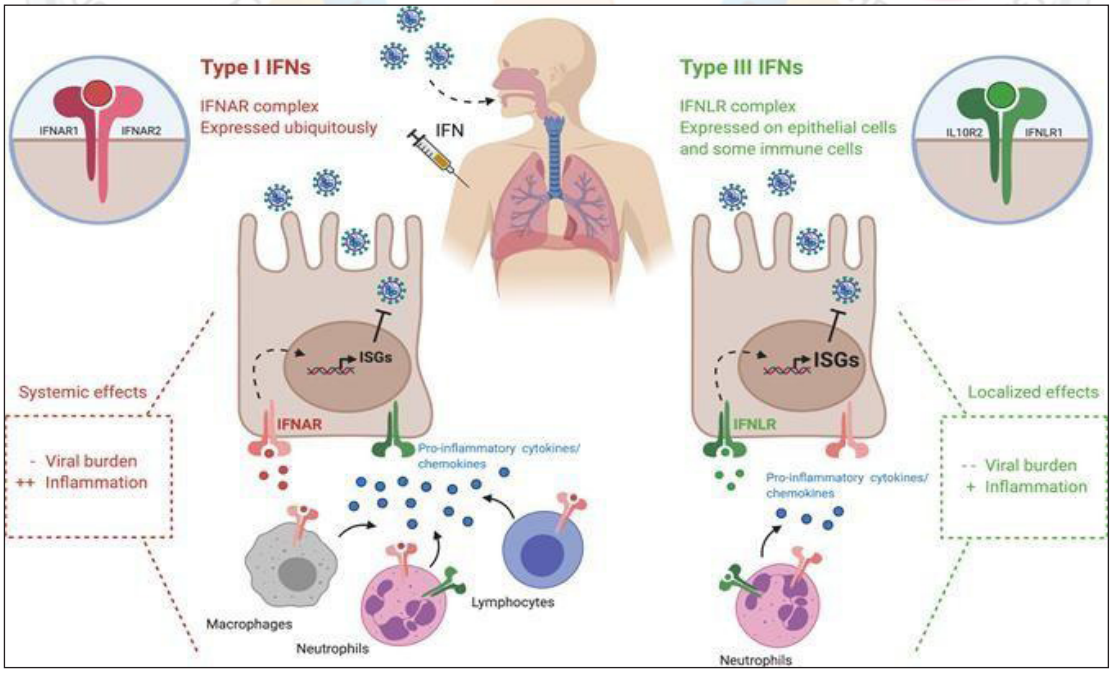


Fig. 1: IFNLs can be a potential therapy against COVID-19. Ludmila P-Olsson et al., J Exp Med (2020) 217 (5): e20200653.

Website link:
https://www.nibmg.ac.in/

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR)

COVID-19 testing laboratory inaugurated in CSIR-NEIST, Jorhat

A COVID-19 testing laboratory has been established in the Jorhat campus of the North East Institute of Science and Technology (NEIST). Dr Himanta Biswa Sarma, Minister of Health and Family Welfare, Finance, Education (Higher, Secondary and Elementary), Transformation and Development, PWD, Government of Assam, inaugurated the laboratory. The Director of CSIR-NEIST, Dr G. Narahari Sastry, described this momentous event as an important milestone in the annals of CSIR-NEIST history.

Appreciating the fact that NEIST is the first research and development institute in Assam to open up a testing facility, Dr Sarma congratulated the scientists and staff of the Institute for making it happen.

Dr Sastry mentioned that a team of 10 scientists of the Institute is actively involved in isolation of RNA from the virus. Forty other staff members are acting as a support system. The Institute's Biotechnology Division is playing a pivotal role in carrying out RT-PCR-based COVID-19 testing. Besides, Government of Assam and the district administration of Jorhat are actively cooperating and facilitating the efforts put in by the Institute.

A microbiologist from the Department of Health and Family Welfare, Government of Assam has been engaged with the Institute's COVID-19 testing laboratory to certify the testing. The samples for the testing are expected to be obtained in coordination with the state government and the district administration of Jorhat. The Institute has also contractually engaged a project scientist and a research scholar for the testing purpose.

Website link:

https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-1-01-June-20.pdf

http://www.neist.res.in/

Webinar on 'Traditional Knowledge and Formal Medicine: A Complementary Approach to Combat COVID-19'

Formal medicine is around since few hundred years, but traditional knowledge is thousands years old. Traditional knowledge still needs to establish itself with more scientific validations. These thoughts were expressed by Dr Shekhar C. Mande, DG, CSIR. Dr Mande was addressing a webinar on 'Traditional Knowledge and Formal Medicine: A Complementary Approach to Combat COVID'. This webinar was jointly organized by CSIR-NISCAIR in collaboration with CSIR-NISTADS and Vijnana Bharati (VIBHA) on 14th May, 2020.

Prof. Ranjana Aggarwal, Director, CSIR-NISCAIR and CSIR-NISTADS has appreciated the spirit of CSIR under the leadership of Dr Mande who geared up the institution to combat COVID-19 even before this was declared pandemic by World Health Organisation (WHO). Dr Mande expected excellent outcomes on this topic of importance and he appreciated Prof. Ranjana for conceptualizing the theme for this webinar.

