

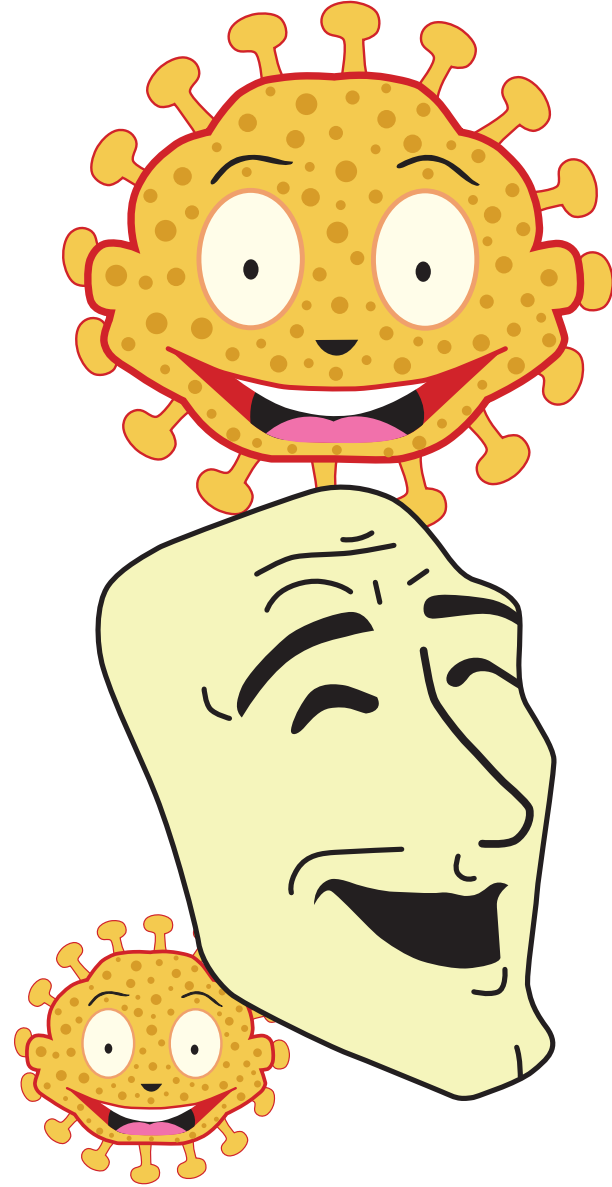
SCIENTOON

# BYE BYE ... CORONA



Pradeep Kumar Srivastava & Others

# BYE BYE... CORONA



Pradeep Kumar Srivastava & Others



Vigyan Prasar

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Bye Bye... CORONA

by Pradeep Kumar Srivastava & Others

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## FOREWORD

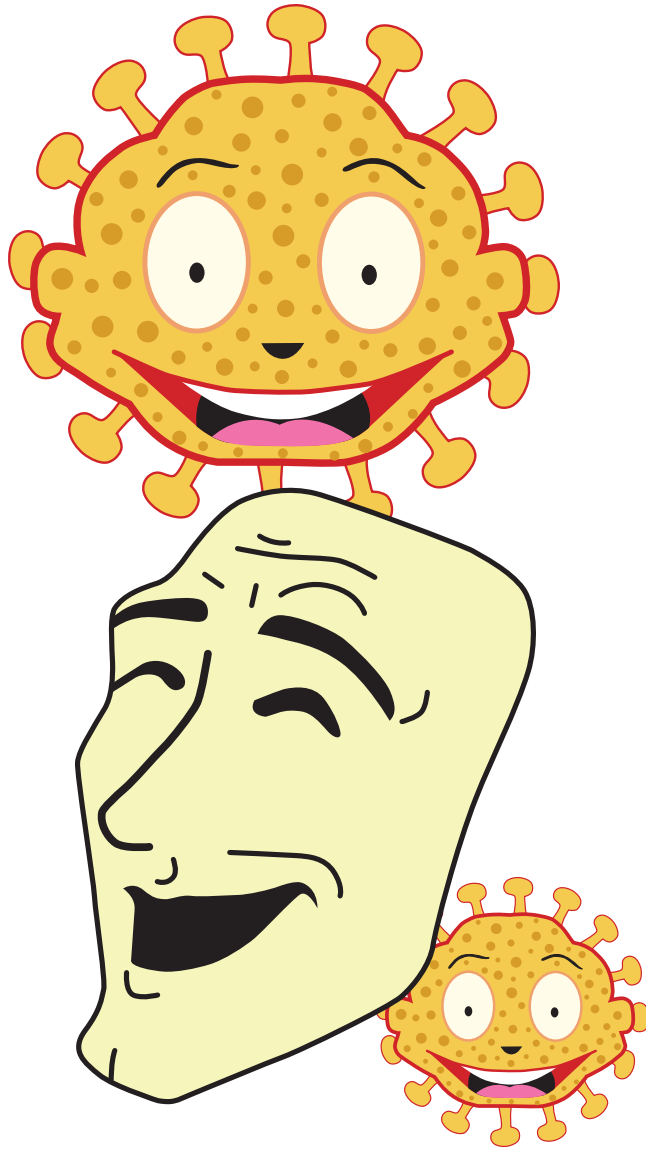
A picture is worth a thousand words, something that we all agree with. Isn't it?

Our first book had big colourful pictures connecting alphabets with animals, fruits, and much more that aided us to quickly connect words with pictures. The journey of learning about anything through visual aids continues and remains the most effective and popular way of communication.

If there is a caption to a picture, it adds another few words which make the picture fully communicable to the person watching it. This fact remains universal irrespective of geography, language, or subject domain. Science & technology, thus, remain no exception to it. In fact, for science & technology, explaining intricacies of it to a common person, pictorial representation is the most effective way of science communication.

Yet, the spread of understanding of science & technology and efforts to make it more interesting for a non-expert continued with very little success. Several presentations made in conferences, seminars, and workshops have since seen an increase in the number of pictorial displays. This has thus made them far more acceptable. Yet, we have still found that the audience in most cases was found napping! People analysed and noticed that to retain the attention of the audience, it was imperative to add subtle and relevant humour to it.

In today's world of widespread and high-speed Internet connectivity, the average attention span has drastically reduced. Pictorial displays and videos, no matter how good they are with their content, are often avoided beyond a certain limit. In such cases, a wide variety and spontaneity are sought. Cartoons, that way, have a unique character. The cartoon is a pictorial display of a discussion, event, or idea depicted with the help of a single picture. Short, simple, and crisp, cartoons have been well accepted since their inception. Conveying a message with an acceptable satire gains the attention of the reader much faster than any other available form of readable communication. It also keeps the



## PREFACE

attention of the reader alive longer than any other possible method of the publishable medium.

For effective science communication, cartoons too could play a very important role. Dr PK Srivastava, who realized this fact, pioneered the art of cartoon in science. He thus coined the term, Scientoon. He started developing Scientoons, and in no time, Scientoon acquired its popularity worldwide. For every presentation of him that I have witnessed, I have found his audience listening to him with complete attention, which is incredible and praiseworthy at the same time.

I've known Dr Srivastava since my *Vigyan Pragati* (a popular science monthly in Hindi) days during the early nineties when he used to send his cartoons for publication. His passion for Scientoon is unparalleled. As the father of Scientoon, when the pandemic hit the world around, we requested Dr Srivastava if we could compile his Scientoons on COVID-19. His kind acceptance shaped the manuscript and we sincerely thank Dr Srivastava for it. Later, the marvellous work of coordination and execution of the team led by Mr Nimish Kapoor, Scientist at Vigyan Prasar and designer, Bipro Kumar Sen got us with this book quickly. I'm quite hopeful that like other Scientoons, this special collection on COVID-19 would be liked by all.

Happy Scientooning!

Dr Nakul Parashar

Science research and education is facing a tough challenge nowadays around the world. Quite often, science is taught in a way which is too technical, less interesting and sometimes even boring. Educationists are expressing their concerns as more and more students are opting for lucrative career options in business, commerce and information technology. This is not a very healthy trend as no country can progress without development in science. Increasingly, scientific researches are becoming interdisciplinary where experts from diverse backgrounds work together. Communication, in such circumstances, becomes even more challenging.

It is said that a picture is worth thousand words. Cartoons are combination of caricature and satire, where caricature means distorted drawing and satire means humorous comment, irony, exaggeration, etc. When the subject of the cartoon is science, it is called science cartoons. SCIENTOONS are a new class of science cartoons that not only make you smile and laugh but also provide information about new researches, subjects and concepts in a simple, understandable and interesting way. SCIENTOONICS is new branch of science, which deals with effective science communication using a novel class of science cartoons called scientoons. They have been recognized and appreciated all over the world by several international organizations including WHO, UNESCO, UNEP, Royal Swedish Academy, International Union of Pure and Applied Chemistry, American Chemical Society, Junior Chamber International (USA), DECHEMA, Germany and also by NCSTC (DST, Government of India), CSIR, Indian Science Congress Association and many more. European Science Festival 2008 held during July 18-22, 2008 at Barcelona, Spain, organized a full session on Scientoonics ([www.esof2008.org](http://www.esof2008.org)).

This Scientoon-based audiovisual technique is more useful when a scientific programme on higher education/mass awareness is undertaken on subjects like environmental pollution, biodiversity, conservation, nanotechnology, DNA and human genome, AIDS awareness etc. Since such programmes involve experts from different

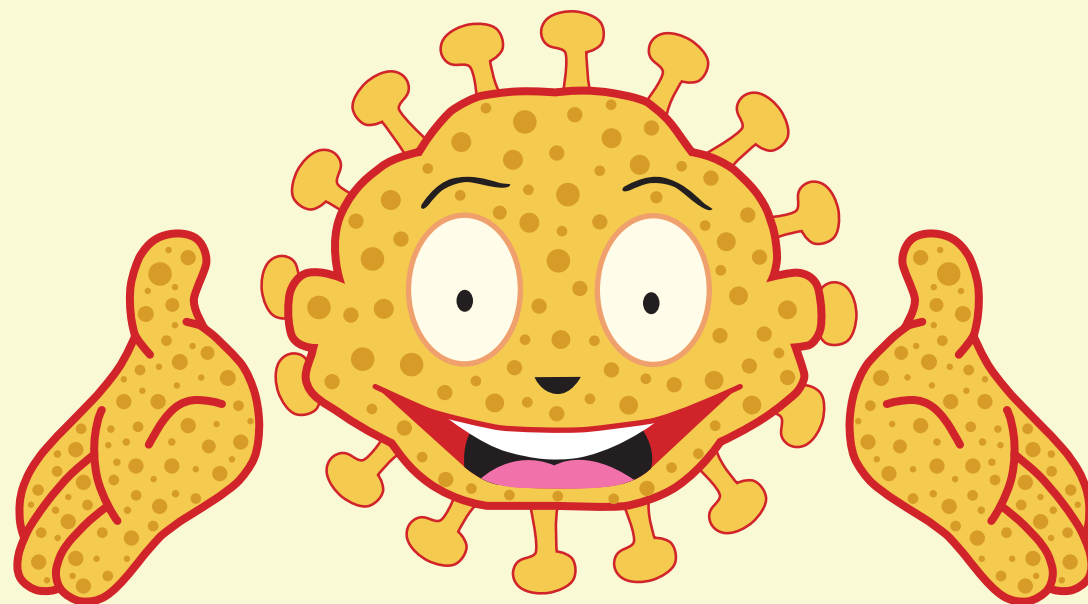
disciplines communicating on different subject, Sciencetoons fill the gap and ensure seamless dissemination of the information and ideas.

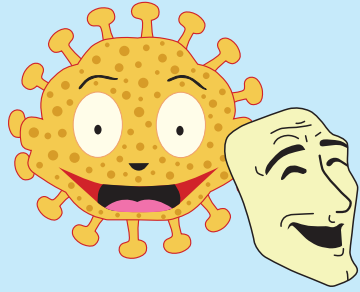
I am extremely grateful to all who contributed in this book and worked hard to make the concept interesting, informative and useful. I sincerely convey my gratitude to Dr R. Kanchana, HOD, Biotechnology, Convener of the two National Workshops on Sciencetoons, Parvatibai Chowgule College of Arts and Science (Autonomous), Margao Goa; Ms. Madhavi Motankar, Assistant Professor in Department of Biotechnology, Co-convener and Organizing Secretary of the two National Workshops on Sciencetoons in Goa; Dr Nand Kumar Sawant, Principal of the Parvatibai Chowgule College of Arts and Science; and Department of Science and Technology, Government of Goa, who sponsored the National Scienceton Workshop successively held in 2019 and 2020.

I express my heartiest gratitude to Dr Nakul Parashar, Director, Vigyan Prasar for giving me and all other contributors this great opportunity to create awareness about COVID-19 pandemic using Sciencetoons. Thanks are also due to his very dynamic team including Sri Nimish Kapoor and Ms Sumita Mukherjee of Vigyan Prasar who took all the pains to edit and improve the book.

This booklet is an attempt to show that how common man can be made aware about SARS-CoV-2 infection or **COVID-19** disease with the help of colourful, interesting and eye-catching Sciencetoons. Since there is no drug or vaccine to cure COVID-19 till now, making people aware is the only way to save them from this disease. Awareness is the best tool for prevention, which in turn is the best way to save us from this pandemic. I sincerely acknowledge the World Health Organization, UNICEF, CDC, COVID KATHA and all others sources that we have used for necessary information. I hope that the Sciencetoons help people understand how to save themselves and their families against the pandemic and live a life free of worries and stress.

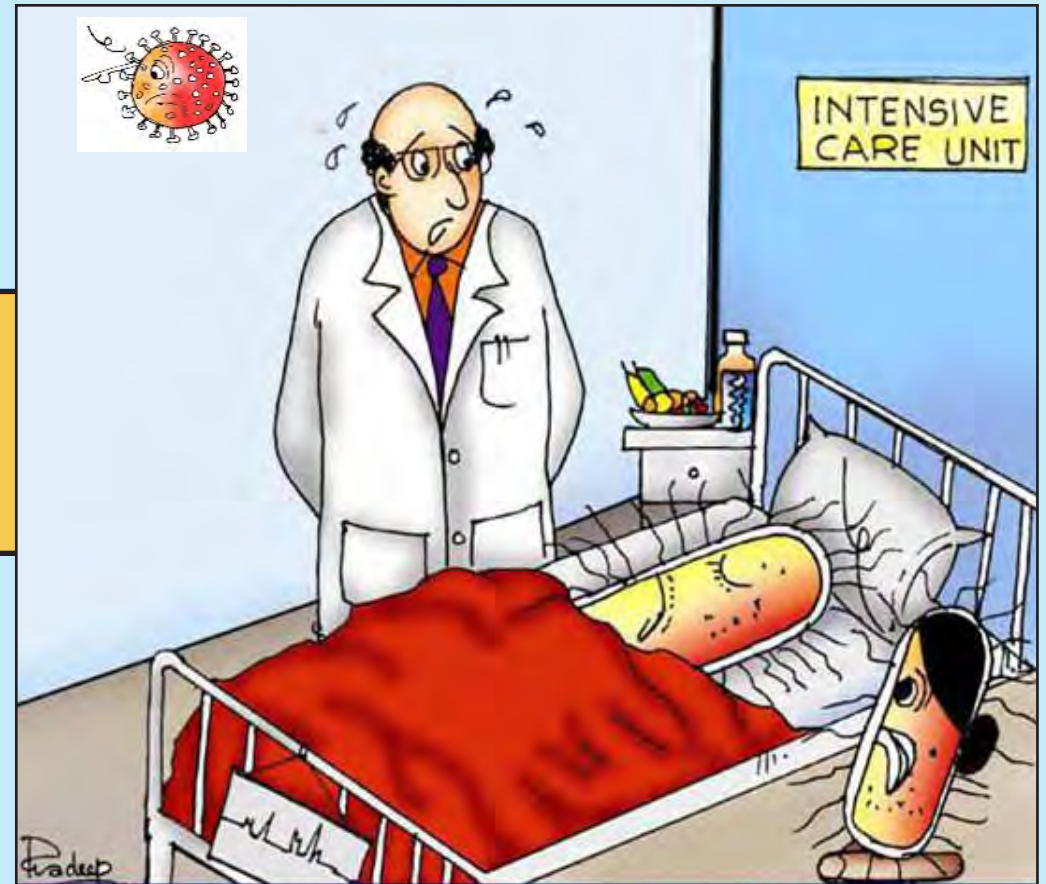
Dr Pradeep K Srivastava





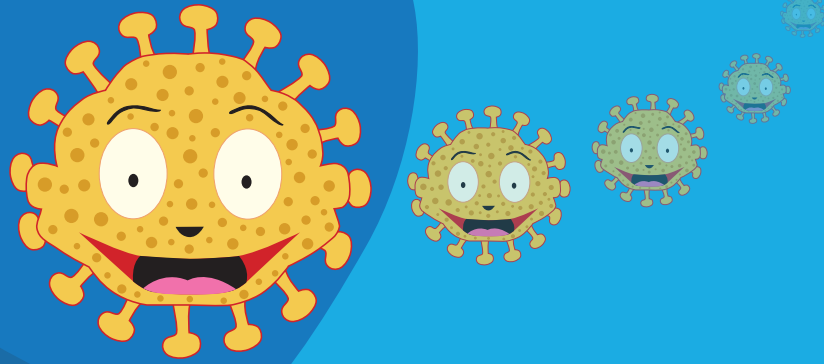
# SCIEN TOON

## Coronavirus and COVID-19



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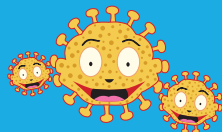




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Bacteria are single-celled, microscopic living organisms. They have a cell wall and all the components necessary to survive and reproduce, although some may derive energy from other sources. They can be dangerous, such as when they cause infection, or beneficial, as in the process of fermentation (such as in wine) and that of decomposition.

Viruses are not considered to be “living” because they require a host cell to survive, for energy and to reproduce.



**“Please save my husband. I told him that Modiji said to finish Corona which is a virus and not a bacteria. But the moment he saw him on TV he went into coma.”**



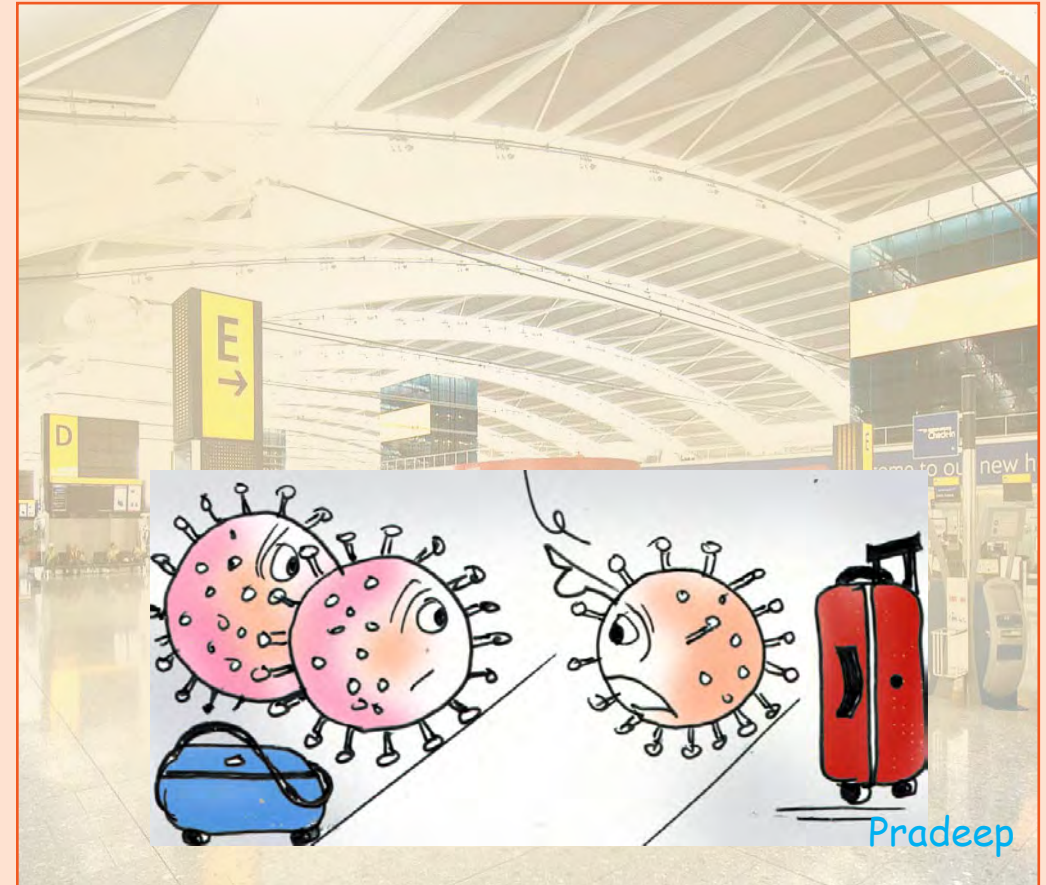
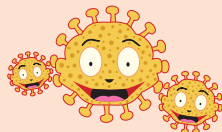


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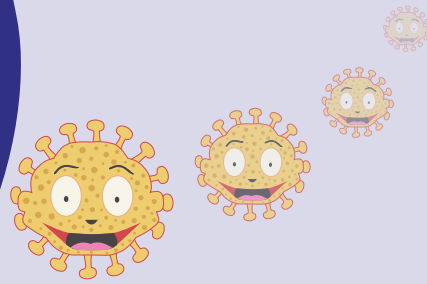
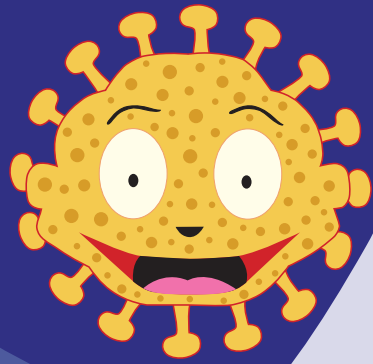
After assessment, WHO characterized COVID-19 as a pandemic and declared it on 11 March, 2020.

An EPIDEMIC is a disease that affects a large number of people within a community, population or region.

A PANDEMIC is an outbreak affecting large populations or a whole region, country, or continent.



**“Ok! We have to go to all 5 continents. Wish you a very happy journey and best of luck. Remember! Soap, sanitizer, PPE these are all our enemies and we have to save ourselves from them.”**



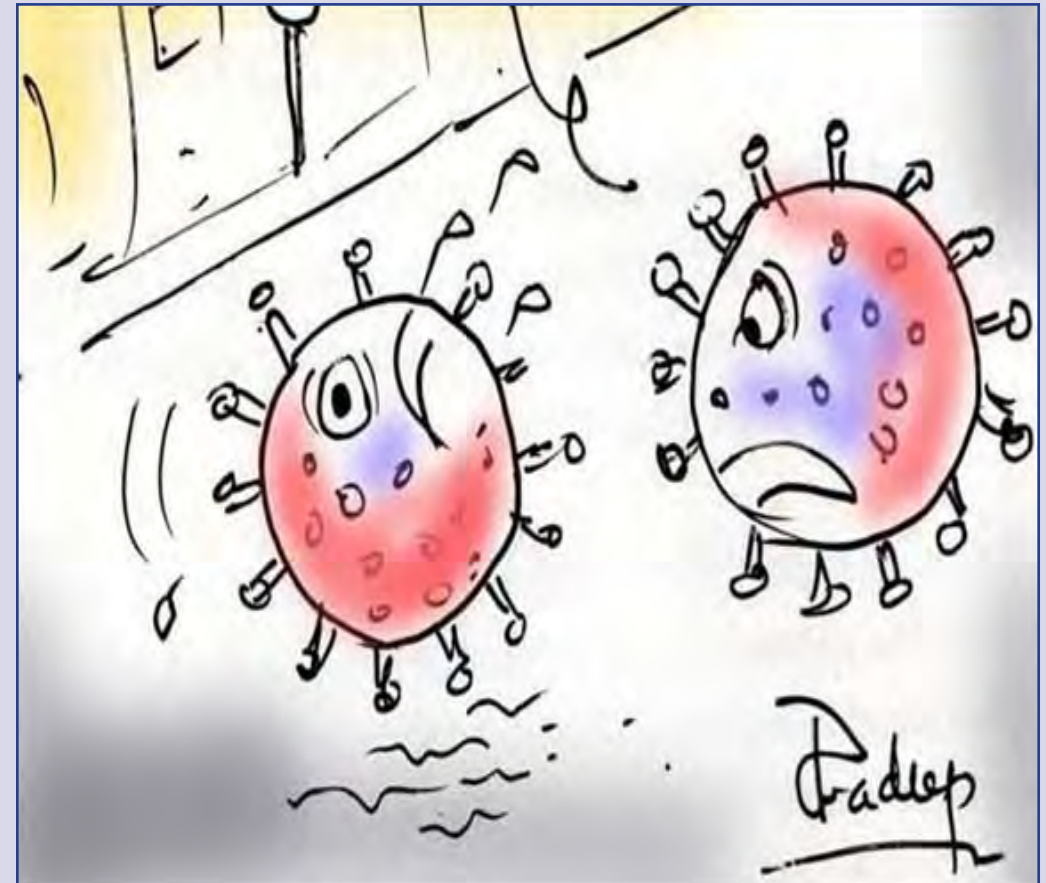
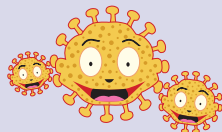
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Coronavirus is transmitted through direct contact, coughing and sneezing and touching surfaces contaminated by the virus. It is not known how long the virus survives on objects or surfaces, but any disinfectant can kill it.

According to the Centers for Disease Control and Prevention (CDC) spread of coronavirus from person to person happens most often when people are no more than 6 feet apart.

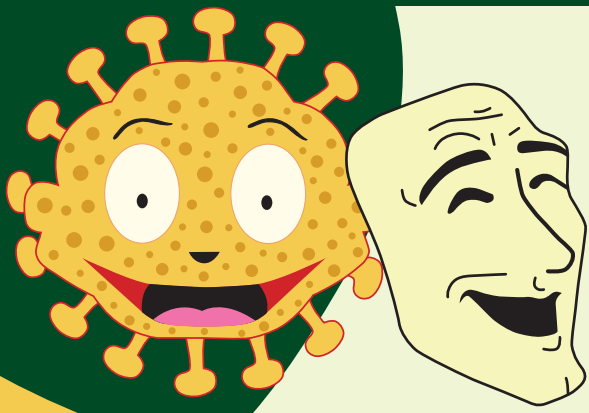
**Website:**

<https://www.unicefusa.org/stories/seven-things-you-should-know-about-coronavirus-outbreak/36969>



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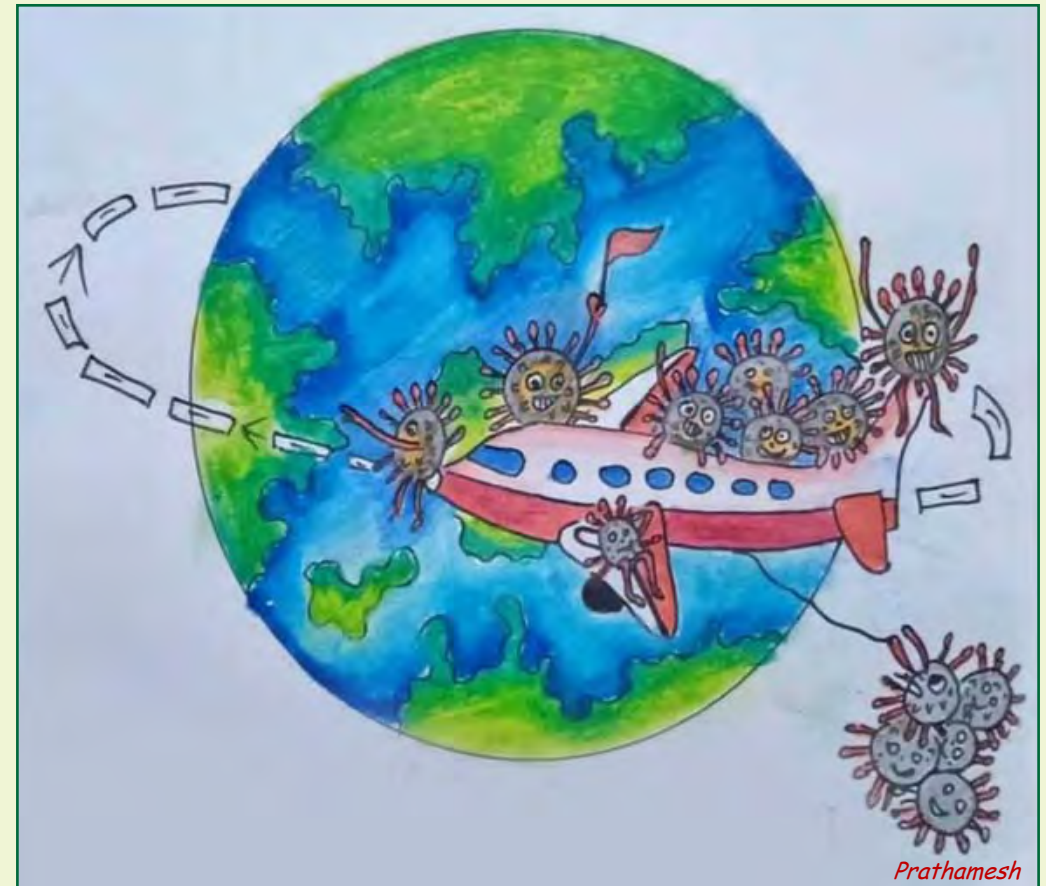
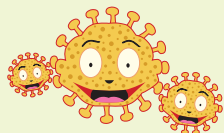
**“Come on! Don’t give up. Look! What our fellows did in China, Italy, USA, Spain! We will find someone to infect. But there are no taxis, no buses, no trains. Oh No! We reached India by chance!!”**



## SCIENTOON

One out of every six persons who gets COVID-19 infection becomes seriously ill.

They may experience running nose, dry cough, fever and difficulty in breathing. Older people and people with serious underlying medical conditions like high blood pressure, asthma or diabetes are more likely to develop severe illness.



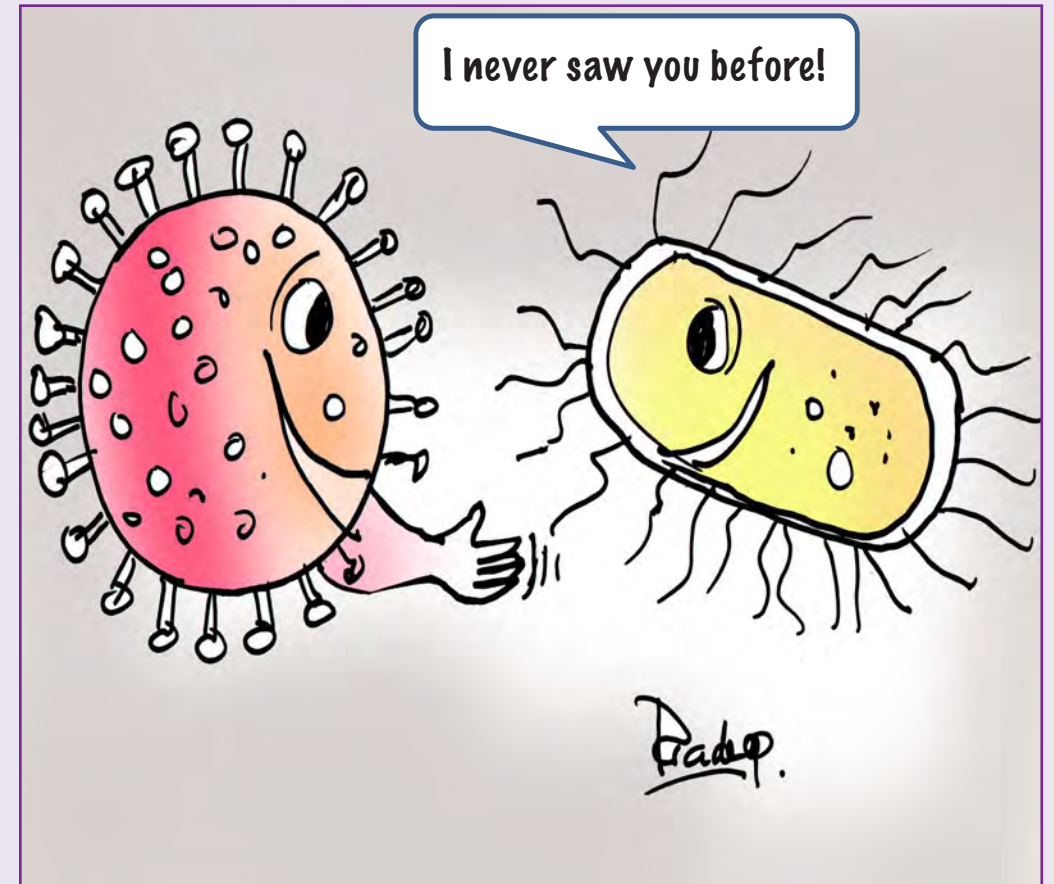
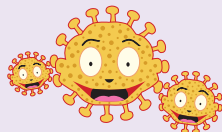
**Coronavirus is on world tour. It has already reached to all five continents of the world.**



## SCIENTOON

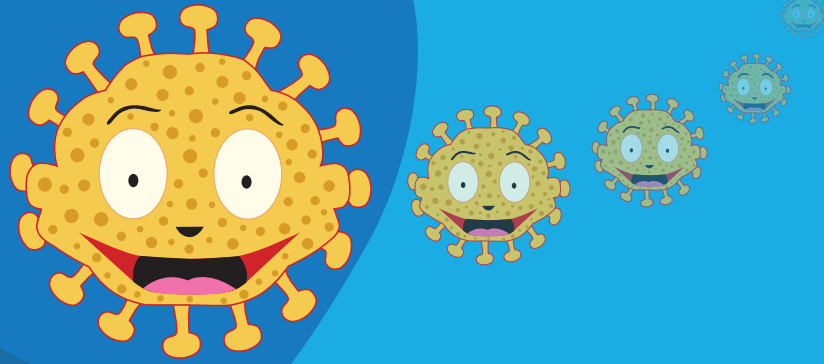
COVID-19 is an infectious disease caused by the most recently discovered coronavirus, SARS-CoV-2.

This new virus and the disease were unknown before the outbreak began in Wuhan, China, in December 2019.



