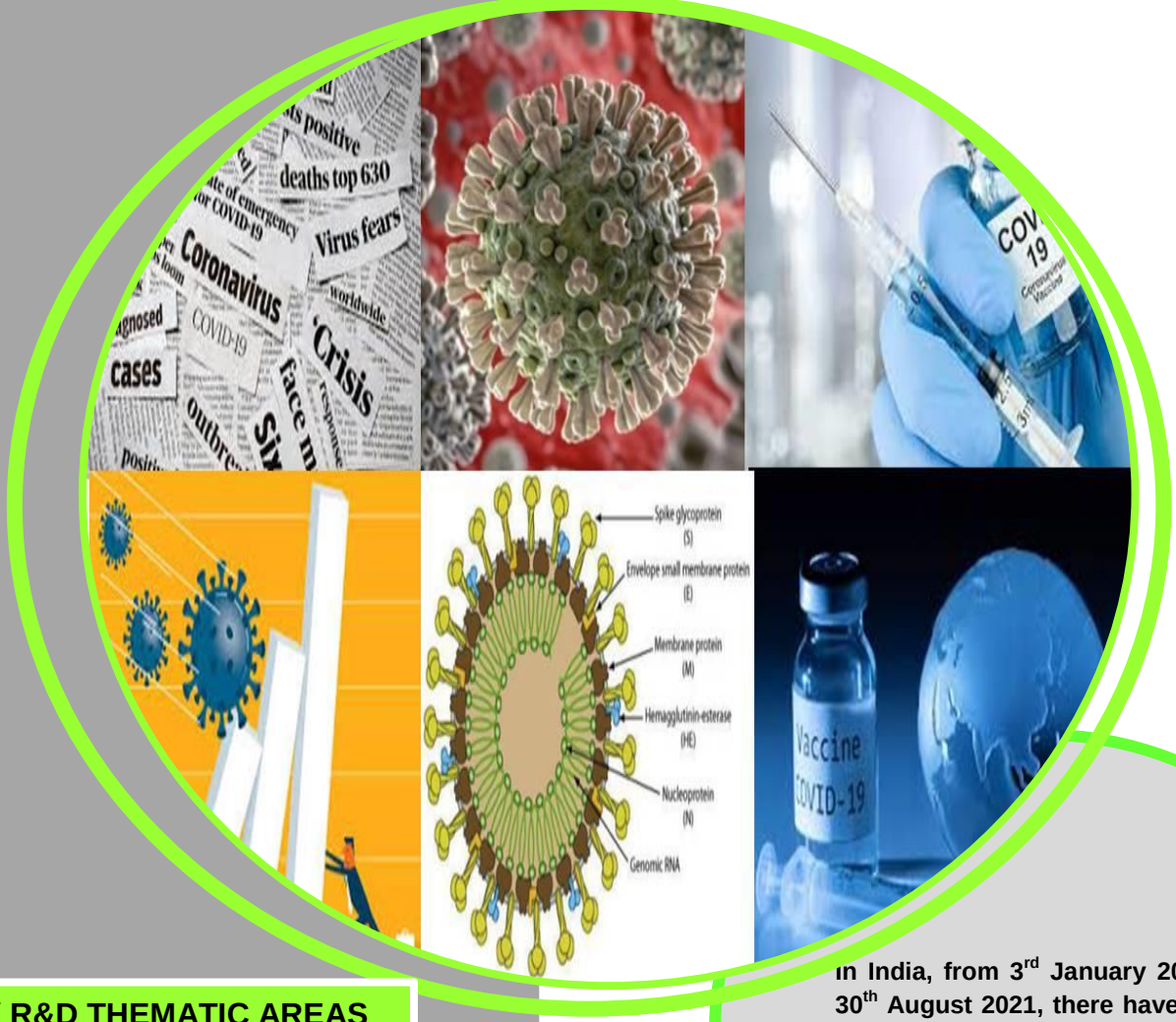
MICROBIOVISION

An Official News Bulletin of
MICROBIOLOGISTS SOCIETY (MSI) INDIA

SPECIAL ISSUE ON COVID 19



KEY R&D THEMATIC AREAS

Rapid Diagnostics

Identification of Optimal Protective Equipment

Major Clinical trials for evaluation of candidate therapeutics

Infection Prevention & control measures (Mask wearing & social distancing)

Epidemiological studies

Ethics and clinical management

Animal & Environmental Research on the virus origin and management measures. *(https://cdn.who.int/media/docs/default-source/documents/r-d-blueprint-meetings/r-d-achievementsreport_v42.pdf?sfvrsn=c4728b39_10&download=true)*

In India, from 3rd January 2020 to 30th August 2021, there have been 32,737,939 confirmed cases of COVID-19 with 438,210 deaths, reported to WHO. As of 23rd August 2021, a total of 595,504,593 vaccine doses have been administered.

INSIDE THE BULLETIN

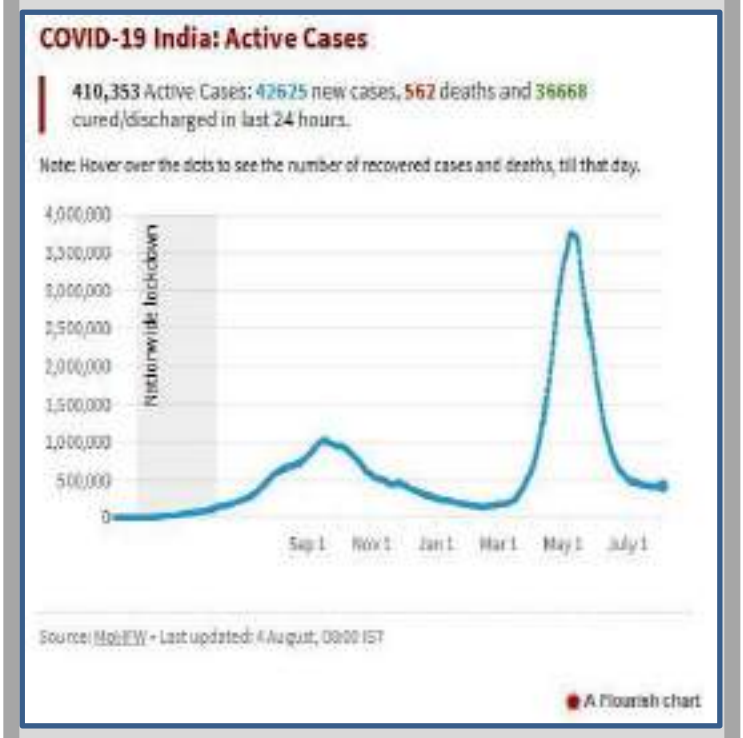
MICROBIOVISION

SPECIAL ISSUE ON COVID 19

FROM THE EDITORS DESK

The entire globe is fighting Covid-19 pandemic caused by severe acute Respiratory syndrome Sars-CoV-2.In such unprecedented times, the pandemic has unraveled new doors of Research on all aspects of this novel viral disease. Be it the Microbiology of this astounding virus, Diagnostics, identifying medica treatments or prevention strategies in the form of novel vaccines. This has been a serious medical crisis influencing all aspects of life! WHO made coordinated efforts to fill the knowledge gaps by publishing a global research roadmap. The scientific fraternity worked tirelessly to provide meaningful solutions to tackle the pandemic.

In this issue we aim to present Research and featured articles, happenings, Outreach Programs, Achievments & Accolades and activity log of various units of MSI addressing Covid 19.



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CORONAVIRUS TIMELINE IN INDIA

January -February 2020: First case detected in Kerala

March 2020: 22 cases were recorded. First death due to Coronavirus. Lockdown imposed. WHO declared Covid 19 a "Pandemic".

April 2020: More than 1463 cases and Total deaths 1075.

May 2020: Number of patients crossed 1lakh.

June-July 2020: Unlocking announced, caseload grew sharply, total cases crossed 1 million. Phase-1 Clinical trials of India's first indigenous Covaxin developed by Bharat Biotech.

August 2020: 19, 87,705 cases in India. 800-900 deaths every day.

September 2020: Highest number of deaths, daily caseload crossed 1 lakh.

October2020: Total deaths crossed one lakh mark. New cases remained closed.

November 2020: Month of relief. Downfall in daily cases from 45,000 to 38,000.

December 2020: Decline in cases. Total caseload crossed 1 crore.

January 2021: Approval of coronavirus vaccine. Inoculation drive began. India begins one of the world's biggest vaccination programme.

February 2021: India completes 1 crore vaccinations in 34 days.

March 2021: Second phase of vaccination drive including people between 45-59 and above 60 years. India witnessed highest spike since November 2020 i.e. 46,951 cases.

April 2021: Second wave imposed major setback on health care systems.

May 2021: WHO declared the two variants first found in India as "delta and Kappa".

June 2021: A big rise in infections driven largely by the more infectious and dangerous Delta variant.

July 2021: Counseling Booklet released for frontline workers & vaccinators.

August 2021: Genomic surveillance for SARS-CoV-2 in India.

Whole SARS-CoV-2 genome & Illumina CovidSeq Test at –Institute of Genomics & Integrative Biology (IGIB)

New Delhi

The COVID-19 pandemic has seen a widespread application of genomic approaches to understand the epidemiology and evolution of SARS-CoV-2. The accelerated efforts to sequence genomes of clinical isolates of SARS-CoV-2 from across the world picked up pace following the initial genome sequencing of the virus from a patient in Wuhan, the epicentre for the pandemic. As the virus evolves through the accumulation of mutations, it has split into major lineages with strong geographical affinities. The availability of the genome sequences in the public domain has provided a unique view of the introduction, evolution, & dynamics of SARS-CoV-2 in different parts of the world. Sequencing-based approaches provide a unique opportunity for high fidelity of detection & understanding the genetic epidemiology of the same. Also, the genetic variants could offer insights into the mutational spectrum, evolution, infectivity, & attenuation of the virus.

