

COVID-19 BULLETIN

1 SEPTEMBER 2020

- #CSIRFightsCovid19
- Corona Research Snapshot
- Corona Innovations
- COVID-19 Dashboard
- #Healthy@Home
- Corona Q&A
- COVID-19 Myth Busters

Compiled, Designed & Published by
National Institute of Science Communication & Information
Resources (NISCAIR)

www.niscair.res.in;  @CSIR_NISCAIR

Council of Scientific & Industrial Research (CSIR)

Dr KS Krishnan Marg, New Delhi-110012

&

14 Satsang Vihar Marg, New Delhi-110067





#CSIRFightsCovid19

Ever since the Coronavirus pandemic broke out, CSIR has mounted a strategic, well-coordinated and integrated approach towards mitigating the Coronavirus outbreak ranging from containing the spread of the virus by providing sanitisation and disinfection solutions to equipping the frontline workers and health warriors with protective gear, and from exploring repurposing of existing drugs to discovering new drugs and vaccines. Here are some major developments this week.



Dr Harsh Vardhan Inaugurates Portable Hospital based on CSIR-CBRI Design

Union Health Minister and Minister of Science & Technology and Earth Sciences Dr Harsh Vardhan inaugurated a 10-bed portable hospital designed by CSIR-Central Building Research Institute (CSIR-CBRI), Roorkee.

A joint venture of CSIR-CBRI and the National Disaster Response Force (NDRF), the hospital infrastructure can be transported during any natural calamity to the place where it would be required. It has been designed in such a way that it can be easily dismantled and reassembled at short notice. All the medical equipment has been designed and sponsored by CBRI while the NDRF has arranged the beds and testing machines.

The hospital will provide an OPD facility besides equipment for blood pressure, ECG and defibrillator machines. Oxygen pipelines have also been fitted to every bed. In view of COVID-19, an isolation ward along with quarantine facilities has also been earmarked with hand washing and sensor-based sanitiser

points. To maintain the temperature, thermal insulators have been used in the waterproof structure to ensure it can be fitted at any place and in any weather.

Mr S.N. Pradhan, Director General of NDRF and CSIR DG Dr Shekhar C. Mande were present at the inauguration.

➔ CSIR Labs Test more than 200000 COVID-19 Samples

CSIR-Indian Institute of Toxicological Research (CSIR-IITR) accomplished a landmark of testing over 50,000 samples at its COVID-19 test facility in the last 16 weeks using RT-PCR based method. The Institute has been receiving samples from various districts of Uttar Pradesh.

CSIR-IITR is an ICMR and State-approved COVID-19 Testing Facility since 4th May 2020.

Thirteen CSIR labs have been testing samples for COVID-19 across India. Till date, they have tested close to 2.3 lakh samples significantly contributing to the testing numbers in the country. Besides, CSIR labs like CSIR-NIO, CSIR-IICB and CSIR-NIIST have been supporting State governments in testing COVID-19 samples.



➔ CSIR-CLRI Provides Training to Chennai Hospital Staff

Ten doctors and technicians from the ESI Medical College and Hospital, Chennai were provided training in COVID 19 diagnosis by RT-PCR method at CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai from 24 August 2020 to 3 September 2020.

CSIR labs such as CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad and CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi and other labs are engaged in training of human resource for conducting coronavirus testing. Almost 200 doctors and technicians from hospitals, testing labs and universities have been trained at the CSIR labs.



Webinar in Malayalam as part of Communication Series in Indian Languages

As part of CSIR’s outreach programme in Indian languages, CSIR organized a webinar in Malayalam on “Comprehensive Approaches for Mitigation of COVID-19” on 28 August 2020. Apart from opening remarks by Dr Shekhar C. Mande, Director-General, CSIR, the other speakers included Dr A. Ajayaghosh, Director, CSIR-National Institute of Interdisciplinary Science & Technology (CSIR-NIIST); Prof. K.P.

Aravindan, Calicut Medical College (Retd.); Dr K. Yousaf, Dr Jubi John and Dr M.V. Reshma from CSIR-NIIST and Dr Vinod Scaria from CSIR-IGIB.

The effort was not just aimed at disseminating information about CSIR’s efforts in the fight against COVID-19 but also bringing clarity in the minds of the general public about the various issues and concerns related to treatment and testing for COVID-19.

The webinar that went live on Facebook was moderated by Dr Chetana Sachidanandan from CSIR-IGIB.

Sequencing Public Health
Rural economy restoration Diagnostics
Repurposing drugs

ഉദ്ഘാടന വാക്കുകൾ മോഡറേറ്റർ
ഡോ. ശങ്കർ മാണ്ഡെ ഡയറക്ടർ ജനറൽ CSIR
ഡോ. ചേതന സച്ചിദാനന്ദൻ CSIR IGIB

COVID-19 ലഘൂകരിക്കുന്നതിനുള്ള സമഗ്ര സമീപനങ്ങൾ
28 ആഗസ്റ്റ് 2020
3:00 - 4:30 PM

വക്താക്കൾ

ഡോ. എ. അജയ് ഘോഷ് CSIR-NIIST
ഡോ. കെ. യൂസഫ് CSIR-NIIST
ഡോ. വിനോദ് സ്കരിയാ CSIR-IGIB
ഡോ. ജൂബി ജോൺ CSIR-NIIST
ഡോ. എം.പി. രശ്മി CSIR-NIIST
പ്രൊഫ്. കെ.പി. അരവിന്ദൻ Calicut Medical College (Retd)

Organized by Council of Scientific and Industrial Research (CSIR)

Sequencing Public Health
Rural economy restoration Diagnostics
Repurposing drugs

Opening remarks Moderator
Dr Shekhar C Mande Director General, CSIR
Dr Chetana Sachidanandan CSIR IGIB

Webinar in Malayalam
Comprehensive approaches for mitigation of COVID-19
28th August
3:00 - 4:30 PM

Speakers

Dr. A. Ajayaghosh, Director, CSIR-NIIST
Dr. K. Yousaf CSIR-NIIST
Dr Vinod Scaria CSIR-IGIB
Dr. Jubi John CSIR-NIIST
Dr. M. V. Reshma CSIR-NIIST
Prof K.P. Aravindan Calicut Medical College (Retd)

Organized by Council of Scientific and Industrial Research (CSIR) facebook.com/CSIR.INDIA



C S I R

MEDIA COVERAGE



liveMint

A health worker holds a blood sample taken from a local resident at a serological survey site

CSIR conducting sero-survey in 38 labs to check presence of COVID-19 antibodies

2 min read · 05:44 PM IST
Prashant Rangnekar, PTI

- All people will be monitored using Omicron technology, which involves the analysis of the entire set of molecules such as proteins, lipids
- Such work will greatly complement and enhance the national efforts of population based cross-sectional sero-surveys