Pradeep

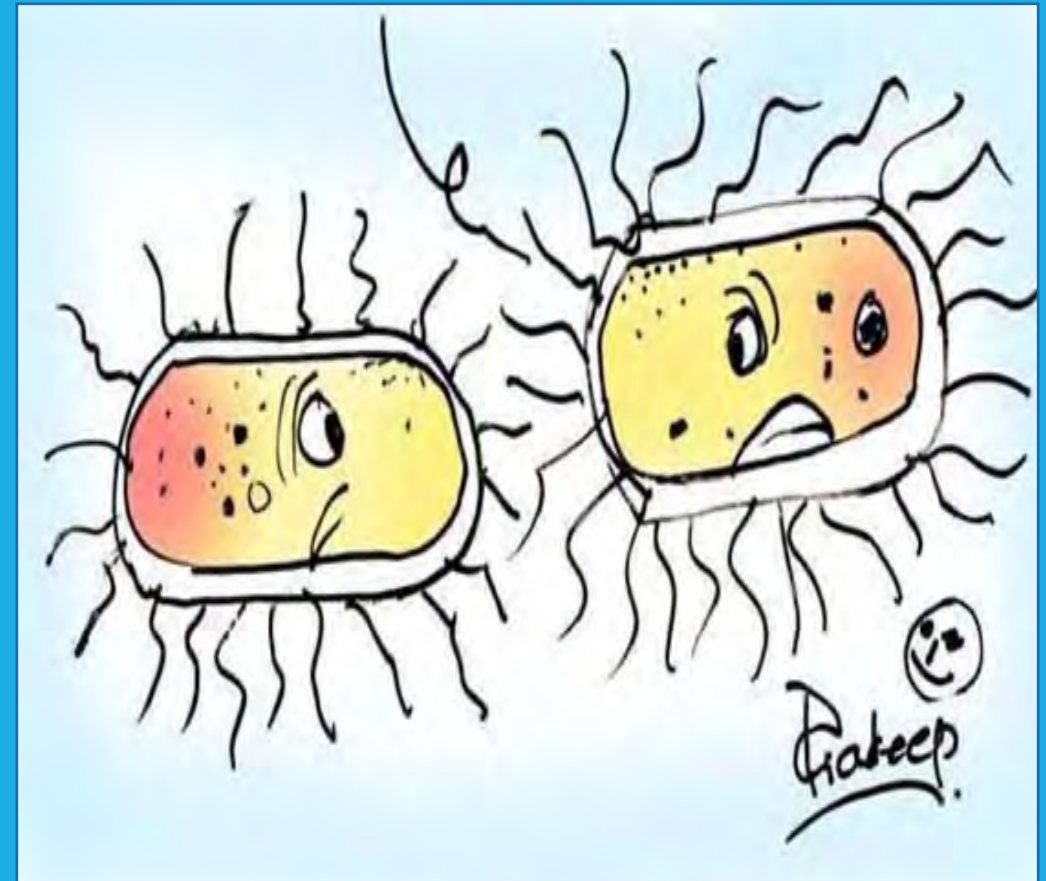
**“Oh yes! We never met before. You may be knowing my cousins, MERS and SARS. I am COVID-19. I belong to the great family of Coronavirus.”**



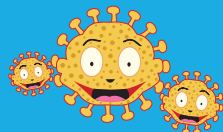
# SCIENTOON

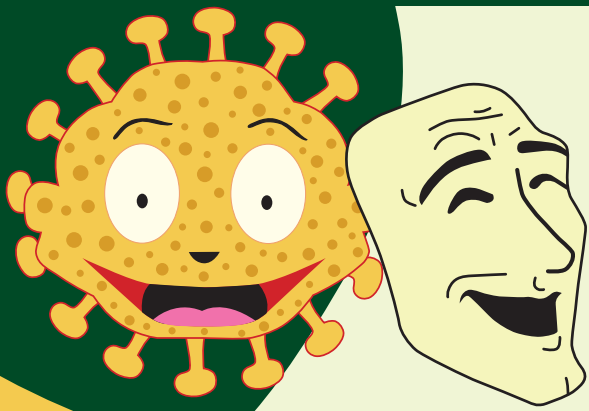
The novel coronavirus (COVID-19) cases have been confirmed by large number of countries. The worst affected countries in the world are China, Italy, USA Spain and Russia.

At present 212 countries in the world are affected by COVID-19 virus.



"I feel terribly neglected nowadays. I wish to be reborn as Coronavirus."



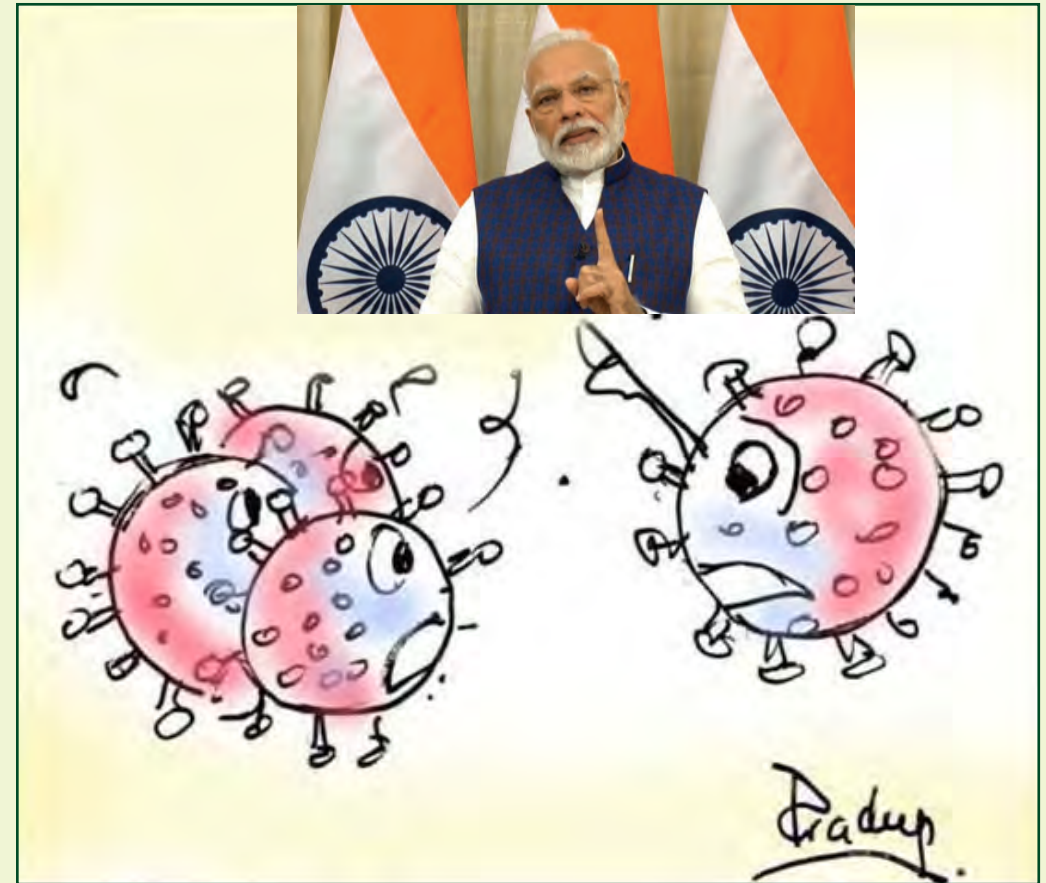
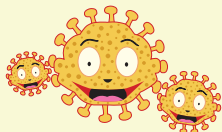


## SCIENTOON

Coronaviruses are a large family of viruses which may cause illness in animals or humans. In humans several coronaviruses are known to cause respiratory infections ranging from common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus is SARS-CoV-2.

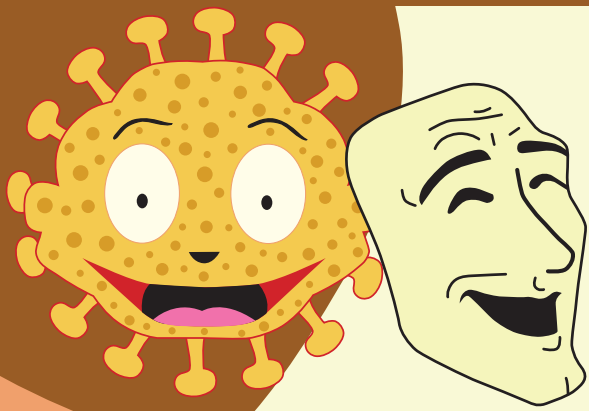
**Website:**

<https://www.unicefusa.org/stories/seven-things-you-should-know-about-coronavirus-outbreak/36969>



Pradeep

**“Stop all other routine infection job. Listen to him very carefully, what he says at 8 PM today; otherwise, it will be disastrous for all our programmes and future plans. OK!!”**



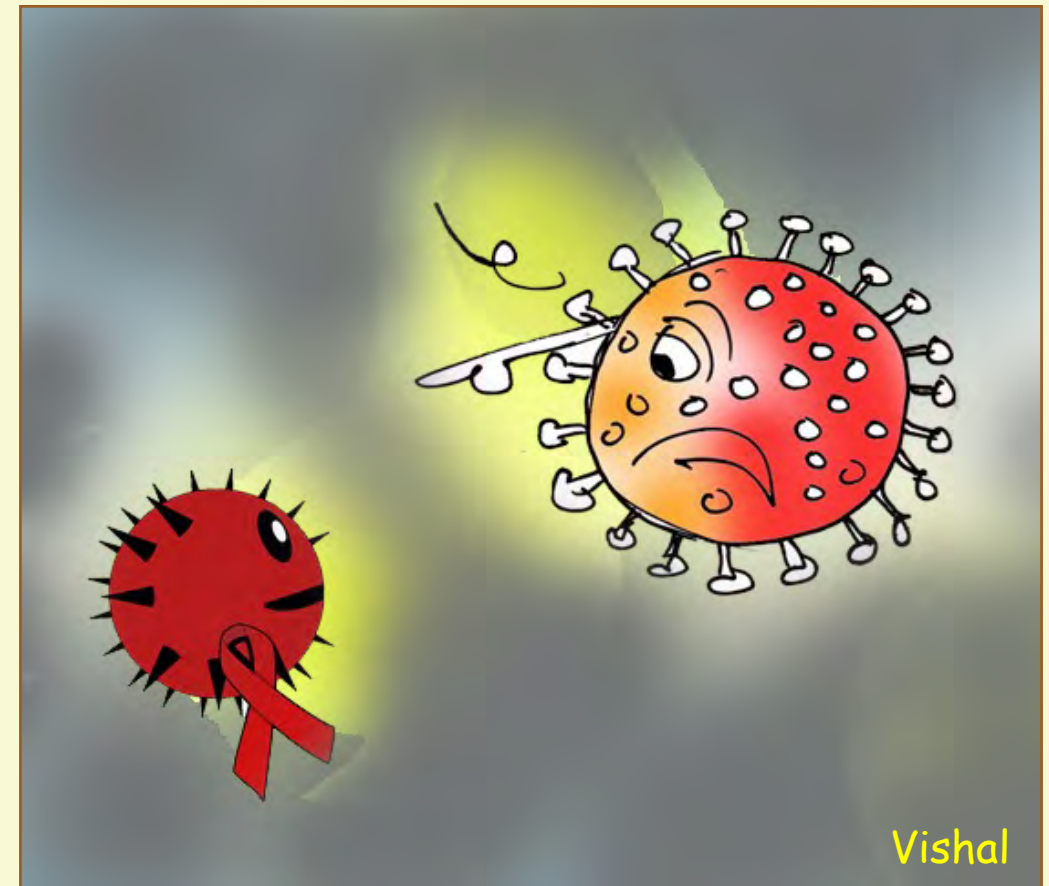
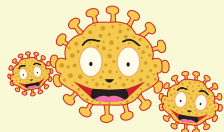
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The journey of coronaviruses of human origin began in 1965 when Tyrrell and Bynoe found that they could sub-passage a virus named B814 in tissue culture.

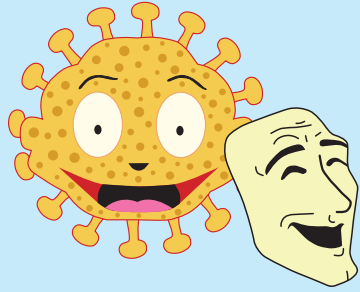
The human coronavirus discovered in 2003, SARS-CoV, causes both upper and lower respiratory infections.

In 1983, Luc Montagnier's team at the Pasteur Institute in Paris discovered HIV-1 (AIDS).

**Website:**  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7189396/>



**"Listen HIV! I was discovered much before you but scientist didn't make me famous. But I never gave up. My hard work has paid off now, I have much more name & fame these days."**



# SCIENTOON

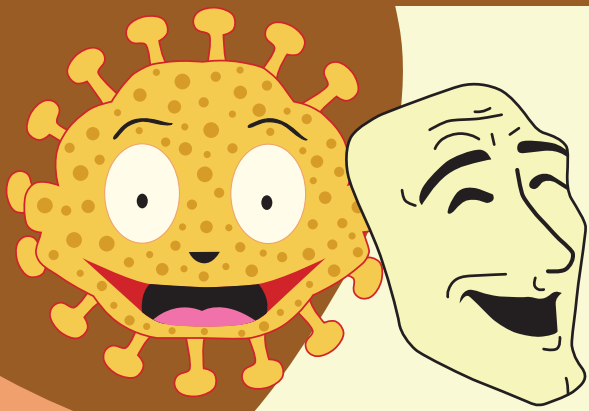
## Symptoms



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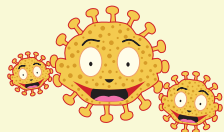
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### What are the symptoms of coronavirus?

Symptoms can include fever, dry cough and shortness of breath. In more severe cases, infection can cause pneumonia or breathing difficulties. Within China, the known case fatality rate (CFR, the proportion of cases who die) is approximately 2 per cent, although epidemiologists caution this figure may be high, as many people with mild or no symptoms are never diagnosed. Symptoms can appear as quickly as two days after initial exposure, or up to two weeks later.

**Website:**

<https://www.unicefusa.org/stories/seven-things-you-should-know-about-coronavirus-outbreak/36969>



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**“No! He is not having Corona infection! Yes he is feeling exhausted, breathing trouble, but poor fellow! He told me that apart from office work at home, he had to clean the floor, wash clothes, utensils and even cook the food also.”**



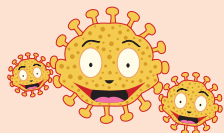
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The INCUBATION PERIOD of the virus is the time between the exposure and the display of symptoms.

Current information suggests that the incubation period ranges from 1 to 12.5 days (with median estimates of 5 to 6 days), but can be as long as 14 days.

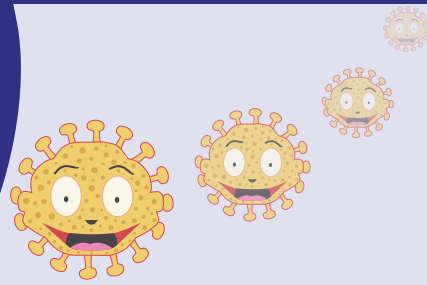
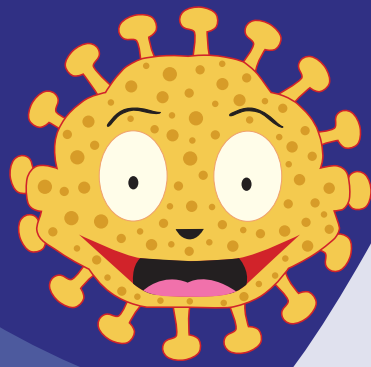
**Website:**

<https://www.mohfw.gov.in/pdf/DGSOrder04of2020.pdf>



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**“I don’t know the incubation period of the coronavirus and its symptoms, but it is my husband’s third incubation! I mean third lockdown, and let me see what symptoms he shows now.”**



## SCIENTOON

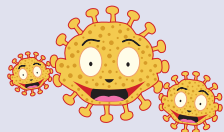
The impact of COVID-19 varies by location. There are now more than 4.7 million confirmed cases around the globe and over 315,000 people have died from the disease, according to the WHO (As per 20 May 2020).

Although scientists won't know for sure until testing becomes widespread, COVID-19 could be about 10 times more deadly than the seasonal flu. But it is a virus that has never been seen in humans, so absolutely no one is immune to it. Strict measures are critical for slowing the disease.

### Website:

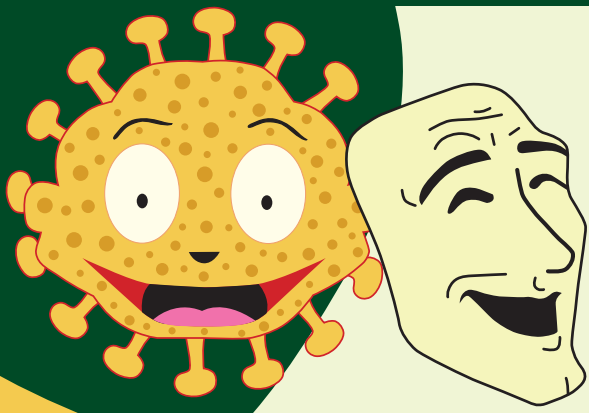
<https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>

<http://www.ucihealth.org/blog/2020/04/why-is-covid19-so-dangerous>



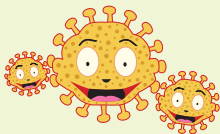
Priyanka

**"...and the award for the Deadliest Virus goes to coronavirus COVID-19, which has affected more than 4.8 million people so far in the world."**



## Less Common Symptoms of Coronavirus Disease

1. Aches and pains
2. Sore throat
3. Diarrhoea
4. Loss of taste and smell
5. Headache
6. Conjunctivitis
7. Rash on skin, discolouration of fingers or toes



Pradeep

**“I repeatedly told you that frogs are not affected by coronavirus. But always keep in mind that “Aya hai so jayega”.**



## SCIENTOON

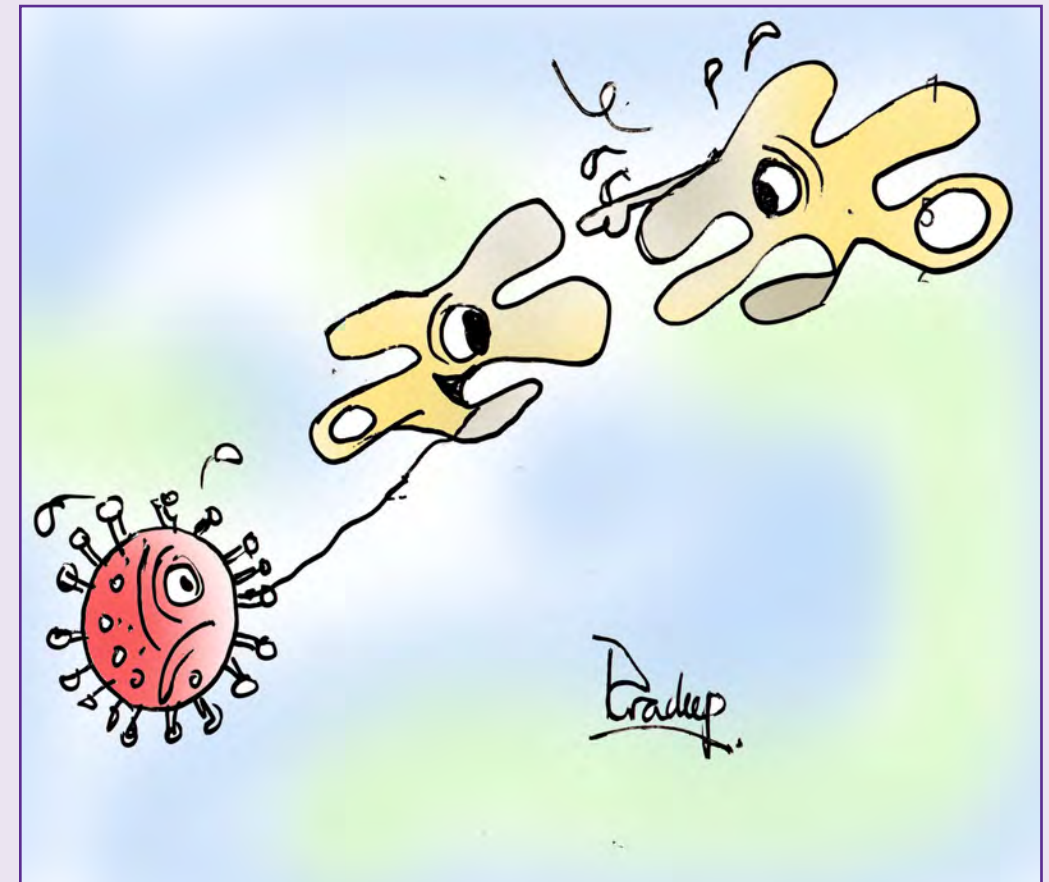
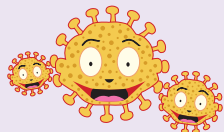
### Can Children Get Coronavirus?

Cases of coronavirus transmission in children have been remarkably low, according to a report published in JAMA (The Journal of the American Medical Association). Children infected by the coronavirus typically have only mild symptoms or are asymptomatic.

It is not unusual for children to be mildly affected by viruses that can cause severe illnesses in adults—chickenpox, for example.

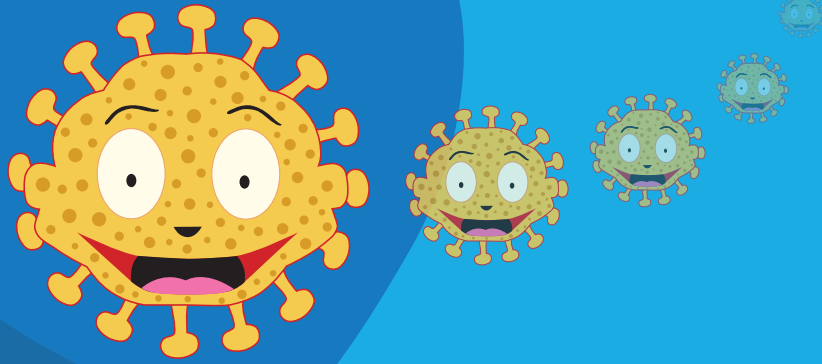
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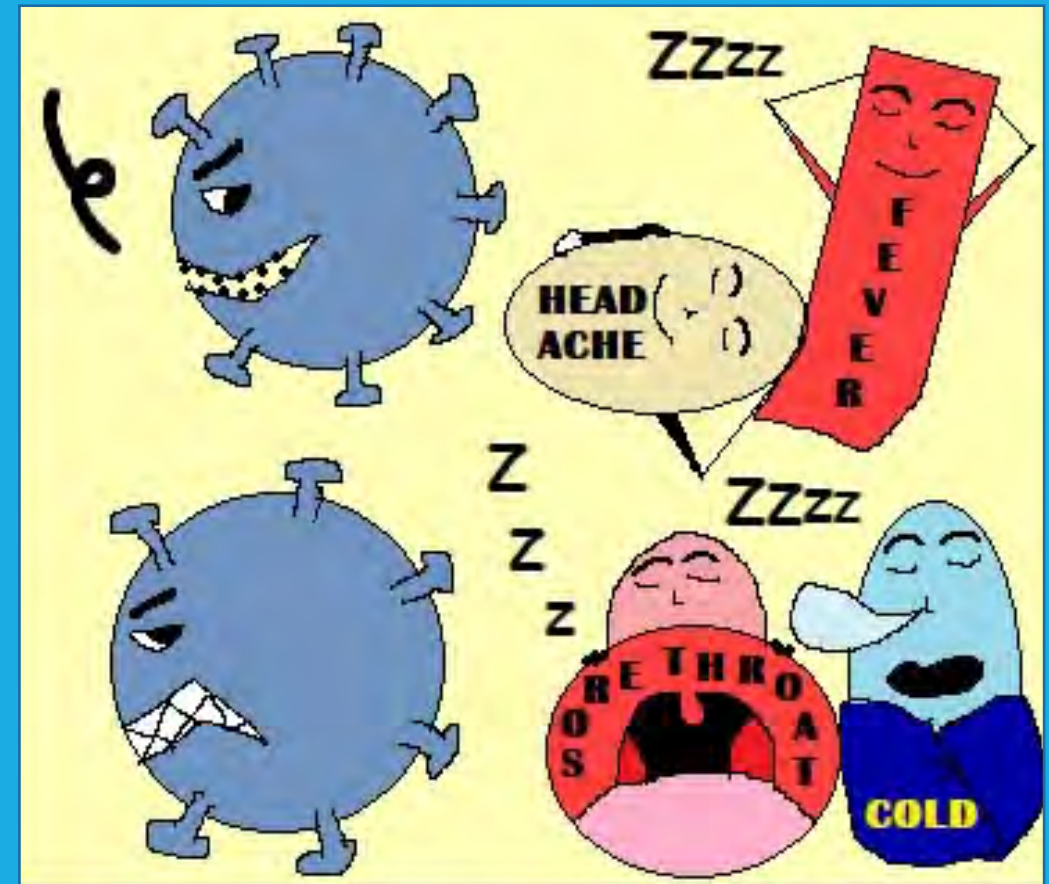
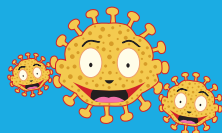
**“Oh my God! Throw it immediately. This is not a ball to play with my son. It is the most dangerous coronavirus that causes COVID-19.”**



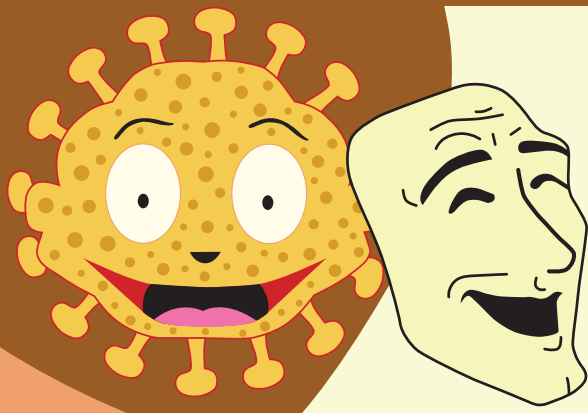
## Asymptomatic COVID-19 Infection

Tamil Nadu Government informed that 98% of COVID-19 cases in Chennai, capital of Tamil Nadu are asymptomatic. This problem appears to be common and will continue to complicate the efforts to get the Corona pandemic under control.

Nearly 30% of the Japanese evacuated from Wuhan, China were asymptomatic.



“Great. Be quiet! We should not wake them up. Let them sleep otherwise our plan will fail.”



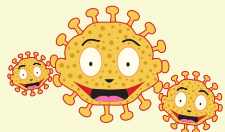
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### Asymptomatic Infection

Many people with COVID-19 experience only mild symptoms. This is particularly true in the early stages of the disease. It is possible to catch COVID-19 from someone who has just a mild cough and does not feel ill. Several patients who were diagnosed with the coronavirus revealed that they experienced loss of taste and smell. Some reports have indicated that people with no symptoms can transmit the virus. WHO is assessing ongoing research on the topic and will continue to share updated findings.

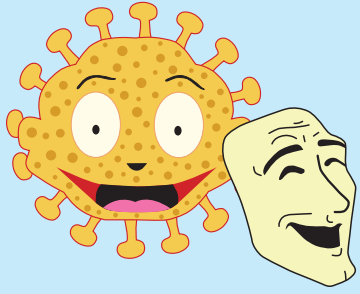
#### Website:

[https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses?gclid=EAlalQobChMIq-LY20Lz6QIVgh0rCh3jQwkyEAAAYASAAEgIOSfD\\_BwE#:~:text=Can](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses?gclid=EAlalQobChMIq-LY20Lz6QIVgh0rCh3jQwkyEAAAYASAAEgIOSfD_BwE#:~:text=Can)  
<https://www.independent.co.uk/life-style/health-and-families/coronavirus-symptoms-respiratory-anosmia-smell-taste-loss-ent-asymptomatic-a9418151.html>



Pradeep

**“What!! The food is not tasty? You might be having COVID-19. I know you very well! You never liked the food cooked by me!! Not only today, but for the last 40 years!”**



**SCIENTOON**

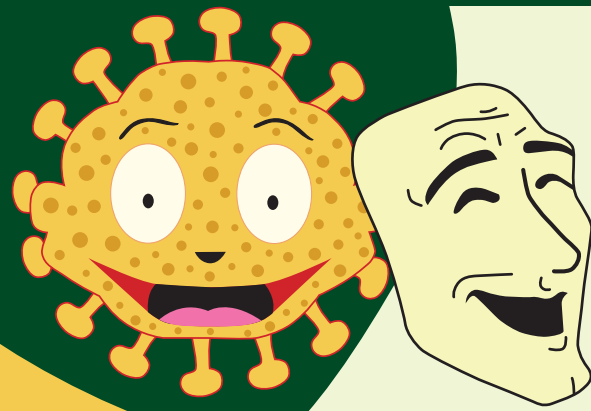
# Dos and Don'ts



Pradeep







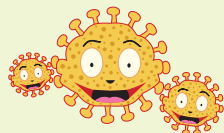
## SCIENTOON

While some western, traditional or home remedies may provide comfort and alleviate symptoms of mild COVID-19, there is no evidence that current medicine can prevent or cure the disease.

WHO does not recommend self-medication with any medicines, including antibiotics, as a prevention or cure for COVID-19. However, there are several ongoing clinical trials that include both western and traditional medicines

**Website:**

<https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>



Bhaiya! How do you know so much about Coronavirus, symptoms, treatment! Amazing!!



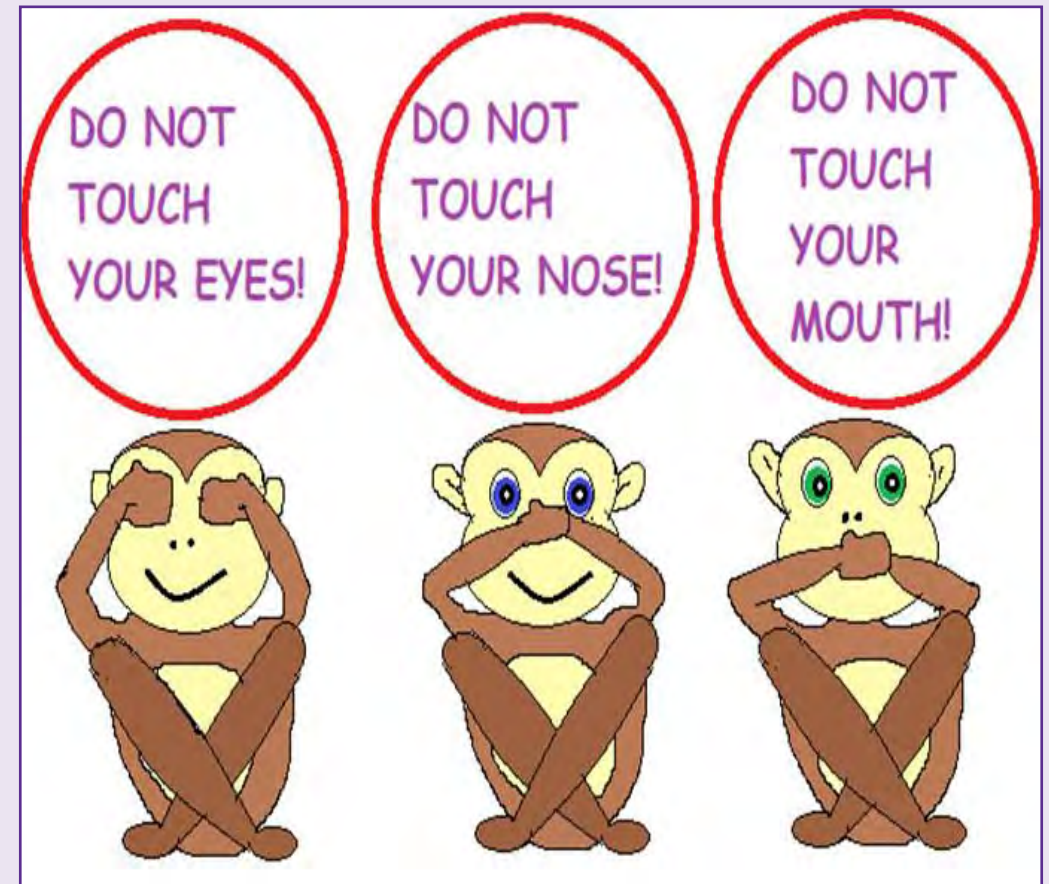
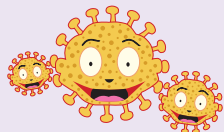
Pradeep

**“Oh! This business is just to keep myself busy these days. I used to be a senior scientist in the area of Virology and Immunology before. I superannuated very recently.”**



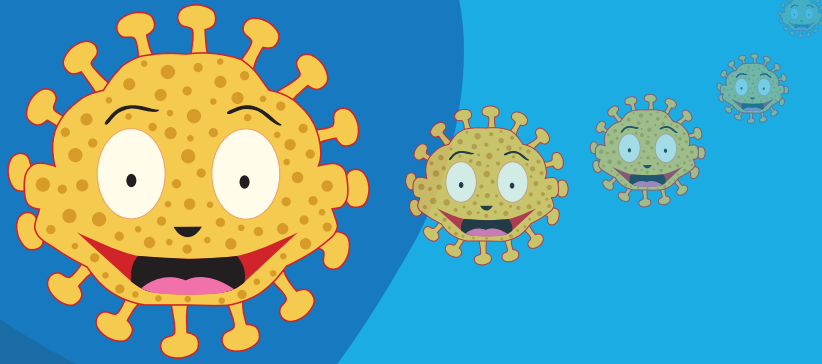
## SCIENTOON

During COVID-19 pandemic, apart from hand hygiene and social distancing, face hygiene is also very important. Rubbing your eyes, scratching or picking your nose or touching your mouth with unclean hands should be avoided. Our mucous membrane acts as portal into the body for a virus like SARS-CoV-2.



**“We were not only relevant in Gandhiji’s times but in today’s world of this Corona pandemic also. Follow us to save you.”**

Maria

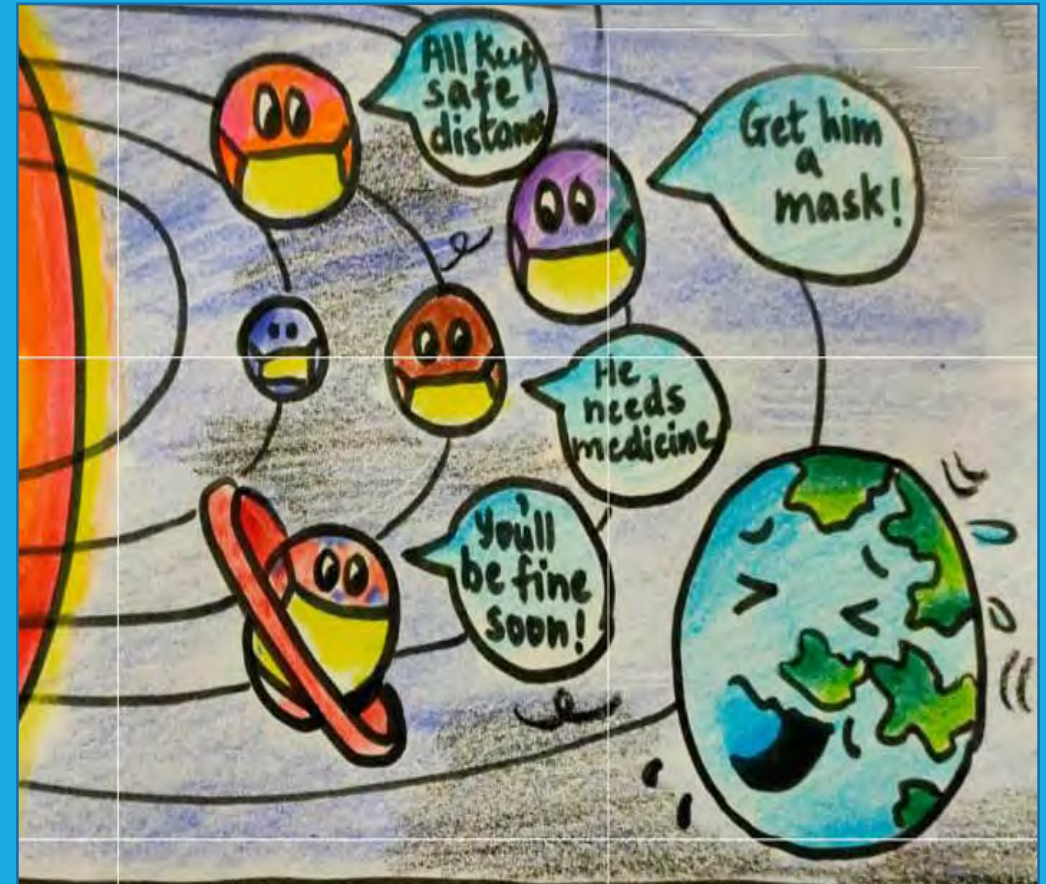
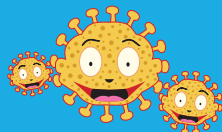


## SCIENTOON

It is not certain how long the virus that causes COVID-19 survives on surfaces, but it seems to behave like other coronaviruses. Studies suggest that coronaviruses (including preliminary information on the COVID-19 virus) may persist on surfaces for a few hours or up to several days. This will depend on some factors like the type of surface, temperature or humidity of the environment etc.