Dr MLB Bhatt, Vice Chancellor, King George's Medical University (KGMU), Lucknow has reassured that most of the COVID-19 cases are with mild symptoms and only less than 1 per cent require hospitalisation or critical care. He emphasised that only those with co-morbid conditions like diabetes, cardiovascular disease (CVD), kidney ailment, etc. may need hospitalisation after being infected with coronavirus.

Website link:
https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-1-02-June-20.pdf
https://www.niscair.res.in/home/webinar
https://nistads.res.in/node/1030

CIMAP's herbal hand sanitizer transferred for commercial production

CSIR's Lucknow-based constituent laboratory Central Institute of Medicinal and Aromatic Plants (CIMAP) has developed an alcohol-based herbal hand sanitizer in the wake of growing demand for sanitizers amid coronavirus outbreak. The sanitizer gel contains essential oil, which has been found to be effective against broad spectrum of microbes.

The technology of the hand sanitizer has been transferred to Lucknow-based company, M/s Sai International. The MoU was signed by Mr Bhaskar Jyoti Deuri, Controller of Administration, CIMAP and Mr Vinay Shukla, M/s Sai International, Lucknow on May 06 at CSIR-CIMAP, Lucknow. The company would start the production of hand sanitizer very soon.

Dr Prabodh K. Trivedi, Director, CSIR-CIMAP said that the herbal hand sanitizer has been clinically tested and found to be highly-effective against commensal pathogens. He also told that the product has been found to be more effective than the existing similar products in the market, which is because of synergistic effect of the essential oils added in the formulation.

Website link:
https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-2-02-June-20.pdf
https://www.cimap.res.in/english/index.php

CSIR, AICTE to hold Drug Discovery Hackathon-2020

The CSIR and All India Council for Technical Education (AICTE) have launched an initiative for potential drug discovery for COVID-19 disease. The CSIR and the AICTE have launched an initiative for potential drug discovery for COVID-19 disease. The Drug Discover Hackathon is supported by the office of the Principal Scientific Advisor of the Government of India.

The Hackathon will be open to both national and international participants. It will be an online Hackathon and all generated data will be available to all. The potential ideas that emerge during the Hackathon will be developed by CSIR labs, start-ups and any other interested organization. As per the information shared by Dr Abhay Jere, Chief Innovation Officer, HRD Ministry, the Hackathon will be held on two themes - Drug design for anti-COVID-19 hit/lead molecule generation or re-purposing and Designing/ optimization of new tools and algorithms.

Website link:
https://www.ndtv.com/education/csir-aicte-hold-drug-discovery-hackathon-2020
https://urdip.res.in/covid19/
https://www.csir.res.in/

Researchers culture novel coronavirus, may help in drug testing and vaccine development

The Centre for Cellular and Molecular Biology (CCMB) has established stable cultures of coronavirus (SARS-CoV-2) from patients' samples. Virologists at CCMB have isolated infectious viruses from several isolates. The ability to culture the virus in lab enables CCMB to work towards vaccine development and testing of potential drugs to fight COVID-19.

Novel coronavirus enters human cell by binding with the ACE-2 receptor on the cell surface. Not all cells have ACE-2 receptors. Human epithelial cells in the respiratory tract copiously express ACE-2 receptors, causing respiratory disease in the infected patient. However, we cannot grow human epithelial cells in lab. "Currently, primary epithelial cells generated from human origins do not grow for many generations in labs, which is key to culturing viruses continuously. At the same time, the labs that are growing the virus need an 'immortal' cell line", says Dr Krishnan H Harshan, Principal Scientist, CCMB. They use Vero cells (kidney epithelial cell lines from green African monkey), which express ACE-2 proteins and carry a cell division that allows them to proliferate indefinitely.

But why cultivate a dreadful germ? If we culture a large amount of the virus and inactivate them, then it can be used as inactivated virus vaccine. Once we inject the inactivated virus, the human immune system triggers the production of germ-specific antibodies. One can inactivate the virus by heat or chemical means. The inactivated virus can trigger antibody response, but does not infect and make us sick as they cannot reproduce.

Website link:
https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-1-27MAY2020.pdf
https://www.ccmb.res.in/

New diagnostic kit for COVID-19 testing

Asymptomatic COVID-19 cases are a big concern worldwide and that makes testing important for early diagnosis and further treatment well in advance. Stepping up to join in the fight against COVID-19, the Indian Institute of Integrative Medicine (IIIM), Jammu, has partnered with Reliance Industries Limited (RIL) to develop and scale up a new RT-LAMP-based diagnostic kit. RT-LAMP stands for Reverse Transcriptase-Loop Mediated Isothermal Amplification.

RT-LAMP test is a nucleic acid-based test carried out from nasal or throat swab sample from patients. It is rapid (45-60 min), cost-effective and accurate. "It has been tested with a small number of patients' samples; validating the kit on more number of patient samples is planned and will be done together with RIL. The test recipe has been developed and successfully demonstrated using synthetic templates", said Dr. Ram A Vishwakarma, Director, IIIM Jammu.
The RT-LAMP test can be done in a single tube with minimal expertise in a basic lab set-up like mobile units/kiosks, which can be used at airports, railway stations, bus stands and other public places. The end detection of the test is a simple colored reaction, which is easily visible in UV light, and is now being modified such that it can be detected in regular light.