CSIR-IGIB currently uses an Illumina Covidseq amplicon-based assay to sequence the whole SARS-CoV-2 genome. This is the first NGS test approved for use under the U.S. Food & Drug Administration's Emergency Use Authorization (EUA).Globally the first field validation of the Covidseq test was undertaken by CSIR IGIB (Bhoyar et al 2021) using the high throughput Novaseq6000 next-generation sequencing system. This amplicon-based NGS test includes 2019-nCoV primers designed to detect RNA from the SARS-CoV-2 virus in nasopharyngeal, oropharyngeal, and mid-turbinate nasal swabs from patients with signs & symptoms of infection who are suspected of COVID-19.

It is now adopted in several countries for SARS-CoV-2 detection and surveillance studies due to its high sensitivity, low processing time & availability of the multiplex barcodes. At CSIR-IGIB, we have extensively applied the Covidseq test for understanding genome sequencing, variation landscaped, SARS-CoV-2 reinfection cases and epidemiology of the virus in several states in India thus enabling pandemic policy decisions. As an active part of the Indian SARS-CoV-2 Genomic Consortia (INSACOG) programme at CSIR-IGIB, we are studying the mutation landscape & the epidemiology of the SARS-CoV-2 virus in the country. This consortium will also assist in developing potential vaccine candidates & will ascertain the status of new variant of SARS-CoV-2 in the country thereby establishing sentinel surveillance for early detection of genomic variants with public health implications.

Dr. Rahul C. Bhoyar
Project Scientist
CSIR- Institute of Genomics and Integrative Biology, Mathura Road, New Delhi, 110025

Survey on Impact of Covid 19 on Research in South Asian Countries

Pune, Maharashtra

A survey was conducted to study the impact of Covid-19 on research in South-Asia countries for research scholars and faculty members. About 80% of the respondents mentioned, due to stress, depression and non-availability of resources, the experiments were not conducted in research laboratories during Covid-19 situation due to which even the publications could not be done. Only 20% of research scholars and faculty member's viz., from Srilanka and Ghazi University, Pakistan were able to carry experiments & publications during Covid-19 pandemic situation. It was also found that 83% respondents mentioned the funding sources from Government agencies for their research projects were also stopped which was a major problem. About 53% respondents mentioned only 1-3% research scholars were allowed to work in research laboratories, while 47% mentioned none of the research scholars worked in laboratories during Covid-19 situation. The variation was observed in working hours in labs during Covid-19 situations. Majority of them mentioned, the working hours in research laboratories were 4.0, and 2.0% responded online working was 2 hours. The response for research work to combat Covid-19 situation was found very poor. Only University of Peradeniya, Srilanka responded they have developed antimicrobial paint, gloves and face masks to combat Covid-19 situation. When asked about the safety measures while working in research laboratories during Covid-19 pandemic, about 90% respondents mentioned they follow use of masks, sanitizers, gloves, maintain social distance and frequently washing of hands. The products such as masks, sanitizers, hand wash if developed by each South-Asian countries, 46% responded they will bring the products in markets in their respective countries, 26% responded they will bring the products in their markets and also export to other countries, while remaining 28% responded they will neither bring the products in markets nor export to other countries. From this survey, it is found that Covid-19 situation has very bad impact on research and has severely decreased publications in South-Asia countries. The number of research publications has decreased in South-Asia countries. Therefore, All such countries should come together to fight Covid-19 situation. Research scholars can work in laboratories if they follow these practices properly in Covid-19 situation. The products viz., sanitizers, hand wash, economical masks, etc. developed by each South-Asian country should be made available in the markets and also exported to other countries. Proper vaccination must be done to combat Covid-19 situation. The research on developing products to combat Covid-19 situation should be done on large-scale.

Aparna B. Gunjal (Assistant Professor)
Department of Microbiology, Dr. D.Y. Patil, Arts, Commerce & Science College, Pimpri, Pune, Maharashtra, India

'COVIRAP'- A Feather in the Hat for the Covid-19 diagnostics

IIT Kharagpur

COVIRAP, a novel diagnostic technology for COVID-19 and beyond have been successfully developed by the research team at IIT Kharagpur lead by Professor Suman Chakraborty and Dr Arindam Mondal. Professor. Chakraborty and Dr. Mondal are the designing heads no doubt, but they highly acknowledged the hard work of the entire unit of researchers working behind this great impactful innovative development. Speaking of the technical design Dr. Modal added- "This highly advanced detection technology deploys a step-wise isothermal nucleic acid testing method for the rapid diagnostics of pathogenic infections including SARS-CoV-2 in individuals. The test can be conducted directly from human swab samples in the portable device developed by the team, without requiring any separate facility for RNA extraction. The results can be made available within 45 minutes of obtaining the patient sample". The research team projected that the kit is also supplemented with a free smartphone app to facilitate result interpretation and automated dissemination

COVIRAP PROMISES..

as viable alternatives for rapid testing of pathogenic infections at low cost in resource-limited settings. While explaining the benefits of this development Professor Chakraborty rightly added - "It overcomes the potential bottlenecks faced by similar other tests like poor performance outside highly controlled laboratory and lack of simple, affordable, yet generic and universal instrument that may be used for home-based testing & community healthcare for a wide variety of infectious and non-infectious diseases".

Members of the research team were delighted to inform that IIT Kharagpur has further initiated the procedure of deploying this product for on-campus use to detect possible novel coronavirus infection. They are indeed hopeful and eager to spread the impact of COVIRAP technology in meeting the long-standing demands of high-quality community-level testing.

Prof. Suman Chakraborty (L) & Prof. Arindam Mondal (R)

Developed by IIT Kharagpur

The research team at IIT Kharagpur believes that, the envisaged trade-off between the high scientific standards of advanced molecular diagnostics with the elegance of common rapid tests appears to be the future of infectious disease detection & management. A platform technology capable to be inclusive of all such disease detections where nucleic acid-based tests may be deployed, COVIRAP is not just a one-time solution targeted specifically to COVID-19 but will remain imperative in global disease management in the years to come.

The COVID-19 Pandemic also known as CORONA VIRUS pandemic is an outgoing global pandemic of coronavirus disease 2019 caused by Severe Acute Respiratory Syndrome Coronavirus2(SARS-CoV2).The WHO declared a public health energy of International concern regarding COVID-19 on 30/1/2020 and later declared a pandemic on 11/3/2020.As of 24/5/2021,more than 167million cases have been confirmed, with more than 3.46 million confirmed deaths, attributed to COVID-19 making it one of the deadliest pandemic in history. On 30.1.2020, Dr.Tedros AdhGhebreyesus, WHO, Director General declared the Novel Coronavirus outbreak, a public health emergency of international concern (phenic), WHOs highest level of alarm.

During COVID 19 pandemic scenario in civil urban and rural areas motivated students of MSI units of various colleges of Gondwana University Gadchiroli, to accomplish various activities in order to spread awareness about the prevention of corona infection.

Dr. Megha Kulkarni
Coordinator MSI, Gondwana University
Gadchiroli

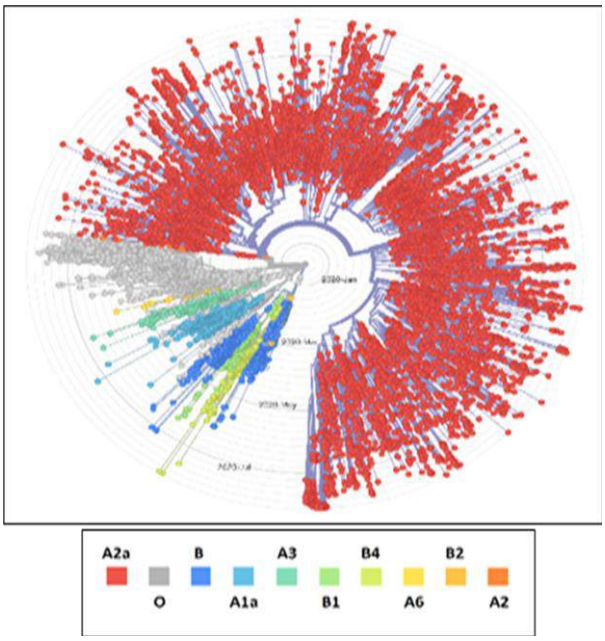
Featured Research Article

Genomic epidemiology driven understanding of the geographical spread and evolution of SARS-CoV-2 lineages

Arnab Ghos, Dr. Nidhan K. Biswas
National Institute of Biomedical Genomics (Kalyani, West Bengal)

The Covid 19 pandemic caused by the novel coronavirus "SARS-CoV-2" has taken the world by storm. Coronaviruses infect humans with various degree of severity; the SARS-CoV-2 causes severe respiratory syndromes. The SARS-CoV-2 is a single stranded RNA virus with a genome size of about 30KB that encodes 29 structural and non-structural proteins. The virus infects the host through interaction of its spike protein and host cell receptor ACE2 which is highly expressed in pneumocytes of human airway tissues. Due to inefficient replication machinery, the RNA viruses acquire mutations over generations. Generation of RNA sequences over time-course of COVID-19 pandemic had shown that SARS-CoV-2 had acquired mutations as it spread geographically. From an evolutionary point of view, most mutations on viral genome are deleterious for the virus and these random mutations are usually eliminated. However, a virus with a particular mutation that provides higher transmission efficiency rapidly rise to a high frequency. Within three months of its emergence, SARS-CoV-2 evolved into 10 major subtypes with characteristic mutations. In early April 2020, our research group at National Institute of Biomedical Genomics (West Bengal) highlighted a particular subtype formally called "A2a" carrying a spike protein mutation (D614G) and a RdRp mutation (P323L) showing potential towards outcompeting all other subtypes, including the ancestral one (Biswas and Majumder, 2020). This SARS-CoV-2 variant brought our attention early on, as it resides in an evolutionary conserved region of Spike protein which plays most crucial role in host cell entry. And as we speculated in our former study, within 7 months, it was shown to become the dominant subtype all over the world. The spike protein of SARS-CoV-2 needs to be activated through proteolytic cleavage by host proteases (e.g., TMPRSS2, Furin) before it attaches to host receptor to deliver its genetic material into host cell. The proteolytic cleavage of SARS-CoV-2 spike protein occurs at the junction of its two main subunits S1 and S2. To our surprise, the frequently mutated 614th amino acid of the spike protein resides within this S1-S2 junction. Through bioinformatic analysis, we first discovered that the D614G mutation generates an additional cleavage site (specific to neutrophil elastase), at S1-S2 junction of the spike protein (Bhattacharyya et al., 2021). Later, other studies also provided supportive evidence to our early finding and shown its increased transmission efficiency in cell-line based experiments. Now, an additional cleavage site on spike protein will lead to faster processing and activation in presence of neutrophil elastase in host.