পশ্চিমবঙ্গ West Bengal

ASSAMESE BENGALI ENGLISH GUJARATI HINDI KANNADA

শিরোনাম সংক্ষেপ রাজ্য জেলা শহর ভারত সিতারা

স্পর্শহীন ওয়াশ বেসিন মাউন্ট তৈরি করল CMERI

Published : a day ago

এই যন্ত্রে যে সেকেন্ড লগানো আছে তার সামনে হাত নিয়ে গেলে প্রথমে আপনার হাতে কয়েক ফোটা তরল সাবান বেরিয়ে আসবে। এর ঠিক ৩০ সেকেন্ড পরে নল বাহিত জল বেরিয়ে আসবে।

DH DECCANHERALD SUPPORT DH JOURNALISM

CSIR conducting serosurvey in 38 labs to check presence of Covid-19 antibodies in its employees

PTI, New Delhi, AUG 25 2020, 18:05 IST UPDATED: AUG 25 2020, 18:05 IST

A health worker handles a vial containing blood sample of a person for serological survey. Credit: PTI Photo

The Council of Scientific and Industrial Research (CSIR) is conducting a survey in its 38 laboratories and institutes across India to gauge the serological prevalence among its employees and also understand

NDTV

Coronavirus India Cases: 31,47,323
Recovered: 24,04,585 Deaths: 58,390

Coronavirus Live TV Latest India

Scientists Conducting Sero-Survey In 38 Labs To Check For Covid Antibodies In Employees

The exercise aims to target 10,000 CSIR employees and their family members in the age group of 19-60 years, said Shantanu Sengupta, a scientist with CSIR's Institute for Genomics and Integrative Biology (IGIB) in Delhi, which is coordinating the sero-survey.

All India Press Trust of India

Updated : August 25, 2020 7:36 pm IST

CSIO highlights success in combating Covid

At Central Scientific Instruments Organisation (CSIO), the director, Prof S Anantha Ramakrishna, unfurled the national flag in the presence of scientific, technical and administrative staff. Prof Ramakrishna said the CSIO responded magnifi-

cently to the national needs during this present pandemic crisis by transferring many Covid mitigating technologies to the industry such as contactless automated hand sanitiser dispenser, UV light-based disinfection system, protective eyewear and aerosol restricting canopy.

DH DECCANHERALD SUPPORT DH JOURNALISM

6 lakh may have been infected by Covid-19 in Hyderabad: Study

PTI, Hyderabad, AUG 19 2020, 20:32 IST UPDATED: AUG 19 2020, 21:20 IST

A health worker wearing personal protective equipment (PPE) gear collects a swab sample from a woman at a free Covid-19 coronavirus testing centre in Hyderabad. Credits: AFP

There may be at least six lakh people in the city who have been infected by coronavirus with a large number of them asymptomatic and need no hospitalisation, a

The Indian EXPRESS

CSIR study to explore possibility of airborne transmission of coronavirus

The study is an attempt to explore the possibility of airborne transmission of coronavirus, Dr Shekhar Mande, director general of the Council of Scientific and Industrial Research (CSIR), told The Indian Express.

Written By Anuradha Mascarenhas | Pune |
Published: August 7, 2020 1:37:14 am

The study comes close on the heels of a letter that was sent to 239 scientists from 32 countries to the World Health Organisation (WHO) about the mounting evidence the air route plays in the transmission of Covid-19. (Mauricio Pains/Rinoborn)

SPONSORED SEARCHES



50 हजार कोविड टेस्ट करने वाली पहली सीएसआईआर लैब बनी आईआईटीआर लखनऊ।

राजधानी स्थित आईआईटीआर 50 हजार कोविड टेस्ट करने वाली कार्मिल ऑफ सार्बेटिक एंड इंडस्ट्रियल रिसर्च (सीएसआईआर) की पहली लैब बन गई है। यहां योजना करीब एक हजार नमूनों की जांच लैब में की जाती है। आईआईटीआर के निदेशक डॉ. आलोक धवन ने बताया कि 50 हजार नमूनों की जांच 16 सप्ताह में पूरी की है। उन्होंने अपने वैज्ञानिकों को टीम को भी तारीफ की है। शुरू में करीब 50 नमूनों की जांच ही आईआईटीआर कर रहा था। बाद में इसकी क्षमता बढ़ाकर 1200 प्रतिदिन कर ली। वहीं, सीएसआईआर में कोविड टेस्टिंग लैब के प्रभारी डॉ. नीरज राय ने बताया कि उनके यहां 40 हजार नमूनों की जांच हो चुकी है।



CORONA RESEARCH SNAPSHOT

➤➤ A quick and low-cost COVID-19 test can detect SARS-CoV-2 in spit



(Figure courtesy: C.B.F. Vogels et al. Preprint at medRxiv; DOI: 10.1101/2020.08.03.20167791; 2020)

Scientists are searching for new cost effective, quick and painless methods to detect SARS-CoV-2 RNA. The conventional RT-PCR is a time taking and costly method to detect SARS-CoV-2 RNA in the swab of an individual. Scientists at Yale School of Medicine, Connecticut, USA have developed a new testing method that uses saliva as the sample. The scientists have named this test *SalivaDirect*. This test is less invasive in comparison to gold-standard nose and throat swab, and it does not need to be conducted by a trained professional. It also avoids the use of scarce chemicals that are needed to store and extract viral RNA. The details of the study and validation tests are published as preprint at *medRxiv*.

Source: Preprint at *medRxiv*;
DOI: 10.1101/2020.08.03.20167791; 2020

➤➤ Immune reaction to a few common colds might also protect from COVID-19

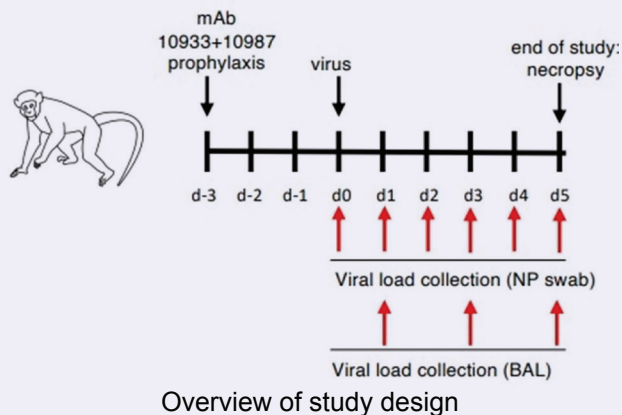


Representative image
(Image Courtesy: canva.com)

Studies have found that a few people who have never been exposed to SARS-CoV-2 also have memory T cells in their body. Scientists at La Jolla Institute for Immunology in California, USA have found that these T cells can recognize the novel coronavirus also by recognizing the particular sequences of SARS-CoV-2 proteins. These sequences have also been found in common cold viruses. It indicated that some T cells are also responding to SARS-CoV-2. This study supports the hypothesis that existing immunity against common cold can contribute to differences in COVID-19 severity. Scientists are yet to confirm this hypothesis. The details of the study have been published in *Science* recently after peer review.