If you think a surface may be infected, clean it with any disinfectant to kill the virus and protect yourself and others.

Website:  
<https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>



Priyanka

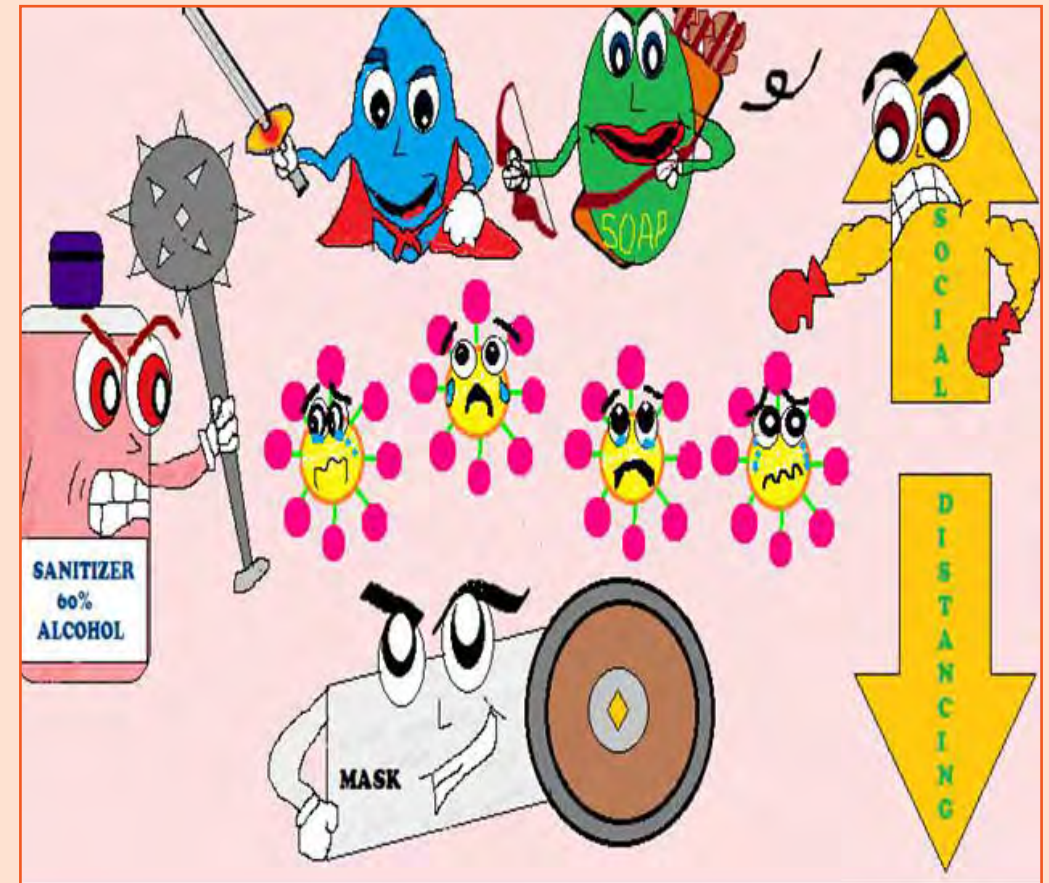
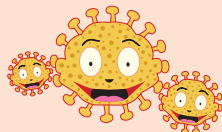
**“Dear Earth! Like us, you also wear a mask please. Otherwise, we all may be affected by respiratory droplets from your cough!!”**



## SCIENTOON

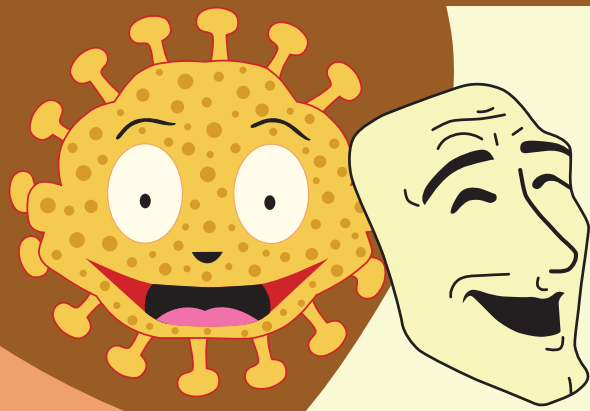
### Protection Against COVID-19

1. Wash your hands frequently for 20 seconds with soap and water.
2. Use Alcohol-based sanitizers.
3. You must wear a mask and in a proper manner.
4. You can also use any home-made triple-layer mask.



Maria

**“We know that we should not make others cry, but remember, it is a killer Coronavirus! So we have to make an exception.”**

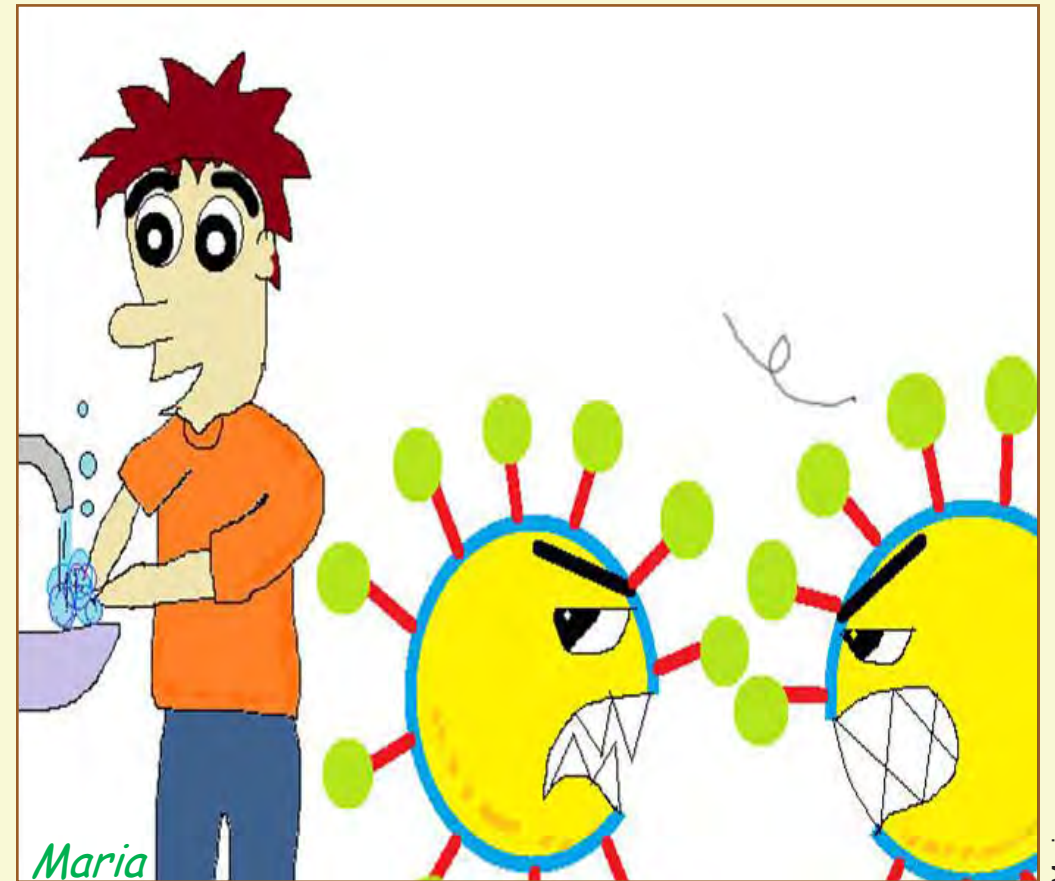
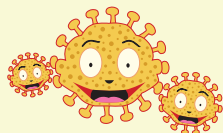


## SCIENTOON

5. Maintain a safe distance from anyone who is coughing or sneezing.
6. Don't touch your eyes, nose or mouth.
7. Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.
8. Stay home if you feel unwell.
9. If you have a fever, cough and difficulty breathing, seek medical attention.

**Website:**

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>



"I was thinking to invite our friend Jack for a game of tag. But unfortunately he won't be able to join us. Look, he is killed by that boy who washed his hands with soap."



## SCIENTOON

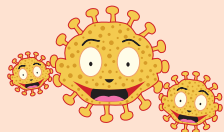
### Fomites

Fomites are the inanimate objects or materials which are likely to carry infection.

It is better to avoid being exposed to such surfaces in public transport system and public places.

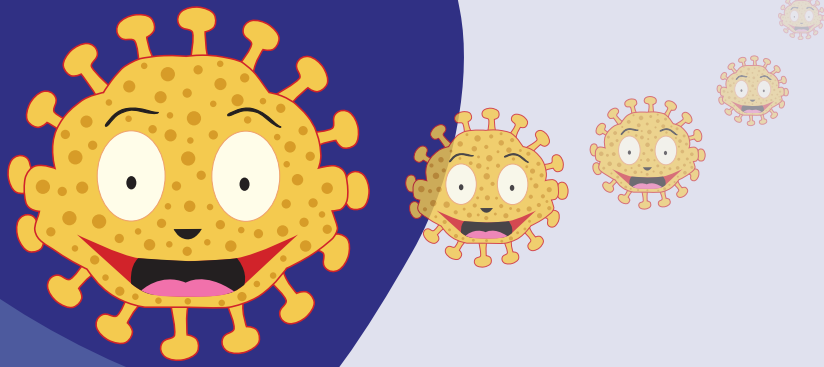
**Website:**

<https://www.mohfw.gov.in/pdf/DGSOrder04of2020.pdf>



Lakeisha

**“This park has been empty for a while now! I wonder where all the children are gone! Why one boy asked the other not to touch us because we are fomites?”**

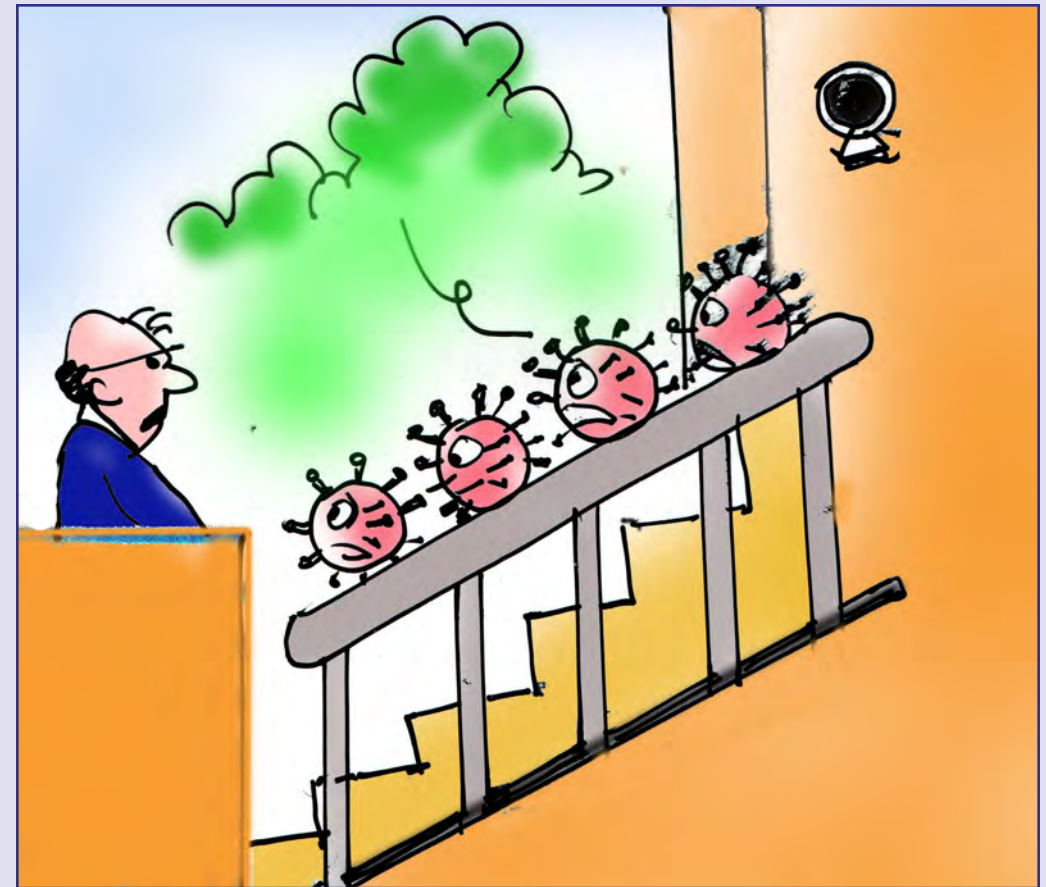
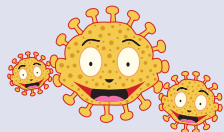


## SCIENTOON

### Fomites

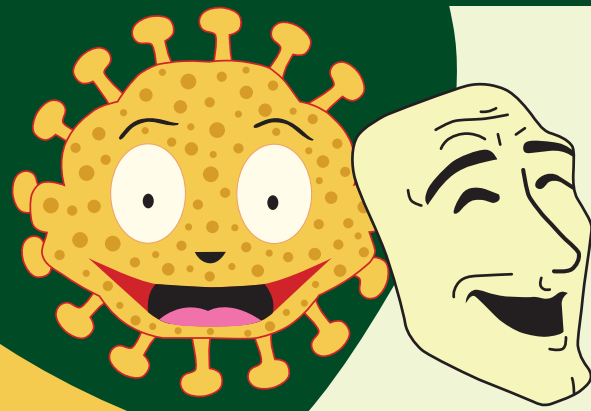
Objects like clothes, utensils, vehicles and furniture are potential fomites as they may carry coronavirus infection.

If you go outside, try avoid touching wooden, metallic surfaces as COVID-19 virus stays on fomites for a very long period.



Pradeep

**“Here comes our prey..... A very careless person indeed! He is not even wearing a mask! The moment he touches this metallic railing, we all will infect him.”**



## SCIENTOON

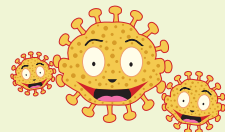
### Shopping

When grocery shopping, keep at least 1-metre distance from others and avoid touching your eyes, mouth and nose. If possible, sanitize the handles of shopping trolleys or baskets before shopping. Once home, wash your hands thoroughly and also after handling and storing your purchased products.

There is currently no confirmed case of COVID-19 transmitted through food or food packaging.

#### Website:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses>



Pradeep

**“Run! Run! Thank God you saw him coming with the sanitizer! Otherwise we would have been finished by now!!”**





## SCIENTOON

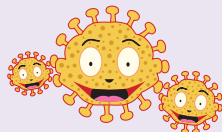


### Do Masks Prevent Corona Virus?

The CDC recommends that health care workers interacting with corona virus patients or suspected cases wear stronger masks, known as N95 respirators, which filter out 95 percent of airborne particles. However wearing a mask/covering the face with a cloth is compulsory during lockdown.

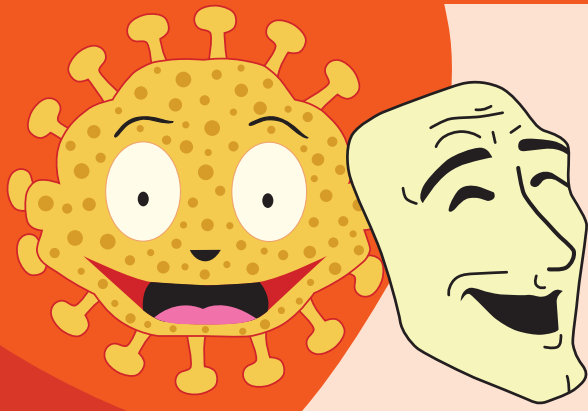
**Website:**

<https://www.unicefusa.org/stories/seven-things-you-should-know-about-coronavirus-outbreak/36969>



Pradeep

**“Hey! Why are you getting furious at Tommy? Calm down! Listen! Has he ever seen you like this in his life?”**

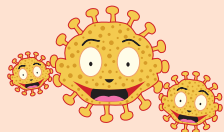


## SCIENTOON

### Here are the national directives for COVID-19 management in India:

Wearing face mask or covering the face is **COMPULSORY** in all public and workplaces.

Over 50 countries now require people to cover their faces when they leave home, especially on public transport and in shops.



Priyanka

**“Dear Krishh! Covering the rest of your face with THIS mask will help reduce the Coronavirus transmission.”**



## SCIENTOON

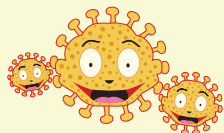
Take the mask and inspect it for tears or holes.  
Orient which side is the top side (where the metal strip is).

Ensure the proper side of the mask faces outwards (the coloured side).

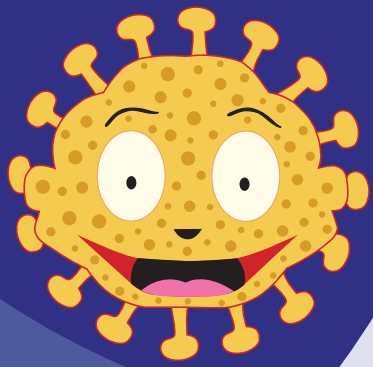
Place the mask to your face. Pinch the metal strip or stiff edge of the mask so that it moulds to the shape of your nose.

**Website:**

<https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>



**“I thought I will definitely infect Krishh, but see WHO is advising him. He upgraded his costume. Look at his mask!”**

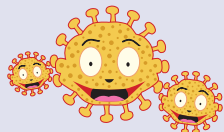


## SCIENTOON

Surgical masks are often blue with white borders. They fit loosely across your nose and mouth. These masks shield against the large droplets that come from a sick person's cough or sneeze, but they're too loose to protect against all germs. Surgical masks can't block the tiniest particles that may carry coronavirus.

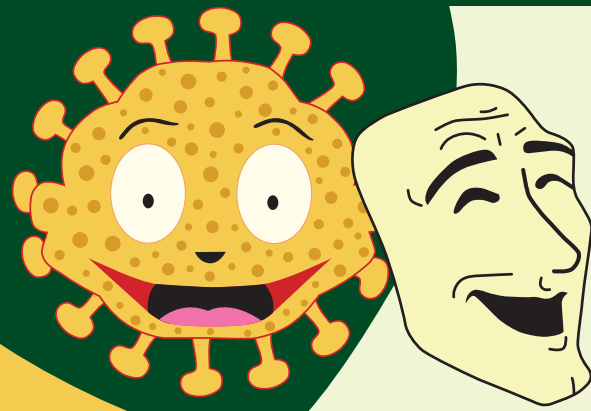
**Website:**

<https://www.webmd.com/lung/coronavirus-face-masks#1>



Pradeep

**“What did you say? This surgical mask is not good enough for safety against coronavirus? Oh my God! I put it because it was matching with my saree.”**



## SCIENTOON

Pull down the mask properly so that it covers your mouth and your chin.

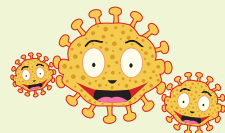
After use, take off the mask. Remove the elastic loops from behind the ears while keeping the mask away from your face and clothes to avoid touching potentially contaminated surfaces of the mask.

Discard the mask in a closed bin immediately after use.

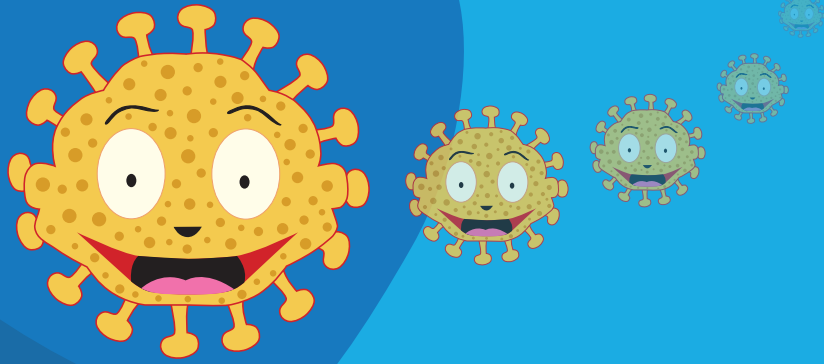
Perform hand hygiene after touching or discarding the mask. Use alcohol-based hand rub or if visibly soiled, wash your hands with soap and water.

**Website:**

<https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>



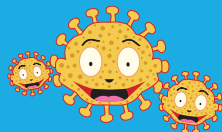
**“Leave this mask! It may be not safe. Don’t fight with me, idiot! Look! Learn from him. How that dog is safely disposing the used mask.”**



## SCIENTOON

Infection prevention and control measures include, among others, hand hygiene, use of PERSONAL PROTECTIVE EQUIPMENT (PPE) and waste management materials.

The PPE consists of garments used to protect the healthcare workers or any other persons from infection. These usually consist of gloves, mask and gown. These are the basic requirements, especially for the frontline workers.



**“No Chintu! They are not astronauts! They are the doctors and healthcare professionals who are wearing this dress, mask and gloves to save themselves from Corona.”**

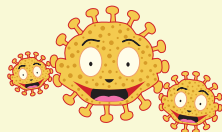


## Social Distancing

Social distancing is a non-pharmaceutical infection prevention and control intervention implemented to avoid/decrease contact between those who are infected with a disease causing virus/bacteria and those who are not, so as to stop or slow down the rate and extent of disease transmission in a community. This eventually leads to decrease in spread, morbidity and mortality due to the disease.

**Website:**

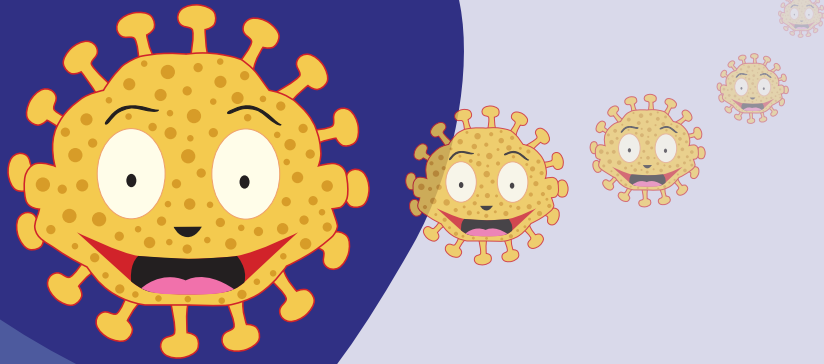
<https://www.mohfw.gov.in/pdf/SocialDistancingAdvisorybyMOHFW.pdf>



## SCIENTOON



**“Latest electronics and nanotechnology chips are used to design this SOCIAL DISTANCING MASK. If someone is less than one meter near you, it generates an alarm. Secondly, Look! It automatically changes its colour matching to your dress.”**



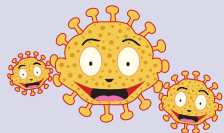
## SCIENTOON

### Social Distancing

Maintain at least one metre distance in market places, medical stores, hospitals, etc. Avoid shaking hands and hugging as a matter of greeting. Avoid non-essential social gatherings at home. Don't allow visitors at home or visit someone's home. Avoid frequent trips to the market to buy groceries/medical supplies.

**Website:**

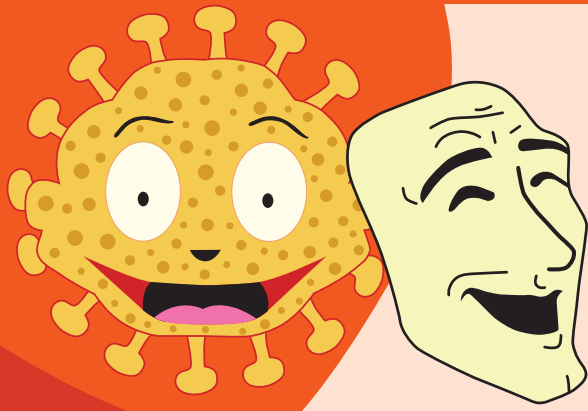
<https://www.mohtfw.gov.in/pdf/SocialDistancingAdvisorybyMOHTFW.pdf>



Pradeep

“Oh No! You are gone. You were very poor in mathematics always. What you calculated and thought to be 1 metre and jumped was actually more than 2 metres!”





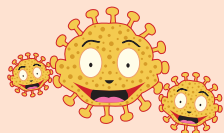
## SCIENTOON

It is very important to avoid all kinds of non-essential travels. Most COVID-19 positive patients came from other countries.

People who came in contact with them eventually got infected.

**Website:**

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



**“Hey! Nice to meet you. You are coming from Europe!  
I am coming from Malaysia.”**

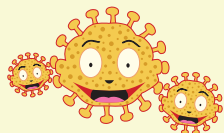


## SCIENTOON

People who have recent travel history or have been unknowingly exposed to an infected person must quarantine themselves without having any visitors, staying at least 6 feet away from other family members, maintaining personal hygiene and by not sharing towels or utensils. Once the quarantine period has ended, they need to follow the doctor's instructions to get back to normal routine.

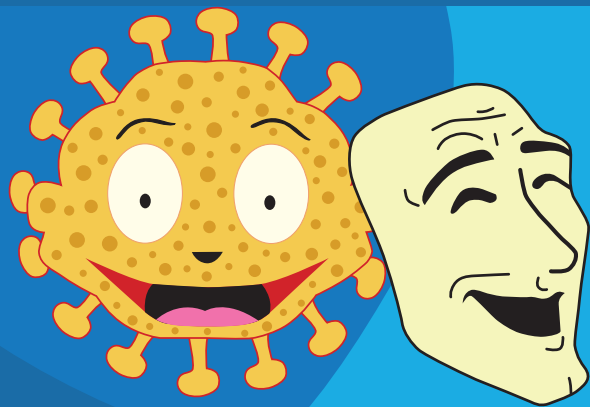
**Website:**

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



Pradeep

**“He lied to you. He did not go to Hrishikesh to meet his Guru. Here is the proof of his travel history. He went to Thailand and Singapore, He has to be put under quarantine and you too.”**

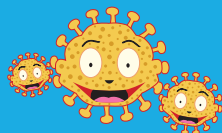


## SCIENTOON

The Union Health Ministry has asked all states to prohibit the use and SPITTING of smokeless tobacco in public places to prevent the spread of the novel coronavirus. Chewing smokeless tobacco products, paan masala and areca nut (supari) increases the production of saliva followed by a very strong urge to spit. Spitting in public places could enhance the spread of the COVID-19 virus. In Gujarat, If you caught spitting, you can also be fined Rs. 500.

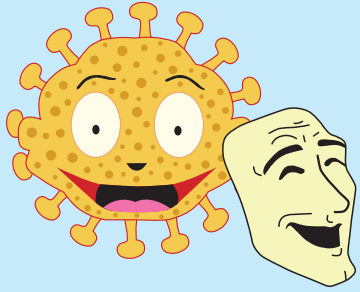
**Website:**

[https://economictimes.indiatimes.com/industry/cons-products/tobacco/covid-19-prohibit-use-spitting-of-smokeless-tobacco-in-public-places-health-ministry-tells-states/articleshow/75091929.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/industry/cons-products/tobacco/covid-19-prohibit-use-spitting-of-smokeless-tobacco-in-public-places-health-ministry-tells-states/articleshow/75091929.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)



Pradeep

**“No, No! darling! There was no accident! No beating by police either! I did the biggest mistake of spitting without realizing I am wearing a mask and also a helmet.”**



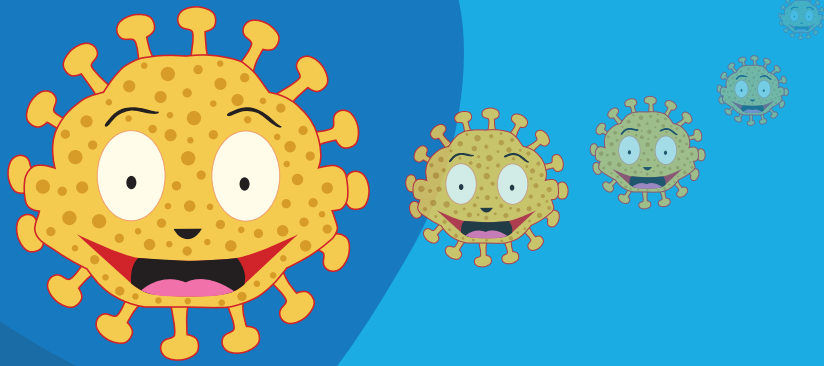
# SCIEN TOON

## Lockdown



Pradeep



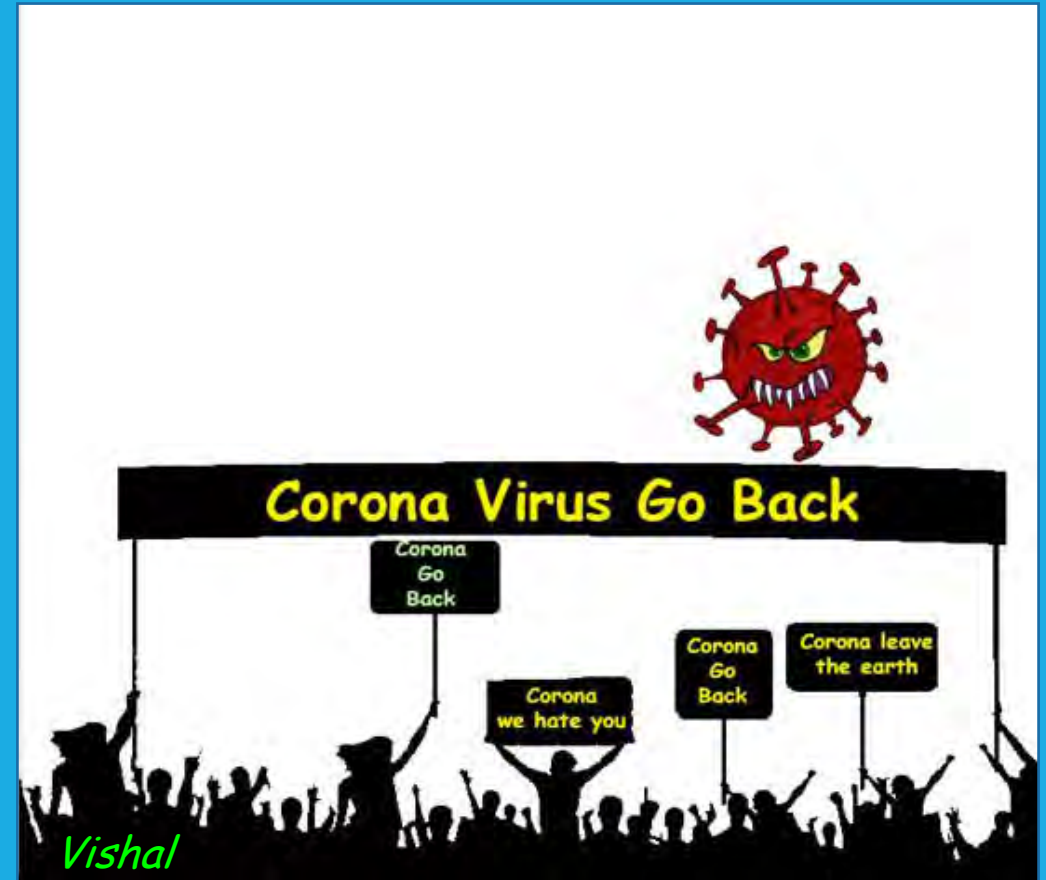


# SCIENTOON

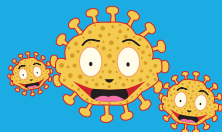
Physical Distancing means being physically apart. WHO recommends keeping at least 1-metre distance from others. This one should follow even if they are with someone who had no known exposure to COVID-19.

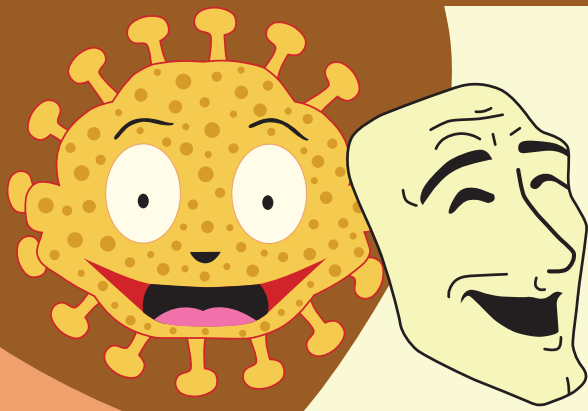
**Website:**

<https://www.who.int/westernpacific/emergencies/covid-19/information/physical-distancing>



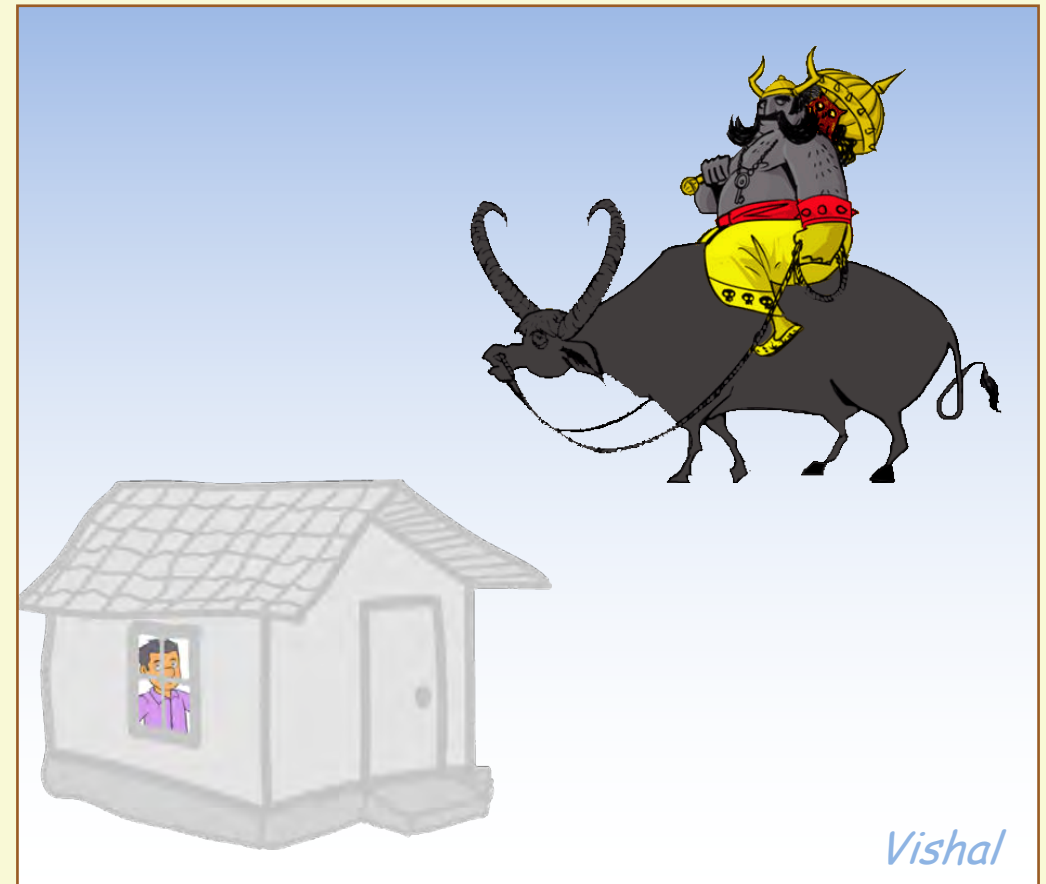
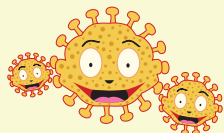
“What a joke! You are coming in crowd to get rid of me! Read the advisory. Follow social and physical distancing.”