Website link:
https://vigyanprasar.gov.in/isw/New-diagnostic-kit-for-COVID-19-testing.html
https://www.iiim.res.in/

टीके के विकास और दवाओं के परीक्षण के लिए सीसीएमबी में कोरोना वायरस कल्चर

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) की हैदराबाद स्थित प्रयोगशाला आणविक जीवविज्ञान केन्द्र (सीसीएमबी) के वैज्ञानिकों ने मरीजों के नमूने से कोविड–19 के लिए जिम्मेदार कोरोना वायरस (SARS-CoV-2) का स्थिर संवर्धन (कल्चर) किया है। लैब में वायरस के संवर्धन की क्षमता से सीसीएमबी के वैज्ञानिकों को कोविड–19 से लड़ने के लिए टीका विकसित करने और संभावित दवाओं के परीक्षण में मदद मिल सकती है।

वैज्ञानिक जब वायरस कल्चर करते हैं, तो यह स्थिर होना चाहिए, जिसका अर्थ है कि वायरस संवर्धन निरंतर होते रहना चाहिए। इसीलिए, इसे स्थिर संवर्धन कहा जाता है। नोवेल कोरोना वायरस एसीई–2 नामक रिसेप्टर प्रोटीन के साथ मिलकर मानव के श्वसन मार्ग में एपीथीलियल कोशिकाओं को संक्रमित करता है। श्वसन मार्ग में एपीथीलियल कोशिकाएं प्रचुरता से एसीई–2 रिसेप्टर प्रोटीन को व्यक्त करती हैं, जिससे इस वायरस से संक्रमित मरीजों में श्वसन रोगों का खतरा बढ़ जाता है। कोशिकाओं में वायरस के प्रवेश की एंटोसाइटोसिस नामक प्रक्रिया के बाद वायरस आरएनए कोशिकाओं के साइटोप्लाज्म में रिलीज होता है, जहाँ यह पहले वायरल प्रोटीन बनाता है और फिर जीनोमिक आरएनए की प्रतिकृति बनने लगती है। इस प्रकार, वायरस इन कोशिका संसाधनों का उपयोग अपनी संख्या बढ़ाने के लिए करता है।

सीसीएमबी के विषाणु–विज्ञानी (वायरलोजिस्ट) डॉ. कृष्णन एच. हर्षन के नेतृत्व में शोधार्थियों की एक टीम ने नमूनों से संक्रामक वायरस पृथक किया है। डॉ. कृष्णन ने बताया कि "वर्तमान में, मानव एपीथीलियल कोशिकाएँ प्रयोगशालाओं में निरंतर कई पीढ़ियों तक नहीं बढ़ पाती हैं, जो लगातार वायरस संवर्धन के लिए महत्वपूर्ण है। इसीलिए, सीसीएमबी और अन्य लैब जो वायरस को संवर्धित कर रहे हैं, उन्हें कभी न खत्म होने वाली सेल लाइन की आवश्यकता है।" इसीलिए, वैज्ञानिक विरो सेल का प्रयोग करते हैं– जो अफ्रीकी बंदर के गुर्दे की एपीथीलियल कोशिका लाइनों से प्राप्त होते हैं, और जो एसीई–2 प्रोटीन छोड़ते हैं। इसके साथ ही, ये कोशिका विभाजन भी करते हैं, जिससे वे अनिश्चित काल तक वृद्धि कर सकते हैं।

Website link:
https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-1-28MAY2020.pdf
https://www.ccmb.res.in/

वैज्ञानिक क्यों कर रहे हैं घातक कोरोना वायरस का कल्चर!

नोवेल कोरोना वायरस (SARS-CoV-2) से दुनिया भर में अब तक 56 लाख से अधिक लोग संक्रमित हो चुके हैं और 3.62 लाख से अधिक लोगों को इस वायरस से उपजी बीमारी कोविड–19 के प्रकोप से अपनी जान गंवानी पड़ी है। भारत की बात करें तो यहाँ नोवेल कोरोना वायरस के संक्रमण का आँकड़ा 1.58 लाख को पार कर चुका है और 4500 से अधिक लोगों की मौत कोविड–19 से हो चुकी है। इसके बावजूद, इस जिद्दी वायरस के कारण होने वाले संक्रमण और मौतों का सिलसिला अभी बना हुआ है। इतने बड़े पैमाने पर कोविड–19 के प्रकोप के बावजूद आखिर क्या कारण है कि वैज्ञानिक नोवेल कोरोना वायरस का लैब में कल्चर (संवर्धन) करके उसकी संख्या बढ़ाने की कोशिशों में जुटे हुए हैं?

हैदराबाद स्थित प्रयोगशाला आणविक जीवविज्ञान केन्द्र (सीसीएमबी), जो वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) की एक प्रमुख घटक प्रयोगशाला है, के वैज्ञानिकों द्वारा मरीजों के नमूने से कोविड–19 के लिए जिम्मेदार कोरोना वायरस (SARS-CoV-2) के स्थिर संवर्धन (कल्चर) की खबर के बाद बहुत से लोगों के मन में यही सवाल गूंज रहा होगा। यह सवाल उठना स्वाभाविक है कि इस वायरस को कल्चर करने के आखिर क्या संभावित फायदे हो सकते हैं? इन सवालों के जवाब क्रमवार जानने से पहले यह जानना जरूरी है कि वायरस कल्चर क्या होता है और स्थिर संवर्धन (Stable Culture) क्यों महत्वपूर्ण है। वास्तव में, वायरल कल्चर एक प्रयोगशाला तकनीक है, जिसमें वायरस के नमूनों को अलग–अलग सेल लाइनों में परखा जाता है। वायरल कल्चर के लिए जीवित कोशिकाओं की आवश्यकता पड़ती है। वैज्ञानिक जब वायरस कल्चर करते हैं, तो यह स्थिर होना चाहिए, जिसका अर्थ है कि वायरस संवर्धन निरंतर होते रहना चाहिए। इसीलिए, इसे स्थिर संवर्धन कहा गया है।

