

# THE LAB CYCLE

ESCO SCIENTIFIC | QUARTERLY NEWSLETTER | ISSUE 2 | JULY 2020

## SCIENCE SPEAKS

### Together in the *New Normal*

The human population has a long history of battling with emerging infectious diseases. Despite the advancement in technology at present times, there still is no tool to prevent the arising of disease outbreaks. While efforts to develop a vaccine for COVID-19 are in progress and the timeline being indefinite, the financial pressure to save the economy continues to build up. To mitigate the economic impact, lockdown is lifted on most countries and citizens are now out and about with the new normal. *Continue at page 2.*

### Braving the Path to Recovery

The COVID-19 pandemic has changed the course of human history and is considered as the most crucial global health calamity of the century. Within a couple of months, it has rapidly spread to over 200 countries. According to the report of WHO, there have been 14,348,858 confirmed cases and 603,691 reported deaths throughout the world as of July 20, 2020. Until now, there is no report of any approved antiviral drugs or vaccines that are effective against SARS-CoV-2. *Continue at page 4.*

## IN THE BLUELIGHT

### COVID-19 Testing and Good Microbiological Practice and Procedure (GMPP)

According to the Centers for Disease Control and Prevention (CDC), there are two kinds of tests available for COVID-19: viral test and antibody test. The viral or molecular test determines if a patient is actively infected with SARS-CoV-2, samples are collected through nasopharyngeal swabbing. On the other hand, the antibody or serology test also known as test for past infection, reveals if a patient has been exposed to the virus through blood samples. *Continue at page 6.*

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# Together in the New Normal

The human population has a long history of battling with emerging infectious diseases. Despite the advancement in technology at present times, there still is no tool to prevent the arising of disease outbreaks. While efforts to develop a vaccine for COVID-19 are in progress and the timeline being indefinite, the financial pressure to save the economy continues to build up. To mitigate the economic impact, lockdown is lifted on most countries and citizens are now out and about with the new normal.

According to Dr. Poonam Khetrpal Singh, Regional Director, WHO South-East Asia, countries in the region should keep on taking evidence-informed action and conducting careful risk assessments while winding back public health and social measure.

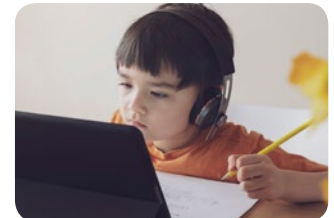
The term “new normal” is defined as the new way of living and going about our daily lives, work, and interactions with other people while adhering to public health measures recommended by designated local health authorities. However, the strategies in every locality differ. The hot-spots and clusters, capacity of healthcare systems and responders to find, isolate, and care for cases, and quarantine contacts are considered in coming up with guidelines. *(Related article: Trace, Test, and Treat Platform of Esco on page 10)*

As we transition from months of lockdown to the new normal, here are the changes we may see:



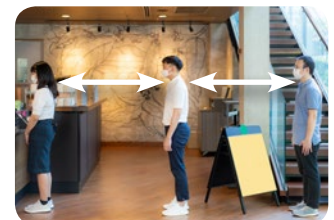
**Mask is a must.** Contagious respiratory diseases including COVID-19 are spread through aerosols. The wearing of mask reduces the risk of spreading the virus. It helps protect a healthy person from being infected or prevents onward transmission by an infected individual.

**Online learning at home.** More than 1.2 billion children in 186 countries are affected by school closures because of the pandemic. What was deemed to be a dilemma became an opportunity for e-learning to rise, wherein teachers use digital platforms to disseminate knowledge remotely. Though in countries where internet and hi-tech devices are inadequate, this option remains to be a great challenge.



**A surge in E-commerce.** The closure of physical stores resulted in the change of consumer's procurement behavior. Transactions, when possible, are now done online. Since it eliminates the effort to go out, online shopping has been a safe and efficient option

**Social distance maintained.** Markings of various shapes and colors are found on streets, supermarkets, restaurants, transportation facilities, and many establishments. They oblige people to maintain a safe distance from one another to limit the risk of disease transmission.



**Urban agriculture is in.** People started to grow a steady supply of fresh produce in their homes. Not only does it help suffice the nutritional needs, but it also helps alleviate expenses rationed for food.



We, at Esco, are no exemption to the change. Some office employees are working remotely in the safety of their homes due to the temporary closure of physical offices. And because of the continuous demand for our laboratory equipment, in aid of the pandemic, our factory personnel continue to operate. They abide by the stringent protocols designed by our safety officers to keep up a COVID-19-free work environment.



*Frequent sanitation of walkways, doors, and surfaces.*



*Physical distancing is observed.*



*Regular temperature monitoring and hand sanitizing.*



*Employees always wear mask.*

Together with the whole world, Esco ventures into the new normal. And while we continue to adapt to change, our mission to provide enabling technologies to support the healthcare industry stands firm.

*References:*

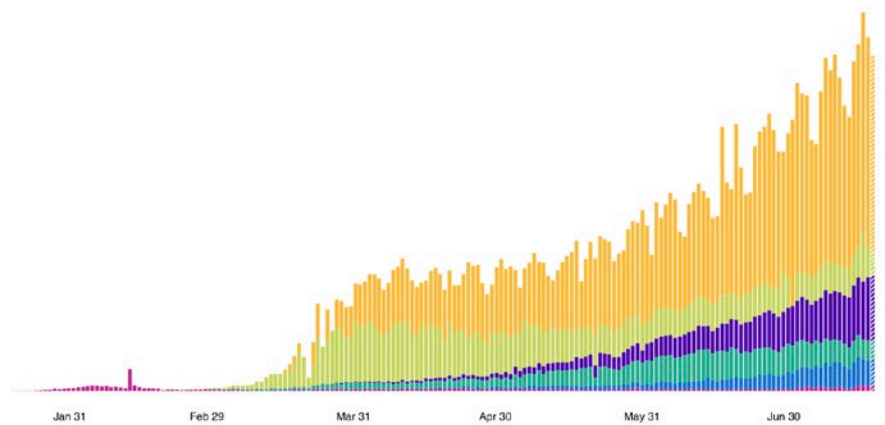
- [1] WHO. May 2020. Local epidemiology should guide focused action in 'new normal' COVID-19 world. <https://www.who.int/southeastasia/news/detail/15-05-2020-local-epidemiology-should-guide-focused-action-in-new-normal-covid-19-world>
- [2] Mirafior, M. May 2020. Growing own food will be the 'new normal' after COVID-19. <https://business.mb.com.ph/2020/05/06/growingown-food-will-be-the-new-normal-after-covid-19/>
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- [5] Wold, S. May 2020. How Covid-19 has changed shopper behaviour. <https://www.marketingweek.com/how-covid-19-has-changed-shopper-behaviour>

# Braving the Path to Recovery

The COVID-19 pandemic has changed the course of human history and is considered as the most crucial global health calamity of the century. Within a couple of months, it has rapidly spread to over 200 countries. According to the report of WHO, there have been 14,348,858 confirmed cases (see figure 1) and 603,691 reported deaths throughout the world as of July 20, 2020. Until now, there is no report of any approved antiviral drugs or vaccines that are effective against SARS-CoV-2.