Source: J. Mateus et al. *Science*: <http://doi.org/d5v5>; 2020

➔ A mixture of two human antibodies protects monkeys and hamsters against COVID-19



Overview of study design

(Figure Courtesy: Baum et al. Preprint at *bioRxiv*;
DOI: 10.1101/2020.08.02.233320; 2020)

A blend of two human antibodies exhibited promise in animal tests for preventing and treating COVID-19. The antibodies could neutralize the viral attack in these animals. Researchers at Regeneron Pharmaceuticals in New York-USA have tested a cocktail of antibodies that have the capability of binding with SARS-CoV-2. The antibodies blend was tested on monkeys and hamsters and found to be promising in trials. Animals given the antibodies blend were less likely to develop pneumonia in comparison to animals that were given a placebo. The animals given antibodies also showed less damage in the lungs. The details of the research study have been published as preprint at *bioRxiv* and are yet to be peer reviewed.

Source: A. Baum et al. Preprint at *bioRxiv*;
DOI: 10.1101/2020.08.02.233320; 2020

➔ Model suggests that malaria deaths numbers in COVID-19 pandemic may explode

A recent study published in *Nature Medicine* by scientists at Imperial College London points out the possibility of explosion of malaria death numbers in Africa during



the current pandemic. In March, WHO issued emergency guidelines to countries regarding malaria prevention and treatment effectively during the current pandemic. Malaria deaths of sick children that don't receive effective treatment may soar. The Imperial College London model predicts that if access to treatment drops by 50% for the next six months, 1,29,000 additional malaria deaths would occur between May 2020 and May 2021.

Source: Sherrard-Smith et al. *Nature Medicine*;
DOI: 10.1038/s41591-020-1025-y; 2020

➔ SARS-CoV-2 can infect placenta of a pregnant woman

A study conducted by National Institute of Research in Reproductive Health (NIRRH), Parel, Indian Council of Medical Research (ICMR) in collaboration with Indian Institute of Science, Bangalore has found that SARS-CoV-2 can infect the placenta of a pregnant woman. According to researchers, it is a first in-depth survey conducted at the cellular basis to identify COVID-19 infection which confirms that the transmission of SARS-CoV-2 from mother to child is possible during pregnancy.



Source: *Cell Dev. Biol.*, DOI: 10.3389/fcell.2020.00783; 2020

➔ New study explains reason behind loss of smell during COVID-19 infection

Out of several symptoms of COVID-19 infection is loss of smell. Scientists are puzzled by this symptom and are continuously searching for valid reasons for the loss of smell during COVID-19 infection. Researchers at Johns Hopkins University have explored and found the possible mechanism behind the process. There are dedicated tissues in the nose for smell. A vast majority of ACE2 receptors are located

in these olfactory regions, specifically on the sustentacular support cells. The respiratory cells in nose were found to have approximately 200 to 700 times less receptors as the smelling cells. The olfactory tissues get damaged or dead due to COVID-19 infection which causes loss of smell in individuals. The detailed study has been published in *European Respiratory Journal* after peer review.

Source: *European Respiratory Journal*, 2020; DOI: 10.1183/13993003.01948; 2020



Representative Image
(Image Courtesy: canva.com)



CORONA INNOVATIONS

Tracking Coronavirus through Actionable Data

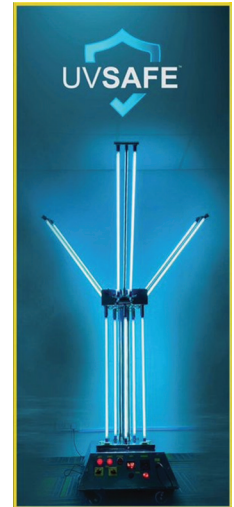
Tableau Software has created a COVID-19 Data Hub to serve as a resource for evaluating a variety of high-quality data sources related to the coronavirus outbreak. This hub is the outcome of a collaboration among Johns Hopkins University, the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO). The data hub shares and offers pre-made dashboards and allows users to build their own visualizations.

This data hub is being used in a variety of ways. Laboratory pharmaceutical companies are using a lot of this data to help inform where to distribute testing kits and so on. Some are using this core data to figure out the national as well as global distribution of coronavirus.

Source: <https://www.tableau.com>

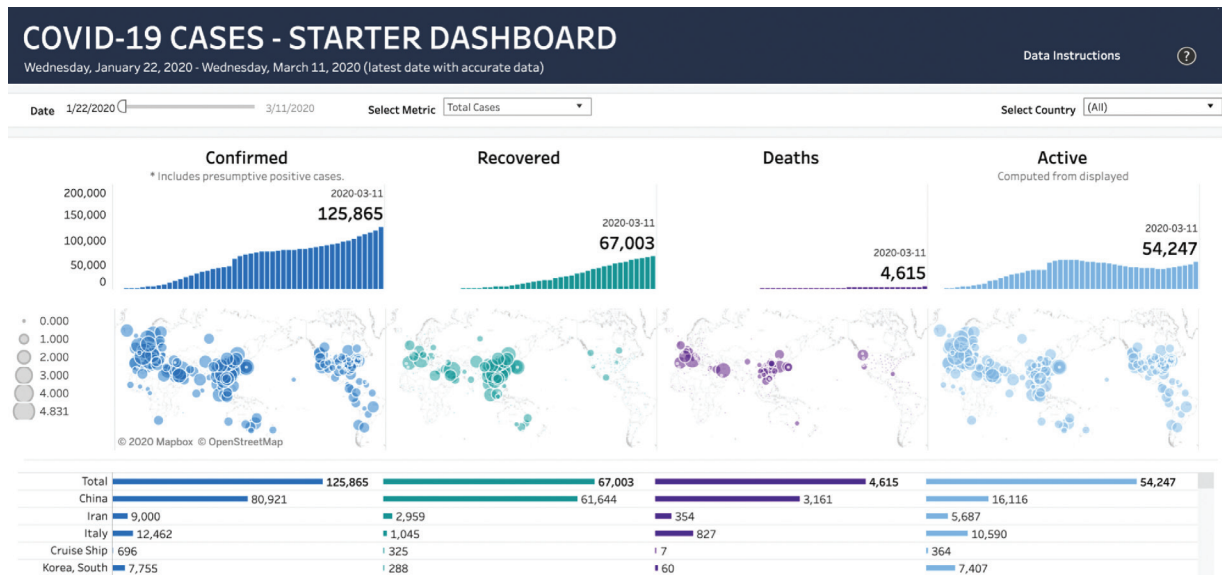
"UVSAFE" — UVGI based room disinfection device