Website link:
https://vigyanprasar.gov.in/wp-content/uploads/Vigyan-Samachar-CSIR-News-2-29MAY2020.pdf
https://www.ccmb.res.in/

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

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

India became self-reliant in COVID-19 testing capacity

On 18 May India reached a landmark in its fight against COVID-19 by performing 100,000 tests in one day. Starting from less than 100 tests per day just two months ago, a 1000 fold increase in just 60 days was made possible by dedicated teams from research institutions, medical colleges, testing laboratories, ministries, airlines and postal services working together.

The remarkable story of how India became fully self-reliant in its testing capabilities, despite starting from scratch just a few months ago, is one about the steely resolve of multiple agencies, working together round-the-clock to save lives.

Faced with an unprecedented challenge, both in terms of technicalities and scale, Indian scientists had to innovate extensively, health workers had to train and learn on the job, administrators had to coordinate multiple actions round-the-clock amid the challenges of nationwide lockdown, and civil and defence aviation personnel had to fly at the shortest of notices.

With the pandemic soaring, there were severe constraints for procuring COVID-19 diagnostic material. Empowered groups set up by the Government of India, cutting across ministries, were tasked with the objective of increasing procurement and ensuring regular supplies. Indian missions and embassies abroad helped identify global suppliers in a highly competitive seller's market.

The scale-up of testing laboratories started with a network of 106 ICMR-funded Viral Research and Diagnostic Laboratories, (VRDLs), which already had the capacity to conduct testing for viruses similar to SARS-CoV-2. Subsequently, the testing was initiated in partnership with laboratories in DST, DBT, ICAR, CSIR, DRDO, MHRD, medical colleges and private laboratories. Private laboratories that had approval from the National Accreditation Board for Testing and Calibration Laboratories (NABL) were accepted. With its testing capabilities now matching the most advanced countries in the world, Indian institutions have risen to the occasion in an emergency situation. In the days ahead their contributions will be required even more as India continues to grapple with the clear and present danger still posed by COVID-19

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Website link:
https://www.icmr.gov.in/pdf/press_realease_files/ICMR_Press_Release_India_testing_story_20052020.pdf

ICMR validates completely indigenous diagnostic platform for COVID-19 diagnosis

As the COVID-19 pandemic is expanding, there is a global shortfall of diagnostic supplies. It is critical for countries to strengthen indigenous production of diagnostic material to ensure uninterrupted availability.

A total of 11 RT-PCR-based indigenous assays were validated and recommended for COVID-19 testing.

In April 2020, the indigenous manufacturer developed TrueNat assay for screening of SARS-CoV-2, causing COVID-19. ICMR undertook successful validation of the E gene screening assay, following which TrueNat-based testing has been initiated by the states for SARS-CoV-2 detection. From April 2020 till date, more than 1.3 lakh screening tests have been conducted by states. However, the rate-limiting step has been the lack of TrueNat confirmatory assay. All the TrueNat positive samples had to be confirmed by RT-PCR-based tests either located in the same or different laboratory.

Recently, the indigenous manufacturer has also developed an RdRp gene-based confirmatory assay of TrueNat which has been successfully validated again by ICMR and has been found to have high sensitivity and specificity. Both the validations have been stringently conducted by DHR/ICMR Virus Research & Diagnostic Laboratory (VRDL) at Bangalore Medical College & Research Institute, Bengaluru.

ICMR has now recommended the TrueNat COVID-19 test as a two-step test: step one, i.e., E gene screening assay for all COVID-19 suspect samples to be followed by step two for the RdRp-based confirmatory test in all E gene positives.

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Website link:
https://www.icmr.gov.in/pdf/press_realease_files/ICMR_Press_Release_TruNat_21052020.pdf

ICMR advises States to conduct sero-survey to measure coronavirus exposure in the population using IgG ELISA Test

ICMR has advised the States to conduct sero-survey to measure coronavirus exposure in the population using IgG ELISA test. In an attempt to decide the future course of action against the pandemic, ICMR has communicated a detailed plan to all the states to measure coronavirus exposure in general population as well as in high risk populations. The numbers and frequency in different groups to be tested has been entrusted with states depending upon the requirement and situation in that particular area.

There is continuous demand for various types of diagnostic tests by countries all across the globe. Real-time, i.e., RT-PCR test is considered gold standard frontline test for clinical diagnosis of SARS-CoV-2, causing COVID-19. The test is useful only when performed in the acute stage of infection (less than 7 days). For several viral infections, antibody tests are useful for disease detection after 5–7 days of illness. Understanding related to antibody tests for COVID-19 is evolving and several tests are being developed globally.