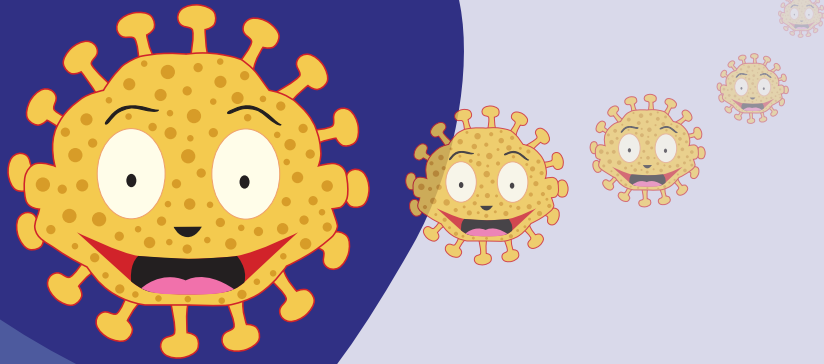


## SCIENTOON

COVID-19 is contagious disease. It threatens to overwhelm the healthcare facilities in a very short period of time if its spread is not checked. This led several nations to announce lockdown as an emergency protocol to prevent people from moving out of a specific area. In a full lockdown one must stay where they are and must not exit or enter the building or the given area.

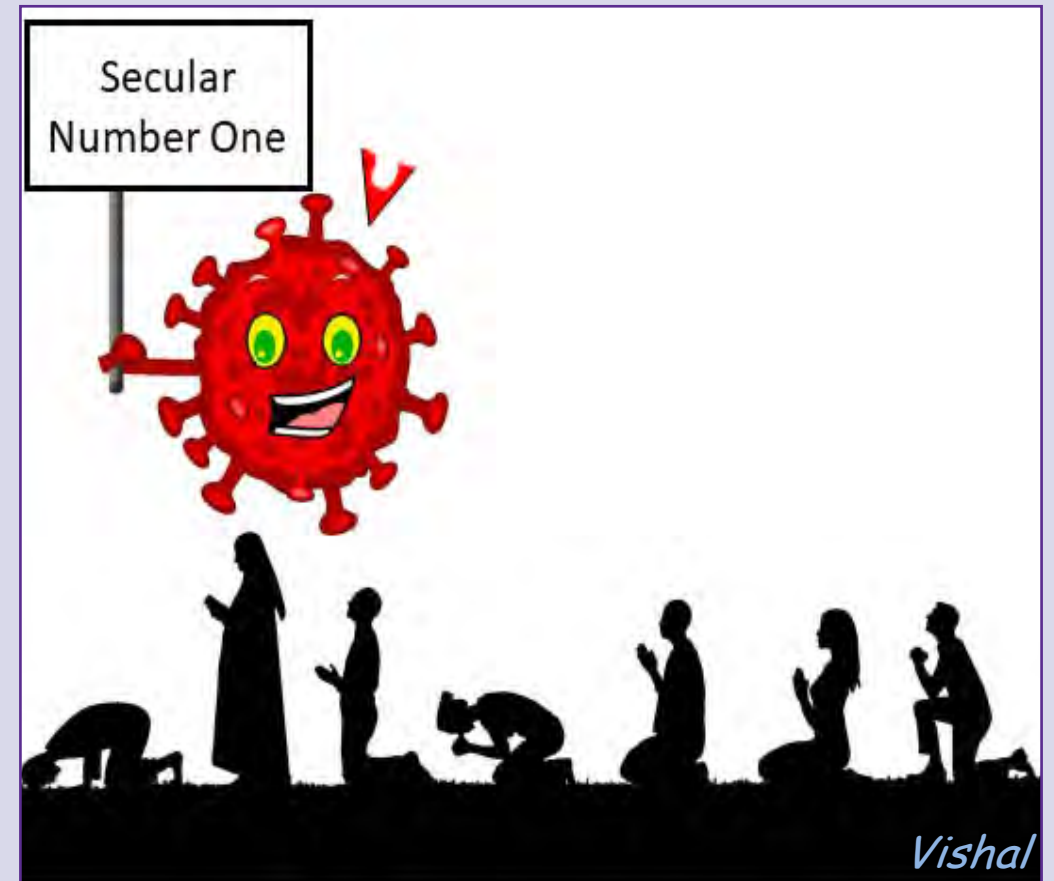
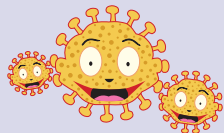


**"Hello, I promise to remain in lockdown except for my normal routine work, if you follow lockdown properly during corona pandemic. Yours sincerely, YAMRAJ"**

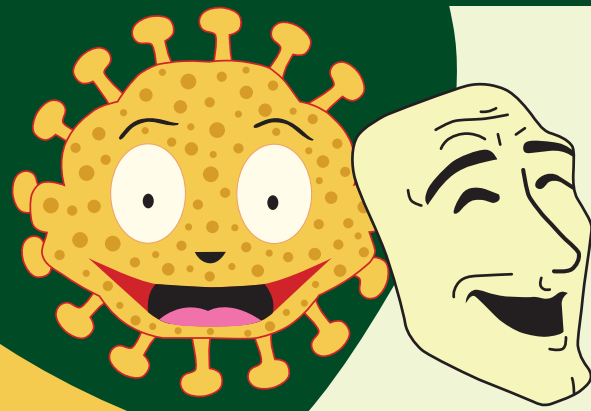


## SCIENTOON

In a full lockdown people are usually allowed to go out for collecting essential supplies. Grocery stores, pharmacies and banks continue to operate and people are allowed to enter such establishments following social distancing. All non-essential activities remain shut for the entire period. In India, the lockdown was initially for 21 days, which was later extended by another 19 days, i.e., 40 days altogether. Subsequently, it has been extended in two more phases (till 31 May, 2020).

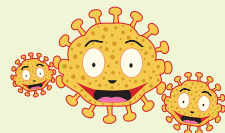


**“I am secular in true sense. I don’t discriminate on the basis of caste, creed, colour, religion, community, faiths, country or even continents.”**



## SCIENTOON

People who have been exposed to the new coronavirus and are at risk of COVID-19 must practice self-quarantine. Quarantine is about isolating oneself from the people and society to contain the spread of the virus. Health experts recommend that self-quarantine should last for 14 days.



Lakiesha

**“My owner was always busy; she went out frequently and never left me free. Now she’s always at home due to quarantine and I am finally free.”**

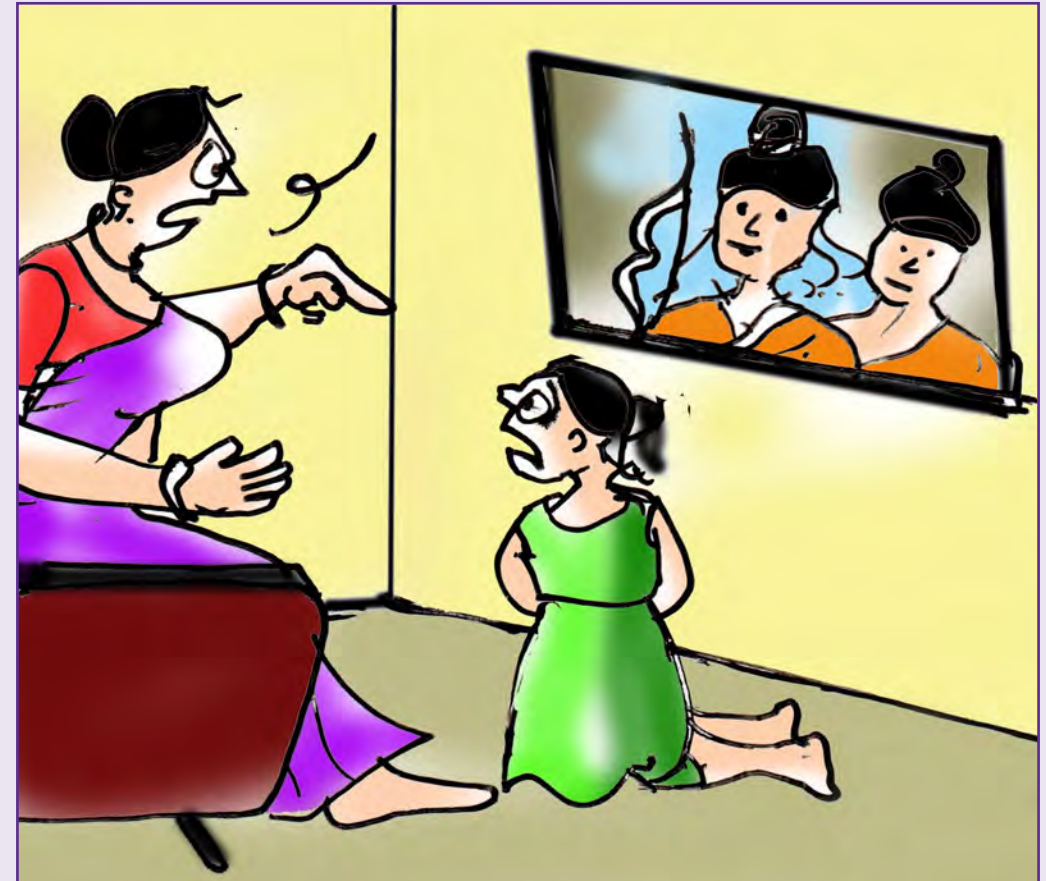
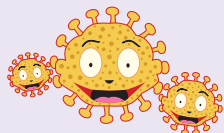




## SCIENTOON

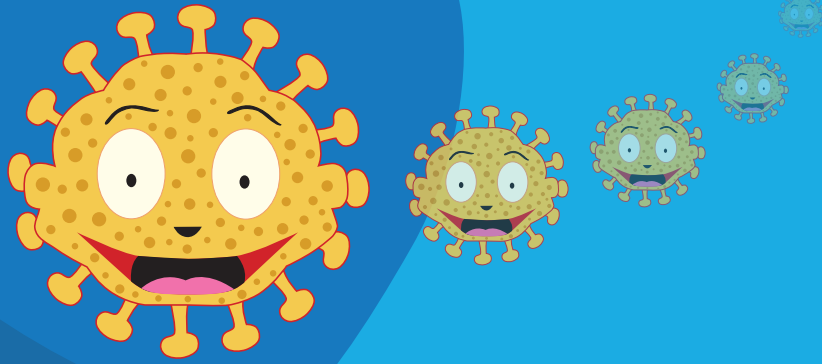
If an animal or person is put into Quarantine, they are kept away from other animals or people because they have or might have a disease.

(Definition of quarantine from the Cambridge Learner's Dictionary © Cambridge University Press)



Pradeep

**“What is VANVAS and why Lord Ram went for Vanvas for 14 years in the jungle?” “Nina, you can say he went into quarantine with Sita and Lakshaman.”**



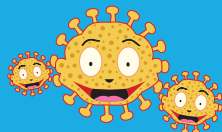
# SCIENTOON

Governments around the world are advising people to socially distance themselves in order to reduce pressures on health services and stop the spread of coronavirus (COVID-19).

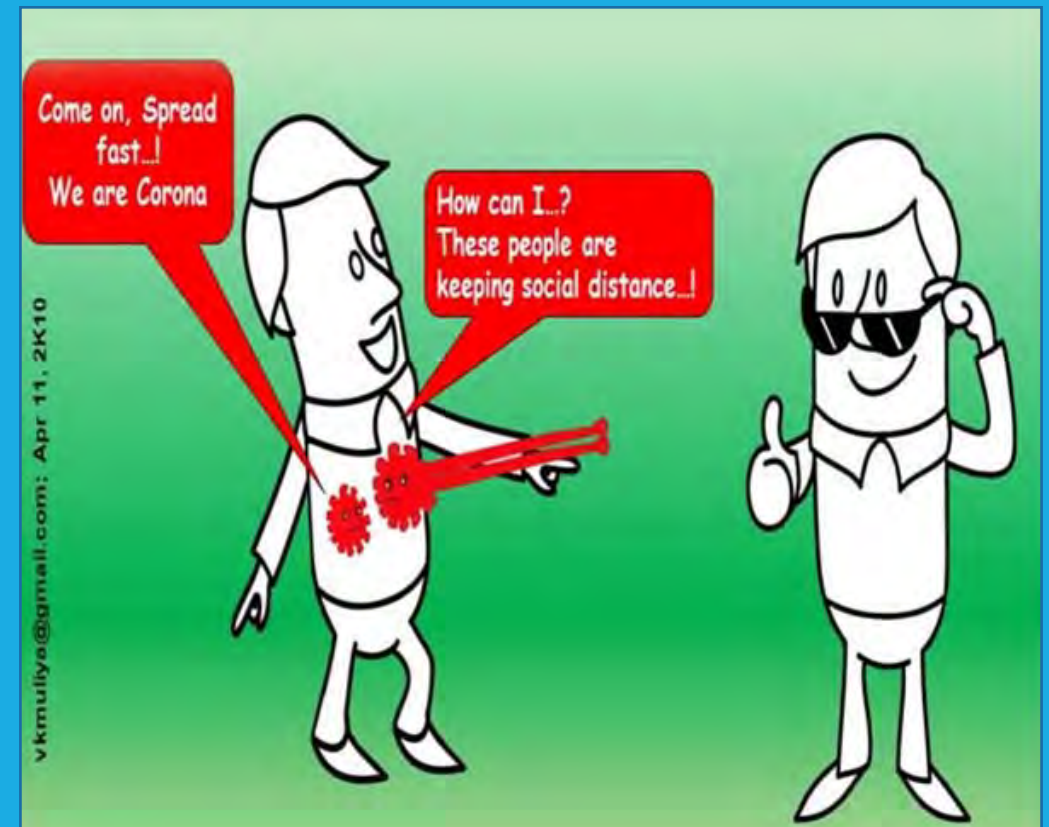
- Stay at least 6 feet (about 2 arms' length) from other people;
- Do not gather in groups;
- Stay out of crowded places and avoid mass gatherings.

**Website:**

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>



## Maintain Social Distancing: Cheat Coronavirus

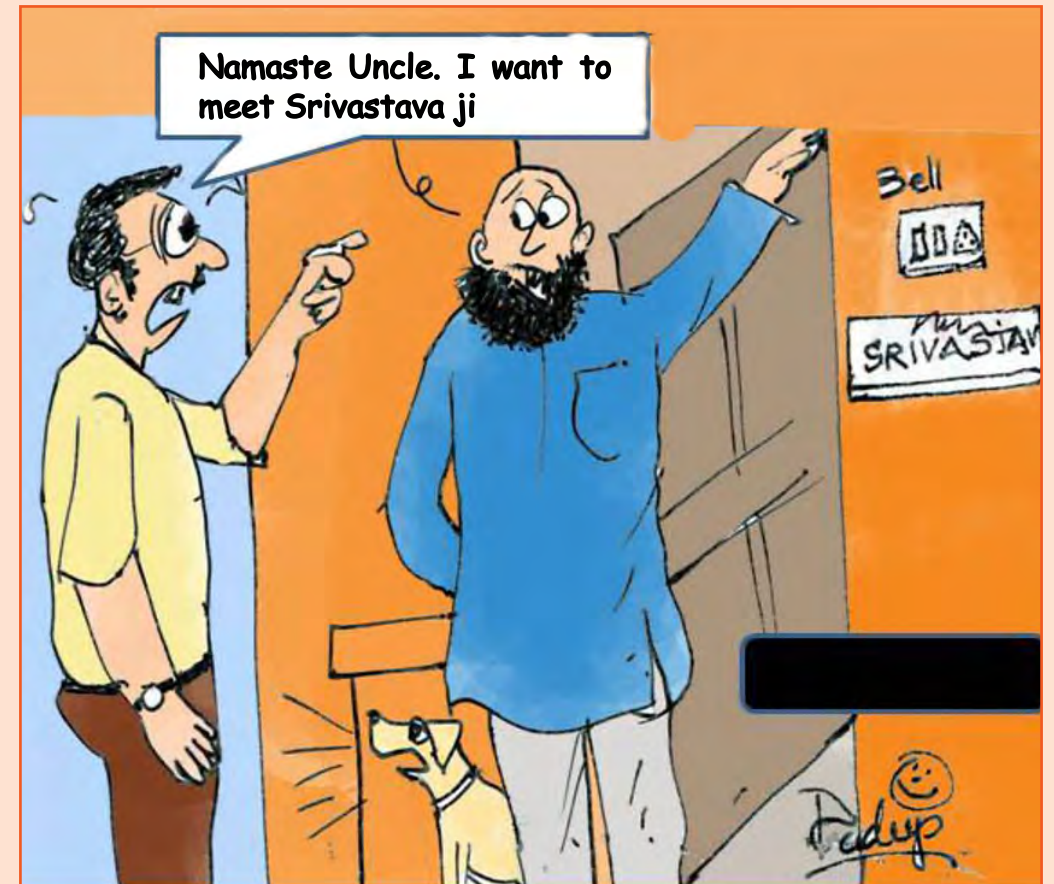
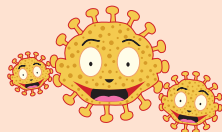




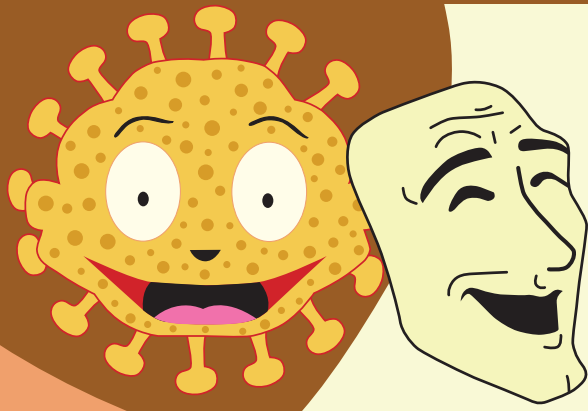
## SCIENTOON

All facilities in the supply chain of essential goods, whether in manufacturing, wholesale or retail through local stores, large brick-and-mortar stores or through e-commerce, are allowed.

Due to lockdown most of the shops are closed including the Barber shop and Beauty parlours, shops for non-essential items, etc.

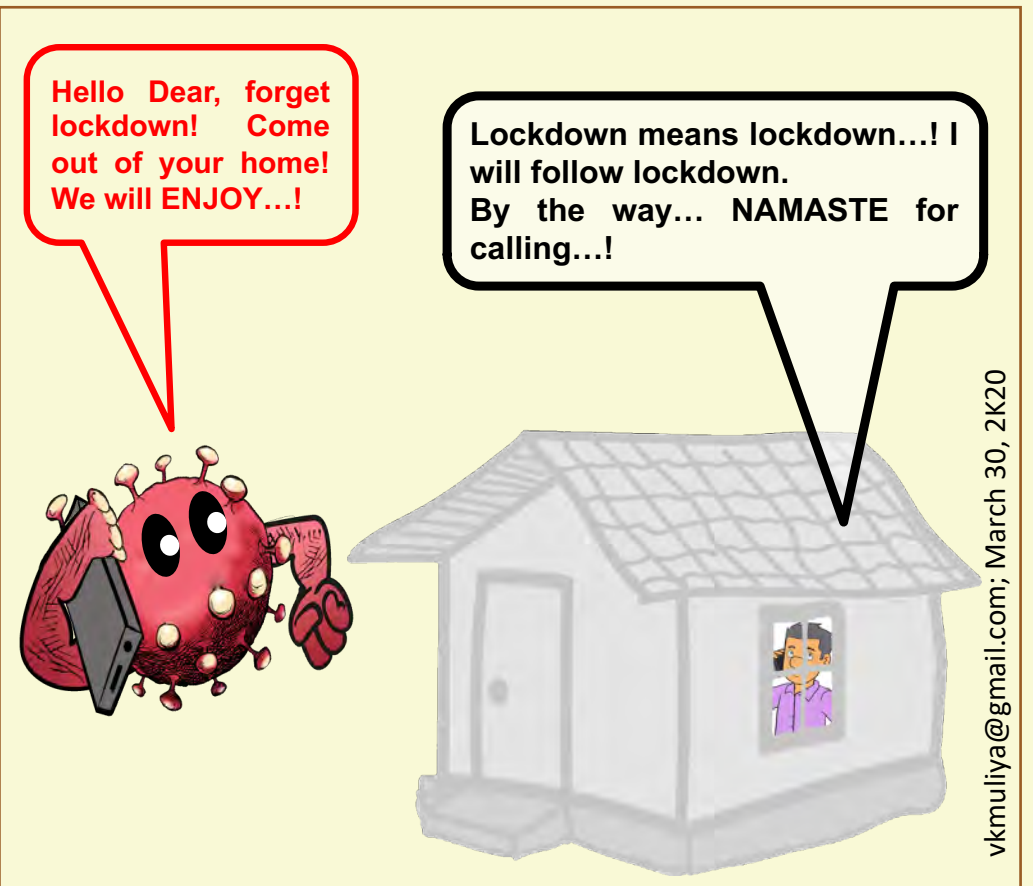
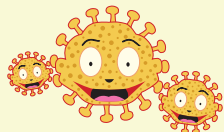


**“Hello Mukesh. How are you? What is wrong with you? Can’t you recognize me? Look carefully! I am Srivastava.”**

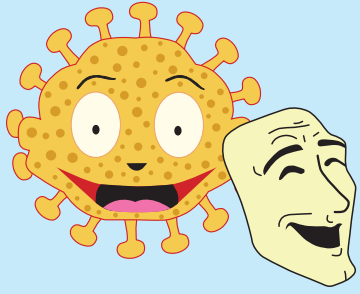


# SCIENTOON

It is believed that one COVID-19-infected person can spread the virus to more than 400 people in about 30 days. So, if the infected patients are not quarantined and a strict lockdown is not followed, the virus would spread like a wildfire. With proper guidelines in place, measures like lockdown and social distancing, the chain of infection can be broken.



**You are not a common man! You are a SMART CITIZEN.  
Obey lockdown and win the battle against CORONA!!**



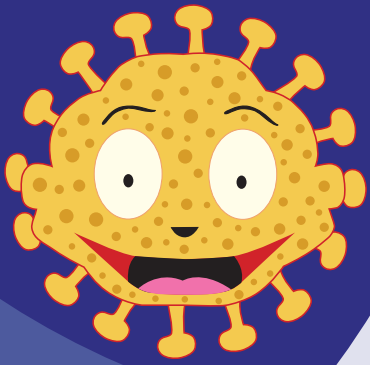
# SCIENTOON

## Myths



Pradeep





## SCIENTOON

### #MYTHS

It is a myth that drinking alcohol will destroy the Coronavirus in your body.

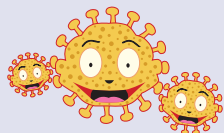
### #FACTS

Drinking alcohol does not protect you against COVID-19 and can be dangerous.

Frequent or excessive alcohol consumption can increase your risk of health problems.

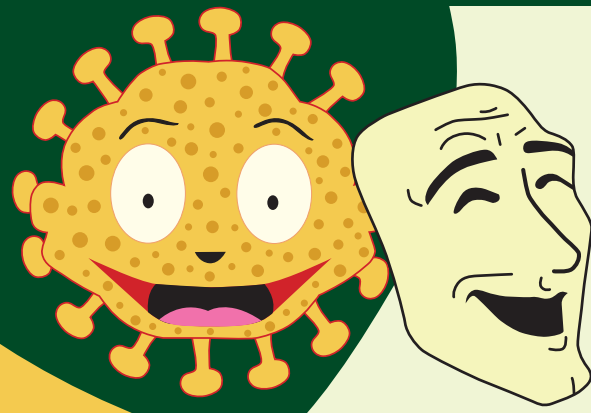
#### Website:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>



Pradeep

**“Don't think otherwise! I am a very responsible person. Its 100% alcohol! More effective than 60%, Sir. I was just sanitizing my throat.”**



# SCIENTOON

## #MYTHS

COVID-19 virus cannot be transmitted in cold weather and snow can kill it.

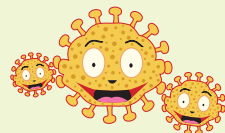
COVID-19 virus cannot be transmitted in the areas with hot and humid climates.

## #FACTS

There is no reason to believe that cold weather can kill the coronavirus or other diseases. The same stands true for hot and humid weather.

### Website:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>



Maria



## SCIENTOON

### #MYTHS

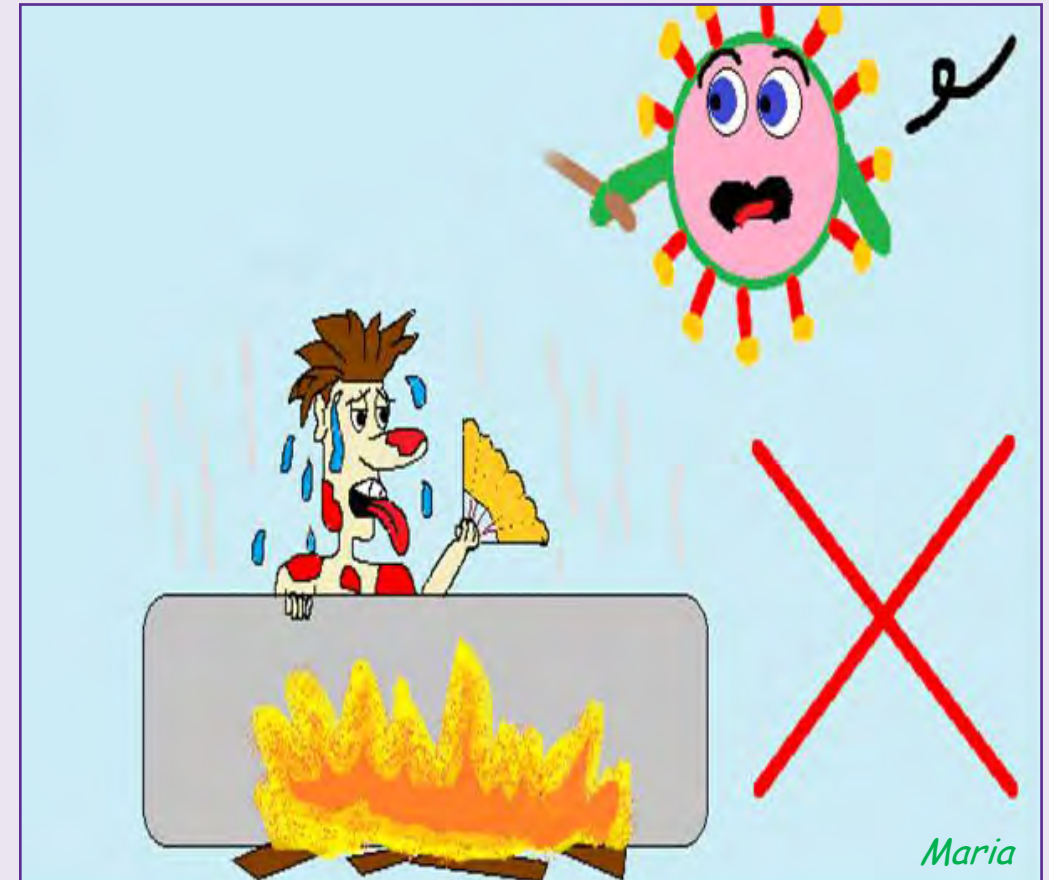
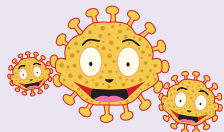
Taking a hot water bath prevents Coronavirus disease.

### #FACTS

Taking a hot bath will not prevent you from catching COVID-19. Your normal body temperature remains around 36.5°C to 37°C, regardless of the temperature of your bath or shower. Actually, taking a hot bath with extremely hot water can be harmful, as it can burn you.

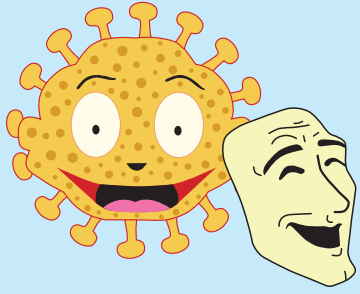
#### Website:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>



**“Oh my God! Corona may not kill me but these burns caused by this hot water will certainly kill me.”**





# Corona and Animals





## SCIENTOON

### Tiger Tests Positive for Coronavirus at Bronx Zoo in New York

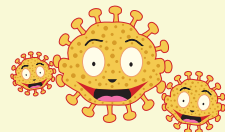
U.S. Department of Agriculture announced the first known case of a wild animal with COVID-19 symptoms, transferred from the human.

Two Siberian tigers and 3 African lions have also had coughs and a loss of appetite.

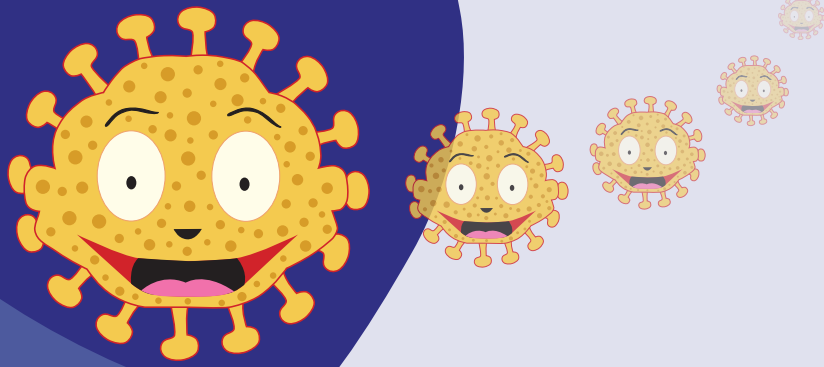
Published online on April 5, 2020.,

**Website:**

<https://www.nationalgeographic.com/animals/2020/04/tiger-coronavirus-covid19-positive-test-bronx-zoo/>



**"I understand what you mean. I will certainly pass on your message and advise people and request them to follow lockdown very strictly."**



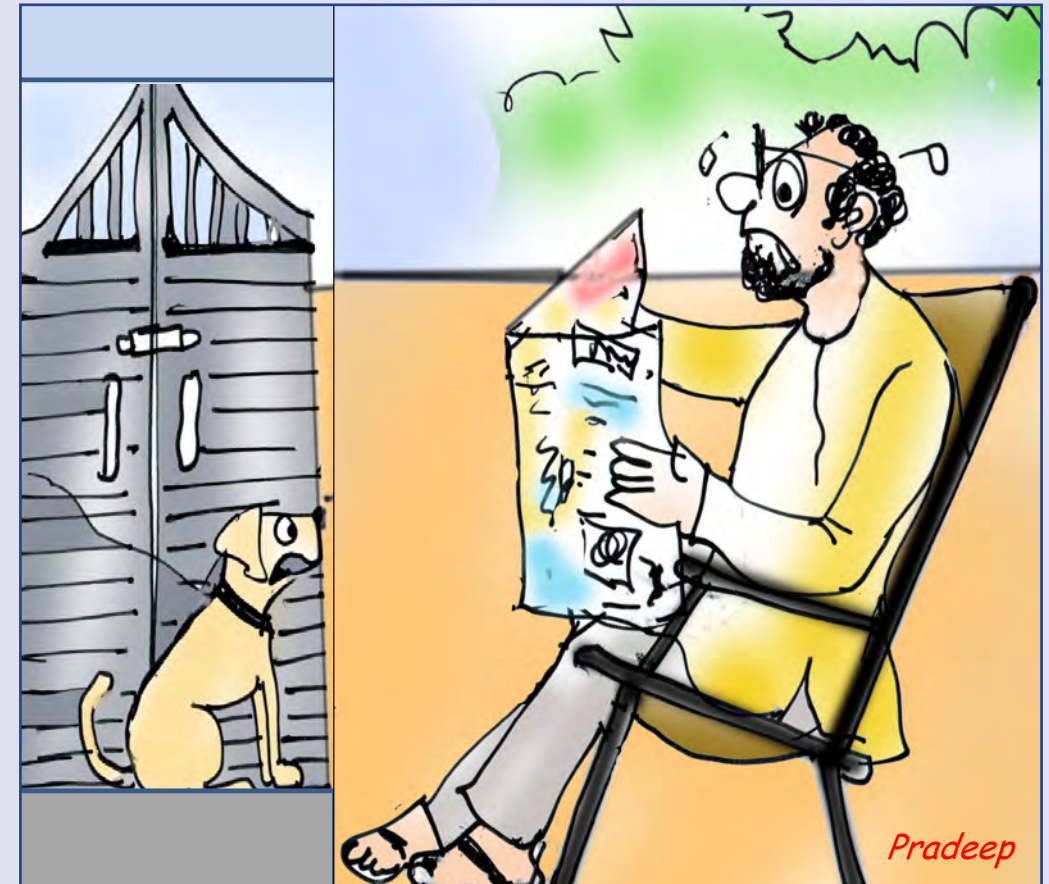
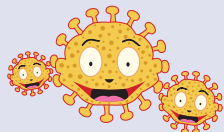
## SCIENTOON

At this time, there is no evidence that ANIMALS play a significant role in spreading the virus that causes COVID-19.

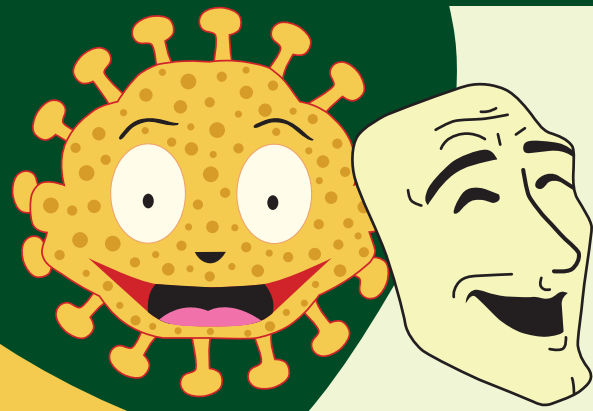
Based on the limited information available to date, the risk of animals spreading COVID-19 to people is considered to be low.