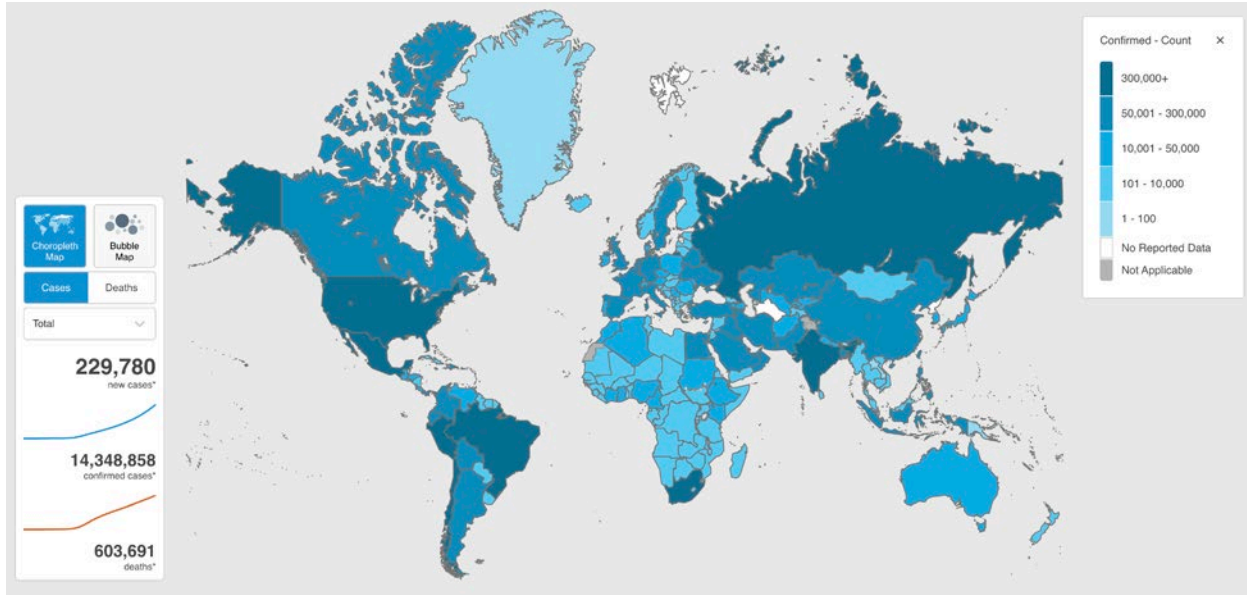
## Situation by WHO Region

Americas	7,584,675 confirmed
Europe	3,079,218 confirmed
South-East Asia	1,436,141 confirmed
Eastern Mediterranean	1,387,295 confirmed
Africa	597,223 confirmed
Western Pacific	263,565 confirmed



Source: World Health Organization  
 Data may be incomplete for the current day or week.

Figure 1. Comparison of confirmed cases per region. Source: World Health Organization (As of July 20, 2020)

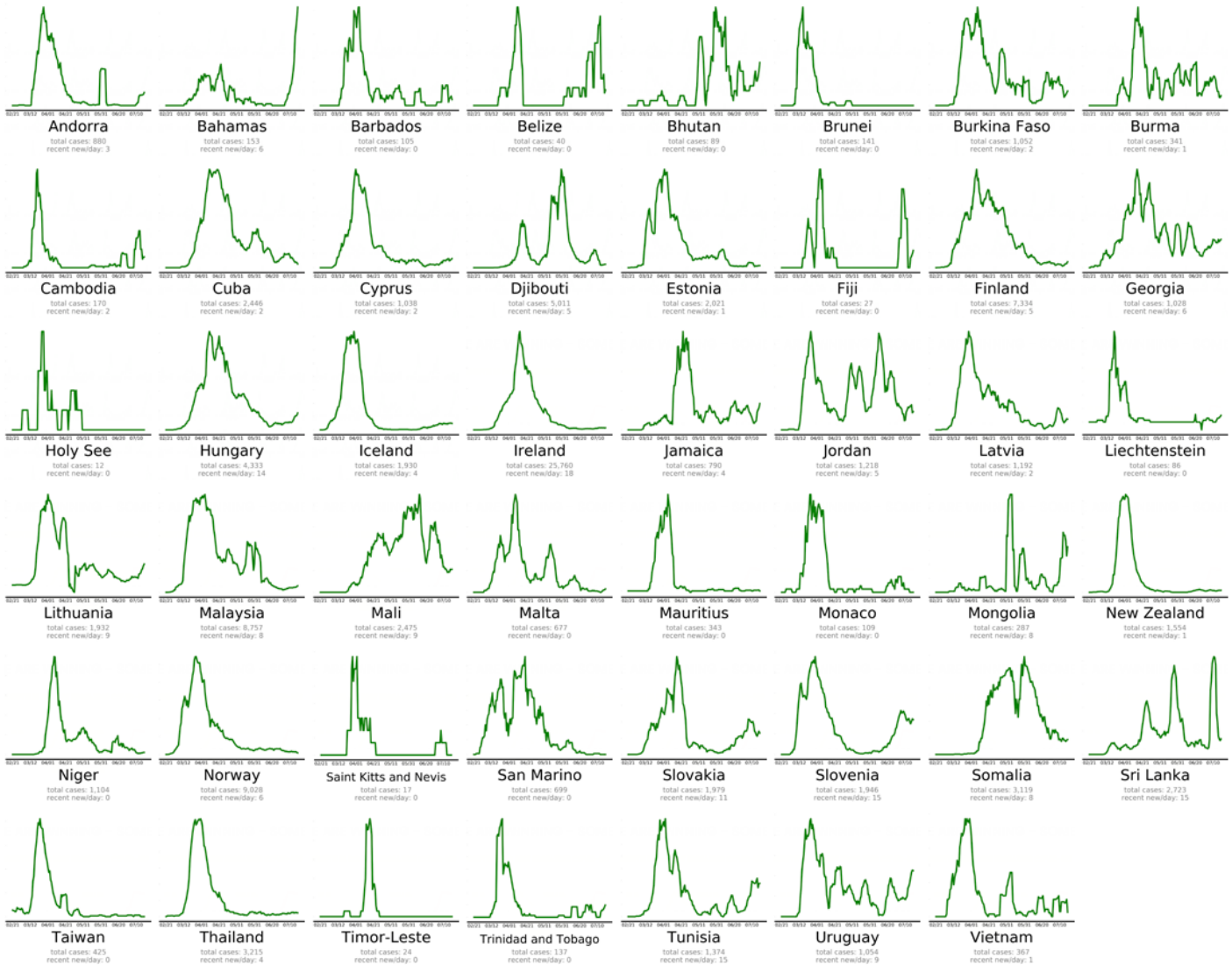


Globally, as of 3:37pm CEST, 20 July 2020, there have been 14,348,858 confirmed cases of COVID-19, including 603,691 deaths, reported to WHO.