IgG antibodies generally start appearing after two weeks of onset of infection, once the individual has recovered after infection and last for several months. Therefore, the IgG test is not useful for detecting acute infection but for indicating episode of SARS-CoV-2 infection in the past. However, detection of IgG antibodies is useful in the following situations:

i) Sero-surveys help to understand the proportion of population exposed to SARS-CoV-2 infection including asymptomatic individuals. Depending upon the level of sero-prevalence of infection, appropriate public health interventions can be planned and implemented for prevention and control of the disease. Periodic sero-surveys are useful to guide the policy makers.

ii) Survey in high risk or vulnerable populations (healthcare workers, frontline workers, immune-compromised individuals, individuals in containment zones, etc.) to know who has been infected in the past and has now recovered.

The sero-survey would be conducted using an IgG ELISA kit. Scientists at ICMR-National Institute of Virology, Pune have developed and validated an indigenous IgG ELISA test for antibody detection for SARS-CoV-2. The test has undergone intense validation in three stages and has been found to have high sensitivity and specificity. To fast-track production and increase availability of the IgG ELISA test, ICMR has transferred this technology to many pharma companies viz. Zydus Cadila, J Mitra & Company, Meril Diagnostics, Voxtur Bio, Trivitron Healthcare, Karwah Enterprises, Avecon Healthcare, etc. The technology has been transferred to various entities without exclusivity clause and therefore can be further shared with others as per demand and capability. IgG ELISA tests from other USFDA/CE-IVD/indigenous sources such as Abott, Roche etc. are also available.

Contact info: Dr Rajni Kant; rajnikant.srivastava@gmail.com

Website Link:
https://www.icmr.gov.in/pdf/press_realease_files/ICMR_PR%20_IgG_Elisa_30052020.pdf

ICMR invites Expression of Interest (EOI) providing Personal Accident Insurance Cover with COVID-19 Extension

ICMR has invited proposals from eligible parties who are interested in providing Personal Accident Insurance cover with COVID-19 Extension, indicating the conditions and extent of coverage, date of commencement and expiry of coverage, and conditions thereof, including the premium and other costs, as per rules.
Submit expression of interest to Email: icmrnew.sm@icmr.gov.in
Last date and time of submission of offer: 03rd June, 2020; 13:00 Hrs

Contact info: Dr R. Lakshminarayanan

Website Link:
https://www.icmr.gov.in/pdf/tender/EOI_PAIC_30052020.pdf

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION (DRDO)

DRDO-NPOL develops UV-based Baggage Disinfector

Naval Physical and Oceanographic Laboratory (NPOL), Kochi, has developed a facility for disinfecting passenger baggage and installed it at Cochin International Airport Ltd (CIAL). The facility consists of two cubic enclosures fixed on to the existing airside conveyors at CIAL, with a configuration of UV lights so placed as to illuminate the volume to the maximum. The UV circuitry was established by NPOL as per the required dosage, intensity and exposure, while ensuring sufficient protection of the baggage handling personnel. It is being ensured that the baggage gets disinfected even before it reaches the Customs area.

Website link:
https://drdo.gov.in/sites/default/files/whats_new_document/NPOL-UV_baggage_disinfector_at_airport.pdf
https://drdo.gov.in/whats-new/npol-developed-uv-baggage-disinfector-cial

Shoe and Driveway Sanitizer

Shoes have high potential of spreading virus from one place to another. In COVID wards 65% of shoes are found to be infected by Coronavirus. Similarly, car tyres also get potentially highly infective.

Institute of Nuclear Medicine & Allied Sciences (INMAS), Delhi has innovated a solution to prevent the spread of coronavirus through shoes and car tyres. This solution is kept on PVC mat with threading to retain the moisture. Artificial grass is the second choice. Rubber and Coir mats are however not suitable.

A 150 ppm sodium hypochlorite gel is used as the disinfectant which has advantages of enhanced stability, better moisture retention and non-chlorine composition. This leaves minimum footprint which can be wiped off easily. For cars, 200 ppm solution can be used. Continuing bacteriology tests have shown 2-log scale kill effect and it is safer to handle compared to alternative solutions.

Operating precaution: It is recommended that the gel should be stored in glass/HDPE-grade plastic bottles and 50 ml gel is to be applied per sq ft using gloves and hands to be washed immediately after handling the gel. One batch of solution can be used for 15 cars/two hours. The mats may require running water wash every 2 hours. No damage is observed to shoes or tyres after 20-hrs dip.

These can be deployed at the entrance of main office buildings, door of office rooms, rooms frequented by crowds like cafeteria and meeting rooms, home entrances etc.

Website link:
https://drdo.gov.in//sanitizing-mats-shoes-and-car

Ultra Swachh – Disinfection of PPE's and Other Materials

INMAS, Delhi has developed a Disinfection Unit named Ultra Swachh to disinfect a wide range of materials, including PPEs, electronics items, fabrics etc.

For disinfection the System uses an advanced oxidative process comprising of multiple barrier disruption approach using Ozonated Space Technology. The System is double layered with specialized ozone sealant technology assuring trapping of ozone for the necessary disinfection cycle. It also has catalytic converter to ensure environment friendly exhaust, i.e., only oxygen and water.

It is in compliance with International Standards of Industrial, Occupational, Personal and Environmental Safety.

Ultra Swachh comes in two variants, namely, Ozonated Space and Trinetra Technology. Trinetra technology is the combination of Ozonated Space and Radical Dispenser. The treatment is optimized with automation for quick disinfection cycle.