**Website:**

<https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html>



**“I follow lockdown better than you always. If I wear a mask, would you permit me to go out? It’s my friend’s birthday. She has been calling me since morning.”**



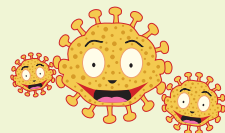
## SCIENTOON

There is no evidence that coronavirus spreads among animals. We do not know the exact source of the current outbreak of coronavirus disease 2019 (COVID-19).

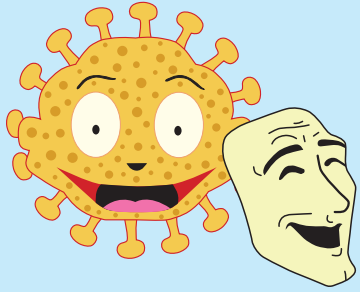
The first infections were linked to a live animal market, but the virus is now spreading from person to person

**Website:**

<https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html>



**"I am leaving the village. My master thinks, he may get COVID-19 due to me!!"**

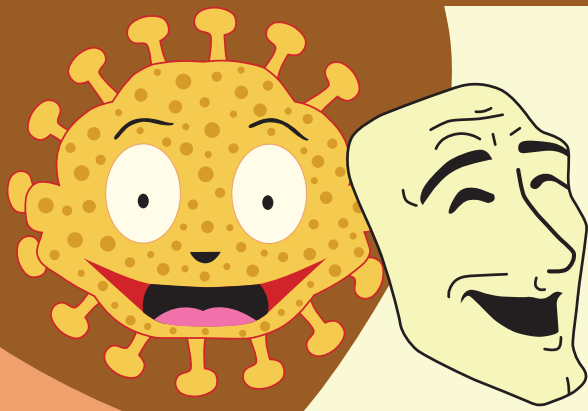


# SCIENTOON

Keep Yourself  
Stress Free



Pradeep



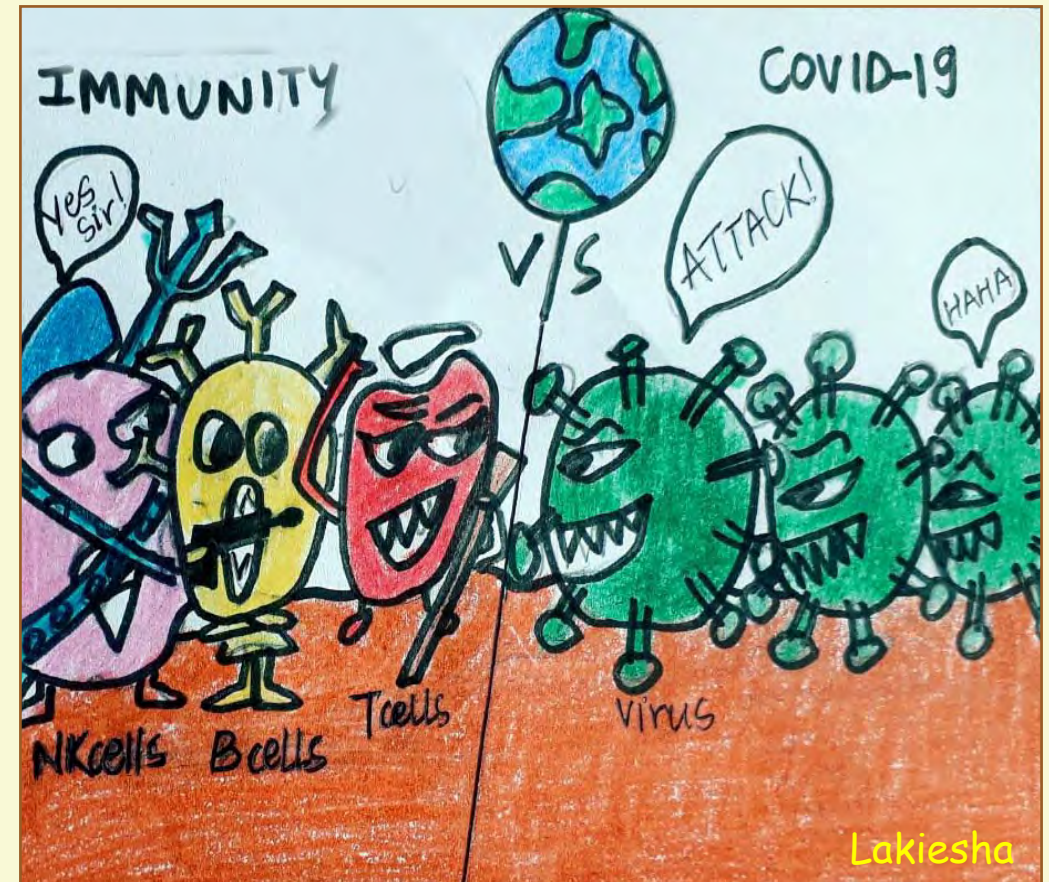
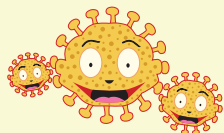
## SCIENTOON

### Immunity

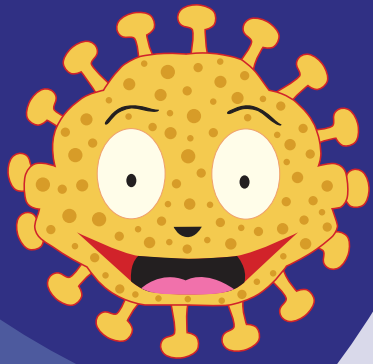
The development of immunity towards a pathogen through a natural infection is a multi-step process. The body responds to antiviral infection immediately with nonspecific innate response followed by an adaptive response which includes B-Cells, T-Cells and NK Cells comprising of the cellular immunity. In general, good immunity can prevent the progression of COVID-19 virus.

**Website:**

<https://www.who.int/news-room/commentaries/detail/immunity-passports-in-the-context-of-covid-19>



**“Come on! Your game is over. Think thousand times before coming and infecting us further.”**

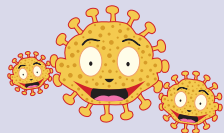


## SCIENTOON

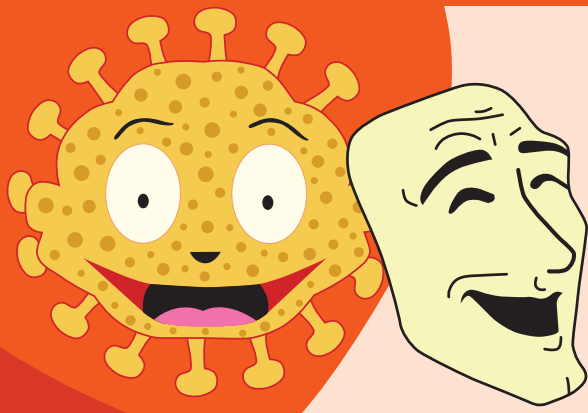
The outbreak of COVID-19 may be stressful for people. Fear and anxiety about a disease can cause strong emotions in adults and children. Take breaks from watching, reading, or listening to news stories, including social media. Eat healthy, well-balanced meals. Exercise regularly, get plenty of sleep and call-up your friends.

**Website:**

<https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html>

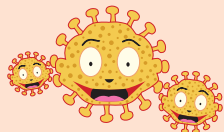


**“Now I know why people are crowding in other grocery shops and my shop is deserted! Who told you to write ‘Kirana’ like this?”**



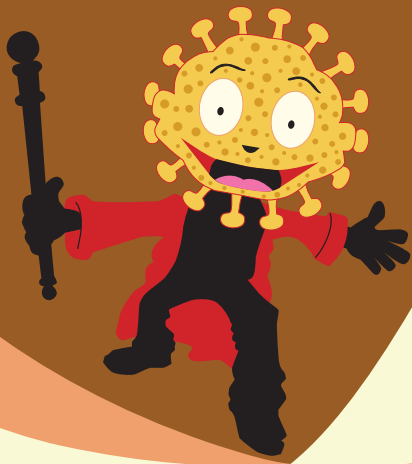
## SCIENTOON

Lots of rumours, fake news and fake videos, especially the ones that are circulated in Social Media, create confusion and spread MISINFORMATION about the coronavirus infection. Such information causes panic among people. As a result they come out disobeying lockdown and not following physical distancing norms. Before believing or sharing such news we should verify them with credible sources.



**“Arre Sir! They had beaten me like anything. I was selling ‘Karonda’ in sabjimandi, which is used in making pickles. Somebody spread the rumour that I am selling Corona.”**



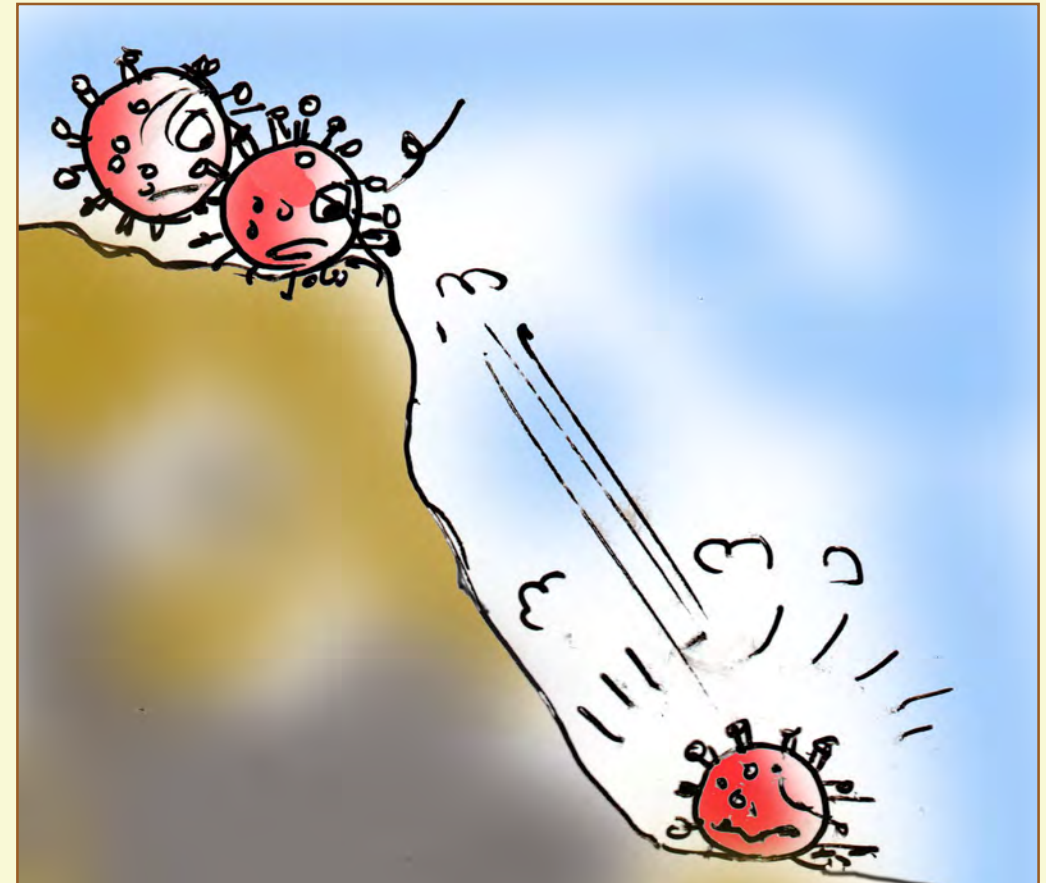
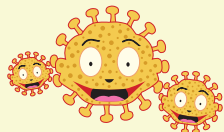


## SCIENTOON

Harvard Medical School recommends YOGA and MEDITATION to deal with coronavirus anxiety. “Regular meditation is very calming. Many apps teach simple forms of meditation, such as Headspace or Calm,” wrote John Sharp, a board-certified psychiatrist on the faculty at Harvard Medical School and the David Geffen School of Medicine at University of California, Los Angeles.

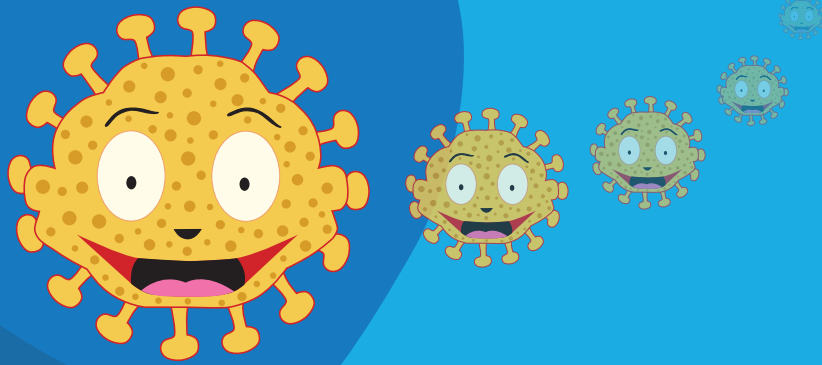
**Website:**

<https://economictimes.indiatimes.com/news/international/world-news/harvard-medical-school-recommends-yoga-meditation-to-deal-with-coronavirus-anxiety/articleshow/74646695.cms>



Pradeep

**“Oh my God! He is running away! We would also be gone soon. People here have started practicing Yoga and meditation to keep themselves fit and healthy.”**



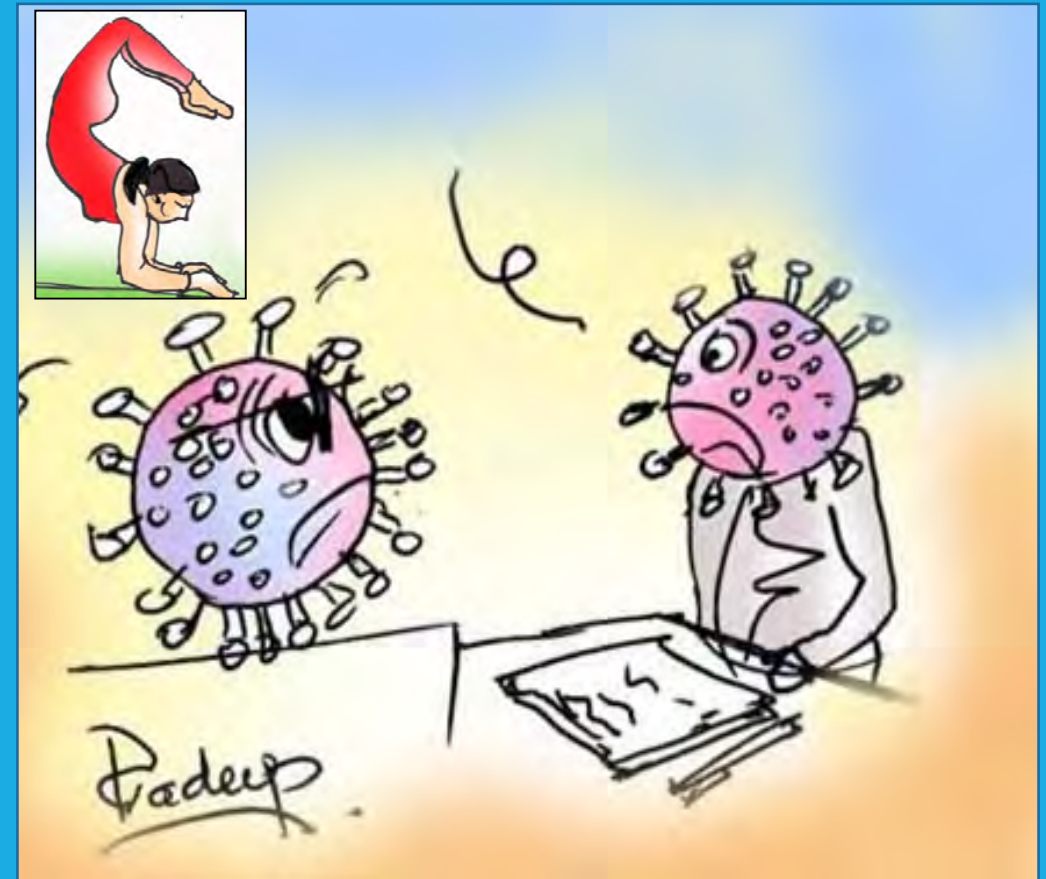
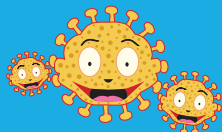
## SCIENTOON

### How Can You Relax Despite Coronavirus Worries?

The Harvard Medical School says that, yoga, meditation and controlled breathing are “some tried and true ways to relax”. Take sensible steps that can help us all; practice good hygiene, use calming strategies that work for you. Making healthy, reasonable choices about what to do and what not to do will make a big difference in being able to stay as safe and as well as possible.

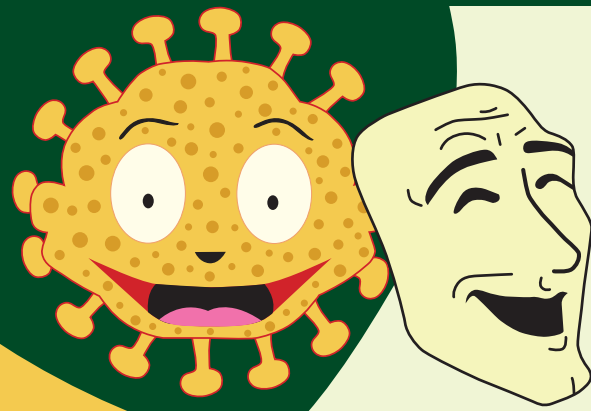
**Website:**

<https://www.health.harvard.edu/blog/coping-with-coronavirus-anxiety-2020031219183>



Pradeep

**“We must learn Yoga to survive. Most of the people in this country are practicing yoga. After all, this is the country which has given yoga to the whole world.”**



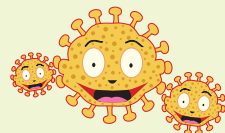
## SCIENTOON

Uncertainty, lack of control, and lack of information—these are primary triggers of stress.

Due to the coronavirus, social distancing leads to isolation, loss of our daily routines, and less access to some coping strategies, etc. Yoga is one of the best stress management tool.

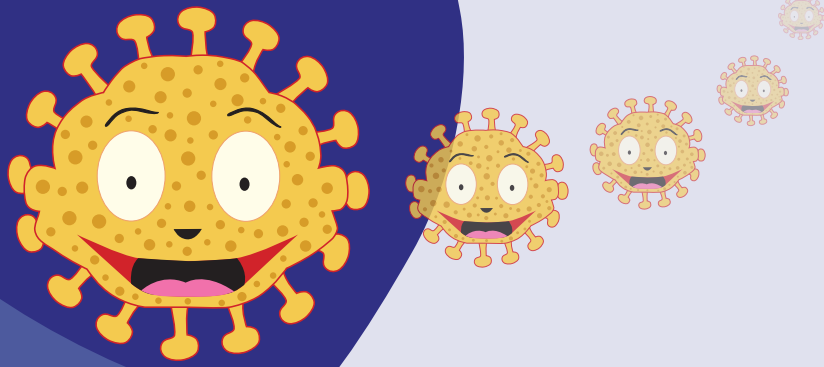
**Website:**

<https://www.psychologytoday.com/intl/blog/the-web-violence/202004/yoga-in-the-time-coronavirus>



Lakiesha

**“This year I will definitely win India’s Top Dancer Award. I have never been as flexible as I am now!”**

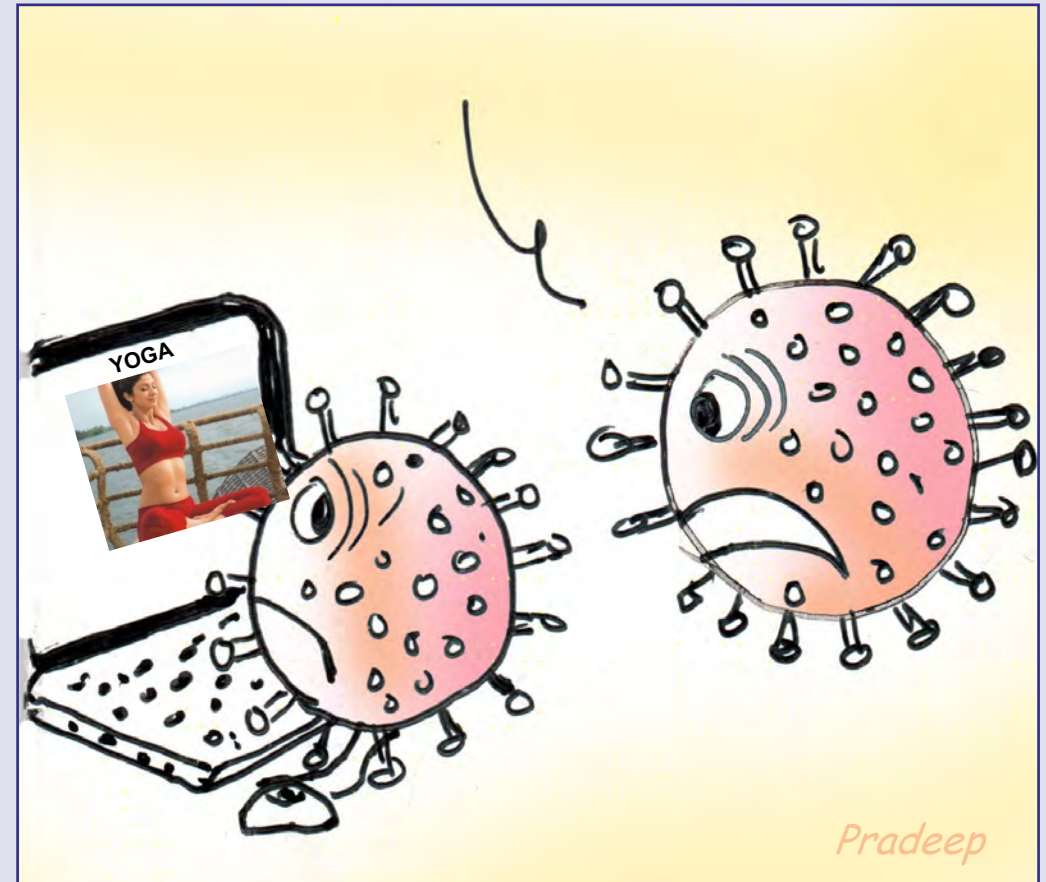
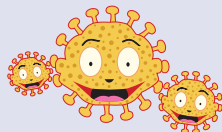


# SCIENTOON

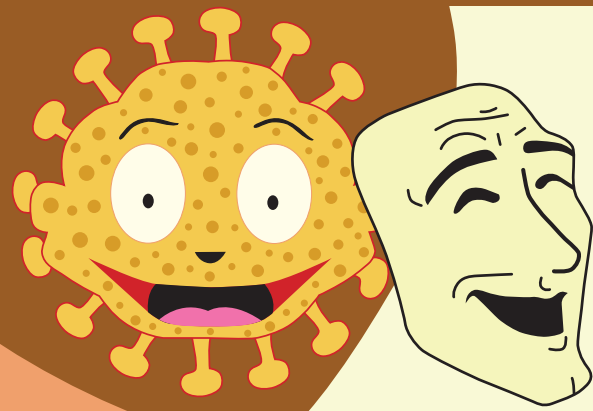
More and more empirical evidence supports yoga as an adjunctive strategy for managing stress and increasing wellbeing. People who practice yoga experience less anxiety, less depression, and fewer symptoms of post-traumatic stress disorder.

**Website:**

<https://www.psychologytoday.com/intl/blog/the-web-violence/202004/yoga-in-the-time-coronavirus>



**“Remember we have to travel all over the world and keep ourselves fit and healthy. Search Google for some Yoga Guru from India.”**



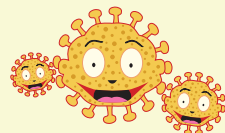
## SCIENTOON

The best way to relieve stress is through meditation. It is a tried and tested activity to calm the nerves.

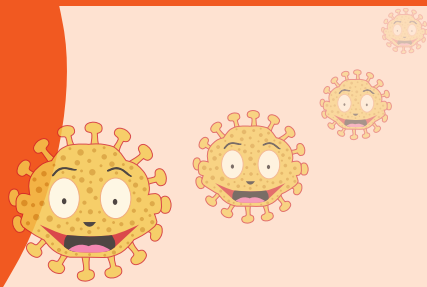
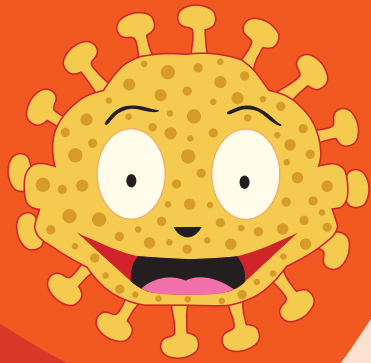
Stress can be released through proper utilization of time. Pursuing an indoor hobby, games or reading books, etc., could be the best ways to keep yourself engaged.

**Website:**

[https://dst.gov.in/sites/default/files/COVID%20KATHA\\_DST\\_NCSTC\\_ARMT\\_ENGLISH.pdf](https://dst.gov.in/sites/default/files/COVID%20KATHA_DST_NCSTC_ARMT_ENGLISH.pdf)



**“Listen very carefully. Meditation will relieve your stress; but if my stress is increased I will make your life miserable. There is no milk at home. Atta is also finished.”**

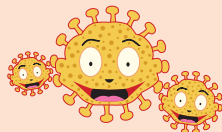


## SCIENTOON

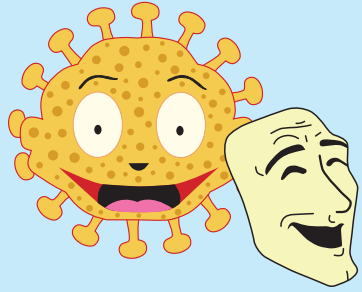
Our immune system is susceptible to stress as well. Too much Stress releases the hormone known as cortisol, which impairs human response to immediate surroundings and makes their body susceptible to infections; they are left feeling constantly anxious.

**Website:**

<https://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/stress/art-20046037>

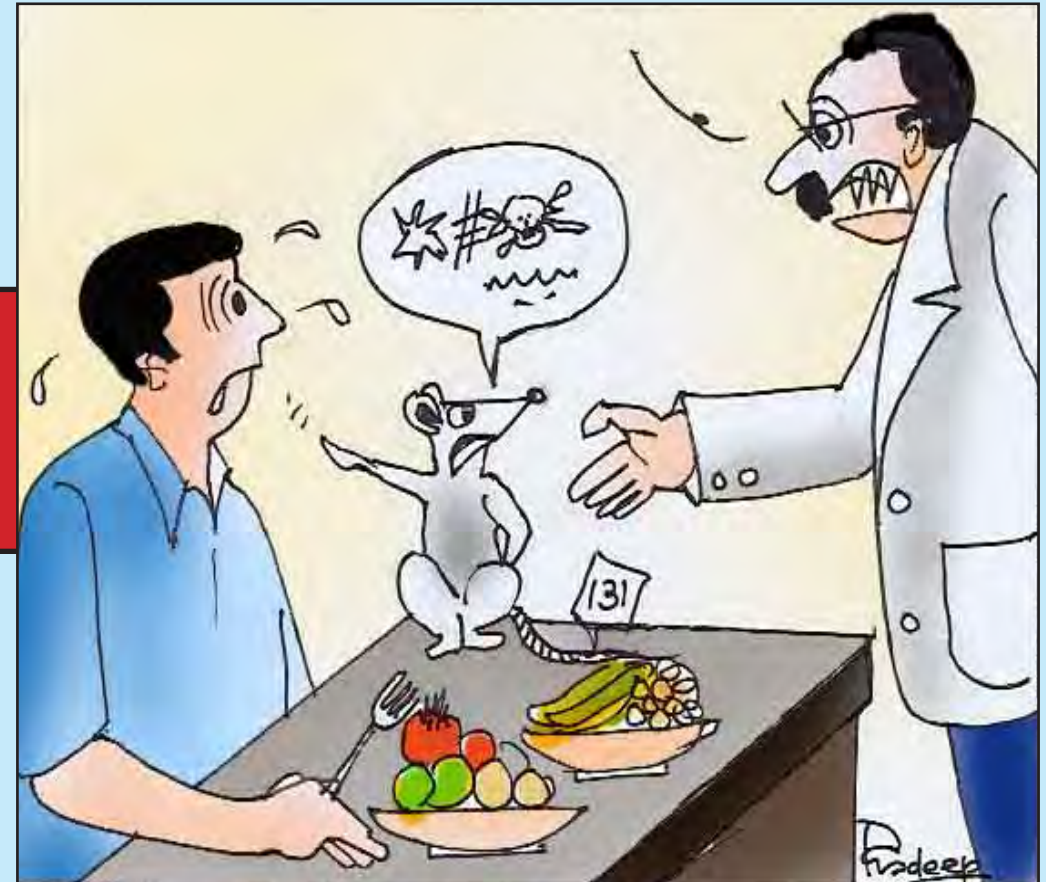


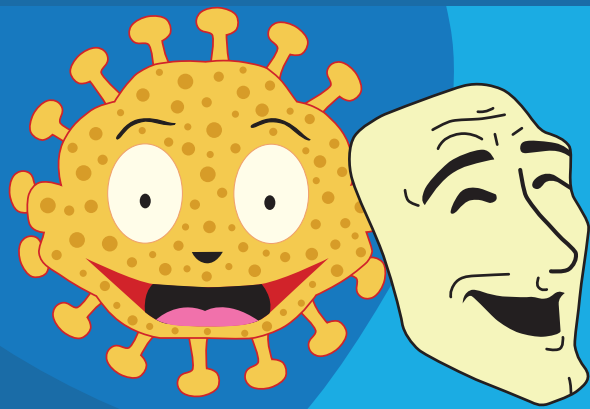
**“Life in apartments can be really difficult at times. Hey! You, up there! Your stress is released but think of us. Stop playing music so loudly, or else we will teach you what stress is.”**



# SCIENTOON

## New Researches





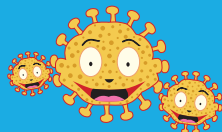
## SCIENTOON

### Protective Clothing using Nanotechnology

There are garments that are coated with microscopic nanoparticles designed to capture viruses and bacteria.

The project began when Olivia Ong incorporated into her fashion line, which she calls, Glitterati. These are microscopic nanoparticles designed to capture viruses and bacteria. They look like glitzy outfits and work as any other functional clothing. The idea came to her mind while living in Los Angeles and had to breathe air filled with smog.

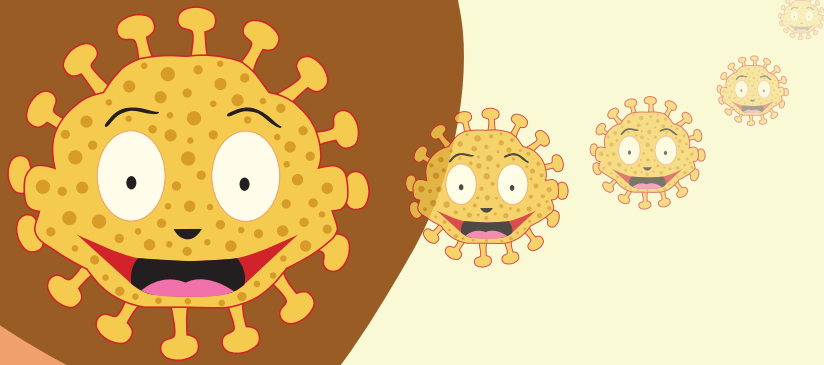
Website:  
<https://abcnews.go.com/Technology/story?id=3153026&page=1>



Pradeep

**“Hi Coronavirus! Where are you? Bring all your cousins, bothers and sisters. Come on! My glitterati are ready to absorb you.”**





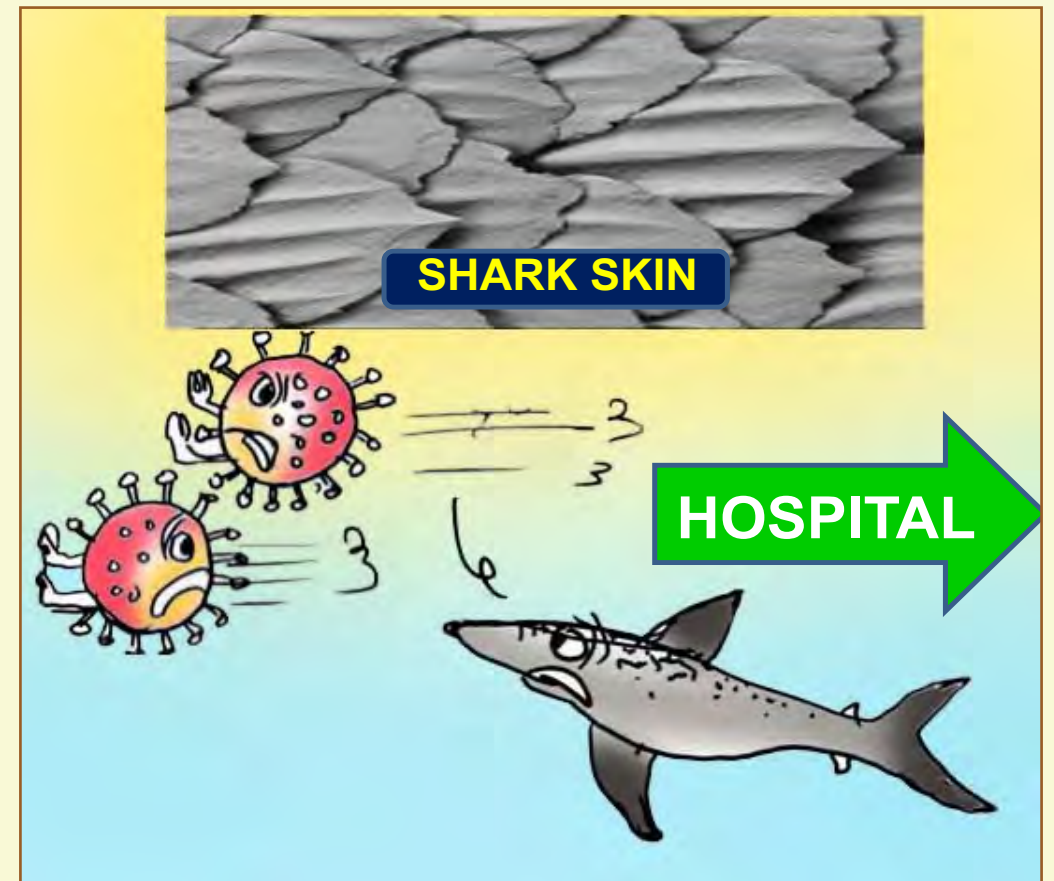
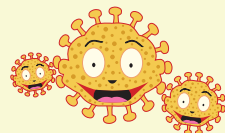
# SCIENTOON

## Sharklet Technology

Sharklet is the world's first technology to inhibit bacterial growth through pattern alone. The Sharklet surface is comprised of millions of microscopic features arranged in a distinct diamond pattern. The structure of the pattern alone inhibits bacteria from attaching, colonizing and forming biofilms. Sharklet contains no toxic additives or chemicals and uses no antibiotics or antimicrobials.