Most of the affected nations are challenged to “flatten the curve”. Aside from the major public health crisis that the COVID-19 has caused, the global economy has been severely disrupted as well. According to Capital Economics, the global GDP growth will plunge down by 3% to 6% in 2020. The pandemic caused a global recession and about \$90 trillion economies were negatively affected beyond anything experienced in nearly a century.

Despite the ordeal, some countries have managed to slow down the rate of new cases and now on a path towards recovery. One notable country is New Zealand, known for having the longest streak of zero active cases. According to a modelling study published by the University of Otago, it is now very likely (above 95% chance) that New Zealand will completely eradicate the virus if there is no new notified case in a month.

Moreover, here are the epidemic curves of some countries with a declining COVID-19 growth rate.



Source: endcoronavirus.org (As of July 20, 2020)

As the world slowly starts to progress past the first phase of COVID-19, national governments will eventually resuscitate the economic activities as these are essential for people’s livelihood. However, these activities must be done under strict protocols and regulations to avoid disease transmission. (Related article: Together in the New Normal on page 2)

This pandemic could be far from over. Some parts of the world are doing better while some parts need to continue devising plans and strategies to effectively approach the pandemic. In line with WHO’s goal to provide aid and healthcare to those in need, Esco envisions a safer and healthier future by continuing to deliver enabling technologies and services all over the world, in the hope that one day the world will heal.

**Scan the QR code**  
to watch Esco’s response to  
COVID-19 pandemic.

References:

[1] WHO. June 2020. Rolling updates on coronavirus disease (COVID-19). <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>

[2] WHO. July 2020. WHO Coronavirus Disease (COVID-19) Dashboard. <https://covid19.who.int/>

[3] Congressional Research Service. June 2020. Global Economic Effects of COVID-19. <https://fas.org/sgp/crs/row/R46270.pdf>

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# COVID-19 Testing and Good Microbiological Practice and Procedure (GMPP)

According to the Centers for Disease Control and Prevention (CDC), there are two kinds of tests available for COVID-19: **viral test and antibody test**. The viral or molecular test determines if a patient is actively infected with SARS-CoV-2, samples are collected through nasopharyngeal swabbing. On the other hand, the antibody or serology test also known as test for past infection, reveals if a patient has been exposed to the virus through blood samples.

Most of the tests being rolled out against COVID-19 are viral tests based on reverse transcription. Collected samples should ideally be placed in a sterile transport tube immediately or on ice and special media to prevent degradation since the genetic material of SARS-CoV-2 is fragile and transient.

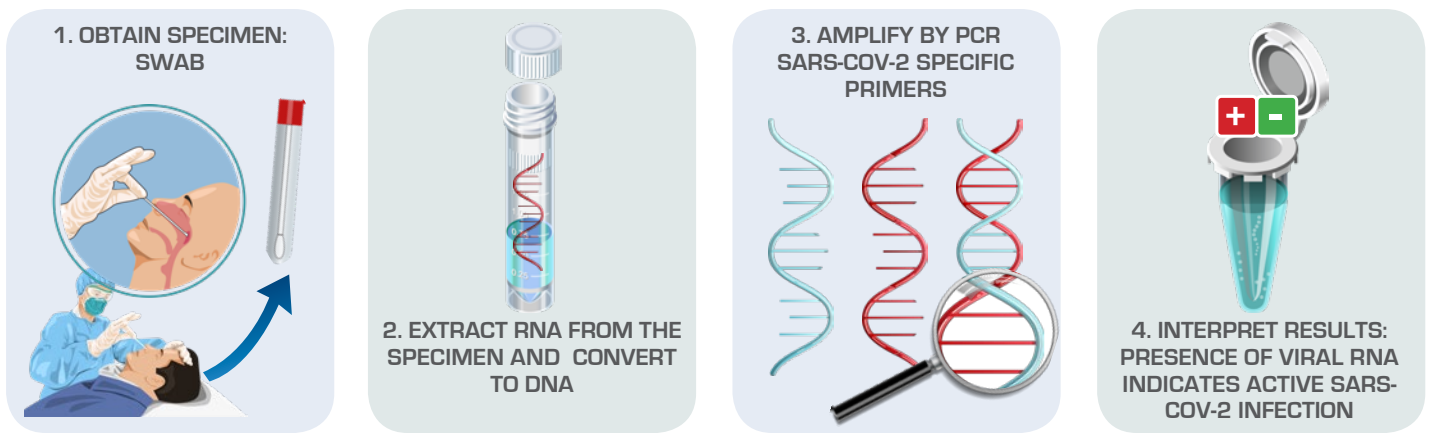


Figure 1. Viral Testing (Nucleic Acid Detection) Diagnose Active SARS-CoV-2 Infections  
Source: American Society for Microbiology

In contrast, the antibody test targets the immune response of infected person—detecting antibodies against the virus instead of detecting the viral genetic material. Although this test can give the result within an hour, most professionals claim that this type of test is not as accurate as viral testing. The problem is that antibodies only develop several weeks after an infection, which means that an antibody-based test is not recommended for early diagnosis and it might miss asymptomatic cases.