Despite, emergence from China, its spread was rather slower in East Asian countries, only reaching up to 24% frequency by the time (Image inset). Gain of an additional cleavage site must provide an equal advantage to the viral subtype in all regions. Thus, the non-uniform rise of the frequency of virus carrying Spike D614G mutation drew our attention. It was further investigated why the viral subtype with an extra neutrophil elastase cleavage site would get advantage in selective populations.



The importance of acquiring additional cleavage sites in Spike protein of coronavirus for greater transmission efficiency has been studied for decades and most importantly, the emergence of the novel coronavirus, SARS-CoV"-2" was due to insertion of a "furin cleavage site" in its genome. Thus, due to D614G mutation, addition of another cleavage site would lead to more efficient transmission and selection of the SARS-CoV-2 subtype. After emergence of the particular subtype in late January 2020 in China (Zhejiang), it spread rapidly in other countries and became the dominant one by March 2020 in Europe (67%) and North America (69%).

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Genomic epidemiology driven understanding of the geographical spread and evolution of SARS-CoV-2 lineages

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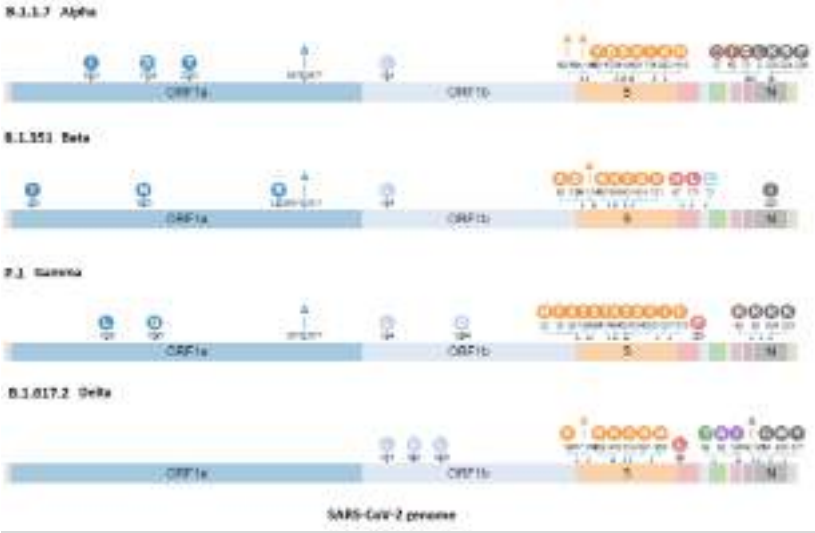
The spread of SARS-CoV-2 virus subtype with Spike D614G mutation (coloured in red) was non-uniform across world regions. Despite its origination in East Asia, it spread in significantly slower rate compared to the Europe and North America. In Europe and North America, it out competed other subtypes within 1-2 months.



Top ranked SARS-CoV-2 global variant of concern as of June 2021. Mutations in Spike and Nucleocapsid protein got selective advantages. These mutations have been shown to cause greater infection efficiency as well as host immune evasion.

As evident from multiple epidemiological studies, there was no significant difference in neutrophil levels among these populations which could provide the subtype with extra neutrophil-elastase cleavage site a selective advantage. Then we asked what can be the other way of regulation of neutrophil elastase level? We saw that the level of active neutrophil elastase in blood is known to be tightly regulated by its inhibitor α1-antitrypsin (AAT). By re-analyzing available human genome variation data, we observed genetic variants that cause AAT deficiency (i.e., AAT deficient alleles) were highly prevalent among populations of Europe and North America and was rare in East Asian populations. Thus, individuals of Europe and North America will have higher level of active neutrophil elastase in site of infection due to prevalence of deficiency of its inhibitor and that will be advantageous to the virus with Spike D614G mutation carrying additional cleavage site specific to elastase. We showed that faster spread of SARS-CoV-2 subtype "A2a" with Spike D614G mutation in selective regions was facilitated by AAT deficiency among individuals. Collectively, we were able to show that the evolution of SARS-CoV-2 and the selection of its variants is shaped by human genetic variation.

Today, almost all SARS-CoV-2 lineages all over the world carry this Spike protein D614G mutation. The SARS-CoV-2 evolution in human host has not been declined yet despite a global initiative taken to immunize humans through vaccination. In late September 2020, another Spike protein mutation N501Y in background of D614G emerged from independent locations of the world (UK, South Africa, and Brazil) and became global variant of concern. The formally known "UK" variant (B.1.1.7) carrying Spike N501Y mutation along with 16 other characteristic mutations in Spike, Nucleocapsid and other proteins, has been reported to be evolved within immune compromised host before spreading. In recent times, another SARS-CoV-2 variant B.1.617.2 emerged from India with characteristic deletions in N-terminal domain of Spike protein and became variant of concern. Due to a high selection pressure caused by host immunity gained through infection or vaccination, majority of SARS-CoV-2 variants that are gaining high frequency now-a-days are helping the virus to evade the host immune surveillance.

Thus, throughout the emergence of ongoing COVID-19 pandemic, the virus evolved rapidly was indeed shaped by human genetic variations and immunity.

NEXT

MSI STUDENT UNIT EVENTS

Students- Messiahs in Corona times.....

5 Intensive Workshop on PCR & RT-PCR!

Golden Salute to Covid Warriors

Inauguration of Goa Student Unit

Compendium on Corona Virus

Task Force Package by Student Unit, Goa

Students as Messiah in Corona testing times!

Sardar Patel Mahavidyalaya, Chandrapur

A vaccination awareness program was initiated by the Student Unit (Tanmay Kale, Piyush Bais, Vaishnavi Limje, Priyanka Sarkar, Prerna Meshram, Akanksha Ramteke, Kartik Date, Niharika Tople, and Gunjankumar Hadge) of Gondwana University in the form of videos, posters and messages and circulated among the society for the control and prevention of COVID 19. Student Unit has also volunteered to distribute fruits and food to relatives of COVID patients coming from villages in Government COVID ward, Chandrapur. Also, students provided tiffin for the people suffering during lockdown.

COVID 19 pandemic scenario in civil urban & rural areas motivated students of MSI units of various colleges of Gondwana University Gadchiroli, to accomplish various activities in order to spread awareness about the prevention of corona infection.

Mantaiah Mallaiah Panem bags First and Second Prize!

Mantaiah Mallaiah Panem, student of Microbiology, Deptt. of Microbiology participated in “University Level Power Point Presentation “Competition for PG Microbiology students on 15/3/2021, organized by Shri Sachchidanand Shikshan Sanstha`s Taywadw College, Mahadula, Koradi stood first. Also, he won second prize in National level Student seminar competition on the **“Role of Microbiology in sustainable development”** organized on 18th & 19th May 21 by Deptt. of Microbiology, Devchand College, Arjunnagar in association with MSI.


DEVCHAND COLLEGE, ARJUNNAGAR

National Level Student Seminar Competition, 2021

CERTIFICATE

5 Day Intensive Workshop on PCR & RT-PCR!

Jammu & Kashmir

A five-day workshop was organized at CSIR-IIIM, Jammu from March 1st to 5th, 2021, under the CSIR skill development program, which was aimed to provide hands-on training on PCR and RT-PCR.

Also, a webinar on World Veterinary Day 2021 theme **“Veterinarian response to the COVID-19 Crisis”** by Dr. Gaya Prasad, Former Vice-Chancellor SVPUAT, Meerut, UP was organized on April 17th, 2021 by the Faculty of Veterinary Science, SKUAST-K sponsored by IDP-NAHEP in which 50 students participated. Many enlightening talks were delivered by (1) Dr. Siti Sarah Othman, Associate Professor, Cell and Molecular Biology, University Putra Malaysia; (2) Dr. Aneela Durrani, Professor, Clinical medicine and Surgery, University of Veterinary and Animal Science, Lahore, Pakistan; (3) Dr. Mahesh Chander, Joint Director Extension Education, IVRI, Izatnagar; (4) Dr. Prakash Reddy, DGM Technical Ventri Biologicals; (5) Dr. Ruchi Tiwari, Sr. Asstt. Professor, Veterinary Microbiology, DUVASU, Mathura.