A team of researchers at IIT Ropar has developed a UVGI based Room Disinfectant device "UVSAFE" with zero shadow, 360-degree disinfection, and foldable wings. The device has been tested for its efficacy by FICCI Research

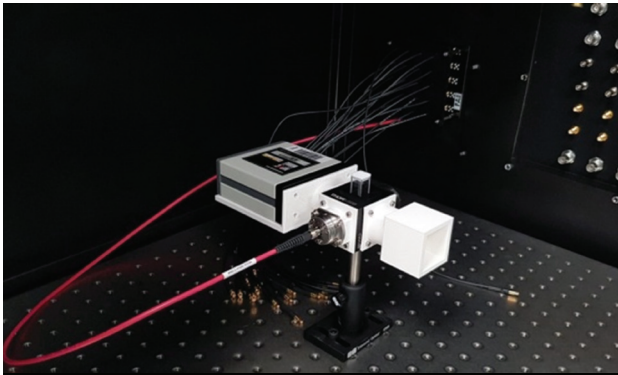


Analysis Center (NABL Accredited Laboratory, New Delhi). The device can disinfect the frequently touched surfaces including cupboards, tabletops, doorknobs, furniture tops, wall corners, etc. The prismatic body and foldable wings give focused exposure with zero shadow to the surfaces to be disinfected.

Source: IIT Ropar Twitter



➔ One-step technology to detect Coronavirus RNA



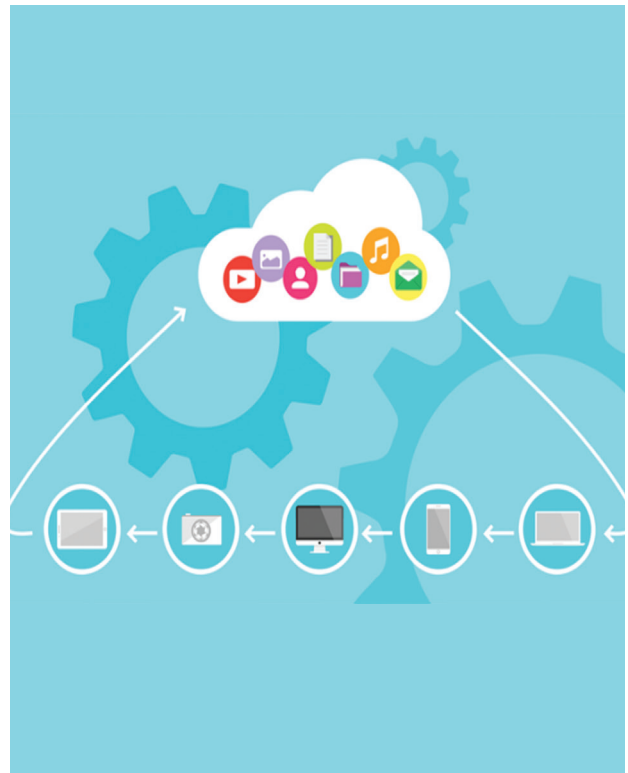
This detection system could detect purified coronavirus RNA with sensitivity of 90-100% and specificity 100% without the time-consuming reverse transcription and amplification steps.

The ATTRACT project is a pioneering initiative funded by the European Union to accelerate breakthrough innovation in Europe. Several technologies developed by ATTRACT researchers help fight COVID-19. PHIL-ATTRACT project has developed an innovative technology to detect single nucleotide mutations of cell-free DNA from lung cancer patients with one quick step. Under this project, a rapid, easy to use and cheap technology prototype is developed that could detect purified coronavirus RNA. A combination of low detection thresholds and timing information enables the detection. Significantly lower amounts of free DNA without DNA amplification are used in this technology.

This detection system could detect purified coronavirus RNA with sensitivity of 90-100% and specificity 100% without the time-consuming reverse transcription and amplification steps. These features are needed in the RT-PCR diagnostic tool currently used for the coronavirus.

Source: <https://projects.leitat.org>

➔ Bio-banking LIMS Accelerator for COVID-19 testing

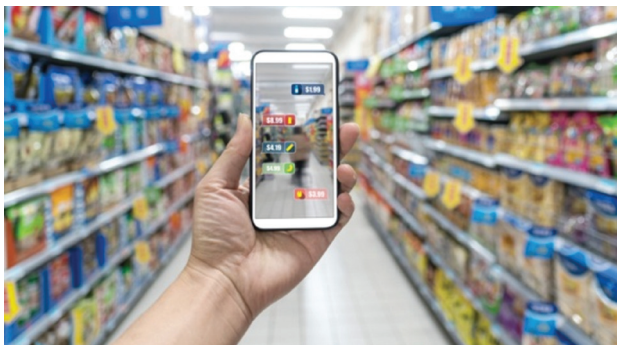


LabVantage Solutions has developed its new purpose-built COVID-19 LIMS solution *Bio-banking Accelerator*. The LIMS (Laboratory Information Management System) is designed to jump-start the ability of laboratories to enter bio-specimens into a bio-bank and rapidly begin conducting COVID-19 related testing and research.

LabVantage COVID-19 LIMS is a full-featured, pre-configured solution for companies, colleges, and universities looking for a way to keep their employees and students safe in the workplace or on campus with the confidence that comes with accurate and comprehensive Covid testing. It mobilizes and incorporates its deep knowledge of bio-banking along with numerous features designed to make it easy for laboratories to acquire, implement and use the LIMS technology for the COVID-19 testing.

Source: <https://www.businesswire.com>

➔ Grabango's technology improves inventory automation and checkout



To avoid surface touching, several technological innovations have been developed. In shopping complexes and malls, in order to improve self-check process, shoppers can enter a store just as they have always done. There are no barriers, no apps; no smartphone scanning needed to enter. Shoppers then proceed to fill their physical carts. At the same time, shoppers' virtual carts are also filled with their items. The technology can differentiate between items.

This innovative technology does not use facial recognition and is designed with privacy in mind. If shoppers have elected to download Grabango's app, they may exit the store, charging items in a virtual cart with pre-selected payment methods. Without the app, they may proceed to cashiers, who then

charge their virtual basket without having to unload any items onto a conveyor belt.