The System operates on 15 Amp, 220 V, 50 Hz power supply. It has been provided with various safety features such as emergency shutdown, door interlocks, dual door, delay cycle, and leak monitors etc. to ensure safe operations for longer duration. Dimensions of the industrial cabinet are 7' X 4' X 3.25' to disinfect large quantity at a time. Cabinets of different sizes will be available for the industry. It has been developed with industry partner M/s Gel Craft Healthcare Private Ltd, Ghaziabad.

Website link:
https://pib.gov.in/PressReleseDetailm.aspx?PRID=1628355

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY (MeitY)

Call for Proposal to conduct ICT Grand Challenge to build suitable Work from Home (WFH) products or solutions

The Ministry of Electronics & Information Technology (MeitY) announces to develop innovative software product by organizing 1st ICT Grand Challenge through implementing agency in the specified areas. The objective of ICTGC is to generate innovative technology/ solutions in the form of software products using emerging technology so as to address the COVID/social economic challenges and have potential for mass market leading to greater access of the products in a cost-effective manner. More scheme details of ICT Grand Challenge under National Policy on Software Products (NPSP) are available in the detailed document.

Broad area of call for proposal

The implementation agency is expected to prepare the detailed plan as per ICTGC scheme document for selecting the right Start-ups/MSMEs that have the potential to build the suitable Work from Home (WFH) products/solutions enabling employees to work and execute tasks remotely for seamless operations/business continuity of organizations in fully secure and reliable environment.

The software product must include but not limited to the following components:

1. Project Planning & Management tool
2. Business operations tool (Productivity and Work/Project management, Task Management & Reporting, Virtual Design & Development, Virtual Work Drives Software product/platform enabling the technical individual(s) & team(s) to support/assist customers remotely through on-demand remote support sessions with end-to-end security, set-up unattended remote access, manage remote PCs, laptops, mobile devices and servers effortlessly etc.)
3. Digital communication and real-time collaboration tool (Teams to meet, discuss in channels or with team members, collaborate, share, chat, deliver presentations, screen share with remote control, integrated task management etc.)
4. Remote monitoring & operations of industrial setups, machinery & equipment, as applicable

Contact Info: ispr@meity.gov.in

Last date of Application: 15th June 2020

Website link:
https://ispr.gov.in/ictgc/documents.php

Result of stage-1 of Innovation Challenge for Development of Video Conferencing Solution

The Ministry of Electronics & Information Technology announces an Innovation Challenge for Development of a Video Conferencing Solution under Digital India Initiative.

The intent of Ideation stage (stage-1) was to invite bright minds to collaborate and participate to propose innovate and cutting edge ideas for their solution. The ideas were evaluated and top Ten (10) teams were selected by a Selection Committee comprising of experts from academia, industry and government. Each selected team will receive a funding of Rs. 5 Lakh to build their prototype.

Twelve teams have been selected for 2nd stage (Prototype stage), in which the teams would present their prototypes to a distinguished Jury to select top three (3) entries. Each selected team will receive Rs. 20 Lakh to build their solution following the design principles and best practices. If needed, there will be mentors assigned to the top 3 to help develop the best solution as per the need of the Government. Queries of the top 3 answered by respective mentors will be available to all, for fairness.

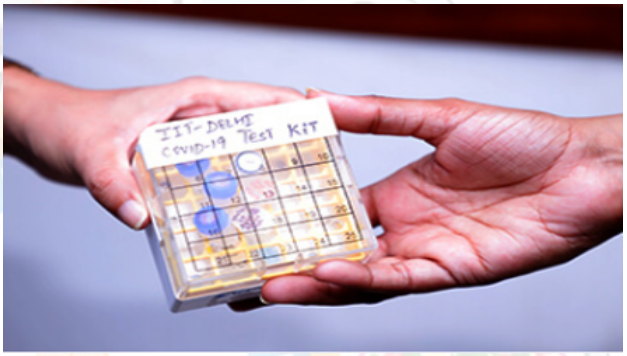
Website link:
https://meity.gov.in/writereaddata/files/Result_1st%20Stage_VC.pdf

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

OTHER SCIENTIFIC AND ACADEMIC INSTITUTIONS

COVID-19 research projects by IIT Delhi receive financial support from Microsoft India



Research to tackle the COVID-19 situation continues at Indian Institute of Technology (IIT) Delhi, with focus on the early detection of the disease. Aiding this endeavour, Microsoft India has come forth to support two such projects of the Institute. One of them pertains to ICMR-approved probe-free real-time PCR-based COVID-19 detection assay developed at the Kusuma School of Biological Sciences, IIT Delhi. This probe-free technology will be more affordable and easily scalable. The other project is a collaboration between IIT Delhi and National Chemical Laboratory, Pune, and it aims to develop an ELISA-based diagnostic serological assay against COVID-19.

Website Link:
https://home.iitd.ac.in/covid19-microsoft.php

Visvesvaraya National Institute of Technology develops Sahayak Robot for healthcare corona warriors

Visvesvaraya National Institute of Technology (VNIT), Nagpur, has developed a robot named 'Sahayak' to help in fighting the coronavirus pandemic. Considering frontline workers like

doctors and nurses in the hospital are at the highest risk of getting infected, the team of researchers at 'IvLabs,' the robotics lab of VNIT, converted a hospital trolley into an automated robot that can be wirelessly controlled. Such a robot can be used by the hospital staff to deliver food packets and medicines to the COVID-19 patients and maintain a safe distance. The robot is also equipped with a display screen, camera, and a speaker which can be used by the doctors for video communication with the patients.