Golden Salute to Covid Warriors

Jammu & Kashmir

In connection with augmentation of COVID-19 testing lab at SKIMS, Soura and GMC, Srinagar, University of Kashmir identified below mentioned Research Scholars from various departments who were deputed to assist state health department in fight against COVID-19. The details of research scholars with their place of posting are mentioned below:

Name of Scholar	Department	Posting
Mr. Irfan Ahmad	Biotechnology	SKIMS, Soura
Mr. Adil Yousuf	Biotechnology	SKIMS, Soura
Mr. Kamran Nissar	CORD, KU	GMC, Srinagar
Mr. Suhail A.Sheikh	Biotechnology	GMC, Srinagar
Mr. Younis Majeed	Biotechnology	GMC, Srinagar
Mr. Rouf Maqbool	Biochemistry	SKIMS, Soura

A webinar was held on **"COVID APPROPRIATE BEHAVIOUR"** by J&K State Emergency Operation Centre and GMC Srinagar on April 30th, 2021 at GMC Srinagar. Also, a 3-Day Webinar on **"COPING STRESS & ATTAINING MENTAL WELLNESS IN COVID-19 PANDEMIC"** was organized by Composite Regional Centre Srinagar J&K in collaboration with Department of Students Welfare (DSW) Central University of Kashmir from May 25th to May 27th, 2021.

MSI Launches Student Unit in Goa!

Government College of Arts, Science & Commerce, Khandola, Goa

The MSI Student Unit of Government College of Arts, Science & Commerce, Khandola, Marcela, Goa was inaugurated on 21st December, 2020 & conducted several activities that involved active student participation centered around the understanding of COVID 19 spread and its control measures. The unit is run by Ms. Kruti Pednekar & Mr. Anson Fernandes of M.Sc. Microbiology course serving as President and Secretary of the student unit & Ms. Sulochana Shet (Assistant Professor, Microbiology) as the treasurer. The number of MSI student members is 48 and 10 faculty members. The unit has launched many innovative Programmes given below.

Compendium of Coronavirus

Khandola, Goa

A Compendium on Corona Virus and Covid19 was compiled by MSc. Microbiology students (Part II) under the banner of MSI, Goa and released with the title of "**World Wide Contagion- Corona Virus**". An E- bulletin was also compiled and released by students of MSc Microbiology (Part I) and members of MSI titled "**Micro Aware E-Bulletin**" that comprised of articles like "Anti-microbial resistance- the next pandemic", "Novavax Reports Varying Success vs. COVID-19 variants" and "Malaria 'completely stopped' by microbe".

National level Collage competition for UG students on **"Covid 19 Vaccine, a blessing not a malediction"** was organised. The first and second positions were bagged by Bharti Vidyapeeth College of Pharmacy, Navi Mumbai and the third place by Maulana Azad College of Arts, Science and Commerce, Aurangabad.

Webinars on Covid 19

Webinars entitled **"Bolstering during India's COVID-19 Emergency"** followed by a State level webinar on "COVID-19 - **Care and Cure through Ayurveda"**. Also, webinar entitled **"Mucormycosis: The 'black fungus' traumatising COVID-19 patients in India"** was organised with Prof. Savio Rodrigues (HOD Microbiology, Goa Medical College and Hospital) as the respected Resource person.

Student Unit comes up with Task Force Package

Student unit comes up with a task force package named **"COVID-19 ASSISTANCE DRIVE"** where the underlying thought is to meet the challenges of the ongoing Covid crisis. The task force design in highlight shows:- Task force 1: **"Goan COVID immunizations drive"** - a survey via Google forms. Task force **2: "Hand-in-aid" - compilation of helpline numbers according to area. Task force 3: "Inform-D-Natives"-** providing information regarding Mucormycosis through power point presentation. Task force **4: "KnowCOV by Art"-** E-Poster on possible 3rd wave and its effect on children. Task force **5: "Covicoaster" -awareness videos in English & local language Konkani** on YouTube. Task force **6: Instagram page.** Task force **7: "Decoding Self-testing**"- E-poster on proper usage and disposal of the kit. Task force **8: "Covicare through Ayurveda"-** helpline data for advice on care and prevention of Covid 19 through Ayurveda.

CONGRATULATIONS

- **Dr. Dilecta D'Costa** and **Dr. Aureen Gomes** of Government College, Khandola were felicitated for their noble work during Covid 19 in carrying out analysis of Covid samples.
- Dr. Dilecta D'Costa was awarded **Swa Shakti Sahayog Puraskar** by Pradnya Shakti Goa for her meritorious work during Covid 19.
- **Miss Neeviya Gaonkar and Miss M. Anandhi** were awarded trophies and certificates for Best Microbiology students of PG & UG respectively by MSI.

NEXT

MSI HAPPENINGS @ Nagpur, Wardha, Gondia

- **Bajaj College students as Community Immunity Ambassadors**
- **Survey on Corona Vaccination**
- **Felicitation of Corona Warriors**
- **Global Handwash Day**

Bajaj College students as Community Immunity Ambassadors!

Bajaj Autonomous College, Wardha

Students of Bajaj College of Science, (Autonomous) Wardha, worked as community Immunity Ambassador and helped to combat the pandemic and circulate the information on how to break the chain, in their family, friends and society. An online quiz on "COVID 19 Pandemic General Awareness quiz" was conducted on 16th April 2020 for Microbiology UG and PG students separately to spread awareness about the prevention and possible treatment of COVID 19 which was attended by 420 candidates. Digital banner and video clip was prepared by the students to aware people about the safety measures of COVID 19 prevention. Some students of department are served as frontline workers viz., Shefali Tiwari working in AIIMS, Raipur, Afsana Sudagar, Pratiksha Bhongade working as Research Assistant and Lab technician in Sewagram hospital, Wardha, Komal Dhote is working in Genetek life sciences, MIDC Wardha.

Survey on Corona Vaccination!

PG students in collaboration with (MSI) conducted a Survey on Corona Vaccination (https://forms.gle/1PR4v8eeir2XP4qu8). They collected data related to vaccine for COVID 19 and its post consequences by online mode. Also, they convinced people for vaccination, if they are not ready to take vaccine.

An informative lecture was organized on 27th May 2021 at 10.00 am on **"Statistical Evaluation of Corona Vaccination Related Data"** by Dr. Sanjeev Patankar, President, MSI, Maharashtra and Goa region which was attended by 48 Microbiology Postgraduate students and faculty members.

Awareness video clip was prepared by the PG students on Hand sanitization, Vaccination and Mucormycosis.

Felicitation of Corona Warriors

Dharampeth M.P. Deo Memorial Science College Nagpur

Covid warriors of Dharampeth M.P. Deo Memorial Science College Nagpur were felicitated by MSI. Students of department are working as frontline workers as an intern in Covid care centres providing their help to Corona patients. Mr Kunal Parate is working as a Pharmacist in NMC run Covid hospital. Mr. Nilesh Ghate provided food stuffs to Covid patients.

Online Digital Poster Competition on Life during Covid-19 Pandemic was organised in collaboration with Home science Department of the college (January 2021).

Covid-19 Wellness Survey was conducted for college students in the month of June 2020.Total 220 students participated in this survey program. The main objective of this Wellness Survey was to understand & guage the overall attitude of the young generation towards their well-being during the Covid-19 Pandemic.

MSI OUTREACH PROGRAMS ON Corona Awareness

Organised by: Department of Microbiology, Department of Marathi & Extension Activity committee

Responding to an appeal made by MSI to organize CORONA Awareness Program for non-Life Science teachers, students & masses Deptt. of Microbiology has organized online program in collaboration with Deptt. of Marathi and Extension Activity committee on 25th May 2021 at 12.00. Dr. Arvind Deshmukh, President, MSI delivered talk & emphasized the need of vaccination and nicely explained conception and misconception about vaccines. The presidential addressed was given by Dr. Mrs. Sharayou Taywade, Principal, Taywade College. Program was conducted by Dr. Komal Thakre.

Vaccines at your Doorstep

Jeevan Vikas Mahavidyalaya Taluka Narkhed Nagpur

Deptt. of Microbiology & NSS conducted the campaign of 'Vaccination at Your Doorstep' & Public Awareness Week were celebrated. College students were selected for the campaign who trained & surveyed people those were not vaccinated. Through this campaign 360 citizens of the village were vaccinated. And 95 per cent vaccination target was achieved.

Dhote Bandhu Science College, Gondia

Celebrated Global Hand Washing Day through online mode in October 2020

National Science Day Celebration!

VidyaBharti College, Seloo

Virtual Poster Competition on the topic- **"Contribution of Microbiologist to National Reconstruction in post COVID-19".** Awareness about the terror of Novel Corona Viral Infection (COVID-19) was the objective of the event.

Kamla Nehru Mahavidyalaya, Nagpur

Online Essay/poster competition was conducted by Deptt. of Microbiology. Total 69 entries from different colleges in the form of Posters and Essays were received. Theme for poster was Corona and post corona period and Antibiotic resistance- a scientific challenge and other subjects. E-certificates were provided to all students.

MSI PUNJAB AT A GLANCE

Kudos to Dr. Jaspreet Kaur

Ludhiana Unit

For her immense contributions in COVID-19 diagnostic testing at Viral Research & Diagnostic Laboratory (VRDL), Government Medical College, Amritsar from 19th April to 22nd June, 2020. She trained medical staff for the same. In VRDL, she was mainly a member of RT-PCR team. During her working period, she was periodically engaged in other COVID-19 testing processes such as handling of COVID samples, COVID RNA isolation etc. In such catastrophic COVID crisis, she worked with the true spirit of a corona warrior.

Mehr Chand Mahajan DAV College for Women

Deptt. of Food Science & MSI organised an International virtual seminar on **'Emerging strategies in the fight against COVID-19** & **other contagions'.** Focused on emerging therapeutics & vaccine related innovations and the role of microbiology in the battle against COVID-19. Over 600 students, faculty members, research scholars & industry personnel from different states all over India as well as from abroad (including UK and USA) attended the seminar. Final session of the seminar was taken by Dr. Ashok Kumar, Associate Professor of Ophthalmology, Microbiology & Immunology, Wayne State University School of Medicine, USA.