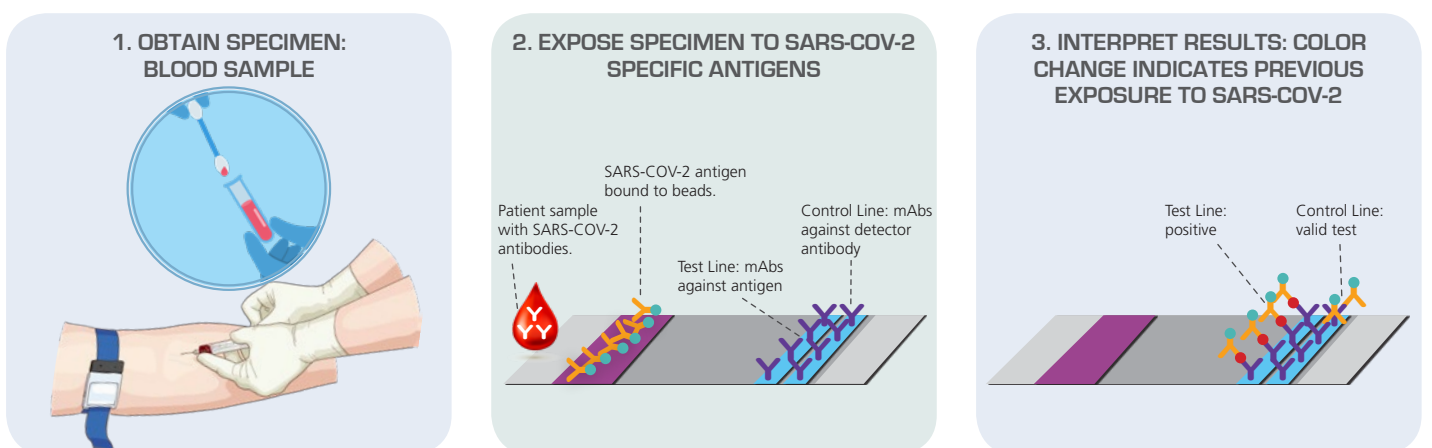


Figure 2. Antibody Test (Serology) Detect Immune Response to SARS-CoV-2 Exposure  
Source: American Society for Microbiology

Outlined below are the viral testing components for the CDC COVID-19 protocol “Centers for Disease Control and Prevention (CDC) 2019-Novel Coronavirus (2019-nCoV) Real-Time Reverse Transcriptase (RT)-PCR Diagnostic Panel”:

## Reagents and Supplies (Consumables)

Testing laboratories will need the following supplies dependent to the elements of the virus test kit provided by the CDC to run the COVID-19 test. To guarantee total compliance, secure that there will be no missing component.

- rRT-PCR primer/probe sets
- Positive template control
- RT-qPCR master mix
- Molecular grade water, nuclease-free
- Disposable powder-free gloves
- P2/P10, P200, and P1000 aerosol barrier tips
- Sterile, nuclease-free 1.5 mL micro centrifuge tubes
- 0.2 mL PCR reaction tube strips or 96-well real-time PCR reaction plates and optical 8-cap strips
- Laboratory marking pen
- Cooler racks for 1.5 micro centrifuge tubes and 96-well 0.2 mL PCR reaction tubes
- Racks for 1.5 ml micro centrifuge tubes
- Surface decontaminants

## Equipment

Aside from the consumables, laboratories must also create an environment conducive to monitoring and carrying out the viral test. Laboratories that routinely conduct polymerase chain reactions likely conform to the environmental conditions. If not, the following equipment are essential for successful input in the coronavirus test.

- **Vortex mixer**  
Efficiently mixes small volumes of liquids.
- **Micropipettes (2 or 10 µl, 200 µl, and 1000 µl)**  
Adjustable calibrated instruments used with disposable sterile tips to transfer small quantities of liquid.
- **Multichannel micropipettes (5-50 µl)**  
Adjustable calibrated instruments used with disposable sterile tips to transfer multiple samples of small quantities of liquid at a time.
- **Cold blocks: 2 x 96-well cold blocks**  
Secure sample tubes and maintain a cool temperature while reagents and samples are added.
- **Real-time PCR detection system**  
Combines adjustable automated PCR cycling with optical detection technology.

## EQUIPMENT AVAILABLE IN ESCO



### PCR Cabinet with UV lamp and Laminar flow (Class 100 HEPA filtered)

Minimizes contamination of nucleic acid samples.



### Micro centrifuge

Separate the components in micro centrifuge tubes or PCR plates by mass resulting to a nucleic acid pellet at the bottom of the tube.



### -20°C freezers and -70°C ultra-low temperature freezers; 4°C refrigerator

Three temperatures are specified for the viral test. Reagents are suggested to be stored at -20°C. Specimens can be stored at 4°C for up to 72 hours after collection, but they should be stored at -70°C or lower if a delay in extraction is expected. Extracted nucleic acids should be stored at -70°C or lower.



### Automated nucleic acid extraction system

Simplifies the extraction process to quickly purify nucleic acid from various sources.

On top of the specified list of consumables and equipment required, CDC emphasized that viral isolation from specimens collected from people suspected to have COVID-19 should be performed by staff trained in the relevant technical and safety procedures in BSL-2 and BSL-3 laboratories. Otherwise, clinical laboratories should not attempt to conduct the viral isolation. World Health Organization (WHO) also added that national guidelines on laboratory biosafety should be followed in all circumstances. Corresponding to this, WHO released Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with COVID-19 and discoursed the following **Good Microbiological Practice and Procedure (GMPP)** as a core requirement in non-propagative diagnostic laboratory work (e.g. sequencing, NAAT).

## Best Practices



- Do not store food or drink, or personal items like coats and bags in the lab. Eating, drinking, smoking, and/or applying cosmetics are also prohibited inside the laboratory.
- Do not put materials like gum and pens in the mouth while inside the lab.
- After handling any biological material, thoroughly wash hands preferably with warm running water and soap before leaving the laboratory.
- Do not place open flames or heat sources near flammable supplies and do not leave it unattended.
- Broken skin or any cuts should be covered prior to entering the laboratory.
- Supplies of lab equipment and consumables, including reagents, PPE, and disinfectants, should be sufficient and appropriate for the activities being executed prior to entry into the lab.
- To lessen the chance of accidents and incidents like spills, trips, or falls for lab personnel, supplies should be stored appropriately (per storage instructions) and safely.
- Proper labeling of all biological agents, chemicals, and radioactive materials should be followed.
- Barriers like plastic coverings should be used to protect written documents particularly those that may need to be removed from the laboratory.
- Work should be performed with care, in a timely manner, and without rushing. Avoid working when fatigued.
- Declutter materials unnecessary for the work procedure and keep the work area clean and tidy.

- Prohibit the use of earphones as it may distract personnel and halt equipment or facility alarms from being heard.
- Cover or remove any jewelry which may tear glove material, easily become contaminated or act as a catalyst for infection. Cleaning and decontamination of spectacles or jewelry should be considered if worn regularly.
- Avoid using mobile electronic devices especially when not required for the specific lab works or procedures being performed.
- Keep mobile electronic devices in areas where they could not easily become contaminated or act as a catalyst for infection. Use physical barriers or decontaminate the devices before leaving the lab if close proximity of such devices to biological agents is unavoidable.