Website Link:
http://vnit.ac.in/students-of-vnit-have-developed-a-robot-named-sahayak-to-help-in-fighting-the-coronavirus-pandemic/

IIT Ropar provides multiple technological interventions to fight against COVID-19 outbreak

Indian Institute of Technology (IIT) Ropar develops several technological interventions for combating the COVID-19 pandemic. These include UV-C sterilization box; 3-way PPE sterilization unit; doffing station; UV-C-specific sensor development; aerial autonomous system for Touch-me-not environment in COVID-19 wards; intelligent InfraRed Vision System for screening of COVID suspects; low-cost Ambu-bag attachment for Rapid Mass Emergency Deployment (AARMED) as a ventilator; a negative pressure aerosol containment box for reducing infection among healthcare workers in ICU; noble synthetic materials for anti-microbial coatings on PPE kits, and spray for disinfecting tunnels and for fogging purpose.

Contact Info: director@iitrpr.ac.in

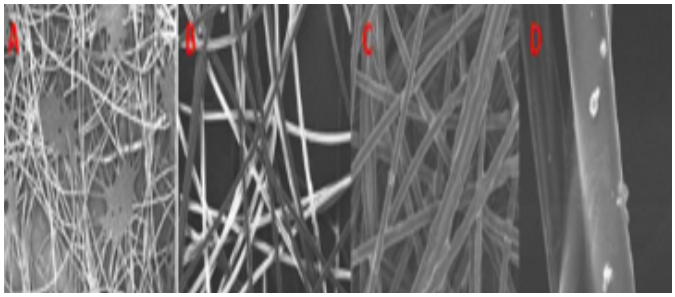
Indian Institute of Technology, Ropar

Website Link:
http://www.iitrpr.ac.in/covid-19-inventionssolutions

Noble synthetic material for anti-microbial coatings developed by IIT Ropar

Indian Institute of Technology (IIT) Ropar is actively contributing to address the issues related to COVID-19. In this direction, it has developed noble synthetic materials for anti-microbial

coatings on PPE kits and spray for disinfecting tunnels and for fogging purpose. These materials are non-volatile in nature with no foul smell, possess high anti-microbial activities, and show high shelf life on different metallic or non-metallic surfaces.



The team has developed two types of coatings, hydrophilic and hydrophobic, and hence one can use them based upon the area of application. The hydrophilic materials are primarily meant for fogging and spray on walls etc., while hydrophobic materials are specifically designed for coatings on PPE.

Contact Info: nsingh@iitrpr.ac.in

Website Link:
http://www.iitrpr.ac.in/noble-synthetic-material-anti-microbial-coatings

IIT Goa works to find a cure for COVID-19

Indian Institute of Technology (IIT) Goa has initiated a process to find a potential drug against COVID-19. The team is carrying out the work in collaboration with researchers at the Georgia State University, Atlanta, USA. The team plans to synthesise the newly-designed compounds and then check for their bioactivity against the virus to identify the starting point for potential drug discovery efforts.

Website Link:
https://timesofindia.indiatimes.com/city/goa/at-iit-goa-team-works-to-find-a-cure-for-covid-19/article-show/75750357.cms

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

PRIVATE SECTOR ENTERPRISES

Biocon Biologics receives DCGI approval for emergency use of CytoSorb® to treat critical COVID-19 patients

Biocon Ltd. from Bengaluru, an innovation-led global biopharmaceuticals company, announced that its subsidiary Biocon Biologics has received the Drugs Controller General of India's (DCGI) approval for an extracorporeal blood purification (EBP) device CytoSorb® to reduce pro-inflammatory cytokines levels in confirmed COVID-19 patients admitted to the intensive care unit (ICU) with confirmed or imminent respiratory failure.

Biocon Biologics has been granted licence for emergency use of CytoSorb in public interest by the Indian health regulator to treat COVID-19 patients who are 18 years of age or older. The licence will be effective until control of the COVID-19 outbreak in the country.

CytoSorb is plug-and-play compatible with the most commonly used blood purification machines or pumps in the ICU used to treat COVID-19 patients, including hemoperfusion, hemodialysis, continuous renal replacement therapy (CRRT), and extracorporeal membrane oxygenation (ECMO) machines.

Studies have shown that COVID-19 patients who develop serious complications experience a 'cytokine storm,' also known as Cytokine Release Syndrome (CRS), which leads to excessive inflammation, organ failure and death. The goal of CytoSorb therapy is to reduce cytokine storm and the deadly inflammatory response through blood purification so that this injury may be mitigated or prevented.

The Company has received approval from DCGI in Form MD-15 (Medical Device) for reducing pro-inflammatory cytokine levels in order to control the 'cytokine storm' and benefit COVID-19 patients who are in a critical condition.

Website link:
https://www.biocon.com/biocon_press_release_20200527.asp

Mangaluru-based Start-up develops portable refrigerator for novel Coronavirus specimen transport

Blackfrog Technologies from Mangaluru, a product development and consultancy firm, had developed Emvólio (previously called Sanjivani) by a nine-member team working out of an R&D facility in Manipal over the last three years.