Lyallpur Khalsa College, Jalandhar, Punjab

PG Deptt. Of Biotechnology & MSI organized National Webinar on **"Corona vaccine: Our greatest weapon against COVID-19"** on May 29th 2021. The resource person of the event was Dr. AM Deshmukh, President, MSI.

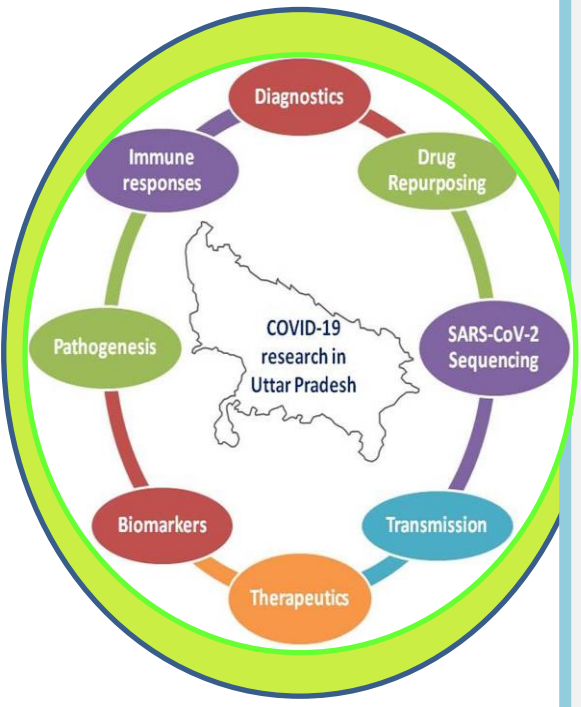
FACULTY NOTABLES

Arun Dev Sharma & Inderjeet Kaur (2021) published a paper **entitled "Targeting β-glucan synthase for Mucormycosis "The 'black fungus" maiming Covid patients in India: computational insights"** in Journal of Drug Delivery & Therapeutics. 11(3-s) Available online on 15.06.2021 at http://jddtonline.info

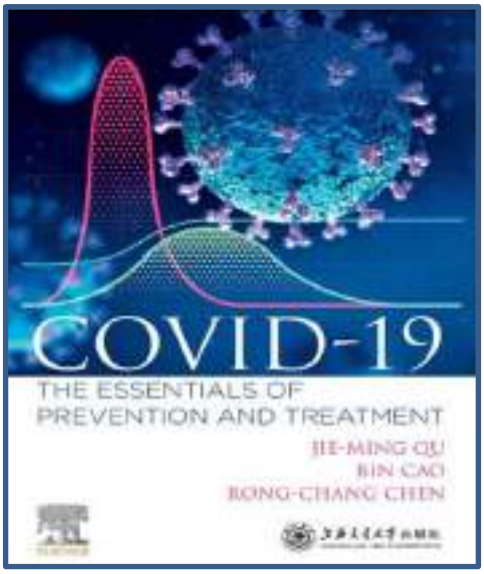
COMING UP

MSI Jamboree @ West Bengal, , Telengana, Maharashta

- MSI West Bengal announces Covid 19 Help Desk
- Oxygen Parlor
- Dry Ration Drive
- Covid-19 Vaccination Drive



A MUST READ



Covid 19 Research Initiatives: Uttar Pradesh

Dr. Neha Sharma (Research Associate) and Dr Devinder Toor (Assistant Professor -III) Amity Institute of Virology and Immunology, Amity University Uttar Pradesh

In India, Uttar Pradesh (UP) is the most populous state with nearly 200 million inhabitants, which imposes a great challenge in the management of this pandemic. A recent study published in Indian Journal of Medical Research illustrated significantly higher infectivity in UP whereas another study on transmission chain and clinico - epidemiological characteristics of COVID -19 investigated by ICMR's Regional Medical Research Centre in Gorakhpur, UP illustrated the high magnitude of transmission of diseases. Amity Institute of Virology & Immunology has proposed a novel immunotherapeutic approach for the regulation of pathogenic inflammation in SARS - CoV -2 infected patients. This approach is translationally viable and harbours the potential for the effective management of SARS -CoV -2 infection in severely infected COVID -19 patients.

With respect to diagnostics, Amity Institute of Virology and Immunology is working on to develop CRISPR/Cas based diagnostic of COVID -19. CRISPR/Cas system is rapidly becoming well known for its powerful potential in therapeutics but also getting a unique identity in the field of molecular diagnostics. A few other research groups have focused on the novel, cost -effective, portable and rapid diagnostics approaches using artificial intelligence and electrochemical sensors. Immunosensors and biomarkers based diagnostic approaches might offer a more reliable, sensitive and user -friendly diagnosis of COVID -19. Further, COVID management can be conducted in a more accurate and sophisticated manner using Artificial intelligence and databases. Other studies suggested use of X -ray images for the early detection of COVID -19 by deploying artificial intelligence and deep learning algorithms. These approaches might provide a more realistic scenario of the COVID -19 based on the database of publicly available X -ray images and might further contribute to the effective management of the disease.

At Indian Veterinary Research Institute (IVRI), the bio -safety laboratory level -3 (BSL -3) lab began testing of COVID -19 samples in the month of April 2020 when the health department of the region started providing samples from the entire district and the adjoining area coming under the jurisdiction of Bareilly district. Initially, the samples for COVID -19 testing were sent to Lucknow and would take at least 48 hrs for the test reports to arrive but since the start of COVID -19 testing at the IVRI BSL -3 facility, the turnaround time reduced to less than 24 hours. IVRI is also engaged in a project where in the role of domesticated as well as wild Animals is assessed in the transmission of SARS -CoV -2. Apart from this, many research groups at IVRI has published excellent research and review articles on COVID -19 since the start of this pandemic to address the issue of COVID -19 for the scientific research community.

Another very important aspect, i.e., repurposing of drugs for COVID-19 management is being accessed by various groups. Dr. Sachdeva from Amity Institute of Virology and Immunology showed in silico potential of antimalarial drugs for repurposing by docking them against two SARS -CoV -2 targets. This study revealed doxycycline and halofantrine as promising drug candidates for repurposing against COVID -19. Doxycycline showed an effective binding affinity for the receptor -binding domain of spike protein of SARS -CoV -2 and halofantrine bound efficiently with the main protease of the virus. This study provided the starting material for in vitro and in vivo studies required to decipher the actual potential of these drugs for fighting against COVID -19.

Another research group from King George's Medical University, Lucknow have suggested repurposing of drugs used in rheumatological disorders for the treatment of COVID -19. The Central Drug Research Institute (CDRI), Lucknow has sequenced the SARS -CoV -2 virus strain from few COVID -19 patients and have also investigated repurposing of drugs (ASC09/ritonavir, lopinavir/ritonavir with or without umifenovir in combination with antimalarial chloroquine or hydroxychloroquine) as potent inhibitors of SARS -CoV2. Further, CSIR -CDRI, Lucknow got approval for Umifenovir for Phase III trial for the use in the treatment of COVID -19.

(https://www.pharmaceutical - technology.com/news/indias -cdri -trial - umifenovir -covid -19/)

West Bengal stands upfront as a strong social Pillar

The MSI-WB is an organization which has been a year since its foundation and has already established its profound impact not only in academics but also the social front. MSI-WB stands upfront as a staunch pillar in Covid devastating times with every possible help to its concerned.

Covid-19 Help Desk

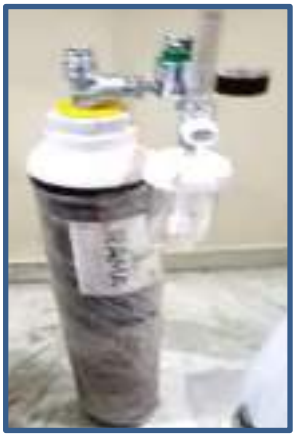
Hundreds of student members of MSI-WB, volunteered to serve at COVID helpdesk & help COVID affected people during the second wave. This desk mainly worked for arranging Ambulances, Hospital Beds, Medicines, Oxygen Cylinders, Blood and Blood Donors, Food and Telemedicine with doctors. This was an unconditional help rendered to the helpless families suffering from COVID and a pronounced step taken for a noble cause by the MSI-WB unit student members under the guidance of Dr. Swapna Mukherjee (State president, MSI, WB) and enthusiastic coordinators of MSI- WB unit. The active COVID warriors at the 24 hours helpdesk included Mr. Soumya Sarathi Ganguly (Jt. Students Convener, MSI-WB), Mr. Sayan Roy (Jt. Students Convener, MSI-WB), Ms. Martina Chakraborty, Ms. Priyanjana Bose, Mr. Himadri Sekhar Paul, Ms. Srabasti Barai, Ms. Joyita Chowdhury, Mr. Soumya Mazumdar and Mr. Bhaskar Acharya. Many more young volunteers helped in spreading the urgent news and finding solutions.

Covid 19 Fundraiser

MSI-WB unit moved ahead to create a fundraiser which mainly was to support the families in distress during the pandemic. Hundreds of people joined hands and supported this initiative financially. A generous financial support and motivation was rendered by Prof. Arvind Deshmukh (National President, MSI) and many others respected members of the society who contributed to the fund. Some great minds who were motivated by the idea of the MSI-WB unit also came up with their benevolent helping hands in full consent to this noble cause (image inset). MSI-WB unit president, Dr. Swapna Mukherjee has expressed her sincere regards to the families of all the respected people who came forward with a thought of serving the society through MSI.