Source: <https://grabango.com>

➔ Painless drug delivery and vaccination device

Department of Electronics & Electrical Communication Engineering at IIT Kharagpur has developed a painless transdermal controlled drug delivery and vaccination device. The researchers have developed a micropump and microneedle which are integral parts of transdermal drug delivery systems and can administer large and viscous drug molecules painlessly. The innovation will further enable the transdermal application of COVID-19 vaccine. According to lead researcher Prof. Tarun Kanti Bhattacharyya, "We have fabricated high strength glassy carbon microneedles which can withstand the skin resistive forces. Added to this is our designing of the ionic polymer-metal composite membrane based micropump which increases the flow rate of the drug molecules in a controlled and precise manner. We have further integrated this microneedle and micropump to achieve controlled drug delivery."

Source: <https://kgpchronicle.iitkgp.ac.in/>

Indian Institute of Technology Kharagpur

**IIT Kharagpur
Researchers Develop
Painless Transdermal
Controlled Drug
Delivery and
Vaccination Device**

3D printed integrated drug delivery device test structure

Prof. Tarun Kanti Bhattacharyya, Dept. of Electronics & Electrical Communications Engineering

Anksing of a microneedle

Device Application



WAYS TO PROMOTE MENTAL HEALTH



Be positive and maintain a good work-life balance



Stay active and engage in recreational activities



Practise yoga and meditation



Stay away from tobacco, alcohol and addictive substances



Stay connected. Share your feelings



Sleep well

THE BEST YOU CAN DO TO HELP YOURSELF IS TO SEEK HELP

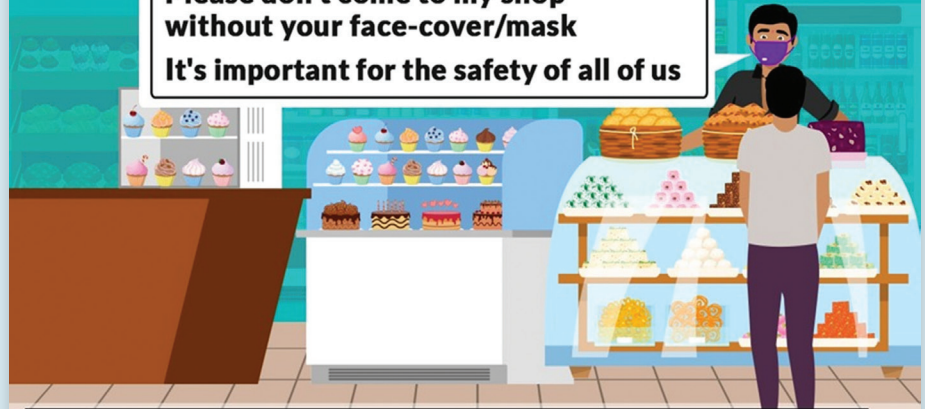
Badalkar Apna Vyavahar, Karein Corona Par Vaar

For information related to COVID-19
Call the State helpline numbers or Ministry of Health and Family Welfare, Government of India's 24x7 helpline number 1075 (Toll Free), Email at ncov2019@gov.in , ncov2019@gmail.com

mohfw.gov.in [f @MoHFWIndia](https://www.facebook.com/MoHFWIndia) [t @MoHFW_INDIA](https://twitter.com/MoHFW_INDIA) [mohfwindia](https://www.youtube.com/channel/UCmohfwindia) [i @mohfwindia](https://www.instagram.com/mohfwindia)



**Please don't come to my shop without your face-cover/mask
It's important for the safety of all of us**



**Wear your face-cover/mask at all times
Protect yourself and others from COVID-19**

BADALKAR APNA VYAVAHAR, KAREIN CORONA PAR VAAR

For information related to COVID-19
Call the State helpline numbers or Ministry of Health and Family Welfare, Government of India's 24x7 helpline number 1075 (Toll Free), Email at ncov2019@gov.in , ncov2019@gmail.com

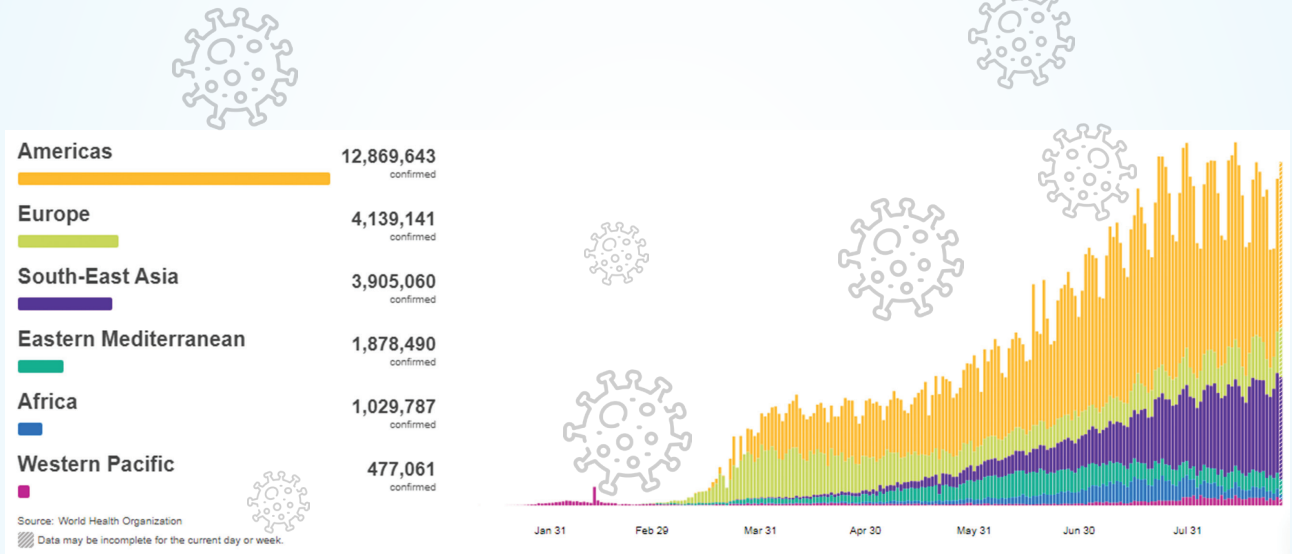
mohfw.gov.in [f @MoHFWIndia](https://www.facebook.com/MoHFWIndia) [t @MoHFW_INDIA](https://twitter.com/MoHFW_INDIA) [mohfwindia](https://www.youtube.com/channel/UCmohfwindia) [i @mohfwindia](https://www.instagram.com/mohfwindia)

COVID-19 Dashboard

Global COVID-19 Cases and Deaths

(Data as of 28 August 2020)

	Worldwide
Total Confirmed Cases	24,299,923
Total Death	827,730



Source: www.who.int

INDIA (Data as of 29 August 2020)