Emvólio is a portable, battery-operated medical-grade refrigeration system that ensures last-mile transport of COVID-19 specimens, vaccines, etc.

Emvólio is at the cutting edge of cold chain solutions with its ability to maintain a stable 2-8 degrees celsius temperature platform for up to 12 hours in the field. Moreover, it offers continuous temperature monitoring, location tracking, state-of-charge indication, and communication of vital statistics with the headquarters via live tracking. The rugged 1.5 litre-capacity cold chamber (as per WHO standards) is designed with dual-layered stainless steel 304 for corrosion resistance and easy sterilization. With Emvólio, Blackfrog Technologies Pvt. Ltd. is able to help build a system where large number of specimens can be collected from the field and transported back to a mother-laboratory without compromising on test accuracy. This project seeks to build a system that separates the point-of-collection of the specimen from the testing facility, while maintaining the integrity of the samples. While awaiting the results, the patient would remain self-quarantined. The entire diagnostic process is done remotely, and for most people who are low-risk and can be safely cared for at home, they need never risk exposure during the entire process of diagnosis, treatment, and recovery.

Website link:
https://www.linkedin.com/company/blackfrogtech
https://www.agnii.gov.in/covid-19/9/blackfrog-technologies

Delhi-based Start-up SNA Sistec develops Smart Sanitiser

SNA Sistec Pvt Ltd, a Delhi-based start-up under Invest India Initiatives is working in the field of safety security and automation services. It has developed Smart Sanitiser that dispenses 1 ml of sanitizer automatically in the person's hands when placed under the dispenser. This also gives an accurate body temperature of the user to detect any suspected corona infected person.

SNA Dispenser is a smart non-touch device, with a filling capacity of 500ml/1000ml. With its smart human hand detection system it gives 1ml of sanitizer on hands and displays live body temperature of the person at the downside of the Dispenser. This is a preventive technology and is incubated at B-Nest Smart City Development Corporation in Bhopal. It can be used in hospitals, offices and public spaces. SNA Sistec can produce 2,500 units a day. The estimated price per unit is Rs. 1,800.

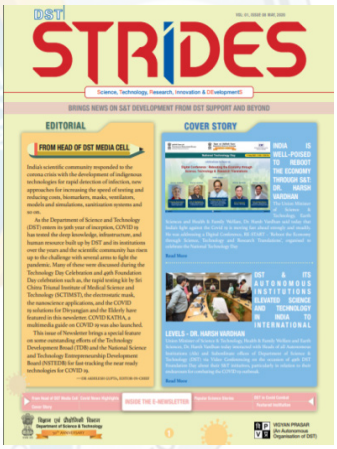
Website link:
https://www.agnii.gov.in/covid-19/21/sna-sistec

SCIENCE OUTREACH & POPULARISATION EFFORTS

Ministry of Science and Technology (MoST), Government of India, is striving continuously for reaching to the common people. Since the eruption 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 Science Ministries, Departments & Scientific Organisations

Monthly e-Newsletter 'STRIDES' of Department of Science and Technology (DST)

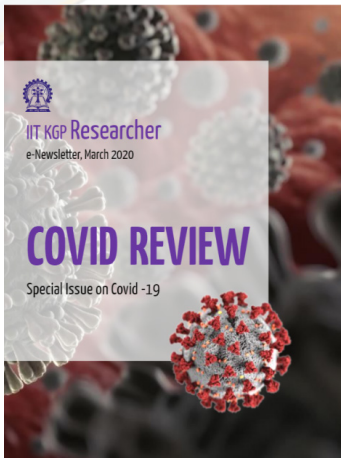


STRIDES (Science Technology Research Innovations and Developments) - A Department of Science & Technology (DST) Communication e-newsletter has been developed to bring news on S&T Development from DST support and beyond. It brings together articles, news stories, features, blogs and event reports. The Newsletter gives snapshot of the science & technology in India with focus on the activities, achievements & events of DST and its autonomous and attached Institutions. The May 2020 edition of STRIDES is on the pandemic – COVID-19. Through this effort, DST tried to bring to the table its efforts delegated towards research, technology and innovation that one would be interested to know and eventually update on the road to recovery and winning the combat.

Contact Info: DSTcommunication@vigyanprasar.gov.in; communicationdst@gmail.com

Website link:
https://dst.gov.in/e-newsletter

IIT Kharagpur brings out COVID REVIEW Special Issue



COVID REVIEW Special Issue has featured the work undertaken by various researchers and students at IIT Kharagpur related to COVID-19 healthcare and advisory.

Website link:
https://kgpchronicle.iitkgp.ac.in/3d-flip-book/covid-review-iit-kgp-research-er-e-newsletter/

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 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 the 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. Daily video bulletin in Hindi and English;
2. COVID Explained - Short films to explain research project findings in layman's lingo;
3. Facebook live sessions on interviews of various stakeholders and media with DST Secretary.

Contact info: kapil@vigyanprasar.gov.in

Website link:
https://www.indiascience.in/

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 COVID-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.

The Research and Development efforts made at 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.

Contact Info: kdgm@vigyanprasar.gov.in

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 who are interested in knowing various aspects of COVID-19 and contributing to the coronavirus warfare in whatever minuscule way.

Contact Info: kdgm@vigyanprasar.gov.in

Website link:
https://vigyanprasar.gov.in/covid19-newsletters/