SHAAS - The OXYGEN Parlor

A three bed oxygen parlor was founded at Garia, South Kolkata by MSI-WB. The unit is being run by MSI-WB unit members in association Garia's "Amra Kajan" group for providing oxygen & space/infrastructure respectively. This noble initiative has helped many people receive oxygen when their SpO2 level went critical and there was tremendous scarcity of cylinders all over, along with high monetary issues associated with the purchase. The unit Student Convener Mr. Soumya Sarathi Ganguly served as the spokesperson for news coverage by TV9 Bangla. MSI-WB State Coordinator Dr. Maitreyi Mondal & Student Coordinator Mr. Sayan Roy was a constant support from inauguration to the working days all along. The whole event was coordinated by Shri Avra Mukherjee (Ward Coordinator), Mrs. Firdous Begum (Local MLA) & organised by Dr. Swapna Mukherjee (State President, MSI, WB) who also conceptualized this entire set up (image inset). MSIWB unit under her able guidance deems SHAAS (free of cost) to be prepared for the future & third wave of COVID if so may come.



MSI-WB Members Volunteer for Sputnik V Trials

MSI-WB members paved a landmark picture for the residents of the state by heartily volunteering in the elemental group of vaccination for Sputnik V in West Bengal as well as in India. MSI-WB students & Professors volunteered to participate and were successfully vaccinated in the phase III clinical trial of Sputnik V COVID vaccine which was organized by Peerless Hospital, Kolkata under the guidance of Dr. Subhrajyoti Bhowmick.

Also, MSI-WB unit honoured its COVID-19 Warriors through an Annual Meet in the end of 2020 which celebrated a year of formation of this unit, along with it the prime focus of this meet was to felicitate the 'COVID-19 Warriors' who have made a remarkable contribution to the society during the pandemic. Covid Warriors were felicitated with memento and certificates from MSI by Dr. Subhrajyoti Bhowmick (Peerless Hospital) who was the chief guest of this programme, Dr. Swapna Mukherjee (MSI WB Unit President) coordinated the event along with the other state coordinators of MSI. ***(Contd..on Page 13)***

A helping hand forwarded to the down-at-heels MSI-WB reaches out to the 'Deprived Community'!

Heartfelt gratitude extended to the contributors who were motivated to serve the community in the pandemic through MSI-WB unit

Name	Amount
Kamal Shaw	20,000
Nayan Roy	10,000
Tanmoy Majumdar	1,000
Jharna Guha	45,000
Community Kitchen	15,000
Community Kitchen	8,000
Alpana Bhattacharya	10,000
Rinku Mondal	10,000
Anjana Jana	8,000
Sarada Ghosh	10,000
Papiya Ghosh	10,000
Ritayan Roy	5,500

The "Dry Ration Drive"

'Dry Ration Spread' founded by MSI-WB student members & coordinators distributed dry ration to the impoverished people at the peak of pandemic where the strict implemented distancing and lockdown rules made the life of these road-siders very distressful. This mission was the brainchild of Dr. Swapna Mukherjee (State president, MSI, WB) and counts the sincere efforts of Dr. Maitreyi Mondal (State Coordinator, MSI, WB) and two student coordinators of the unit. A part of the fund collected was used to provide relief to the people who lost their jobs due to pandemic Dry ration was distributed among more than 100 street dwellers under Gariahat flyover in Kolkata in May, 2021 and further plans are under the agenda of the MSI unit to reach out to other locations based on survey reports from the community.

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Service in Community Kitchens

A considerable amount of money from MSI-WB COVID-19 Fund has been donated to the "Community Kitchens" organized by volunteers in the state. It ran continuously in the critical times pandemic in the last few months, providing food to the COVIDinfected families free of cost. The endeavour is still under process with the agencies concerned.

ANNUAL MEET 2020 AT MSI-WB

"Covid-19: Understanding The Virus and How to Cope with Anxiety" An International Webinar was organized by Deptt. of Microbiology, Telangana Social Welfare Residential Degree College for Women, Mahabubnagar in the month of June 2020.

Likewise, a National Webinar on "**Drug Repurposing and Novel Therapies against SARS CoV-2**" was organized by Deptt. of Microbiology, Telangana Social Welfare Residential Degree College for Women, Mahabubnagar and Telangana Academy of Sciences, Hyderabad in the month June 2020.

NEXT

TELENGANA MSI SNIPPETS

Awareness Drive on Covid-19 Vaccination in Washim District, Maharashtra

Rajasthan Aryans Mahavidyalaya, Washim

Student unit started generating awareness about COVID-19 vaccination. Students of Post graduate Deptt. of Microbiology started informing the villagers about the importance of COVID-19 vaccine and its role in protection against COVID-19 infection. The villagers who had several doubts about Covid-19 vaccine have agreed to take it, following counseling by the students.

The initiative was as a result of appeal by Dr. Rachana R. Pachori (Sharma), Head, Deptt. of Microbiology, U.G, P.G & Research section, Rajasthan Aryans Mahavidyalaya, Washim. The students reached nearly 550 villagers residing in different tehsils of Washim district. The awareness drive resulted in removing misconceptions about the vaccine and the villagers who were reluctant about taking the vaccine started visiting the vaccination centres. Within a short period, about 497 eligible residents of the village got vaccinated.

The awareness drive is as a result of motivation by Maharashtra Unit President of MSI Dr. Sanjeev Patankar and National President of MSI Dr. Arvind Deshmukh who are continuously engaged in generating awareness among the people through various modes of communication. Special guidance for the COVID-19 vaccination drive is received from Shri. Subhashji Rathi, President Rajasthan Education Society, Shri. Rajendraji Somani, Secretary Rajasthan Education Society and Principal Dr. Milan Kumar Sancheti, Rajasthan Aryans Mahavidyalaya, Washim.

MSI-Madhya Pradesh organizes International Essay Competition

Mandsaur University, Mandsaur

Faculty of Life Sciences, Mandsaur University, Mandsaur, in association with MSI organised an International Essay Competition on **"The COVID-19 Vaccine: Present and Future".** The event was coordinated by Dr. Ashish Warghane, Asst. Prof, Life Sciences, Mandsaur University, and Dr. Shekhar Jain, Head, Life Sciences, Mandsaur University, was the Convenor.

STUDENT APPRECIATION WRAP UP

India Category I		
Prize	**Name of Participant**	**Affiliation**
First	Harini G	Bannari Amman Institute of Technology, Sathyamangalam, TN, India.
	Sandra Jose	Vels University, TamilNadu, India.
Second	Vaghasiya J. Dineshbhai	Rajkot, Gujrat, India.
Third	Rupali Kota	Jawaharnagar, Solapur, Maharashtra, India.
	Ghulam Mehdi Dar	Central University of Punjab, Bathinda, Punjab, India.
	Shehla Babar	Mandsaur University, Mandsaur, M.P., India.
India Category II		
First	Raja Manokaran	Department of Biosciences, Manipal University Jaipur, Rajasthan, India.
Second	Sijo A	SUT Hospital, Pattom, Trivandrum, Kerala, India.
Third	Dr. K. Kusum Docras	Kasturba Gandhi Degree &P.G College for Women, Secunderabad, Telangana
	Rutuja Patankar	Goregaon East, Mumbai, Maharashtra, India.

COMING UP

- **Delhi NCR comes up with Initiatives to combat Covid 19**
- **Awareness & Preparedness of COVID-19 Outbreak at Delhi Unit**
- **CoVविजय: Vaccination for Safe Nation**
- **GBRC: A premier Biotechnology Organization**

Initiatives and strategies to combat COVID-19 in Delhi/NCR

After surpassing the second wave of Covid-19, the Government of India is taking strong steps to control the COVID-19 pandemic. As per the reports from the capital of India, New Delhi, various government/private research and medical institutions have joined hands to curb the spread of COVID-19 in Delhi/NCR region by utilizing appropriate strategies and effective healthcare services. Institutes in Delhi are working on major challenges i.e., development of antiviral drugs/vaccines; designing simple, efficient and rapid diagnostic kits; development of more effective preventive measures; identification of new strains and symptoms which are helpful in redesigning better guidelines. Recently, an oral drug named 2- deoxy-D-glucose (2-DG) was developed by INMAS, DRDO in collaboration with Dr Reddy's Laboratories. The developed drug has already got approval from the Drugs Controller General of India (DGCI) for emergency use/adjunct therapy especially for severe COVID patients. Further, ICGEB centre in New Delhi in coordination with Triesty centre had suggested the repurposing of Valproic acid Co-A as inhibitor of SARS-CoV2 RdRp using computational tools. In another research, a group led by Dr. Rajesh Kumar, THSTI have successfully developed human monoclonal antibodies against SARS-CoV23. For plant-based drugs, NIPGR is screening various plant-based molecules, especially flavonoids against SARS-CoV24. Moreover, for vaccine development, ICGEB and NII, New Delhi are working at the forefront to develop different types of candidate vaccines, i.e., Recombinant subunit vaccine and protein-based vaccine.

Shivangi Mishra, Pulkit Goel, Taanvee, Anshita, Richa, Babita
B.Sc Hons. Microbiology

Student Appreciation Wrap Up Contd...