TOTAL SAMPLES TESTED UP TO AUGUST 27, 2020
3,94,77,848

SAMPLES TESTED ON AUGUST 27, 2020
9,01,338

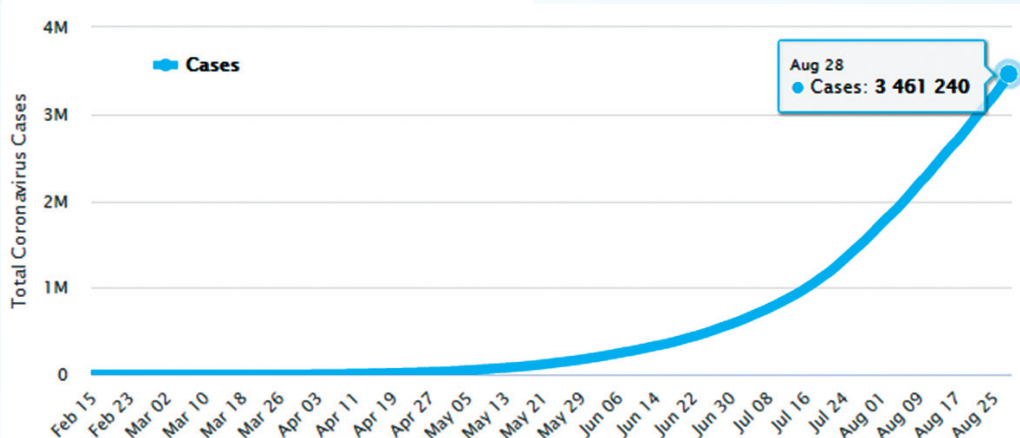
Total Cases 34,63,972 76472 ↑	Active (21.72%) 7,52,424 10401 ↑	Discharged (76.47%) 26,48,998 65050 ↑	Deaths (1.81%) 62,550 1021 ↑
---	--	---	--

Source: www.mygov.in

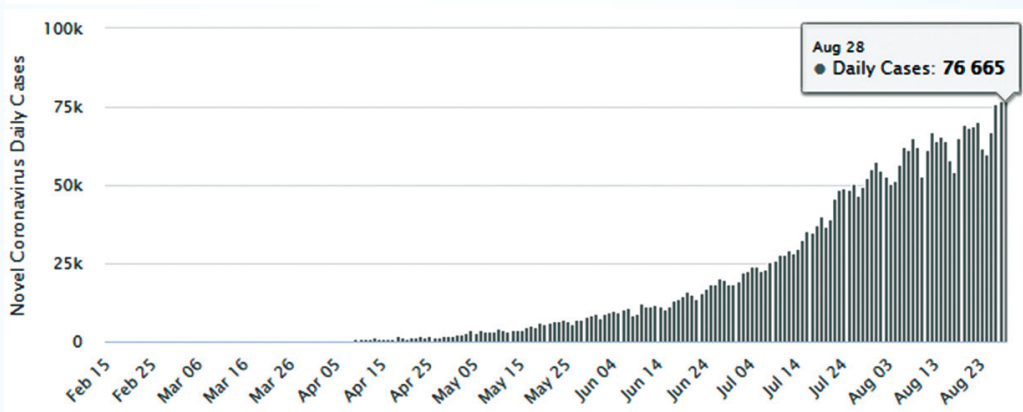
Graph INDIA

(Data as of 29 August 2020)

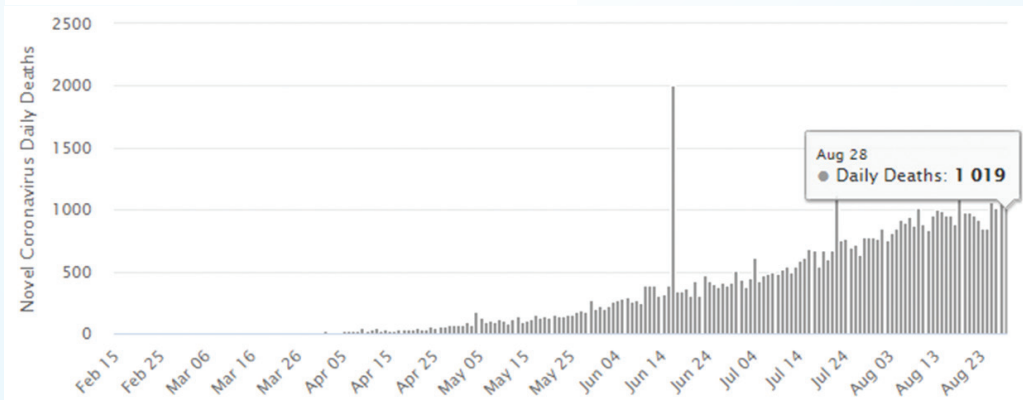
Total Cases in India



Daily New Cases in India



Daily New Deaths in India



Source: www.worldometers.info



CORONA Q&A

How does age impact immunity?



Credit: Getty Images

Age is probably the single biggest determinant of how sick someone gets from the coronavirus. As the decades roll by, the human body becomes less effective at fighting infections. Basically, our defensive cells become thinned out in number and variety. And like old warriors, they become more geared toward fighting yesterday's battles with familiar enemies than tackling something new, such as the latest flu strain or the novel coronavirus.

With age, B cells, which make antibodies, and T cells, some of which directly kill infected cells and some of which alert the B cells, are no longer produced in large quantities in the bone marrow and thymus gland, respectively. Older adults maintain populations of these essential immune cells in the lymph nodes and spleen, but they develop defects with age, so they don't function as well. For example, as people age, both the stem and arms of the Y-shaped antibody molecule become less flexible. This limits the body's ability to modify them to match an unfamiliar invader. As a result, antibodies may not lock on as effectively. T cells, meanwhile, lose a lot of

the variety of receptors that allow them to respond to diverse pathogens, and they may lack the vigor to rapidly multiply in response to infection.

Older people are also far more prone to chronic diseases that involve low-grade inflammation, which seems to further compromise the immune system. It is unclear whether a geriatric immune system resorts to more inflammation to protect the body or whether the inflammation comes first and impairs defenses. If a coronavirus vaccine becomes available, it will probably be less protective for aged people. As with the flu shot, an extra strong dose or some kind of booster may be needed.

www.scientificamerican.com

Why deforestation and extinctions make pandemics more likely?