Sharklet draws inspiration from the shape and pattern of the dermal denticles of sharkskin. This technology holds promise for containing coronavirus also.

Website:  
<http://sharklet.com/>



"Get lost! Don't dare to come here again. This hospital is using the SHARKLET TECHNOLOGY to stop germs from spreading on surfaces."

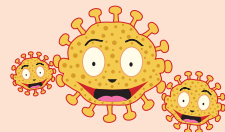


## India Developed Fast & Cheap Test for Coronavirus

Scientists from CSIR lab, Institute of Genomics & Integrative Biology (IGIB), New Delhi have designed a paper strip-based testing assay that can detect coronavirus in sample within an hour and the cost will be less than Rs. 500.

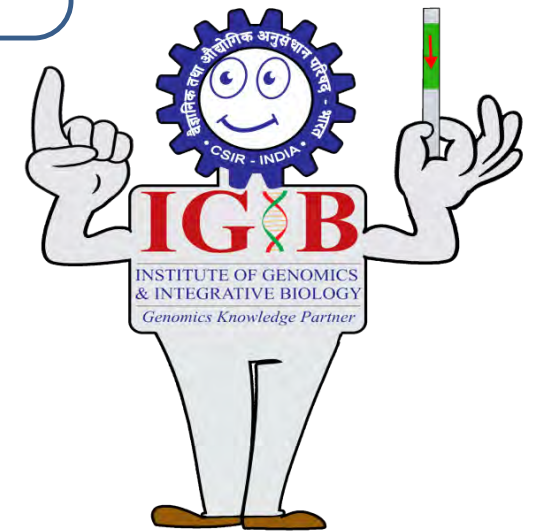
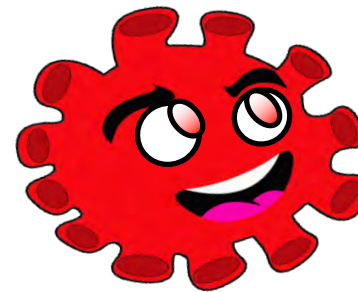
**Website:**

<https://www.natureasia.com/en/nindia/article/10.1038/nindia.2020.56>



# SCIENTOON

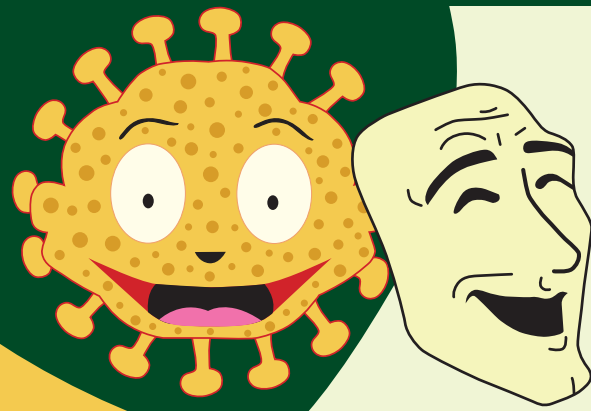
It takes 12 hrs to trace me ...You will be tired. It's expensive too...



Vishal

Vishal

**“You are mistaken! We will find you in an hour!”**

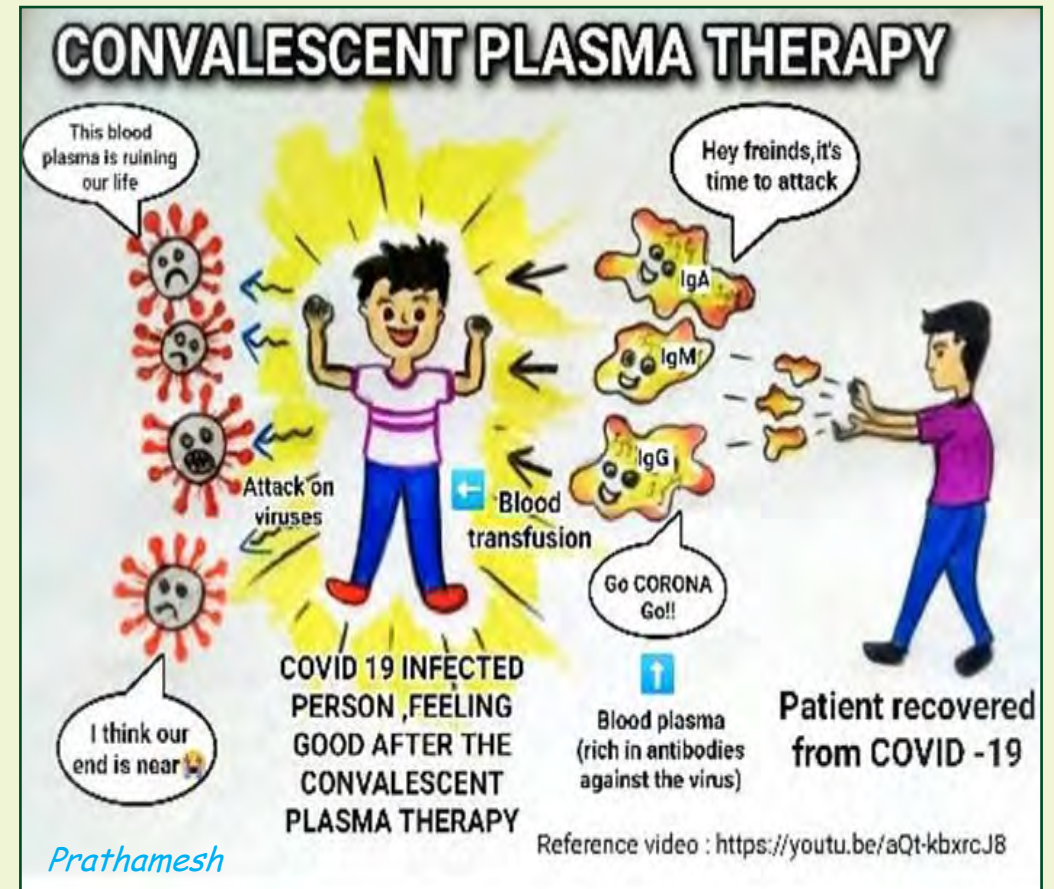
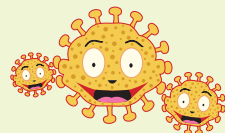


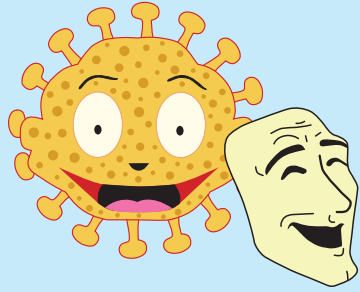
# SCIENTOON

People who have recovered from COVID-19 have antibodies to the disease in their blood. Doctors call this convalescent plasma. In Convalescent Plasma Therapy the plasma of a patient who has recovered from COVID-19 is injected into patients under treatment to boost a generalized response, known as passive immunity, until they develop a strong, targeted ability to fight the virus.

**Website:**

<https://newsnetwork.mayoclinic.org/discussion/convalescent-plasma-a-therapy-for-covid-19/>





# SCIENTOON

## Is Corona Blessing in Disguise!



Pradeep

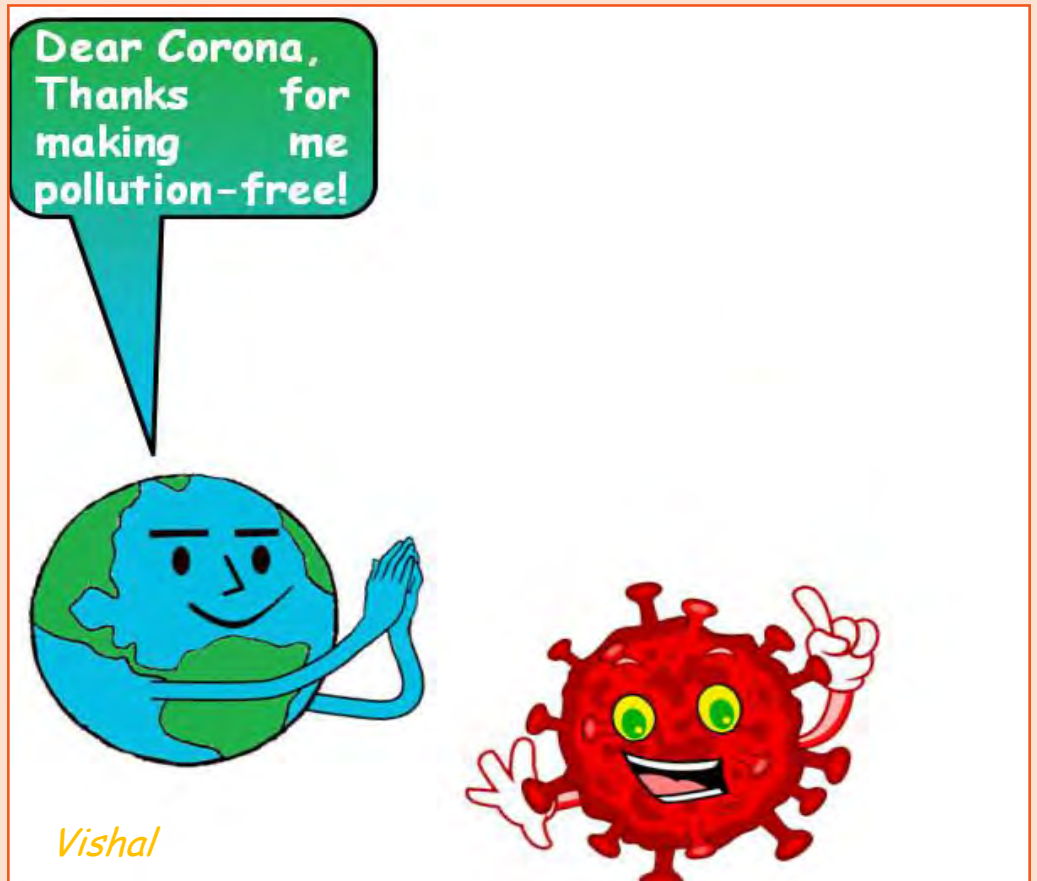
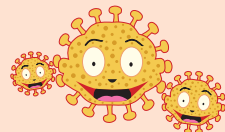




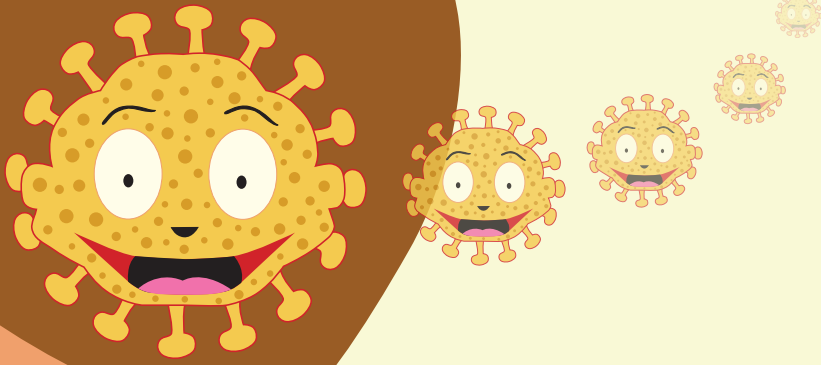
## SCIENTOON

Ever since the coronavirus pandemic struck across the globe, several reports have emerged highlighting the return of many species to their natural habitats.

A few days ago, a Nilgai was spotted walking leisurely on the roads of Noida's busiest Sector-18. In Kerala's Kozhikode, a Malabar civet, which is a critically endangered animal, was spotted walking on the road.



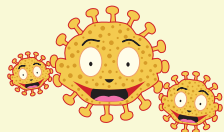
**“Only thanks...? Nominate me for THE NOBEL PRIZE with citation “for contribution in making the Earth pollution-free within remarkably short time.”**



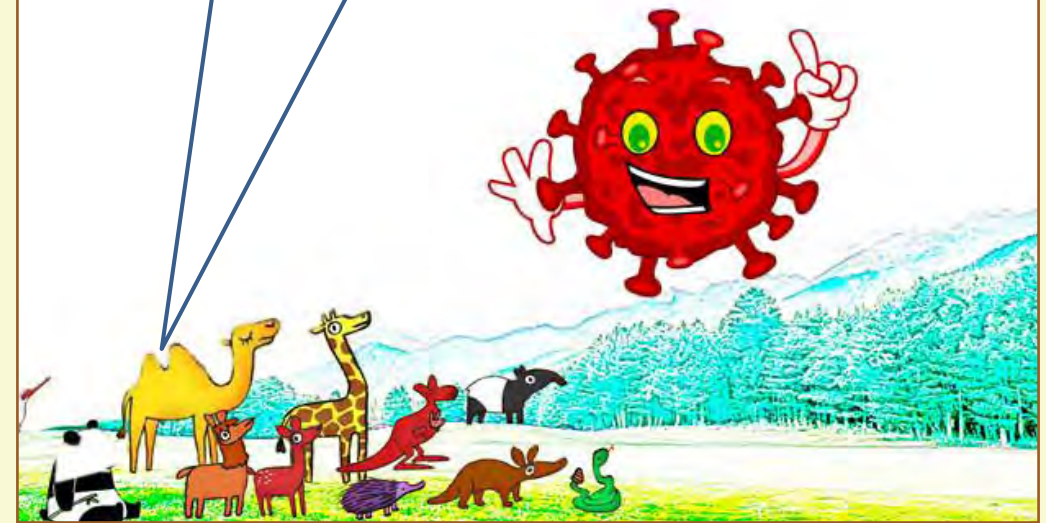
# SCIENTOON

From flamingos to Sika deer, a range of wildlife is being spotted in urban centres across a world under lockdown. A raccoon was found walking in an almost-deserted Central Park in New York, reported *The Guardian*. A deer was seen walking across a pedestrian crossing in Nara, Japan.

Wild animals are reclaiming cities and streets during Coronavirus lockdown says *The New York Times*.

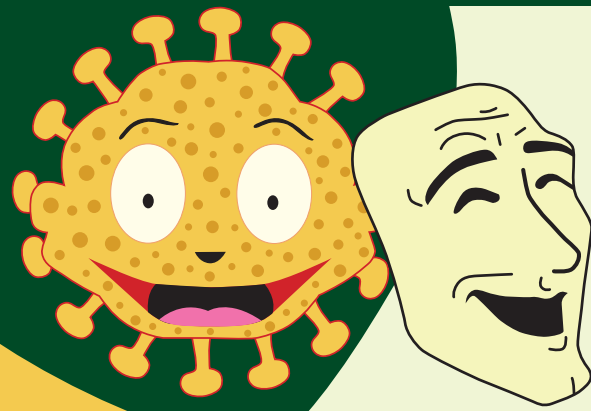


**Dear Corona, Thanks for forcing the human to have a lockdown. We got a chance to roam around freely.**



Vishal

**“Thanks my dear fellow animals. This is the minimum I could do for all of you. Enjoy the freedom from lockdown.”**

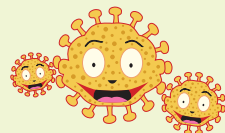


## SCIENTOON

### Corona as Pollution Controller

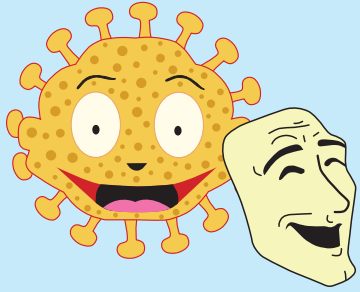
With many factories and businesses closed, fewer cars on the road and fewer planes in the sky, our environment is recovering slowly. According to the Uttarakhand Environment Protection and Pollution Board, in Ganga water there has been in 34 per cent reduction in faecal coliform and 20 per cent in biochemical oxygen demand in Haridwar.

In India, life under coronavirus brings blue skies and clean air, reports The Washington Post.



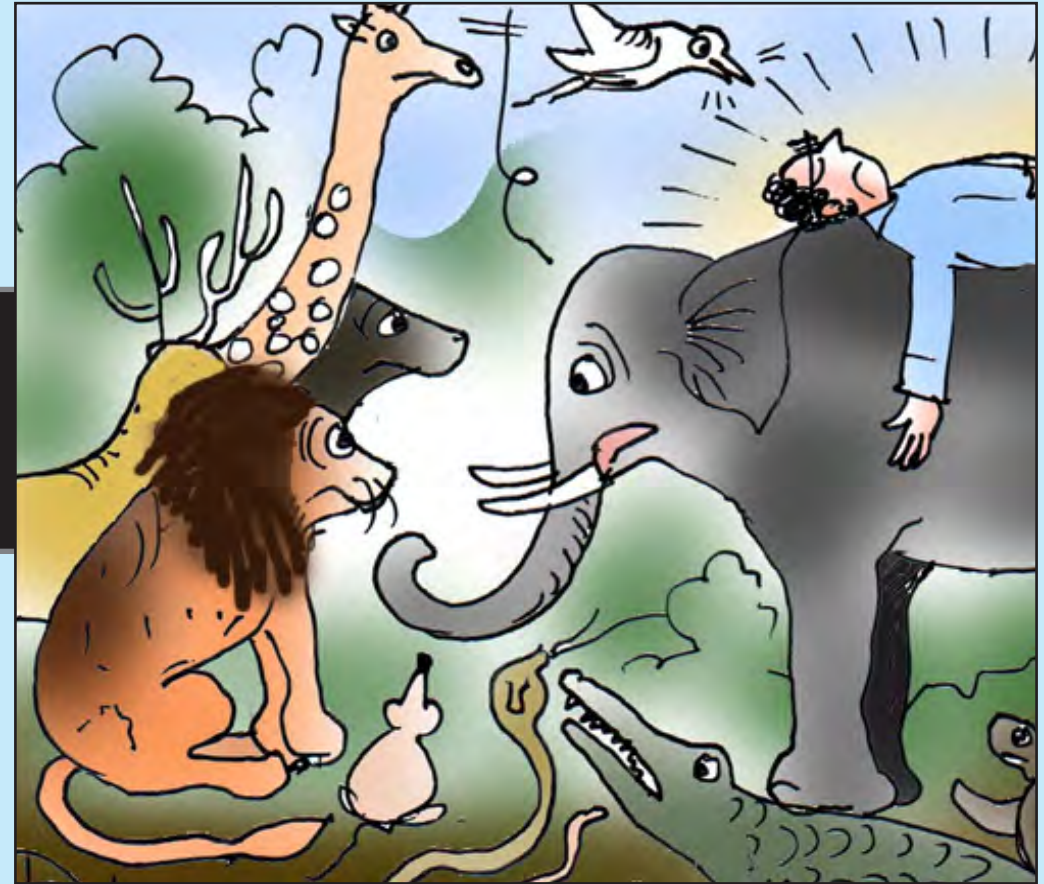
Pradeep

**"No! No! Don't panic. I will not infect you. Sir! would you like to appoint me as a consultant here?"**

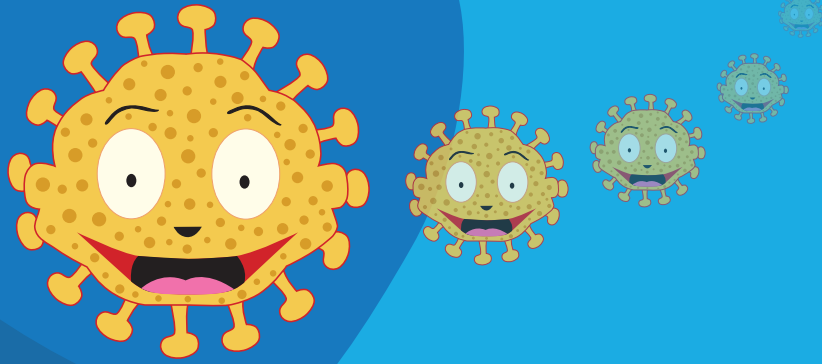


# SCIENTOON

...and Finally



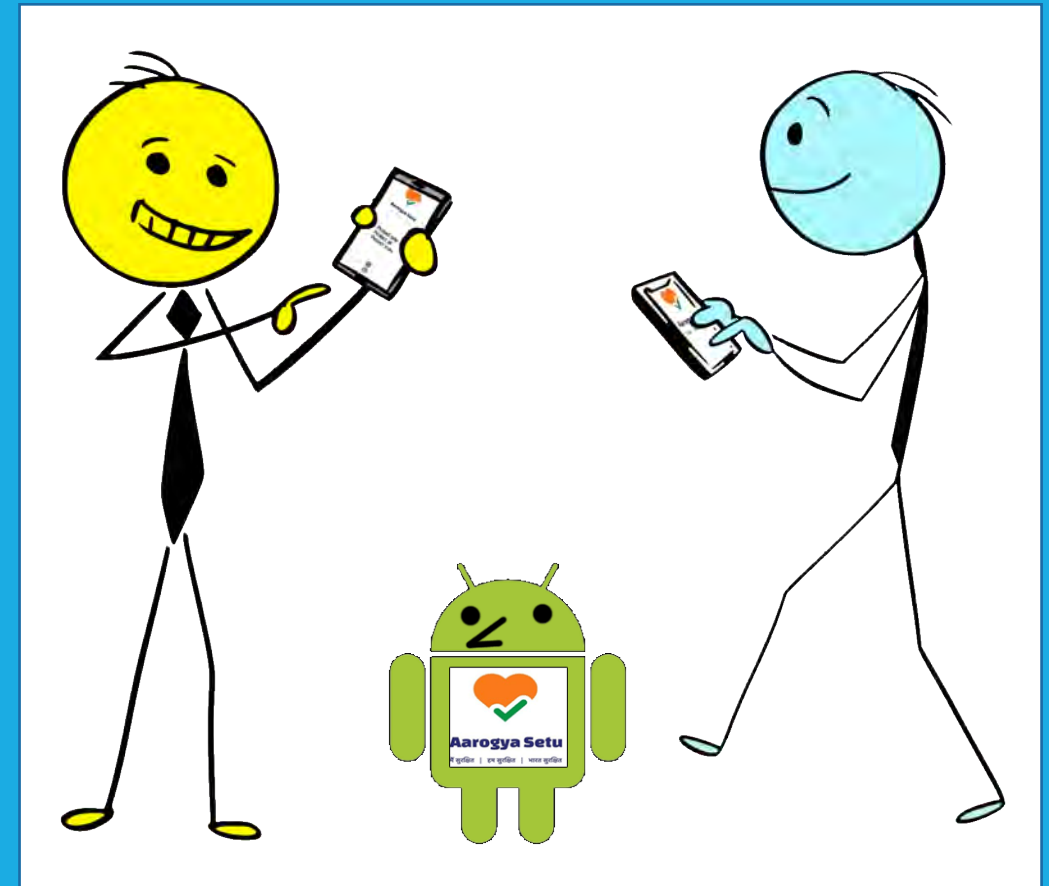
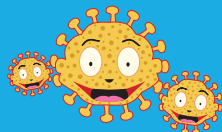




## Aarogya Setu

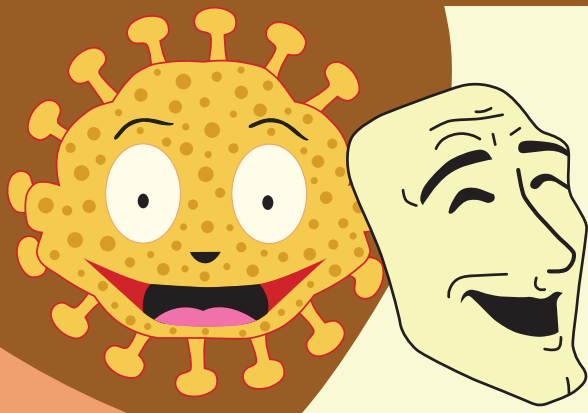
It is a mobile application developed by the Ministry of Health & Family Welfare, Government of India.

Aarogya Setu is a primary contact tracing tool. It lets you know if a person around you has already tested positive for COVID-19.



Vishal

**“Arre! You don’t need to roam around. Download Aarogya Setu app. It alerts you if someone around you is tested positive for COVID-19 .”**



## SCIENTOON



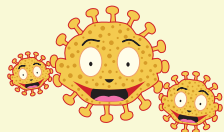
Aarogya Setu is an important step in our fight against COVID-19. By leveraging technology, it provides important information. As more and more people use it, its effectiveness will increase. I urge you all to download it.



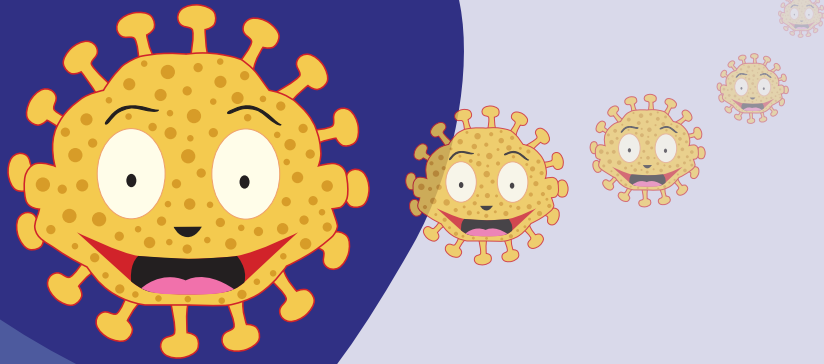
**Narendra Modi**  
Hon'ble Prime Minister of India

### Features of Aarogya Setu:

1. This app is available in many Indian languages.
2. It has latest Corona updates in the state/ world/ India.
3. You will know if any Corona- infected person is near you.
4. Information from media on various aspects like making a mask at home to AYUSH MINISTRY suggestions are available.
5. COVID call Helpline: 1075



**Sir, why are you complaining that Aarogya Setu is showing more people as corona positive now? When even a senior person like you is not wearing a mask, how do you expect the spread of infection to stop?"**

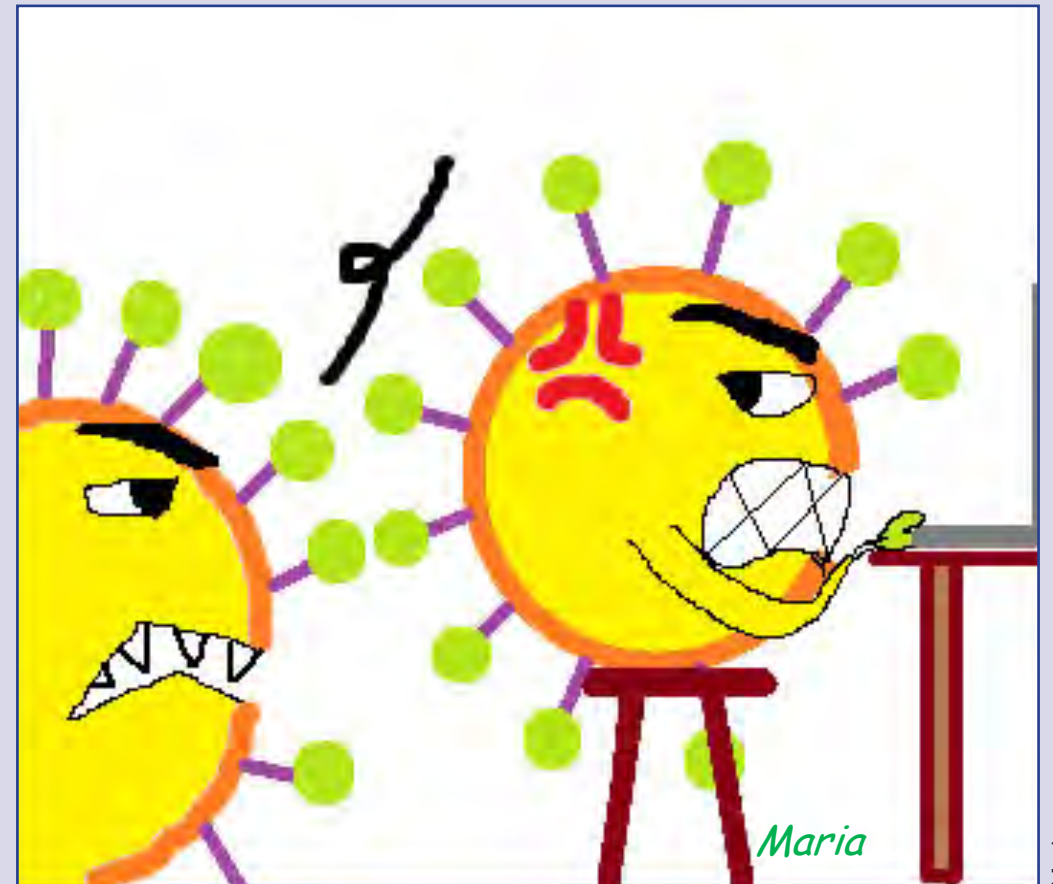
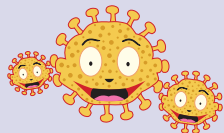


## SCIENTOON

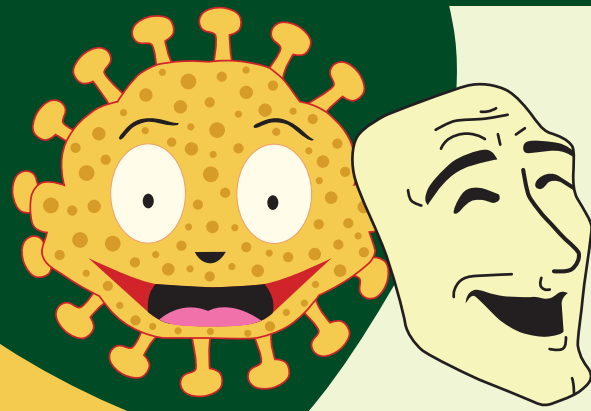
### Aarogya Setu:

A “unique randomised anonymous device ID” will be assigned to all the devices that will be used for all communication between the device and the Aarogya Setu server.

The information is used ONLY for administering COVID-19-related health interventions and NOT any other purpose.



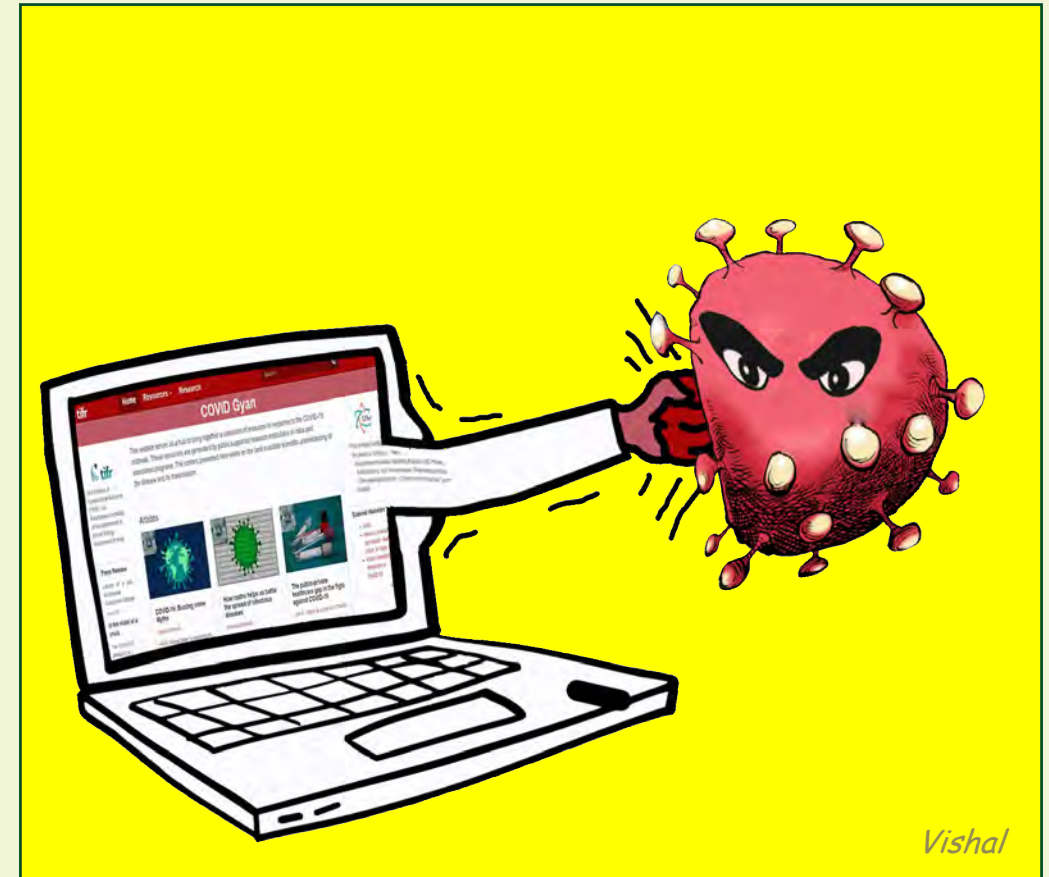
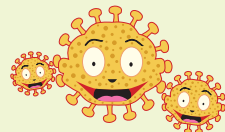
**“Shame on you! You have done software engineering and still can’t infect an app!! You have ruined our reputation.”**



## SCIENTOON

“COVID-19 has also come as a blessing in disguise as it will give boost to country’s resilience and self-reliance and enhance indigenous capacity in developing critical healthcare equipment.”

**Dr Harsh Vardhan,**  
Union Minister of Science & Technology,  
Health & Family Welfare and Earth Sciences



Vishal

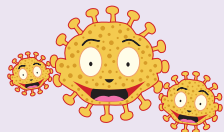
**“Foolish virus! This is new India! We are progressing in almost all the fields. We are ready to face whatever challenges you throw at us.”**



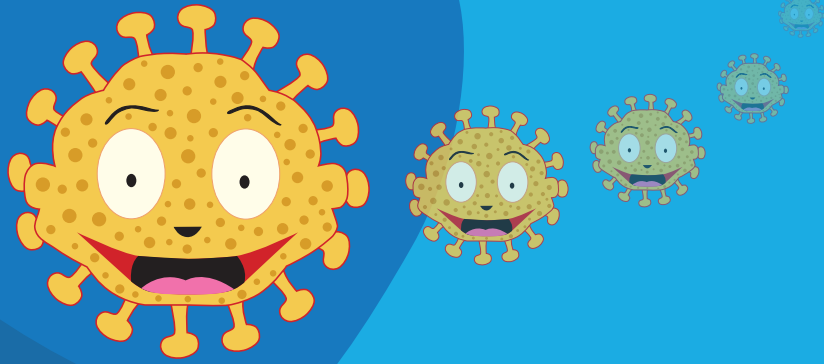
## SCIENTOON

### COVID GYAN

This website serves as a hub to bring together a collection of resources in response to the COVID-19 outbreak. These resources are generated by public-supported research institutions in India and associated programmes. The content presented here relies on the best available scientific understanding of the disease and its transmission. Vigyan Prasar is one of its contributing Institutions.