## Technical Procedures



- When manipulating specimens, use good techniques to minimize the formation of aerosols and avoid the inhalation of biological agents.
- Avoid the ingestion of biological agents and contact with skin and eyes.
- When handling specimens, do not forget to wear disposable gloves at all times.
- Contact of gloved hands with the face should be avoided.
- During operation, protect or shield the mouth, eyes, and face where splashes may occur.
- To prevent injury and injection of biological agents, handle all sharps and needles carefully.
- Replace any glassware with plastic ware wherever possible.
- Use scissors with blunt or rounded ends in preference to those with pointed ends.
- Minimize the risk associated with the use of syringes or with needles and use ampoule openers for safe handling of ampoules.
- Never re-cap, clip or remove needles from disposable syringes.
- Puncture-proof or puncture-resistant containers fitted with sealed covers should be used in the disposal of any sharp materials like needles, needles combined with syringes, blades, and broken glass.



## Preventing Dispersal of Biological Agents

- Leak-proof containers with lids properly secured should be used in the disposal of specimens and cultures before disposal in dedicated waste containers.
- Consider opening tubes with disinfectant soaked pad/gauze.
- At the end of the work procedures and if any material is spilled or contaminated, decontaminate work surfaces with a suitable disinfectant.
- For effective complete inactivation, the disinfectant should be efficient against the pathogen being handled and is left in contact with infectious waste materials for sufficient time.

When these practices are strictly implemented and the right laboratory equipment are used, the likelihood of exposure of personnel when handling or manipulating biological agents will be minimized.

### References:

[1] Coronavirus Disease 2019 (COVID-19). May 2020. <https://www.cdc.gov/coronavirus/2019-ncov/index.html>

[2] Laboratory Biosafety Guidance Related to The Coronavirus Disease (COVID-19). February 2020. [https://www.who.int/docs/default-source/coronaviruse/laboratory-biosafety-novel-coronavirus-version-1-1.pdf?sfvrsn=912a9847\\_2](https://www.who.int/docs/default-source/coronaviruse/laboratory-biosafety-novel-coronavirus-version-1-1.pdf?sfvrsn=912a9847_2)

[3] American Society for Microbiology. April 2020. <https://asm.org/Articles/2020/April/COVID-19-Testing-FAQs>

# SAFETY STARTS WITH YOU.



# Flatten the Curve with Esco, your Partner in Biosafety

Various countries have been taking comprehensive approaches to fight COVID-19. Among those is an effective containment strategy that starts with the identification of infected individuals. This strategy is done by tracing suspected cases and those they have been in contact with, testing to confirm infection with the disease, and treatment in a designated medical center. Early detection through diagnostic testing is recommended to control the pandemic. Countries need to increase their testing capacity and acquire the necessary equipment and facilities to execute a large-scale testing strategy.

As part of our response to COVID-19, Esco Aster, the bioprocessing business unit of Esco Lifesciences Group which provides CDMO services and turnkey solutions for process development, designed and has been supplying vital equipment and facilities through its **'trace, test, and treat'** platform that promotes worldwide eradication of the virus. This end-to-end platform is intended to deliver accessible diagnostic testing, especially for communities that cannot readily acquire hospitals or testing centers. Through this solution, emerging outbreaks will be addressed quickly, and the spread of disease will be contained by reducing transmission and lowering the burden on centralized hospitals.



Esco Aster's end-to-end 'trace, test, and treat' platform consists of COVID-19 swab booths, mobile diagnostic test labs, isolation rooms/containers, and treatment centers.

## TRACE

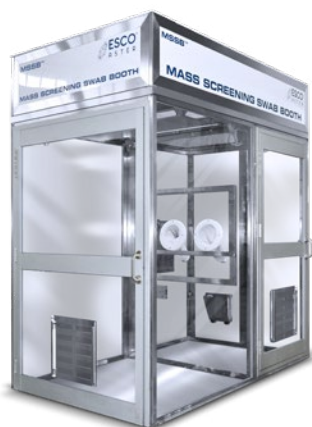
In the trace stage, Esco Aster designed multiple swab booths [Mass Screening Swab Booth™ (MSSB™), Infectious Disease Diagnostic Sampling Booth™ (IDDSB™), and Streamline Swab Booth™ (SSB™)] to safely take swab samples from asymptomatic and symptomatic suspected carriers of SARS-CoV-2, thus eliminating the risk of healthcare workers to contract the virus. The swab booths guarantee a safe and efficient way to enhance mass diagnosing of COVID-19 PUMs/PUIs. These provide enhanced protection for both the healthcare professional and the patient.

**Infectious Disease Diagnostic Sampling Booth™**



IDDSB™

**Mass Screening Swab Booth™**



MSSB™

**Streamline Swab Booth™**



SSB™ for HCW



SSB™ for PUI

COVID-19 Swab Booths



## TEST

Aster Xpress™, the mobile diagnostic test laboratory, is designed for virus-infected areas where specialized laboratory mechanical contractors are not present. These turnkey services make the diagnostic unit easy-to-deploy in situations where the medical provider desires to cover large areas and in situations where mobility of health services is desirable (through shifting demand). This mobile diagnostic lab features a complete set of equipment required in COVID-19 testing. It consists of a Class II BSC, centrifuge, laboratory refrigerator and freezer, PCR cabinet, and thermal cyclers.



*COVID-19 Mobile Diagnostic Labs and Containerized Isolation Medical Centers*

## TREAT

The innovations under this platform aim to reduce healthcare-associated infections (HAIs) and give turnkey solutions to increase both patient and hospital outcomes. The surge of individuals requiring treatment from healthcare professionals has brought about space saturation as appropriate and suitable facilities have been compromised due to high demand.

As a response, Esco Aster designed an Airborne Infection Isolation Room (AIIR) Technology which aims to provide proper isolation for COVID-19 positive individuals with varying viral shedding capacity while allowing optimal care and throughput. These isolation rooms can be retrofitted into hospital wards to convert normal beds into temporary isolation rooms with optional anterooms. These hospital wards can be returned to normal wards after the COVID-19 pandemic.

Different turnkey treatment center schemes are designed for pandemic preparedness and response to emerging healthcare needs. These provide a modular easy-to-assemble and disassemble treatment center for immediate relocation to the next cluster turnkey solution. Esco Aster Turnkey Treatment Center (TTC) total containment is provided to protect healthcare workers and to greatly reduce healthcare system exhaustion.