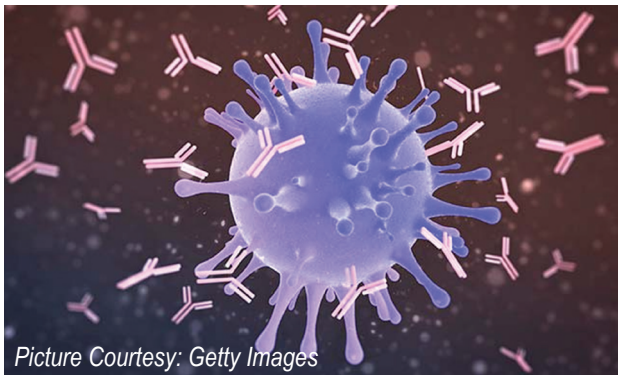
Credit: Patrick Landmann/Science Photo Library

As humans diminish biodiversity by cutting down forests and building more infrastructure, they're increasing the risk of disease pandemics such as COVID-19. Many ecologists have long suspected this, but a new study by Kate Jones, an ecological modeller at University College

London helps to reveal why some species are going extinct; those that tend to survive and thrive, rats and bats, for instance, are more likely to host potentially dangerous pathogens that can make the jump to humans. The analysis of around 6,800 ecological communities on six continents adds to a growing body of evidence that connects trends in human development and biodiversity loss to disease outbreaks, but stops short of projecting where new disease outbreaks might occur.

www.nature.com

How does an individual become immune to SARS-CoV-2 infection?



Picture Courtesy: Getty Images

The human body has its own defence system to fight against infection. Generally, the immune system can be understood in two parts. The first part of the immune response is always active and acts against each and every invader that tries to enter the body. It is known as innate immune response. It releases chemicals that cause inflammation and white blood cells that have the capability to destroy the infected cells. But this part of the immune system cannot fight with the novel coronavirus. To fight viruses like SARS-CoV-2, the body uses adaptive immune response. It includes the cells that release the antibodies with the capability to fight the virus by sticking on the virus itself and T cells that attack the infected cells.

Why are immune passports not being issued to those in whom antibodies to SARS-CoV-2 have been found?



Picture Courtesy: BBC.com

It is not guaranteed. Scientists have identified patients who had developed antibodies (may be less in number) but died due to COVID-19. It depends on the overall response of the immune system to the viral attack which is different in different individuals. Sometimes the immune system itself harms the organs in the process of fighting with COVID-19. *Cytokine Storms* produced by the immune system can damage the lungs severely even though the antibodies are developed in a COVID-19 patient. (Preprint at *medRxiv* <http://doi.org/d27t>) This is the reason, the World Health Organization is hesitating in using immunity passports for international travel. Immunity passports are issued on the basis of antibody detection in blood samples.

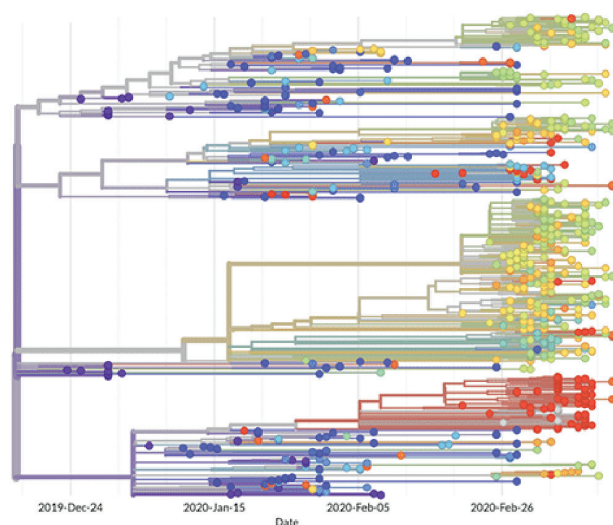
Are there any long-term or lasting effects on health of COVID-19 patients?

Almost everyone is familiar with the short-term symptoms of an acute SARS-CoV-2 infection. These include a fever, cough, breathing problems, fatigue, diarrhea, and other flu-like symptoms. While some doctors have raised alarms about the infection's potential to inflict lasting organ damage, the popular perception of COVID-19 is that a small percentage of patients die and the rest recover.

But as the pandemic has stretched on, experts have begun to recognize that many COVID-19 patients — maybe even a majority — continue to grapple with a range of “post-viral” symptoms. Some of these patients eventually get all the way back to normal, even if it takes a few weeks or months for that to happen. But some don’t. And for those who have yet to fully recover, there’s a growing suspicion that the virus may act as a catalyst for a condition that is commonly, if a bit misleadingly, known as chronic fatigue syndrome.

In July, the *Journal of the American Medical Association* (JAMA) published a report from Italy that found that the bulk of former COVID-19 patients — those who had been hospitalized, discharged, and who no longer tested positive for the infection — continued to grapple with health issues months after their ostensible recovery.

Among the 143 people interviewed for the report, only 18 were symptom-free 60 days after their hospital discharge. More than half of the people interviewed said that they still experienced three or more symptoms, among which fatigue was the most common issue cited.



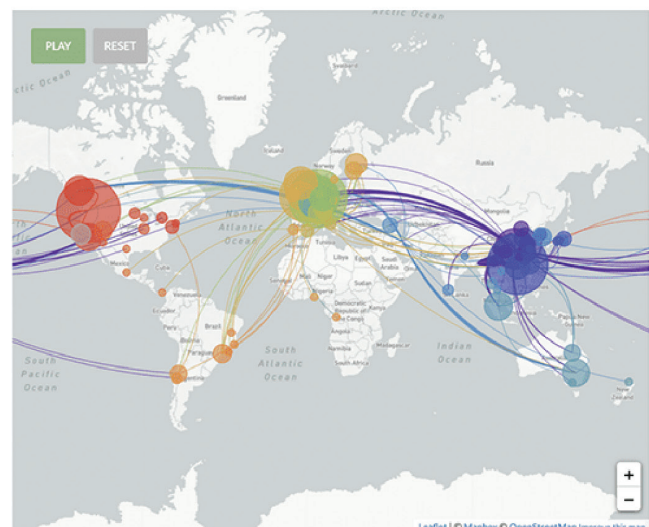
How many people with COVID-19 could go on to develop CFS? Jason says that some older research suggests that a significant percentage of people who develop viral infections — “We think maybe 10%, but it may be a larger percentage” — still feel ill six months later.

This six-month threshold is usually used to differentiate CFS from the shorter-lived post-viral syndrome. But at this point, and especially when it comes to COVID-19, there are many more questions than answers.

<https://elemental.medium.com>

How does virus genome sequencing help the response to COVID-19?

Virus genome sequencing is a vital and rapidly-developing tool in the diagnosis of COVID-19 and in understanding the spread and control of the new coronavirus. If the new coronavirus’s sequence is found in a sample (usually taken from the nose or mouth) it will confirm the likelihood that a patient’s symptoms are those of COVID-19. Virus genomes constantly alter (mutate), changing a few letters at a time as they divide and spread by infecting more people.