**"I agree. You all are a great gyani, no doubt; but I am sure you know nothing about this Coronavirus disease. So, now listen to the COVID GYAN."**



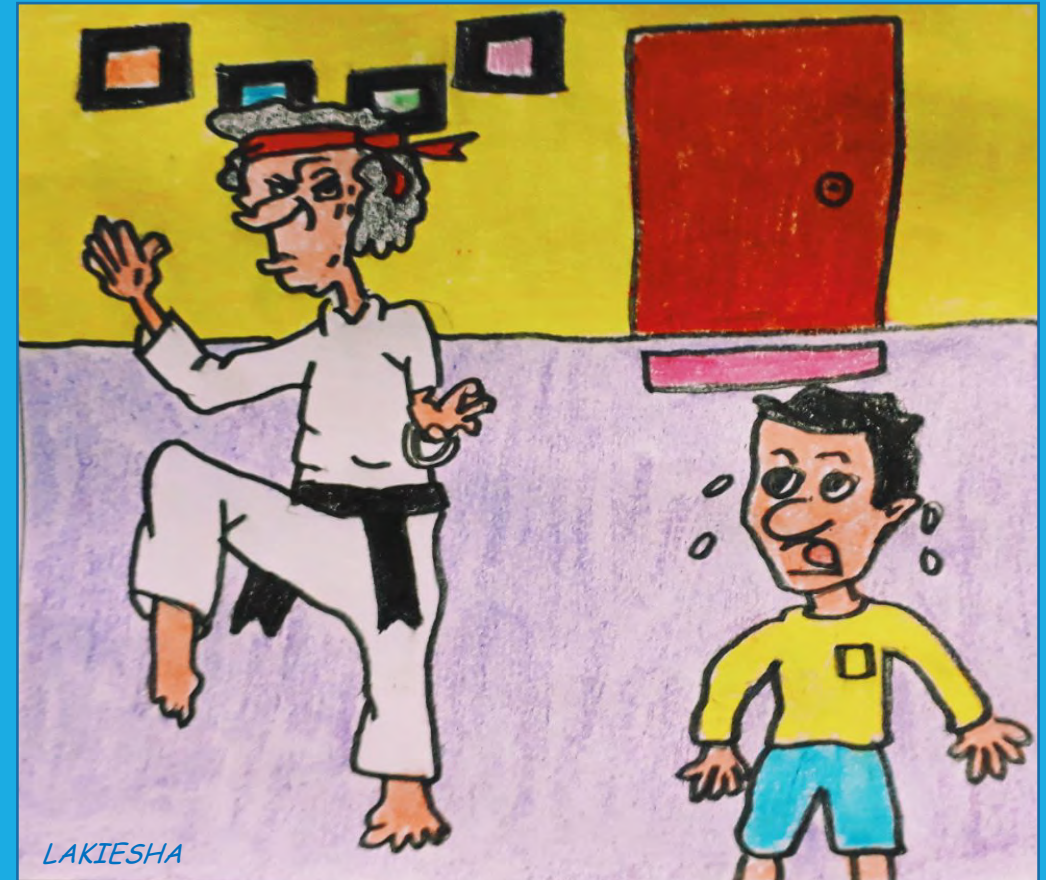
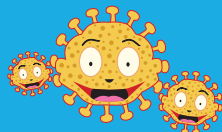
## SCIENTOON

### Regular Physical Activity

For all of us, young and old, regular physical activity is important for staying healthy! Compared to just sitting around most of the time, moderate-intensity physical activity is associated with better immune function.

Regular physical activity can help reduce your feelings of stress and anxiety (which many of us may be feeling in the wake of the COVID-19 pandemic).

Website:  
<https://www.cdc.gov/coronavirus/2019-ncov/about/index.html>



**“Dadaji, You might have been a Taekwondo Black Belt, but you can do nothing against this virus. Take care of yourself, which is more important for you than me.”**



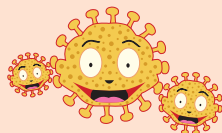
## SCIENTOON

By ensuring effective lockdown Goa became the first COVID-19 free state in India.

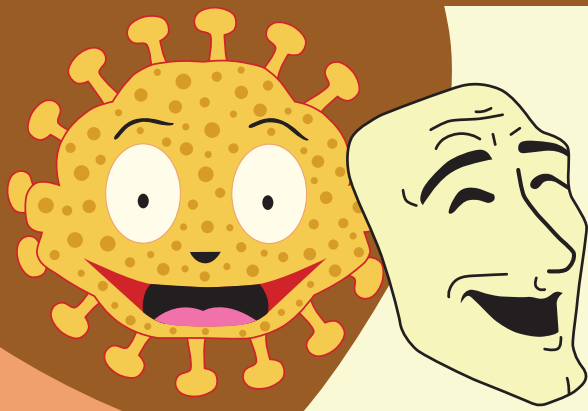
Closing borders and strict enforcement of lockdown are one of the reasons, which helped Goa emerge as a coronavirus-free State in the country.

But corona positive cases have again been reported from Goa.

Times of India April 29 & May 18, 2020



**“Look! Goa once became first COVID-19-free state of India. But you did not take all precautions and we got coronavirus back again.”**

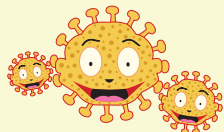


## SCIEN TOON

### Corona Warriors

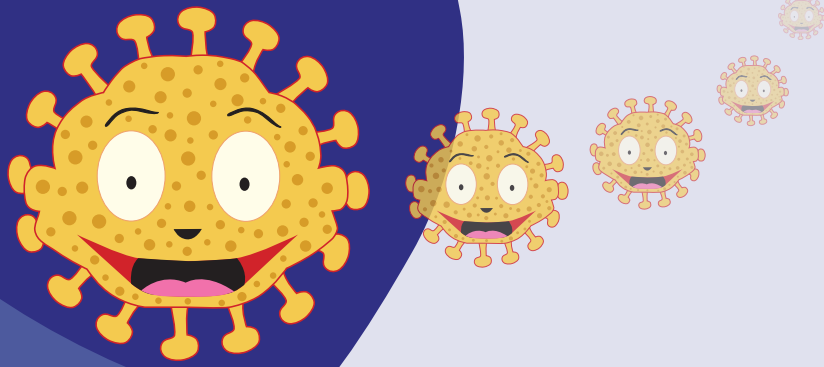
While the Reel Heroes fight against the monsters on screen, some Real Heroes, like the doctors, healthcare workers, municipal workers, police, government and police personnel are fighting against the deadly virus so that the people of the nation are safe.

During its lockdown frontline workers are still going out every day to win what is described as “a war India can’t afford to lose”.



**“Please respect The REAL HEROES! Our doctors, health staff and police personnel... they are the real Corona warriors.”**



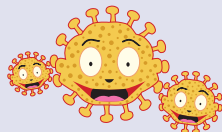


## SCIENTOON

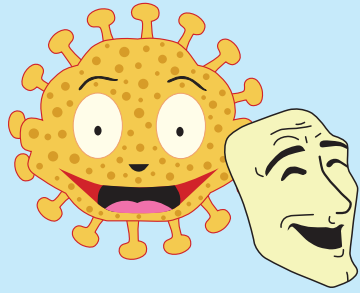
Religious places like temples, mosques, churches and gurudwaras across the nation are closed during the lockdown. Devotees are advised to stay at home and pray so as to avoid infection.

**Website:**

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/points-of-entry-and-mass-gatherings>



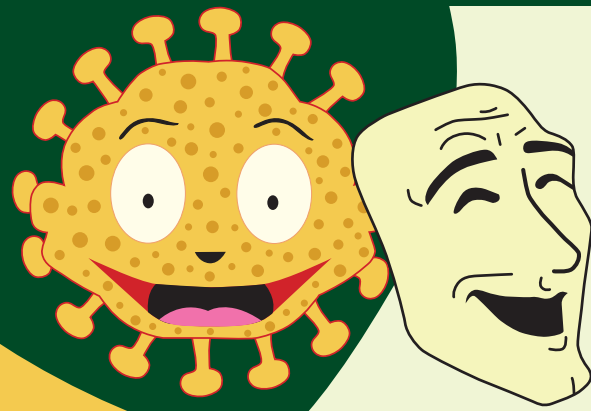
**“Hey Arjun! It is quite simple. Wash your hands frequently, use a mask when going out, and no need to go anywhere for your prayers during this Corona time, as you are aware that I am present everywhere.”**



# SCIEN TOON

...on Lighter side





## SCIENTOON

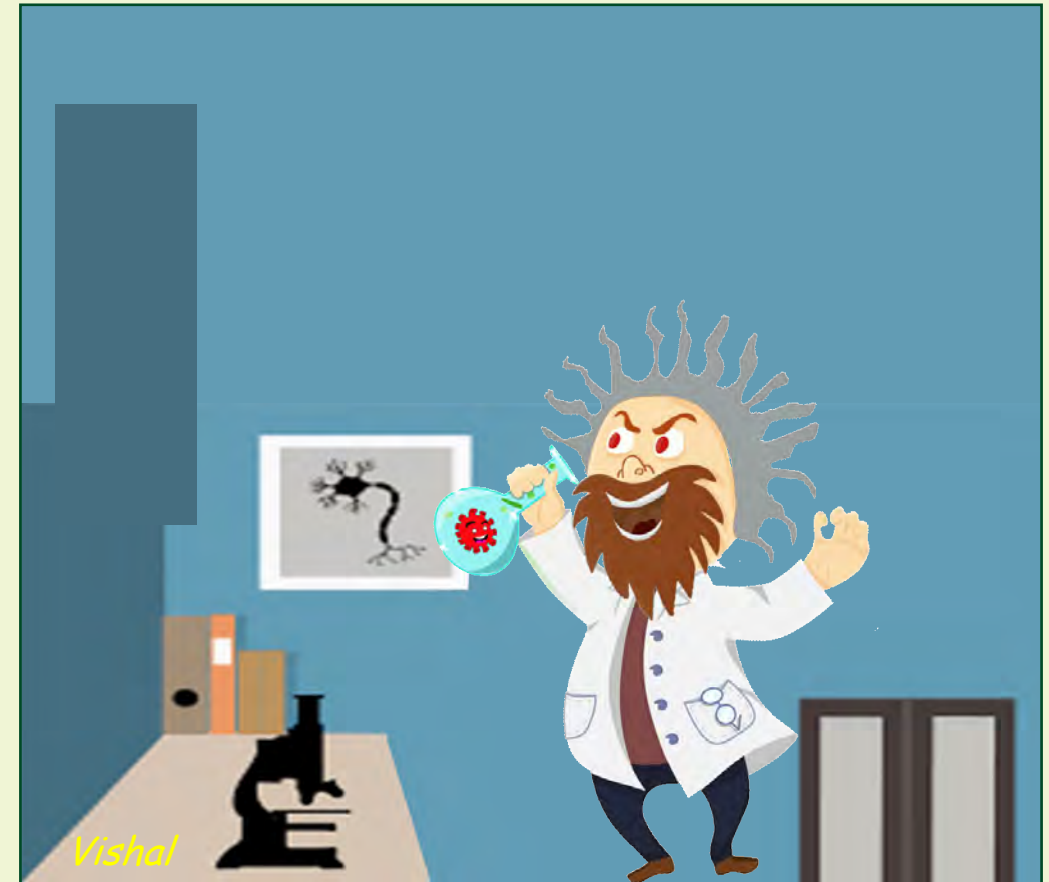
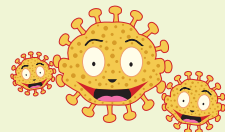
### Virtual Partnering for COVID-19

Biotechnology Industry Research Assistance Council (BIRAC) is supporting a COVID-19 VIRTUAL PARTNERING event that is gathering the global pharma industry to connect and help bring forward solutions against the novel coronavirus pandemic.

In future it will not be easy to travel so most of the conferences, seminars will be virtual conferences or webinars.

Reference: 01: Michael Price (2020) , As COVID-19 forces conferences online, scientists discover upsides of virtual format doi:10.1126/science.caredit.abc5170 date: April 28 , 2020

02: "Virtual Partnering for COVID-19" from <https://vigyanprasar.gov.in/vigyan-Samachar>, dated Apr 29, 2020



**“What the hell! I will never pardon you Corona! No more visiting different countries of the world. Now there will be virtual conferences, seminars, webinars...”**



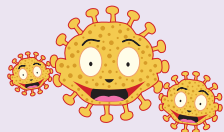
## SCIENTOON

### Indian Lockdown & Education

“To ensure learning continues even for the batch that is staying at home on a given day, the school can give them some activity to do at home. Currently, teachers try to teach every part of the chapter in class. But given the changed circumstances, students can be asked to cover some parts on their own and clear their doubts once they are in class on their designated day.”

Hrushikesh Senapaty  
Director, NCERT

The Indian Express  
May 10, 2020

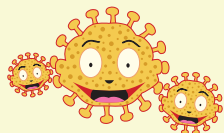


**“Mumma...! For the online education, there is online homework and online punishment. If you wish to scold me for not finishing my homework, go online and do so.”**

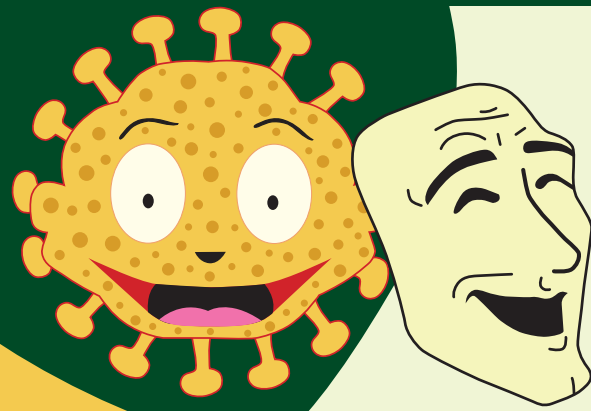


## SCIENTOON

The Jawahar Navodaya Vidyalaya (NVS) has suggested keeping just half the strength on campus till October to ensure social distancing between students. It has also recommended that mess timings be staggered to allow students to have their meals in batches.



**“Now I know how the food disappears from the fridge every 15 minutes. Just because you have no work, that doesn’t mean you can eat all day.”**

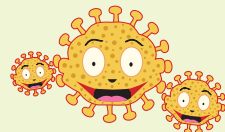


## SCIENTOON

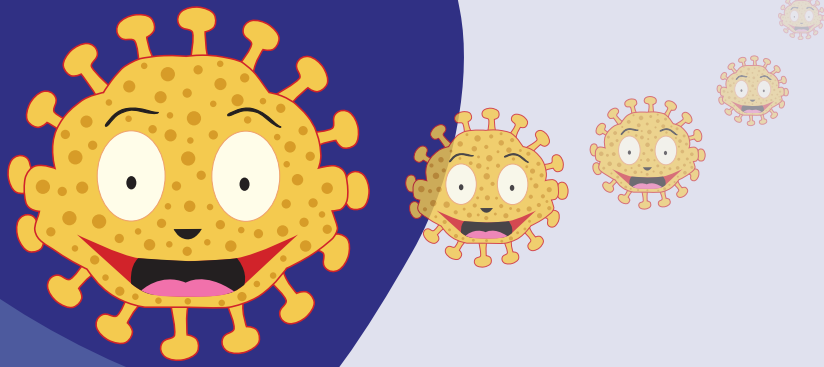
These can be difficult times for all of us as we hear about spread of COVID-19 from all over the world, through television, social media, newspapers, family and friends and other sources. The most common emotion faced by all is Fear. It makes us anxious, panicky and can even possibly make us think, say or do things that we might not consider appropriate under normal circumstances.

**Website:**

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



**“Do you know people used to tell me that I look like a Super Model. Now I probably look like the female version of Tarzan.”**

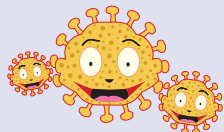


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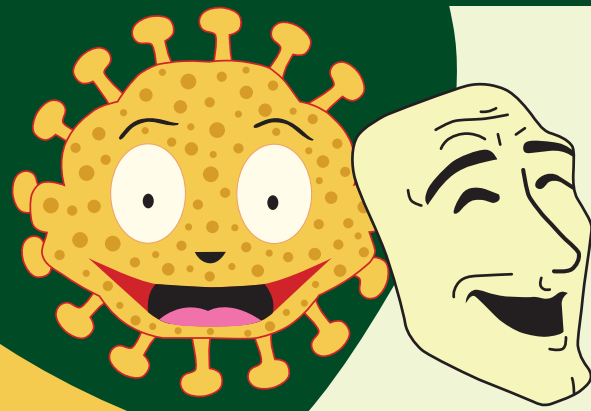
Staying at home can be quite nice for some time, but can also be boring and restricting. Here are some ways to keep positive and cheerful. Be busy. Have a regular schedule. Help in doing some of the work at home. Distract yourself from negative emotions by listening to music, reading, watching an entertaining programme on television.

**Website:**

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



**“My hair has grown so much that it has turned into a lawn! Planting seeds and making a garden would be the best idea.”**



## SCIENTOON

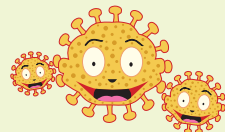
### Can I exercise outdoors during the coronavirus pandemic?

Do not exercise if you have fever, cough and difficulty in breathing. Stay home and rest, seek medical attention and call in advance.

If you are able to go for a walk or bicycle ride always practice physical distancing and wash your hands with water and soap/alcohol-based hand rub before you leave, when you get to where you are going, and as soon as you get home.

**Website:**

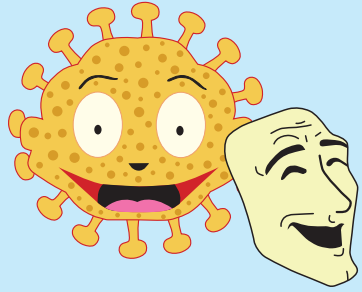
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/be-active-during-covid-19#:~:text=Do%20not%20exercise%20if%20you,%2Dbased%20hand%20rub.>



Lakiesha

**“Come let’s go and sit on those swings and have some fun since the park is empty and no one is coming.”**

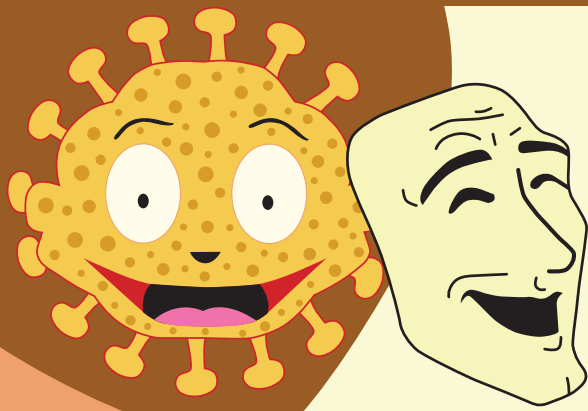




# SCIEN TOON

...Be Positive!





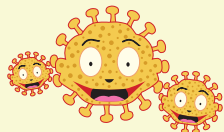
## SCIENTOON

### Online Education During Lockdown

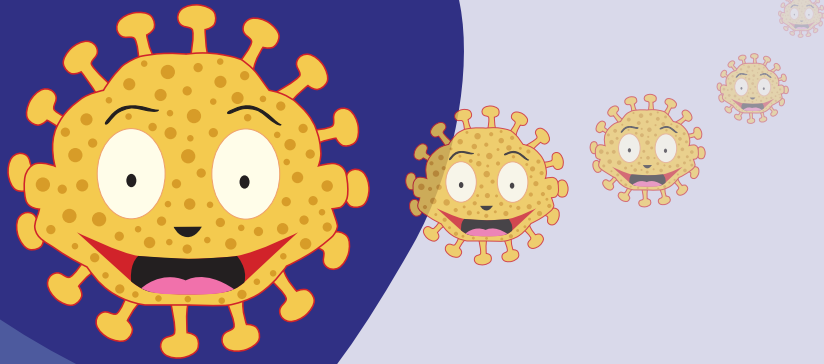
Many users are signing up for free courses taught by professors from reputed universities. It is felt that deep concentration of study is more rewarding than scrolling through social media. Increasing numbers of people are using the time to build their skill-set with the help of massive open online courses or MOOCs.

**Website:**

<https://www.theguardian.com/education/2020/apr/19/online-learning-how-to-acquire-new-skills-during-lockdown>



**“Dear Corona! Thanks a lot for giving opportunity to learn so many new things. With the help of online education we will also learn how to fight you and other pathogens.”**



## SCIENTOON

### Indian Development During Lockdown

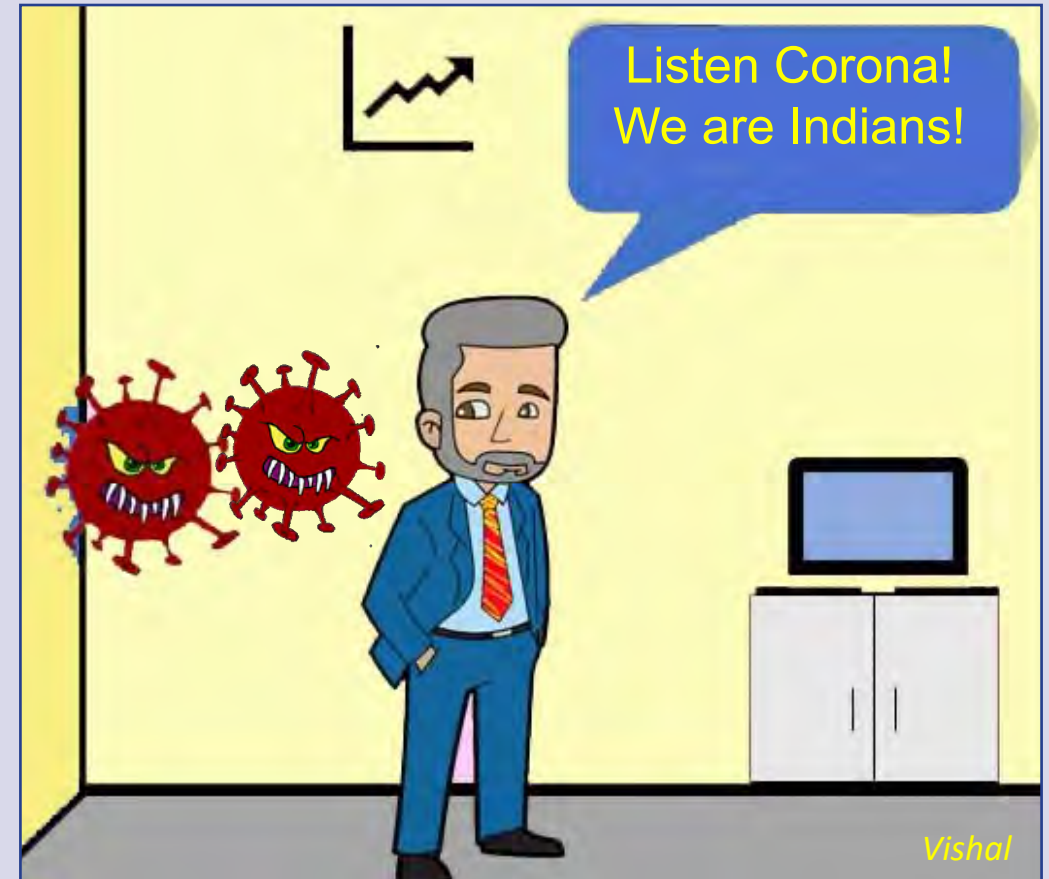
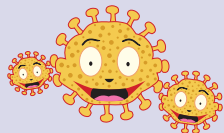
Keeping a finger on the pulse of the dynamic demand and supply situation of things as varied as personal protective equipment (PPE), testing kits, ventilators and isolation wards, there is a fascinating, multifaceted, behind-the-scenes race underway to combat India's Covid-19 crisis, which has drawn in state as well as private sector capabilities.

**Website:**

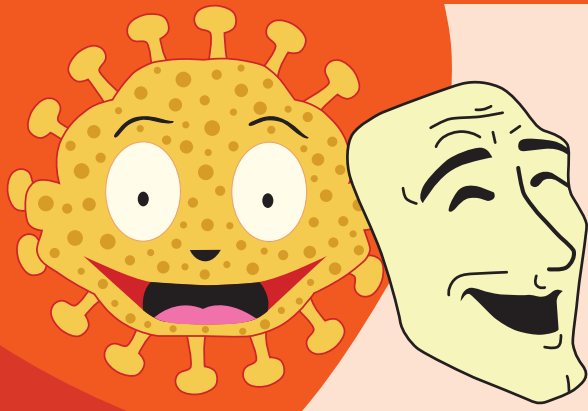
[https://www.india.gov.in/news\\_lists](https://www.india.gov.in/news_lists)

<https://vigyanprasar.gov.in/wp-content/uploads/vp-Covid-Newsletter-7may2020.pdf>

<https://economictimes.indiatimes.com/news/science/can-coronavirus-crisis-change-indian-science-for-good/articleshow/75224904.cms?from=mdr>



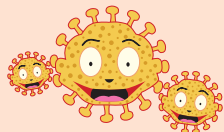
**“It was a mistake to come to India. We thought we will hack their progress. But they developed natural sanitizer, cost effective ventilators and very soon will develop treatment plan to kill us.”**



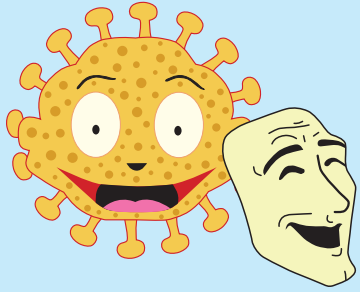
## SCIENTOON

Life after Corona pandemic is going to be different. Government has done its best to educate, advise and to generate awareness. Now it is the responsibility of the citizens of the country to take care of themselves by following these guidelines.

1. Wear a mask, cover your face always when you go out.
2. Wash your hands frequently.
3. Maintain physical distancing always.
4. Discipline yourself, do yoga, exercise and boost up immunity.

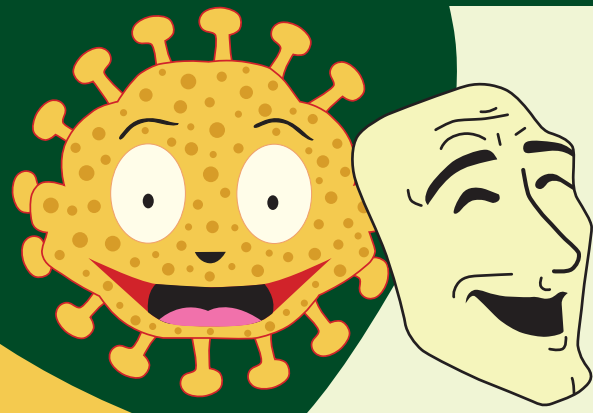


**“First, fill up this form mentioning your Aadhar card no., travel history record, attach your latest corona test report and download Aarogya Setu App! Then apply online for hair cutting. Come back with OTP sent by me.”**



# Art of Living with COVID-19

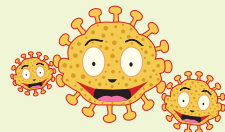




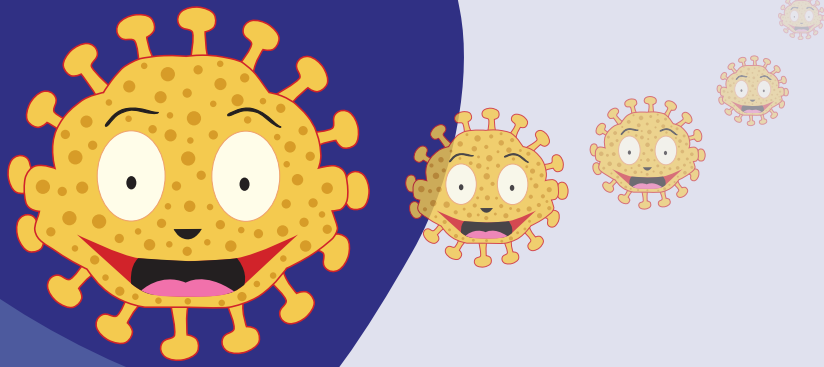
## SCIENTOON

### When You Go Out

1. Cover your mouth and nose with a mask/cloth or handkerchief.
2. If you don't wear spectacles, you may use a goggle to cover your eyes.
3. Wear a cap.
4. Carry a bag so that you can bring items in it.
5. Don't touch anything unnecessarily.
6. Stay away from crowded places. Maintain a distance of minimum 3 to 6 feet.



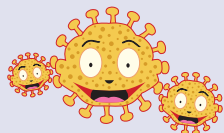
**“Stop shouting and banging the gate! I will not allow you to come inside. How could you go out without wearing a mask? I know your plan! You wish to infect me with Coronavirus!!”**



## How to Use a Lift

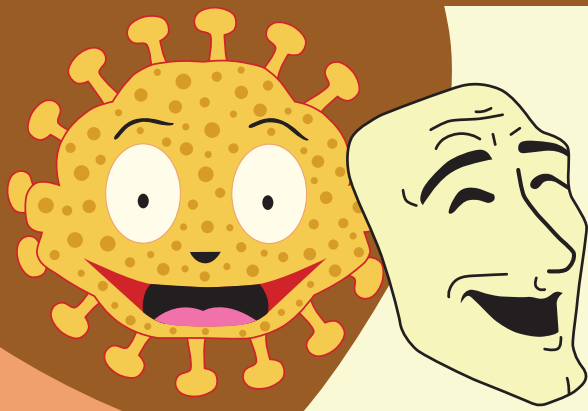
While using the lift, touch the buttons on the panels with a tissue paper and dispose it off safely after using it.

Don't touch the metallic surface inside the lift and railings or other surfaces.



Pradeep

**“My umbrella is a multipurpose tool. It saves me from rain and sun. I open it in crowded place to maintain physical distancing and now I also use it in operating a lift.”**



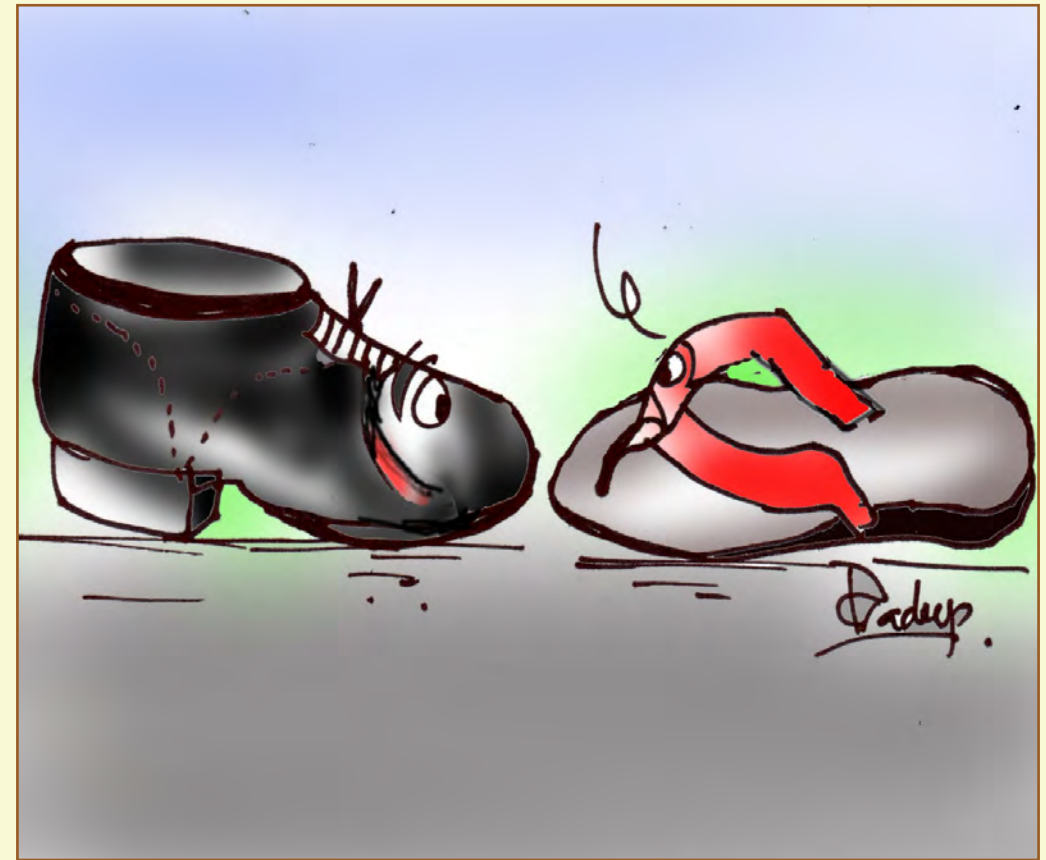
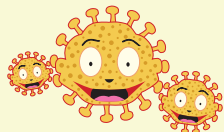
## SCIENTOON

### When You Go Out

1. Don't touch the door or the gate. Ask someone to open it for you from inside.
2. Remove your chappal outside instead of taking it inside your house.
3. Remove your cap/spectacles/mobile phone/belt/purse and sanitize them before taking them inside the house.
4. Wash your clothes in warm water and detergent solutions immediately.

**Website:**

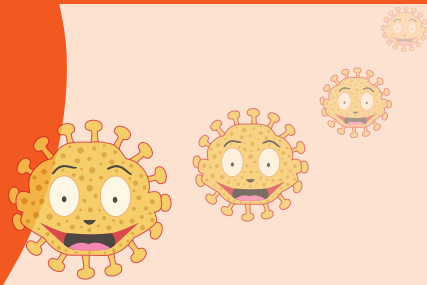
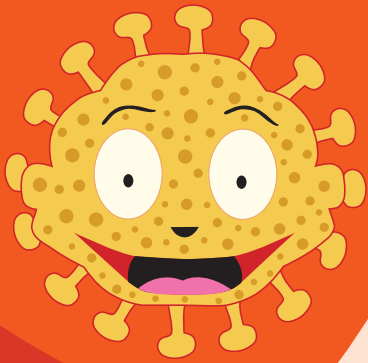
<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/index.html>



Pradeep

**“Shoe Bhaiya! You are really enjoying the lockdown. No travel, no going out!! But look at me! Now I am being used so often to go out! And what I hate most is the wash with detergent solution I get every time I am back. I will lose all my colour and shine in few days!!”**





## SCIENTOON

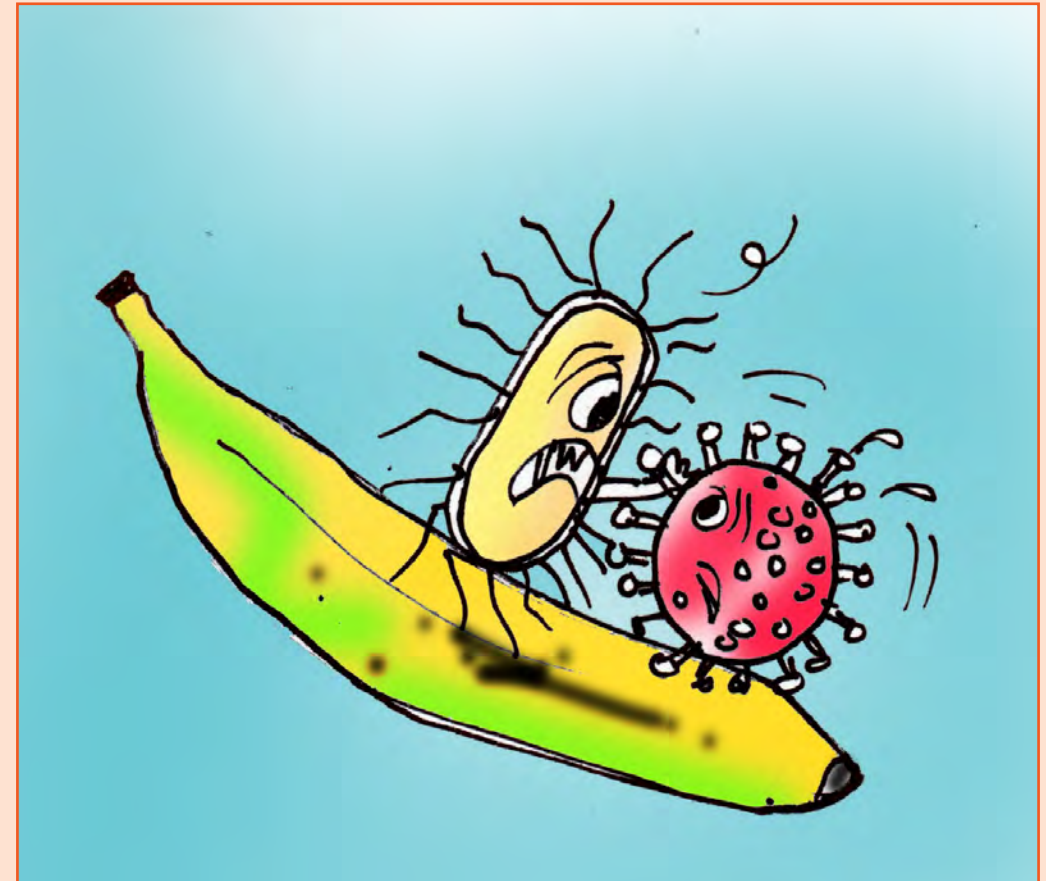
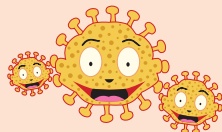
### When You Come Back From Market

Keep your bags in sunlight for 30 minutes to kill coronavirus (killed at 56°C). Don't use bleaching powder or isopropyl alcohol for cleaning vegetables and fruits.