*Airborne Infection Isolation Room (AIIR) Technology*



*Esco Aster Turnkey Treatment Center*

### References:

- [1] Interim Guidelines for Biosafety and COVID-19. May 2020. <https://www.cdc.gov/coronavirus/2019-ncov/lab/lab-biosafety-guidelines.html>
- [2] Testing for COVID-19: A way to lift confinement restrictions. May 2020. <http://www.oecd.org/coronavirus/policy-responses/testing-for-covid-19-a-way-to-lift-confinement-restrictions-89756248/#section-d1e688>
- [3] Esco Aster End to End Trace, Test, and Treat Platform. 2020. <http://www.escoaster.com/covid-19-products/esco-aster-end-to-end-trace-test-and-treat-platform/#content>



# Esco goes ONLINE!

Esco free end-user seminars are now ONLINE!

Since the emergence of the pandemic, mass gatherings including seminars and conferences were advised to be postponed or canceled to avoid further transmission of the disease. During this time, this webinar will help make it more accessible to everyone and help cater more audiences all over the world.

As an alternative, Esco, along with our Laboratory Safety Specialists started conducting free online “Biosafety Awareness” webinar to various institutions worldwide. Every year, we persistently extend our efforts to effectively disseminate information to the key people in the life science industry and in the healthcare sectors as well. The webinar aims to foster safety awareness among laboratory and healthcare professionals. This year, our team prepared an informative online presentation with various topics relevant to biosafety and chemical safety. Enough time will also be allotted to raise questions regarding the discussion and the e-certificates will be provided afterwards.

Email us at [mail@escoglobal.com](mailto:mail@escoglobal.com) or contact your local Esco representative to schedule the webinar. Once registered, you will receive a confirmation email.

## TOPICS

### Biosafety Awareness

#### A. Introduction to Biosafety

- Biohazard
- Hazards in the Laboratory
- Classification of Biological Agents
- Biosafety Levels
- Controls and Hierarchy of Controls

#### B. Engineering Controls

- Biological Safety Cabinets
- Laminar Flow Cabinets

#### C. Working Safely with Biological Safety Cabinets and Laminar Flow Cabinets

- Common Users Mistake
- Placement Recommendation
- Maintenance Requirements

### Chemical Safety Awareness

#### A. Introduction to Chemical Safety

- Hazards in the Laboratory
- Health Effects Caused by Chemicals

#### B. Fume Hoods

- Types and Parts
- Importance
- Correct Fume Hood for Different Applications

#### C. Working Safely with Fume Hoods

- Common Users Mistake
- Introduction to Certification
- Placement Recommendation
- Maintenance Requirements

## WHO MAY ATTEND

- Laboratory Personnel and Technicians
- Laboratory Scientists
- Industrial Hygienists
- Facilities Managers
- Biosafety Officers
- Safety Officers
- Professionals
- Students



You can now acquire better overall understanding of safety cabinets and safer working techniques in the comfort of your home. Join our Esco Webinar! Expand your knowledge and earn a certificate for **FREE!**

Esco continues to keep its corporate responsibility to foster knowledge and spread safety awareness to all laboratory professionals across the world.

We hope to see you online!

# Esco Launches CelCulture® CO<sub>2</sub> Incubators with High-Temperature CO<sub>2</sub> Sensor

Esco introduces **CelCulture® CO<sub>2</sub> Incubators with High-Temperature CO<sub>2</sub> Sensor (CCL-HITEMP)**, ideal for growing and maintaining your cell culture. This new product is installed with CO<sub>2</sub> probe GMP231 based on Vaisala's patented CARBOCAP® technology and a new type of infrared (IR) light source that can withstand high-temperature decontamination. It is designed to provide accurate and reliable CO<sub>2</sub> level measurements. The CO<sub>2</sub> Probe GMP231 is installed on the top electrical panel of the unit, exposing only the high-temperature CO<sub>2</sub> sensor to the chamber's environment (see figure 1). This design allows decontamination procedure without the need to remove any component, thus, it saves time and reduces the risk of contamination.



Model: CCL-170\_--HITEMP

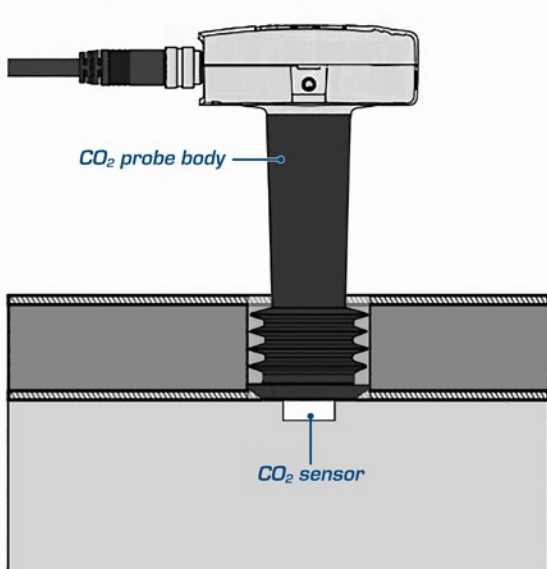


Figure 1. CO<sub>2</sub> Probe GMP231 installed on CCL-HITEMP unit

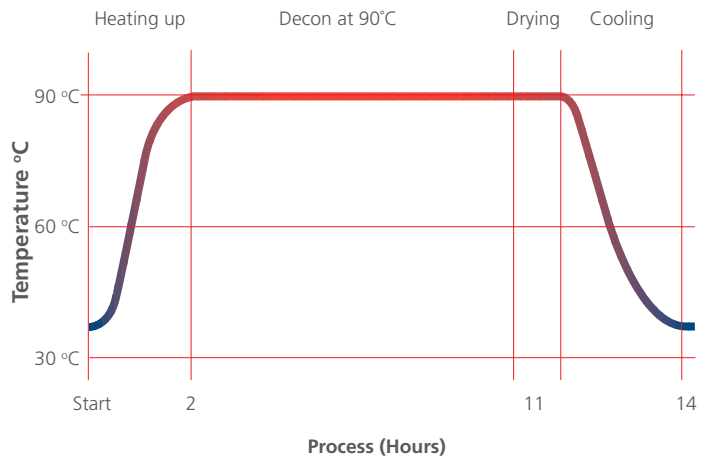


Figure 2. Graph of full cycle decontamination. 90°C moist heat decontamination cycle completes within 15 hours.