These changes can be exploited to track the spread of the virus by sequencing, recording and analysing genomes. If virus genome sequencing is undertaken rapidly and on a large-scale it can assist epidemiologists and public health authorities in understanding how the virus is spreading and in evaluating how effective their interventions have been. It can also help to establish whether new variants are associated with particular patterns of symptoms or severity of disease. In the longer term, tracking new variants is likely to be extremely important to ensure that vaccines, when these are developed, can be kept 'up to date' with the strains of virus that are currently circulating.

In the initial stages of the epidemic, sequencing can be used to find out how many new cases of the disease are imported or come from local transmission. Global databases of virus genomes enable researchers to compare genomes so that an accurate assessment of local transmission in each country can be made. Mathematical models of how viruses evolve during an epidemic, developed from extensive analysis of past outbreaks, allow epidemic growth rates and other measurements of transmission and infection to be estimated from virus genome sequences. Compared to estimates from other sources of data, insights from virus genetics are most useful for the prediction of longer-term, larger-scale trends.

Importantly, they provide independent validation of estimates of the size and growth rate of an epidemic. This is useful especially when cases are under-reported, for instance because many people who are infected do not have symptoms. Widespread sampling and genome sequencing of the new coronavirus allows the reconstruction of virus spread in different places or groups of people. This provides information about what is driving the spread of the virus both locally and nationally.

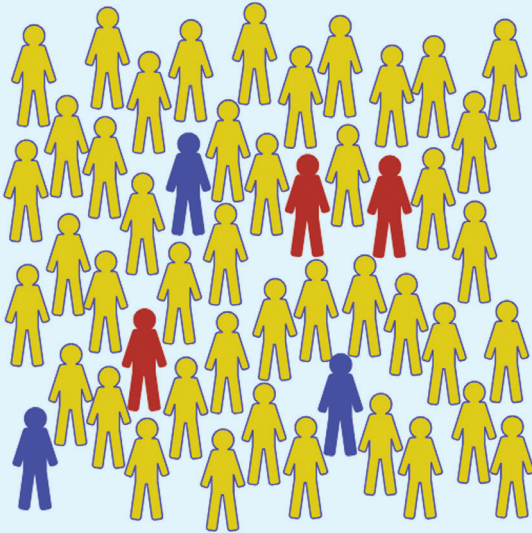
Virus genome sequences can also identify unique genetic changes shared by all those infected in a single virus transmission chain. This can be used to distinguish whether two clusters of cases in the same area have arisen because one started infection in the other, or because there were two distinct and independent chains of transmission with separate, earlier origins. Virus genomes can therefore add to the information provided by patient contact tracing, which is important for tracking outbreaks in communities, hospitals and other care settings. Many genetic changes that occur in the genome of the virus will have no significant effect on the course of infection or disease, or the impact of control measures. However, a few of the changes might be important. These need to be identified and tracked through time.

coronavirusexplained.ukri.org

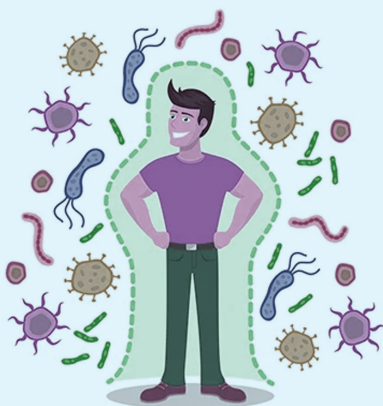
COVID-19 MYTH BUSTERS

MYTH

Herd immunity is the way to go



You get herd immunity with other diseases, so it'll work the same for Coronavirus



FACT

Herd immunity means that enough people have recovered from the virus and developed immunity to it so that now they cannot infect other people or get sick again themselves. How much is 'enough' depends on how contagious a virus is. Considering the death toll of such a strategy, this is far from the best approach. But another huge question mark here is if it's even possible for people to become immune for long enough for this theory to even work. It's also important to know whether this immunity response is strong enough to prevent re-infection in people who have already had the virus. The herd immunity is not in the immediate future and we cannot look to it for reassurance.

www.findmecure.com

Unfortunately, coronavirus isn't like other illnesses. The situation is much more complicated with respiratory viruses like COVID-19. These kinds of viruses tend not to create herd immunity because they don't create the same strong, long-lasting immune responses as measles, rubella, or other diseases. Instead, our bodies often produce lower levels of antibodies that might not stick around for very long.

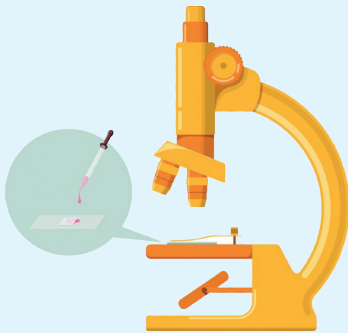
www.findmecure.com

MYTH ❌

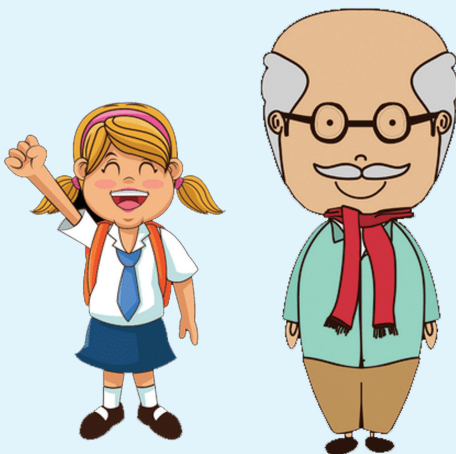
If I get it, it's like naturally getting vaccinated, so it's not a big deal



You cannot take a microbiome test to tell you what supplements to take to help boost your immune system



It only kills the elderly, so younger people can relax

**FACT** ✅

Some people think it's better to "just get COVID over with" in the hope that they'll have no symptoms, get antibodies, and be protected in the future. But getting the virus organically is very different from getting vaccinated against it.


www.findmecure.com

You DO NOT need a microbiome test to tell you what to eat or what supplements to take. There is no evidence to support that the test recommendations can improve your immunity. Selling unauthorized health products or making false or misleading claims to prevent, treat or cure COVID-19 is illegal in Canada.

www.cdhf.ca

Most people who are not elderly and do not have underlying health conditions will not become critically ill from COVID-19. But the illness still has a higher chance of leading to serious respiratory symptoms than seasonal flu. There are other at-risk groups. Health workers, for instance, are more vulnerable because they are likely to have higher exposure to the virus. The actions that young, healthy people take, including reporting symptoms and following quarantine instructions, will have an important role in protecting the most vulnerable in society and in shaping the overall trajectory of the outbreak.

www.theguardian.com

 Content in this bulletin has been compiled from various sources, and wherever available, due credit has been given to the original source.