“Even if the fruit has a peel, you should wash it with baking powder solution first, because touching it could contaminate your hands and you could then infect yourself when you eat that delicious banana.” After a little shaking take it out and wash with water.

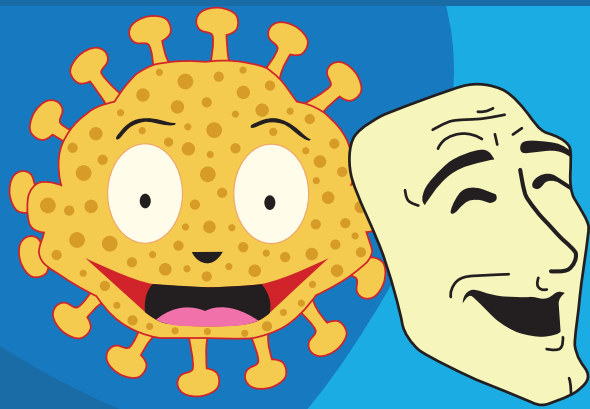
**Website:**

<https://www.usatoday.com/story/money/food/2020/03/27/coronavirus-can-washing-produce-prevent-covid-19-spread/2901725001/>



Pradeep

**“Listen to me, Coronavirus! Just because of you innocent bacteria like me are getting killed everyday. You’ve made everyone’s life miserable on earth!! Get out of here, NOW!!”**



## SCIENTOON

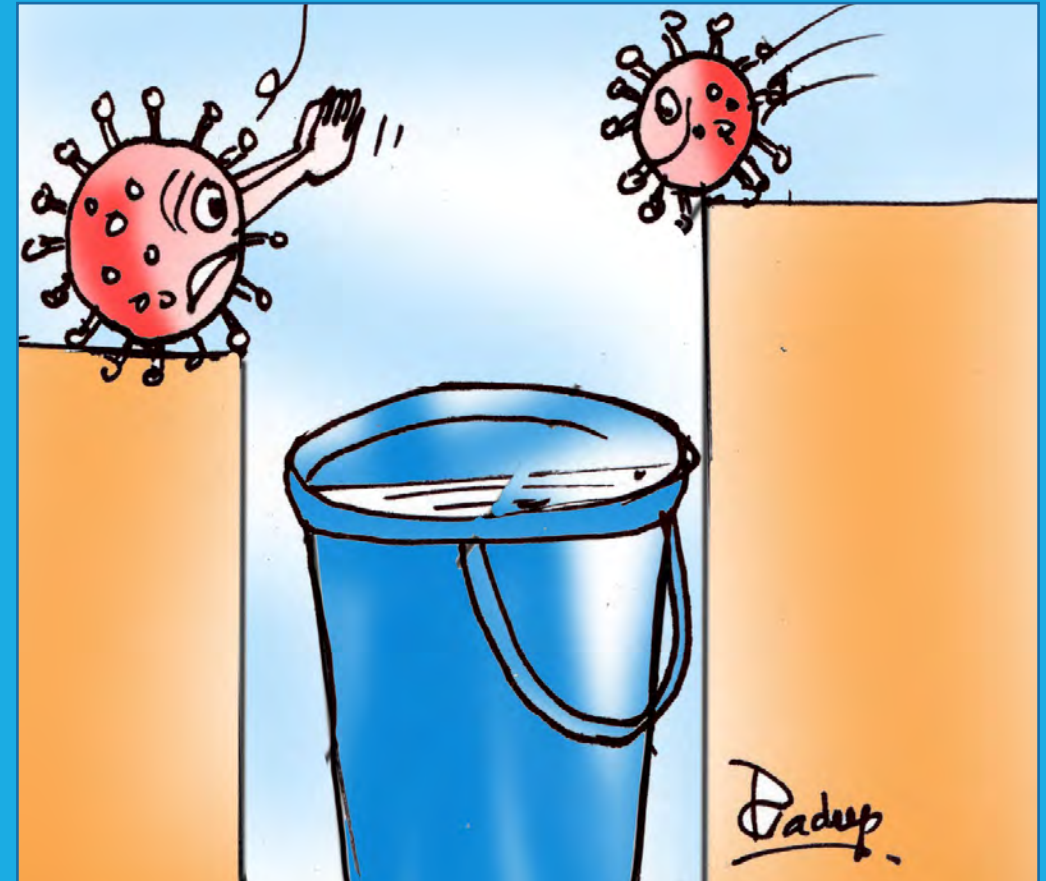
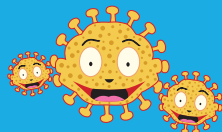
### How to Clean Vegetables

Vinegar is also known to reduce the microbes on vegetables and fruits. Use one part vinegar in three parts water for washing and then rinse with clean water. It works well for produce with smooth skin and for leafy greens.

Use one table spoon of mild detergent in a bucket of water. Soak the fruits and vegetables prior to touching. Rinse thoroughly with cold water several times. While rinsing, keep soaking in tubs to avoid wasting water. Residual detergent can be harmful hence please take precautions.

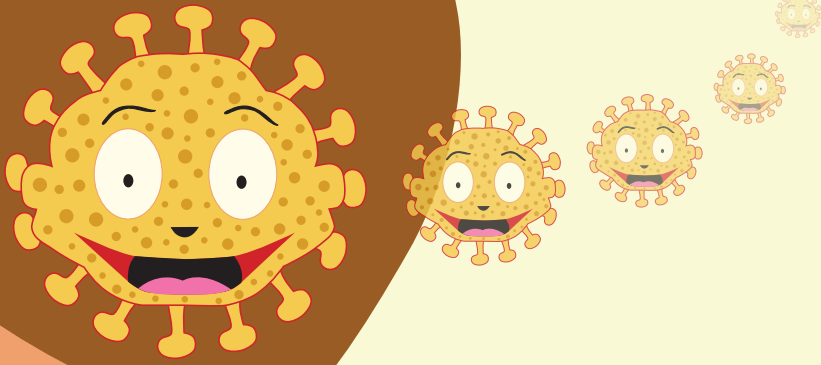
**Website:**

<https://www.teriin.org/article/food-safety-during-coronavirus-how-clean-fruits-and-vegetables-home>



**“Oh No! No my Son! Don’t jump into it. It is not a swimming pool. It is the sanitizer with vinegar and baking soda...a death trap for us!!”**

Pradeep



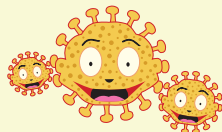
## How to Clean Vegetables

Prepare a solution of 1/2 cup table salt and three tablespoon baking soda in one bucket water and soak vegetables for 15-20 minutes. Rinse with plenty of fresh water.

Food grade sodium hypochlorite (NaOCl) solution (100 ppm) can also be used to soak vegetables like cabbage for two to five minutes before rinsing with clean water.

**Website:**

<https://www.teriin.org/article/food-safety-during-coronavirus-how-clean-fruits-and-vegetables-home>



Vishal

**“You want your hairs should be washed with a nice shampoo! Look, we are not giving you a bath. We are disinfecting you from any bacteria and especially coronavirus.”**

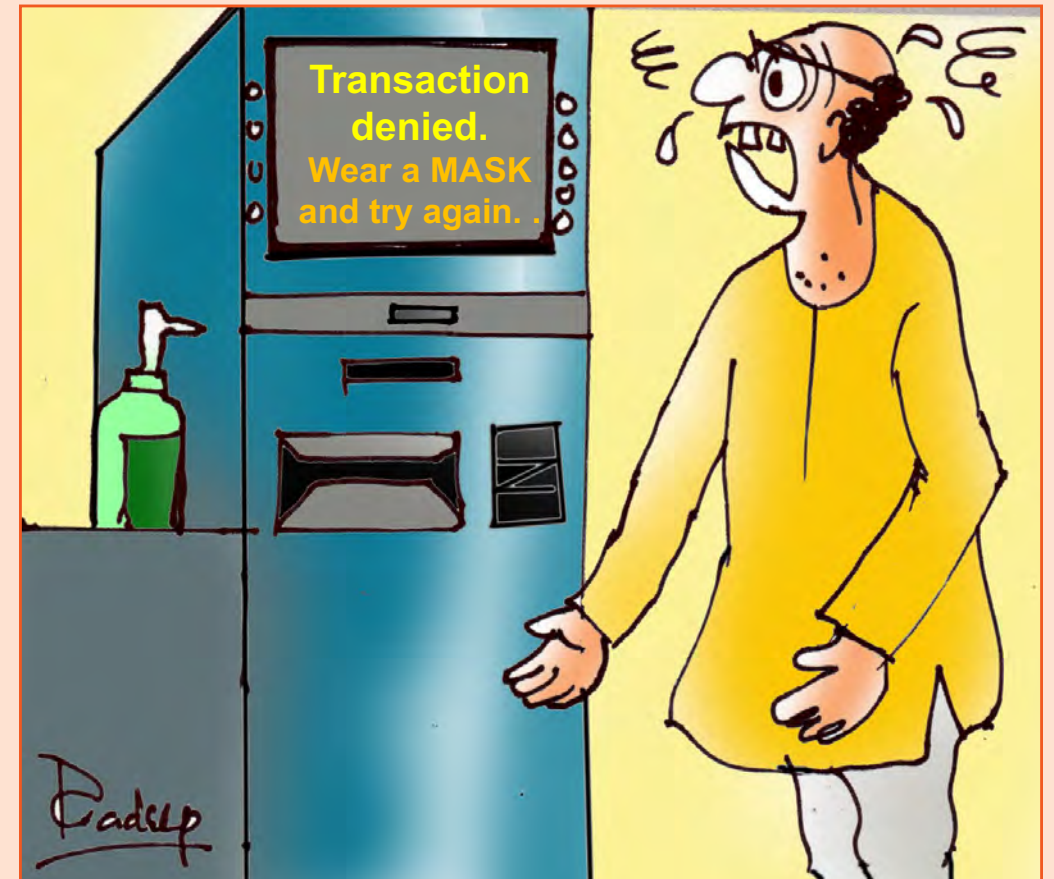
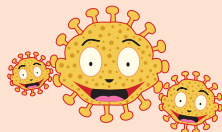


## SCIENTOON

### How to Use ATM

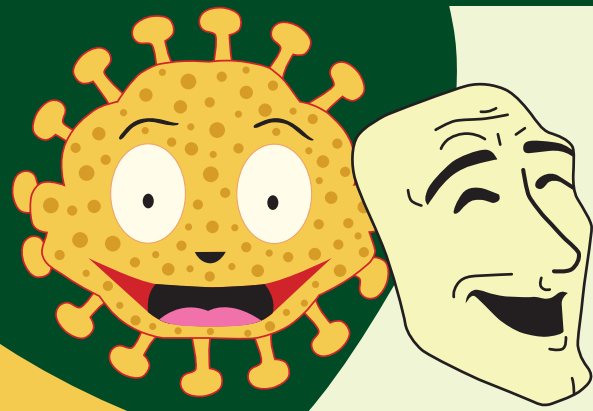
1. Avoid using the ATM room, if someone is already inside.
2. Avoid touching areas in the ATM room.
3. Avoid using ATMs if you are suffering from flu.
4. Cover your mouth and nose with your elbow or a handkerchief while sneezing or coughing.
5. Use gloves to touch the buttons or use your debit card or small piece of paper covering your finger. Then dispose off the paper carefully.
6. Avoid disposing used tissue papers or masks inside an ATM lobby.

Website:  
<https://www.onlinesbi.com>



Pradeep

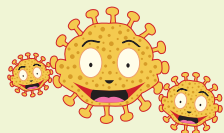
**“Oh my God! My house is 1Km away! To take out money, I have to come back again wearing a mask!!”**



## SCIENTOON

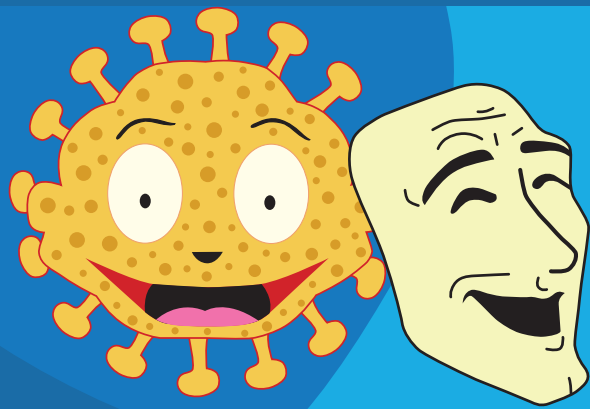
### How to Make Payment

1. For making payments use online apps or Bank apps/credit card/debit card.
2. If you accept notes and coins from the shopkeeper:
3. Press the currency notes with hot iron.
4. Wash coins with sanitizer or soap and detergent.
5. Sanitize your purse/credit card/debit cards very carefully with sanitizers containing 70% alcohol, without damaging the magnetic strip on it.



Pradeep

**“Oh yes! I know its terribly hot and unbearable! But have patience. It will save us from Coronavirus infection.”**



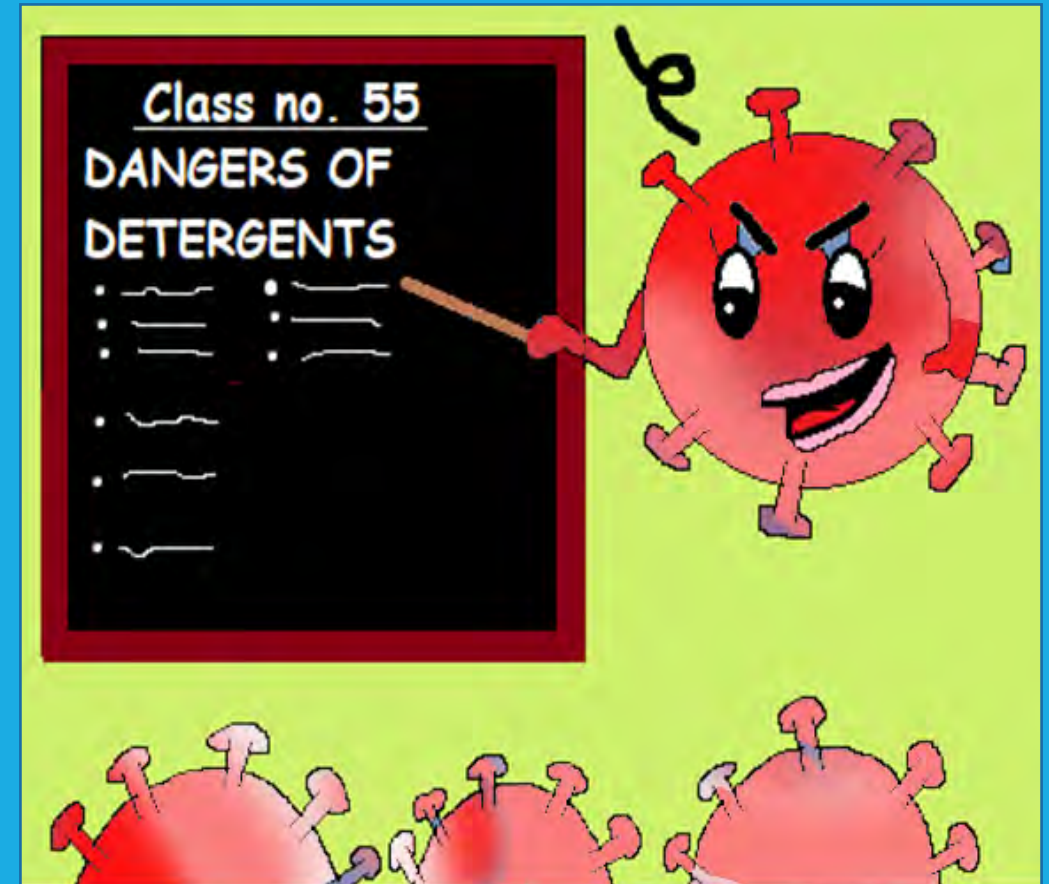
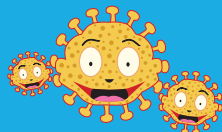
## SCIENTOON

### How to Use Your Car/Bike

Coronavirus can survive for 2 to 5 days on a surface like plastic, rubber, metal. Alcohol-based cleaning agents can be used for the automobile's interior, door latches, lock buttons, seat belts and buckles, window buttons, mirrors, radio and climate control buttons etc. Soap and water will work, too. The steering wheel may have four times the amount of germs found on an average toilet seat. Don't store a large bottle of hand sanitizer in your car.

**Website:**

<https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/disinfecting-transport-vehicles.html>



“There are several chemicals like baking powder, vinegar, detergents, sanitizers with alcohol etc. used by humans to kill us. Take precautions. You have to perform better than the EBOLA ACADEMY.”

Maria



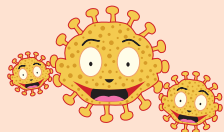
## SCIENTOON

### Travel Tips

- Frequently clean hands by using alcohol-based hand sanitizer or soap and water.
- When coughing and sneezing cover mouth and nose with flexed elbow or tissue – dispose the tissue away immediately and wash hands.
- Avoid close contact with anyone who has fever and cough.
- If you have fever, cough and difficulty breathing seek medical care early and share previous travel history with your healthcare provider.
- When visiting areas currently experiencing cases of novel coronavirus, avoid direct unprotected contact with live animals and surfaces in contact with animals.

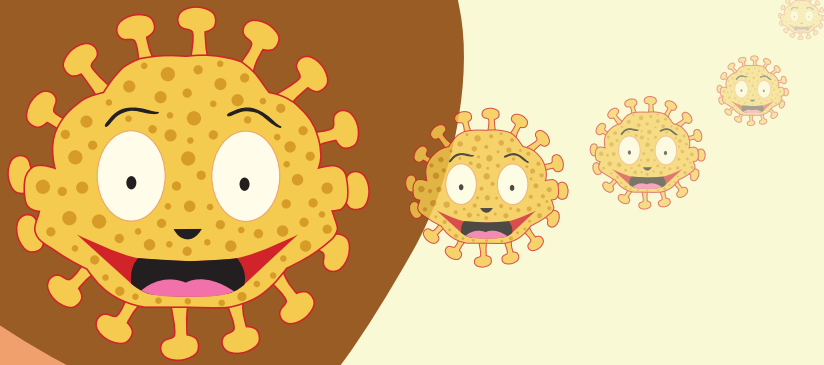
#### Website:

<https://www.who.int/news-room/articles-detail/updated-who-advice-for-international-traffic-in-relation-to-the-outbreak-of-the-novel-coronavirus-2019-ncov-24-jan>



Pradeep

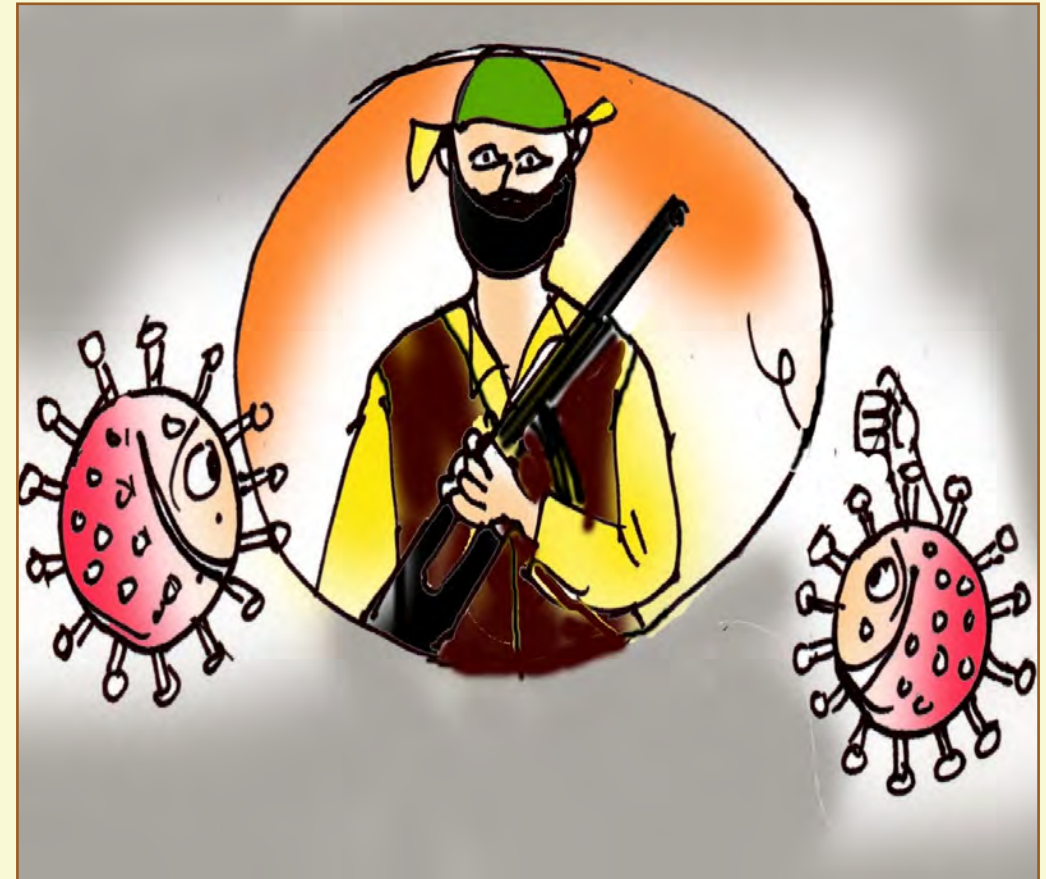
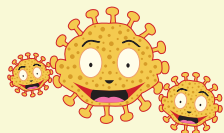
**“There was a time when I travelled around the world without being noticed at all. But now I don’t think I will survive! If I survive, I swear I will never travel by air again in my life.”**



## SCIENTOON

### How to Use Hotel Room

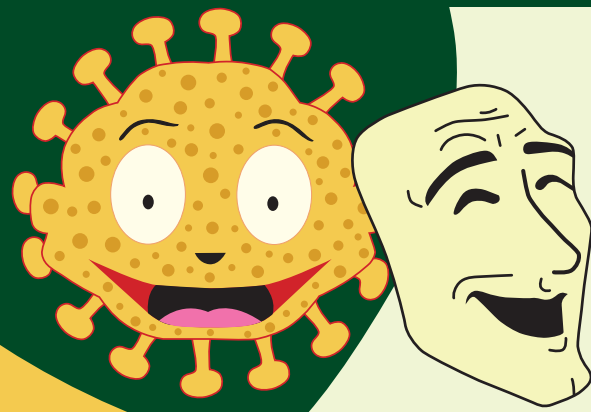
A preliminary research found that around 81 per cent of hotel room surfaces contain at least some fecal bacteria. Other things, like airplane seat covers and the tray tables in the coach section, may not get daily cleanings. Disinfecting wipes can be used to clean door handles, bathroom countertops, sink and shower faucets, toilet flushers etc. to kill 99.9 per cent germs that can live on surfaces for up to 48 hours and 99.9 per cent of viruses and bacteria. However, one should not use them for personal cleaning; they're not meant for using on skin.



Pradeep

**“There was a time when only terrorists and criminals used to cover their faces with masks. Look at the terror we have created! Now from the poorest man to the most powerful and rich persons in this world are forced to wear a mask.”**





## SCIENTOON

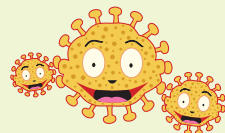
### Corona and Sleep

Dr K.K. Agarwal, former IMA Head, suggested that people may practice sleeping in prone position (lying on your abdomen). Doing this, the posterior and lateral sides of the lungs open fully and one gets proper oxygen and the lungs function better. He also suggested that if you have COVID-19 and you sleep in this position, there will be no need for ventilator. He points out, all animals sleep on their belly. One research paper suggested that for management of ARDS (acute respiratory distress syndrome) patients, prone position can be used as an adjuvant therapy for improving ventilation in these patients.

**Website:**

[https://youtu.be?XNOM8oqC\\_sk](https://youtu.be?XNOM8oqC_sk)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7158870/>



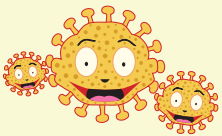
Pradeep

**“Sir, I am exactly 1 meter away from you! Look at me! Check my status in Aarogya Setu App, it is showing ‘Safe’. I am also wearing a mask, but where is your mask?”**



**SCIENTOON**

.....together we can  
conquer CORONA!



## ABOUT THE AUTHOR / SCIENTOONIST



### PRADEEP KUMAR SRIVASTAVA

A scientist by profession, Dr Pradeep Kumar Srivastava is a former Dy. Director (Senior Principal Scientist) in the Medicinal and Process Chemistry Division of CSIR-Central Drug Research Institute, Lucknow. He did M.Sc. in Organic Chemistry and Ph.D. from Kanpur University. He has an experience of more than 36 years of R&D in the area of synthetic and natural product chemistry. His area of work had been technology development of various drugs and drug intermediates and latest being technology development for the production of a drug from turmeric for brain stroke.

He is the **first person in the world** to start a novel concept called “**SCIENTOONS**” a new class of cartoons, which are cartoons based on science. He is well known as father of **SCIENTOONICS**, a new branch of science communication. He has delivered more than 1326 invited lectures so far in India, Nepal, Bhutan, Thailand, Singapore, Hong Kong, Turkey, China, Portugal, Germany, Sweden, Spain, France, Ukraine, Australia, South Africa, Brazil, USA and Caribbean countries on more than 31 different topics to school children, school teachers, scientists/researchers, medical doctors, lecturers/professors, Army and Air Force personnel, social club members like Rotary Club, Lions Club, Jaycees Club, Railway officers, Bank officers, Government officers/ground water experts, science journalists/media persons, computer professionals, prisoners, IAS, IPS, IFS, and IRTS.

Dr Srivastava has also coined these terms: SCIENTOONS and later a new branch of science called SCIENTOONICS, Radio SCIENTOONS, Puppet SCIENTOONS, Postcard SCIENTOONS and Awadhi SCIENTOONS - Scientoons

in Awadhi language. He has also appeared in many television programmes on scientoons aired by Virginia 13-WSET TV, USA, D TV Dubai, DD National, DD News, Republic TV, Republic Baharat TV, Aaj Tak, Star News, Sahara Samay, Rajay Sabha TV, Nepal TV, News 18, News 24, Zee News and many others including BBC Radio, London; Lotus Radio, South Africa; and many Indian FM radio channels.

He is the recipient of most prestigious International Award “**THE OUTSTANDING YOUNG PERSON OF THE WORLD**” (1990) award given by JUNIOR CHAMBER INTERNATIONAL (USA) to 10 selected persons of the world annually. Past Recipients of this award include former US President John F. Kennedy, Richard Nixon, Dr. Henry Kissinger, Jackie Chan and many more.

He is also the recipient of “**THE OUTSTANDING YOUNG PERSON OF INDIA**” (1990) award given by Indian Junior Chamber (past winners include Sunil Gavaskar, Ravi Shastri, P.T. Usha, Pankaj Udhas, Sudha Chandran); “**NATIONAL AWARD FOR SCIENCE WRITING**” by Indian Science Writers Association (ISWA), New Delhi; and “**SILVER MEDAL**” for the best lecture in the Asian Conference held at National University of Singapore, Singapore.

Dr Srivastava is the International Brand Ambassador of Singapore-based magazine “The Young Scientist” which is read by more than 100,000 children in Japan, Hong Kong, Philippines, Thailand, Singapore and Malaysia and India. American Chemical Society (ACS), USA has selected him as ACS Chemistry Ambassador in the International Year of Chemistry.

He has authored a book - “**Scientoonic Tel Tale of Genome and DNA**” co-authored with Dr Lalji Singh and Dr M W Pandit, (CCMB, Hyderabad).

He has been associated as Jury Member with various editions of National and International Science Film Festival of India, Vigyan Prasar and National Akashwani Annual National Awards 2016, All India Radio. He is member of International Society of Bionic Engineering, China; International Association for Media and Communication Research (IAMCR), Canada; Hands on Science Network, Portugal; and Public Communication of Science and Technology Network, PCST, USA.

## PROFILE OF OTHER CONTRIBUTORS



### VISHAL MULIYA

Vishal Muliya, a Biology teacher by profession, has been creating scientoons since 2014 for developing scientific temper among science enthusiasts and common people. His scientoons are regularly published in various magazines and journals and social media platforms. He has been making scientoons based on the latest research in the field of science. He has judged several scientoon competitions and delivered lecture on scientoon. He also publishes interesting scientific facts and figures on his YouTube channel “Vigyan with Vishal Muliya”. He has authored 7 publications.



### DA COSTA MARIA SCIMRAN BLOSSOM

Maria S.B. Da Costa is currently pursuing BSc Biotechnology at Parvatibai Chowgule College of Arts and Science. As a kid she liked cartoons and was passionate about science. Naturally, she took up scientoon to propagate scientific ideas and make people aware about topics like the COVID-19 pandemic. In future she wishes to work on issues like Human Rights, Animal rights and Environmental problems.



### LAKIESHA INACIA COELHO E COSTA

Lakiesha Inacia Coelho E Costa is currently pursuing BSc Biotechnology in Parvatibai Chowgule College of Arts and Science, Margao, Goa. With the help of her creative skills she makes scientoons to explain scientific concepts and theories and thereby contributing to the society.



### PRATHAMESH PUNDALIK SHETGAONKAR

Prathamesh Pundalik Shetgaonkar is a student of BSc Biotechnology at Parvatibai Chowgule College of Arts and Science, Goa. He has a keen interest in biology and virology and loves combining it with technology. He wishes to use scientoons to make people aware and understand scientific concepts in an innovative and interesting way and make learning fun for everyone.



### PRIYANKA SHANKE

Priyanka Shanke is pursuing BSc Biotechnology at the Parvatibai Chowgule College of Arts, Margao, Goa. She is deeply interested in molecular biology and food technology and intends to deliver scientific information with the help of scientoons and contribute positively for the betterment of the society.



### SAMRADNI ROHIT PAIGANKAR

Samradni Rohit Paigankar is studying BSc Biotechnology at the Parvatibai Chowgule College of Arts and Science. With her innate interest in novel use of technology she loves mixing arts and science in her scientoons to spread awareness.



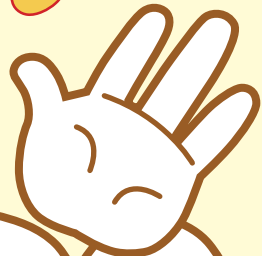
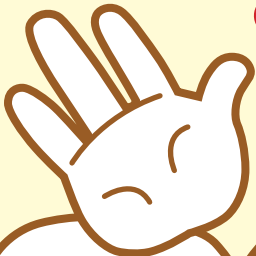
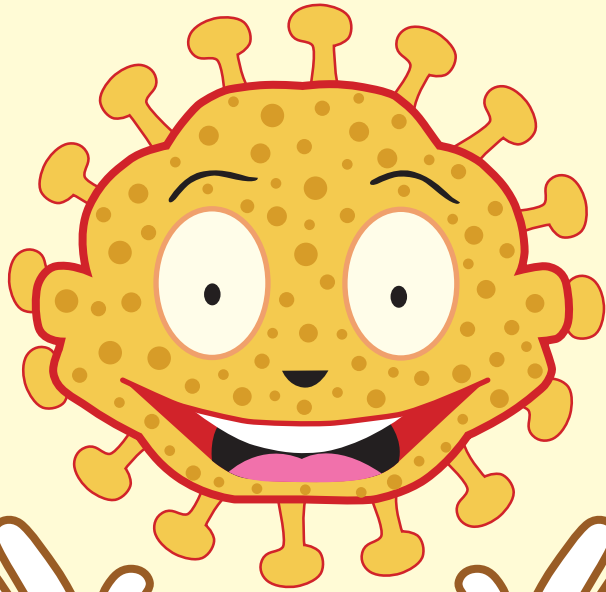
### BHOMKAR SHREESIDDHI VINOD

Shreesiddhi Bhomkar is studying BSc Biotechnology at the Parvatibai Chowgule College of Arts and Science in Margao, Goa. She loves studying birds and is interested in nature photography. With scientoons she wishes to create awareness among people on science and nature. Her goal in life is to create a better environment for the future generations and to minimize destruction of nature.



### SELCEA SAVIA D'COSTA

Selcea Savia D'Costa is currently pursuing BSc Biotechnology at Parvatibai Chowgule College of Arts and Science. With her scientoons she wishes to motivate students on various tenets of science and technology and make learning a fun-filled activity.



**TATA**

## Scientoons

It is said that a picture is worth a thousand word. Cartoons are a combination of caricature and satire. When the subject of the cartoon is science, it is called science cartoons. SCIENTOONS are a new class of science cartoons that not only make you laugh but also provide information about new researches, subjects and concepts in a simple, understandable and interesting way. This title has selected scientoons to present complicated information on SARS-CoV-2 in a manner that can be easily comprehended by common people. We hope this would ensure propagation of right information, dispel myths and rumours and inform people on following safe protocols to save themselves and the community at large.

## About Vigyan Prasar

Vigyan Prasar is an autonomous organisation of the Department of Science & Technology, Government of India. Since its inception in 1989, Vigyan Prasar has been engaged in science & technology-related communication, popularization and its extension. Vigyan Prasar, thus, continues to attend to various societal needs related to the creation & spread of scientific temper and rationality. Vigyan Prasar has produced more than 300 titles so far. It has produced more than 500 video films with more than two dozen DIY kits. Its foray into various Indian languages, a recent effort, has thus, enhanced its presence nation-wide.



### Vigyan Prasar

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[www.vigyanprasar.gov.in](http://www.vigyanprasar.gov.in)



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