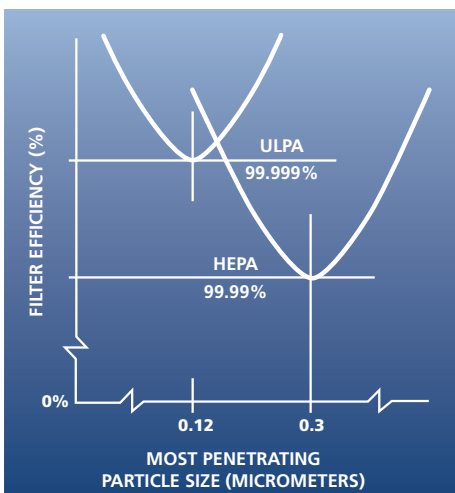


Figure 3. ULPA Filtration System. 10x more filtration efficiency than HEPA filter for a cleaner and safer chamber atmosphere.

CCL-HITEMP has automated SwiftCon™ 90°C moist heat decontamination cycle, proven to be effective in deactivating normally resistant fungi, bacterial spores, and vegetative cells. The full decontamination cycle is completed within 15 hours, leaving the chamber cool and dry at the end of the cycle (see figure 2).

The unit's chamber air is continuously filtered by ULPA filter (see figure 3) to keep the chamber at ISO Class 5 cleanliness. This ensures that contaminants are filtered and only clean air is recirculated. All gas injection lines are filtered via 0.2µ inlet filters to remove impurities and contaminants before being injected into the chamber (see figure 4).



Figure 4. Gas Injection Lines

The external body is made of electro-galvanized steel with silver-ion impregnated Isocide™ antimicrobial powder-coating which kills 99.9% of surface contaminants within 24-hours of exposure. The incubator chamber, perforated shelves, plenum, and humidity pan are constructed from stainless steel type 304 material which allows easy cleaning (see figure 5). The internal components can be easily removed without using any tools, providing convenience to the user.



Figure 5. Stainless Steel Interior Chamber of CCL-HITEMP



Heater foils directly mounted on the outer surfaces of the inner chamber help maintain a relatively uniform temperature with fast recovery time after door opening. A high-density insulation completely protects the heating elements. It is then surrounded by an air jacket which separates the chamber from the varying ambient conditions (see figure 6).

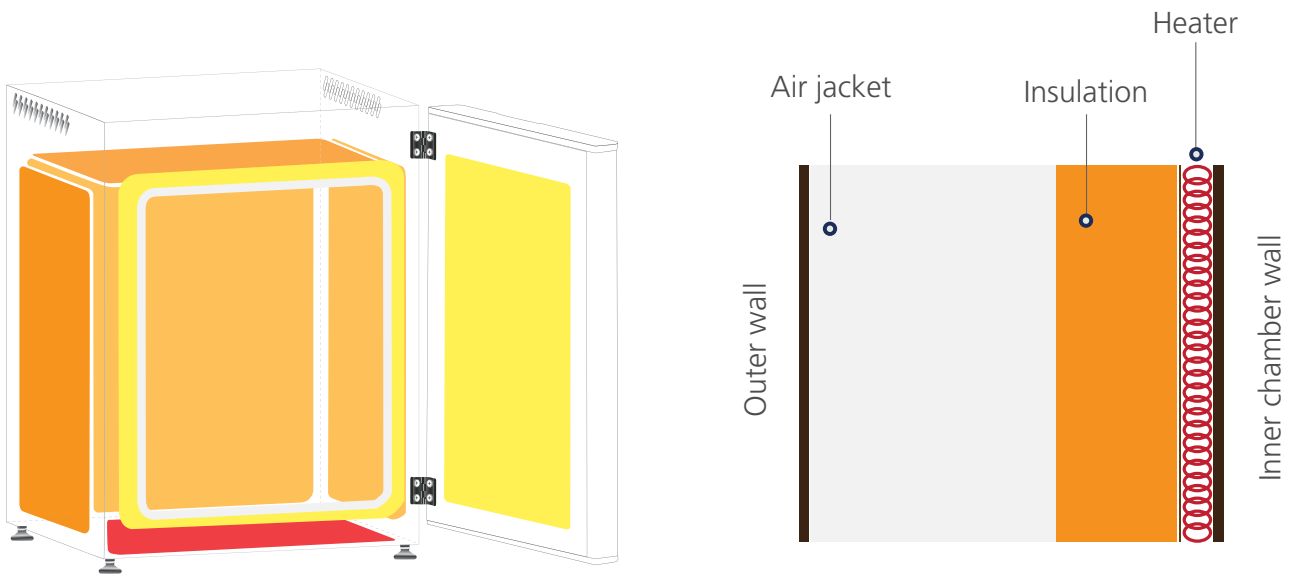


Figure 6. Direct Heat and Air Jacketed

## More New Features!

The Esco CelCulture® CO<sub>2</sub> Incubator with High-Temperature CO<sub>2</sub> Sensor is equipped with **Temperature Fail-Safe System**. Its over-temperature protection device prevents overshooting of temperature display to +0.4°C from the set point.

Another new feature for CCL-HITEMP is the **%CO<sub>2</sub> Failure Mode Protection** that prevents build-up of %CO<sub>2</sub> over set point in cases of CO<sub>2</sub> sensor defect.

Lastly, CCL-HITEMP's control system is installed with a **Watchdog System Failure Mode** that automatically resets the system in the unlikely event of system failure, preventing the controller from freezing.



# New Upgrade on OptiMair™ Vertical Laminar Flow Cabinet

Esco OptiMair™ Vertical Laminar Flow Cabinet bids the old Sentinel™ Delta microprocessor goodbye as it has a new controller—the Sentinel™ Silver Microprocessor Controller. With this upgrade, users can only expect an enhanced monitoring and controlling experience. This new feature is available for both 4 ft. and 6 ft. sizes.



Model: ACB-4E\_

## BEFORE



*Sentinel™ Delta Microprocessor Controller (obsolete)*

## NOW



*Sentinel™ Silver Microprocessor Controller*

- ✓ Supervises all cabinet functions with large display monitor and operational parameters.
- ✓ Centered and angled down placement for an effortless reach and viewing.
- ✓ Easy to navigate.



Moreover, here are the prime features of OptiMair™ Vertical Laminar Flow Cabinet:



1. German-made ebm-papst® permanently lubricated motor fan provides a smooth, quiet, and vibration-free operation. It has a compact design with a completely integrated assembly that optimizes motor cooling.
2. Equipped with a sliding sash made of 5 mm tempered glass with ergonomic handles as standard.
3. Worktop is raised at the front edge to contain any accidental liquid spills.
4. Up to ISO Class 3 containment enclosure compliant with ISO 14644-1 and has an ULPA filter with >99.999% efficiency at 0.1-0.2 µm.
5. AutoPurge™ slots designed to eliminate air turbulence and the possibility of dead air corners.
6. External surfaces are coated with Isocide™ antimicrobial coating which eliminates 99.9% of surface bacteria within 24 hours of exposure.