Nepal Category I		
First	**Dipesh Thapa**	**National college, Bharatpur, Chitwan, Nepal.**
Second	**Saraswati Paudel**	**Bharaptur-5, Chitwan, Bagmati province, Nepal.**
Third	**Jayanti Parajuli**	**Nepal.**
	Rajani Mishra	**Bharatpur, Nepal.**
Bangladesh Category I		
First	**Md. Sohan Ahmad**	**University of Rajshahi. Sirajganj Sadar, Sirajganj, Bangladesh.**
Second	**Md. Wasim Bari**	**University of Rajshahi, 6205, Rajshahi, Bangladesh.**
Third	**Habibur Rahman**	**Jahangirnagar University, Dhaka, Bangladesh.**
China Category II		
First	**Neha G. Paserkar**	**Zhejiang University, Hangzhou, PR of China**

Category I: (B.Sc./M.Sc./ B.Tech/ M.Tech students of Microbiology Biotechnology/ Biochemistry
Category II: Ph.D. Scholars/Academicians/Scientist/ Industry personnel of Microbiology/ Biotechnology/ Biochemistry

Surveillance of SARS-CoV-2

For continuous genomic surveillance of SARS-CoV-2, MOHFW and DBT has established an Indian SARS-CoV-2 Genome Sequencing Consortia (INSACOG) to assess SARS-CoV-2 virus variants from Indian patients. National Centre for Disease Control, Delhi (NCDC) has given responsibility to collect the samples from different states and correlate the clinical aspects. In addition, AIIMS, a premier medical institute of Delhi in coordination with different hospitals of Delhi is credited for designing newer & better guidelines as per the identification of new strains and symptoms. All the ongoing COVID-19 related projects at various institutes in Delhi are funded by Govt. agencies to support researchers. Moreover, various NGOs of Delhi have been working on actual field conditions to cater the needs of the people since the beginning of COVID cases. The NGO's such as, Robin Hood Army, Khalsa Aid India, Milaap, Uday Foundation, Mission Oxygen, Gautam Gambhir Foundation, Breathe India, Mazdoor Kitchen, PINT(Plasma In Need for Transfusion) Network etc, are working tirelessly for providing free food, essential drugs, masks, sanitizers, oxygen supply, Plasma support for the needy, poor and homeless people of the city.

Student Contributions

"CoVविजय: Vaccination for Safe Nation"

Under the able leadership of Dr. A. Archana, the Delhi Student Unit, MSI, India in collaboration with Sookshma, the Microbiology society of Swami Shraddhanand College, University of Delhi has launched a campaign "CoVविजय: Vaccination for Safe Nation" on 9th June, 2021 to boost the confidence & willingness of general public for COVID vaccination. The goal of CoVविजय is to increase motivation through effective pictures, easy to understand video and tailored messages targeted to the segments of the population that have higher levels of vaccine hesitancy.

Awareness & Preparedness of COVID-19 Outbreak at Delhi Unit

Microbiologists Society, India, Delhi Unit organizes various talks to spread awareness regarding COVID-19 and Vaccination. One such informative talk was organised on the topic, "Novel Technology for COVID-19 Diagnosis" on 15th January, 2021 and the worthy speaker was Dr. Debdutta Bhattacharya, Scientist-D/Assistant Director, Department of Microbiology, ICMR-RMRC, Bhubaneswar. This webinar was aimed at spreading information regarding novel methods for the diagnosis of COVID-19. To create awareness amongst people regarding safety of COVID-19 Vaccination and Mucormycosis (colloquially referred as Black Fungus) - symptoms, treatment and preventative measures, an impactful talk was organised by MSI, Delhi unit on 19th May, 2021 and the reverent speaker was Prof. A.M. Deshmukh, President of Microbiologists Society, India.

POSTER GALLERY

Contd… page 17

We Won't Rest in the fight against COVID

Accurate and early diagnosis of COVID-19 also plays a crucial role in controlling the spread of infection, therefore in Delhi, researchers at different institutes are working hard to design efficient test kits for early detection of COVID-19. Prof. V. Perumal & his group at IIT Delhi have developed a probe-less, low cost diagnostic test for detection of COVID-19 infection, the kit has already got approval from ICMR for commercial production. In another successful attempt, Dr. Sauvik Maity and Dr. Debajyoti Chakraborty from IGIB came out with a paper based test kit which uses gene-editing crisper-cas-9 to identify coronavirus in less than an hour. IIT Delhi has launched more effective and economic face masks and antimicrobial fabrics through its startup, ETex-Kawach. Similarly, for doctors & healthcare workers, DRDO has designed body suits, which provide better protection, especially in hospitals and healthcare centres.

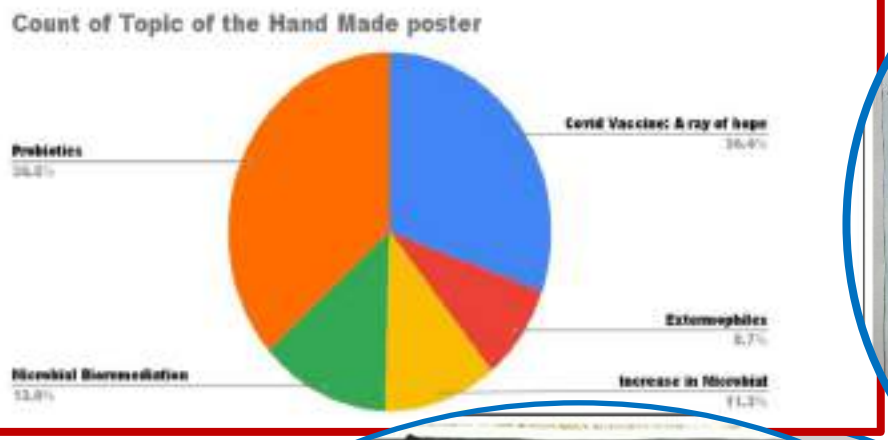
Shivangi Mishra, Pulkit Goel, Taanvee, Anshita, Richa, Babita

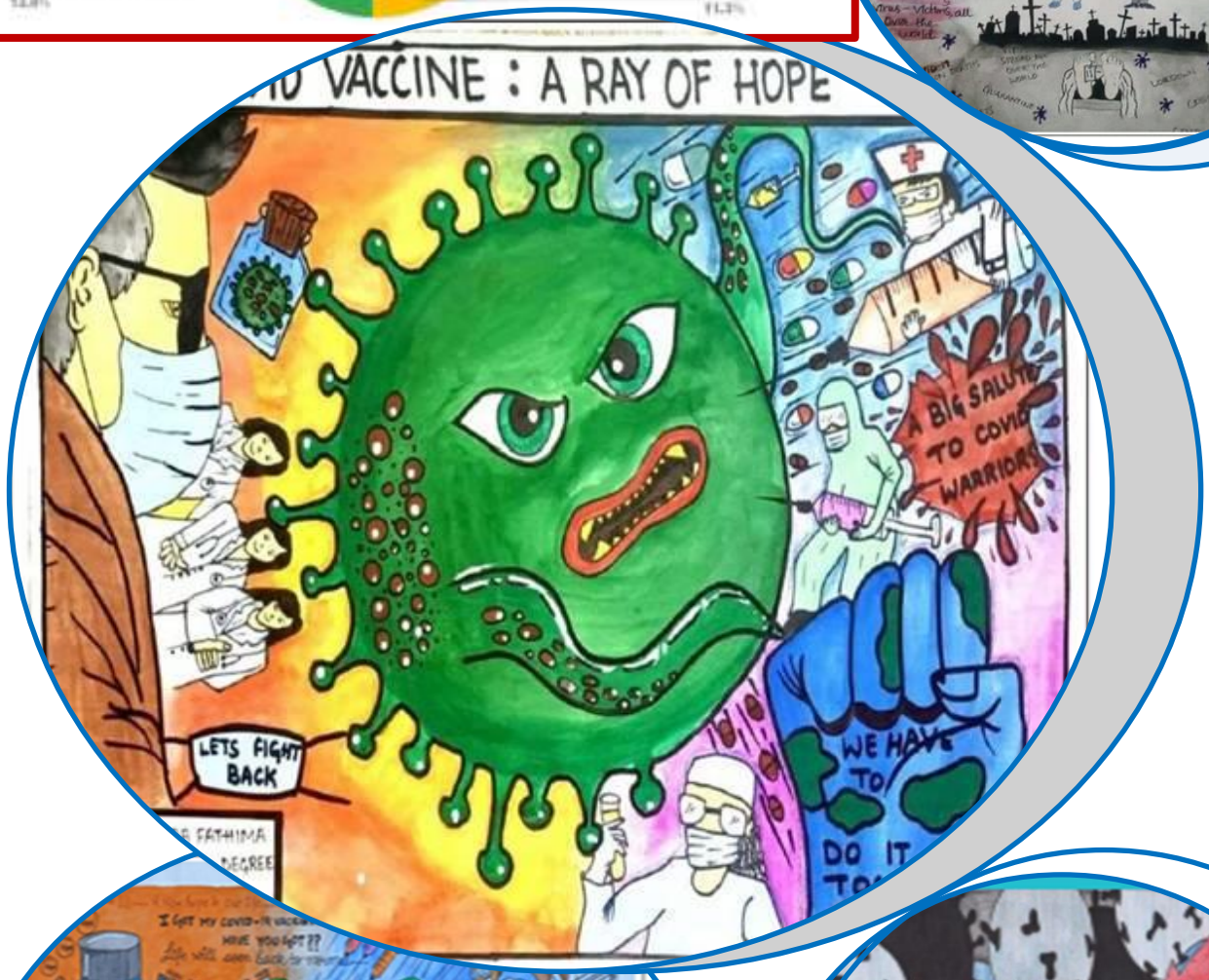
B.Sc Hons. Microbiology

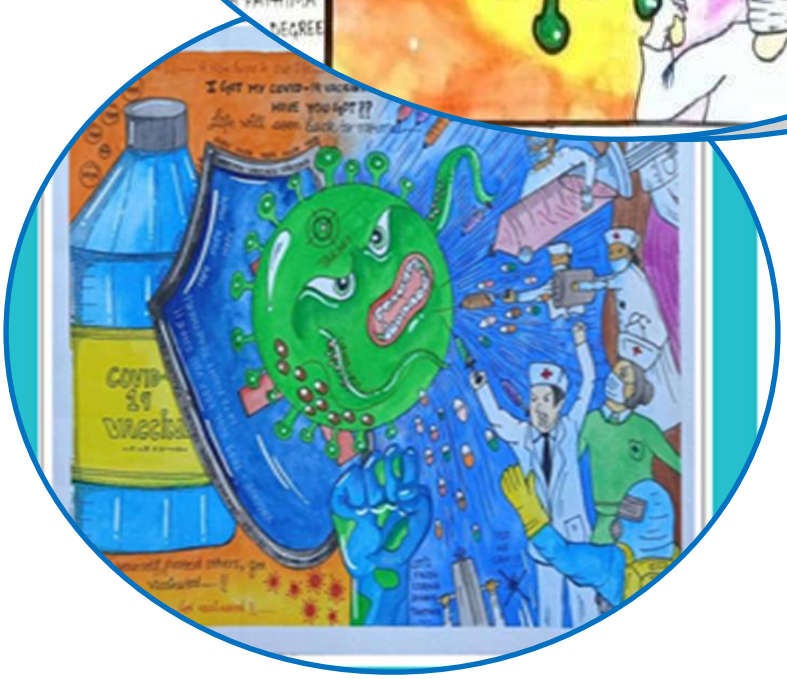
'COVID VACCINE: A RAY OF HOPE'

Microbiologists Society India, Delhi Unit organized a **'Poster Making Competition'** in collaboration with Sookshma, The Microbiology Society of Swami Shraddhanand College on 18th January, 2021. Competition got a massive response of more than 100+ submissions from different states of India. Around 30% of responses were on the topic, 'Covid Vaccine: A Ray of Hope'. Results of the competition were as declared by a team of esteemed judges from different states including: Dr. D. Mubarak Ali, Dr. Neelam and Dr. Avinash.

Students win Poster Contest!







ANNOUNCEMENT

Release of Covid special issue September 2021

Contribution of GBRC in combating COVID-19 pandemic

Gujarat Biotechnology Research Centre (GBRC) is one of the fast-growing research institutes in Gujarat, India which is committed to deal with the societal problems through cutting-edge biotechnological intervention.

The organization is well equipped with all advance research infrastructural facilities and performing research activities in the various frontier areas of biotechnology. In the past few months, COVID-19 pandemic has shaken the world. Scientific communities are coming forward to the rescue. Advances in the field of biotechnology are helping them to work faster and to provide suitable medical treatments, drugs, diagnosis methods and vaccine. As the premier biotechnology institute, GBRC has also taken the initiative towards fighting the pandemic.

1. Genome sequencing and analysis

Genome sequencing of COVID-19 causing virus i.e. SARS-CoV-2 is one of the major breakthrough research conducted at the GBRC. Till date, GBRC has completed sequencing of hundreds of SARS-CoV-2 genomes which is openly available (http://covid.gbrc.org.in/) with the intention of knowledge sharing with the scientific community and other relevant stakeholders. The data thus generated can be used to predict viral behavior, host-pathogen relationship, disease severity, drug discovery and development of suitable medical interventions such as vaccine. GBRC has analysed these genomes to determine the mutation frequency and is distribution across the Gujarati population and successfully identified different variants, possibly co-related to the deceased patients (Joshi et al., 2021). The deleterious missense mutation in N gene (C28854T-Ser194Leu) has been found to be occurred in higher frequency in deceased patients specifically in Gujarat during the first wave of COVID-19 in India. Point mutations in virus genome which are responsible for its reduced severity in patients have also been reported by GBRC (Gaurav et al., 2020). Genome sequencing of the virus has given another lead to GBRC. In an in silico study it was found that one of the most frequent 5' UTR variants in the SARS-CoV-2 i.e. C241T can cause change in the structure and folding of RNA. This modification in genome is found to be responsible for week interaction with the host replication factors MADP1 Zinc finger CCHC- type which lead to reduced replication efficiency of the virus. This mutation has been found very advantageous and correlated with higher recovery rates (Chaudhari et al., 2020).

2. Host genotyping to find host-pathogen relationship

Severity of the disease not only depends upon the virus but also impacted by the host genotype. Variations in the host genome are also required to know about the host susceptibility against the disease. GBRC has conducted Genome Wide Association Study (GWAS) in COVID-19 patients of varying category of disease severity i.e., asymptomatic, symptomatic and deceased. Many significant genomic loci have been identified which might have crucial role in degree of disease severity and outcome. These genetic markers can be used for prognosis and risk predication of the disease in human populations (Pandit et al., 2021, preprint).

3. Wastewater-based epidemiology study

Disease management become easy, if we can get the early warning of the disease outbreak before it becomes uncontrolled. Wastewater-based epidemiology (WBE) is a promising approach. Viral load can be detected in the wastewater containing excrement from both symptomatic and asymptomatic individuals to understand the status of disease outbreak. WBE data can help in better periodic disease surveillance and thus, can increase the efficacy of interventions. GBRC along with IIT Gandhinagar is also focusing in this area and conducted first ever successful research in India. RT-PCR methods have been developed to detect the RNA of virus in the untreated waste water collected from various locations in Gujarat, India. The data thus generated has been found very useful in detecting the cases which may be escape from the clinical reporting. Two such studies have been conducted first time in India by the contribution of GBRC (Kumar et al., 2020 and 2021). These studies have proved the significant role of WBE research in pandemic prediction as well as can be used to determine efficacy of vaccination and medical interventions being followed. ***(Contd. Page 19).***

Contribution of GBRC in combating COVID-19 pandemic

Contd..

4. Drug discovery

Another focus area of GBRC is the drug discovery. India has the legacy of a various medicinal therapies as Ayurveda, Siddha and Unani. Plants are the major source of the drugs in these therapies. In addition, plant derived therapeutic molecules are also attracting attention of modern science. GBRC has taken the aid of in silico tools for molecular docking and dynamics and studied therapeutic potential of herbal formulation. Various plant compounds such as Liquiritic acid, Liquorice acid, Terchebulin, Glabrolide, Casuarinin, Corilagin, Chebulagic acid, Neochebulinic acid, Daturataturin A, and Taraxerol have been found very effective as the drug leads for SARS-CoV-2 (Joshi et al., 2021).

5. COVID Diagnosis Centre

Endeavours of GBRC in battling with the pandemic are not limited to research. GBRC has given its valuable contribution to the government in disease management by providing facility of COVID-19 diagnosis in free of cost. GBRC is ICMR recognized COVID-19 diagnosis centre. GBRC is equipped with BSL-2 facility and have advanced RT-PCR facility which is found very advantageous to the country in sharing diagnosis load. In spite of being a research institute, GBRC has taken the lead and managed to diagnose more than eight thousand patient's samples which are still enduring. Moreover, GBRC has provided training to other premier academic and research institutes as IIT, Gandhinagar, Sardar Patel University and Anand Agriculture University.

Thus, GBRC has made great efforts and has shown its caliber in fighting the pandemic. Development of new biotechnological innovations for the societal benefit is the key motto of the GBRC and committed to accomplish its vision. Support and input of GBRC does not stop here. The journey will be continuing till the complete eradication of the disease. GBRC will always stand up with the country and will continue put its hard efforts for the welfare of the whole world.

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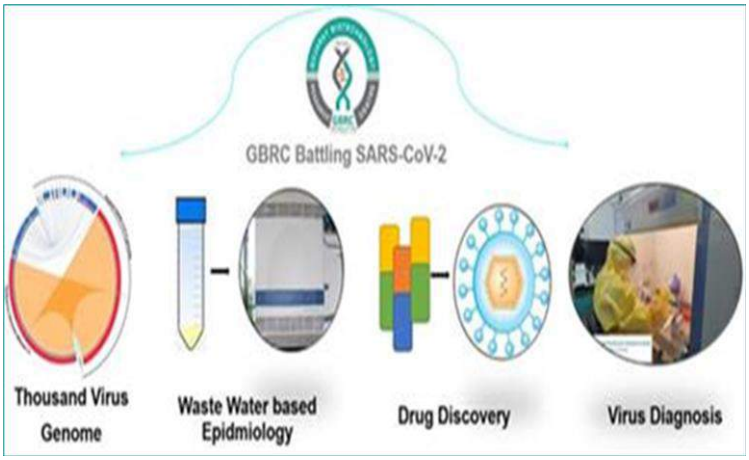

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CALL FOR CONTRIBUTIONS FOR NEXT UPCOMING ISSUE OF MICROBIOVISION

- **Newsbullettin committee welcomes your contributions in the form of Thematic articles, Research Articles, Review Articles, MSI events and Outreach Programs in respective units, Academic and Research Accomplishments, Awards/Honours etc.**
- **All event news should be submitted in Font Times New Roman or Arial 12 point. Text should be supplemented with high quality advanced photographs. For further details please contact with the Editorial Board.**
- **Mail us at msinewsbulletin@gmail.com**

MSI Donates to PM Cares Fund

MSI has donated Rs. 61,000/- to PM Cares Fund and Rs. 51,000/- to Maharashtra CM Fund. Dr. Rahul Khobragade and Mr. Jitendra Kulkarni, MSI members handed over the cheques to Honourable Ms. Deepa Mudhoi, Collector, Osmananabad. 600 Teachers from all over India donated Rs. 100 each and made generous contributions. 6030 students from all over India donated Rs. 10 each.

Invitation

ACKNOWLEDGEMENT

Sincere note of Thanks goes to Dr. A.M. Deshmukh, Patron and President, MSI for his constant support and able guidance. Our gratitude goes to all Advisory Board members for their vigorous inputs and suggestions. The News bulletin committee is grateful to all State Presidents and News Coordinators for providing their state MSI unit contributions for this Covid special issue. All memebers of Editorial team deserve a big applause for devoting their time and putting hard core efforts generously for bringing this issue in proper shape. The team is juvenile and still learning for future publications.

Wishing all our Readers Happy, Healthy and Safe Times!

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