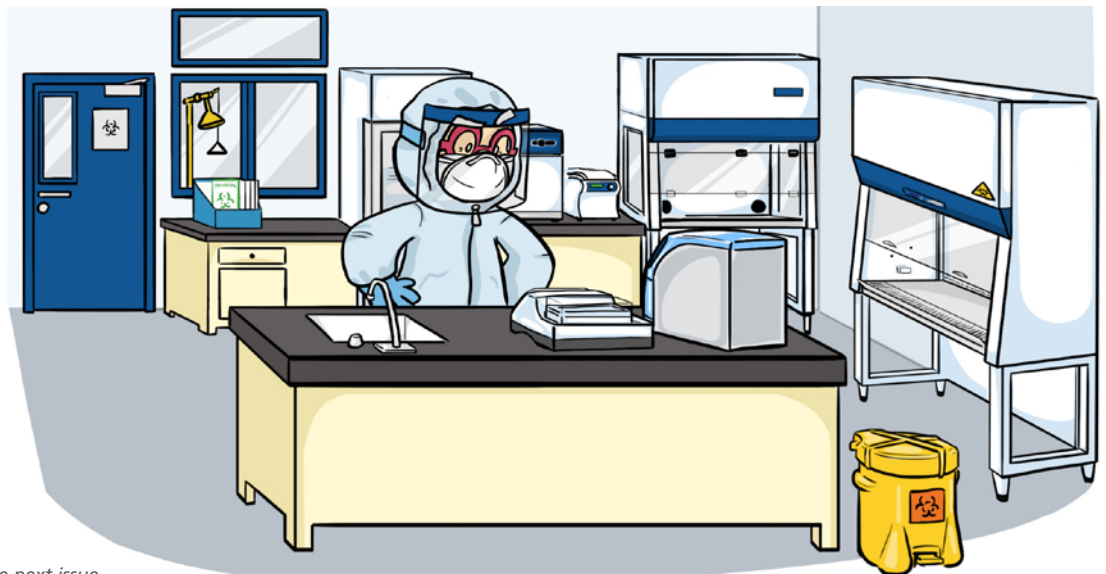
# Spot the Difference



Find out the **11 differences** from the illustrations below.



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_



Answers will be revealed on the next issue.

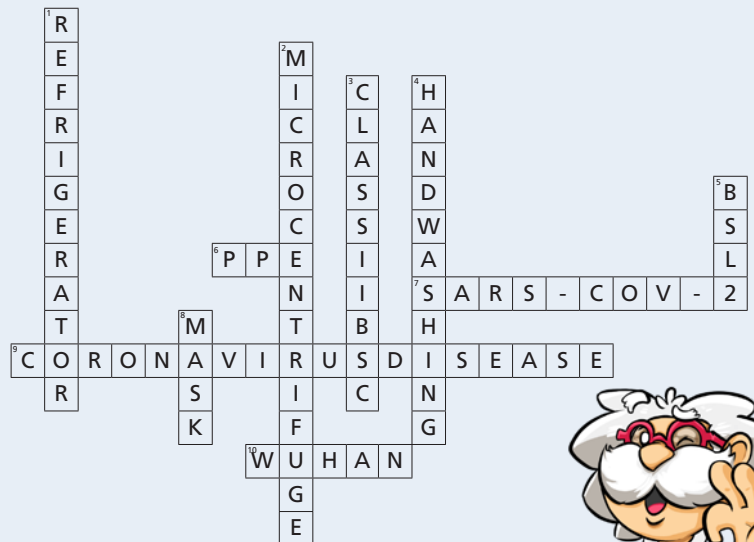
## Here is the solution to last issue's Pandemic Puzzle

**DOWN**

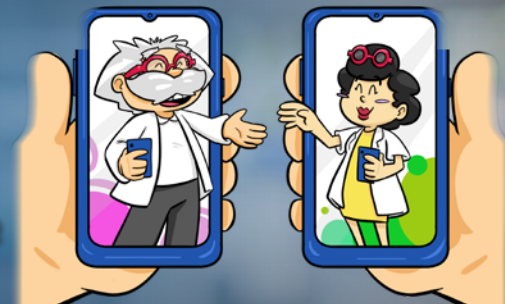
1. Equipment with a temp. range of 2-15°C used for sample storage
2. Equipment that spins small amount of liquids at high speed to separate components
3. Right type of biosafety cabinet to be used for handling COVID-19 test samples
4. According to the World Health Organization, \_\_\_\_\_ with soap and water is the most effective way to prevent COVID-19 spread
5. Biocontainment designation level for COVID-19 testing
8. Wear a \_\_\_\_\_ if coughing or sneezing

**ACROSS**

6. First line of protection against biohazards
7. Name of virus that causes the COVID-19
9. Official name of COVID-19
10. Province in China where the first case of the disease occurred



# The Quarantine Life: Tips and Things to Do at Home



The COVID-19 pandemic has practically changed the way we live every day. In these unprecedented times, we look at going into our usual activities in a new normal. Some people are fortunate to have a work from home setup while some are looking for ways to pass the time. Even if the lockdown has been lifted in some areas, these ideas may come in handy any time you find yourself stuck at home for an extended period for any reason. Stay safe, stay healthy, and stay productive with this thoughtful list!

## Explore your creativity.

Try painting or doodling. Challenge yourself to an art in times of quarantine. Draw inspiration from the things to be grateful for.



## Work on your green thumb.

Gardening is one of the healthiest hobbies you can have. Being around plants help people concentrate better at home.



## Read a book.

Reading improves your memory and alleviates depression while also giving you different perspectives about life and its little things.



## Do some cooking.

Learn and improve your kitchen skills whether it be cooking or baking.

This can relieve a lot of stress knowing that you can make people happy through food. It's more than just feeding yourself because it provides satisfaction, boosts self-confidence, and relationships.



## Create music.

Learn a new skill like playing musical instruments. Sing-along to your favorite beat. Dance like no one's watching.



## Stay physically active.

Regular exercise helps in weight management and makes your muscles and bones strong. It improves brain health, sleep, and the immune system.



## Meditate.

This aligns our inner being to have a sense of calm, peace, and balance that can benefit your emotional well-being and overall health.



The quarantine and lockdown restrictions may have brought mixed emotions and bittersweet moments to all of us, which are genuinely far-reaching. With that, no one should feel pressured or guilty about not following any of these tips. Respecting your time, your feelings, and your health should be the main priority. Do what you can, with what you have.

