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## **Question number:1**

### **Answer:**

#### **Laboratory protocols:**

Used primarily in the life sciences, protocols provide individual sets of instructions that allow scientists to recreate experiments in their own laboratory. They provide instructions for the design and implementation of experiments that include:

- the safety bias
- procedural equipment
- statistical methods
- reporting and troubleshooting standards for experiments

Some laboratory protocols are:

#### **Cold Spring Harbor Protocols**

An interdisciplinary journal providing a definitive source of research methods in cell, developmental and molecular biology, genetics, bioinformatics, protein science, computational biology, immunology, neuroscience and imaging. Each monthly issue details multiple essential methods—a mix of cutting-edge and well-established techniques.

#### **Current Protocols in Immunology**

A "best-practices" collection that provides comprehensive coverage of immunological methods from classic to the most cutting edge: the most sophisticated protocols in immunology today. Subscription supported by the Tulane Microbiology and Immunology Department. Via Wiley.

#### **Current Protocols in Microbiology**

Provides detailed, step-by-step instructions for analyzing bacteria, animal and plant viruses, fungi, protozoans and other microbes. It offers updated coverage of emerging technologies and concepts, such as biofilms, quorum sensing and quantitative PCR, as well as proteomic and genomic methods. Subscription supported by the Tulane Microbiology and Immunology Department. Via Wiley.

#### **Current Protocols in Molecular Biology**

Includes more than 1,000 procedures from hundreds of biologists at top laboratories around the globe; offers a range of basic methods for DNA preparation to advanced procedures for microarray analysis, chromatin assembly, and more. Covers emerging areas, including mouse phenotyping, DNA construction by recombination, and high-throughput sequencing.

## **Current Protocols in Mouse Biology**

Satisfies a great and growing need for a mouse protocol resource that covers all aspects of mouse biology under a "single roof". Readers will be able to find information that covers: the generation of mouse models; mouse husbandry, including the breeding and maintenance of colonies; clinical and molecular phenotyping of mice.

## **Laboratory safety importance:**

Lab safety is important because it keeps people from getting severely injured.

Proper lab rules are important because they keep people from getting hurt.

Lab safety is rules that are used in every lab to keep everyone safe.

If you do not follow the lab safety rules then you could get hurt.

To avoid contamination instruments must be sterilized

## **5 safety hazards found in the laboratory**

Chemical burns. Corrosive substances can break down or degrade a number of commonly used materials. ...

Heat burns. Bunsen burners and other heating devices are commonly used in the lab. ...

Eye Injuries. ...

Cuts from glassware. ...

Inhaling dangerous gases.

## **Basic Safety Rules**

Basic safety rules for laboratory conduct should be observed whenever working in a laboratory. Many of the most common safety rules are listed below.

- Know locations of laboratory safety showers, eyewashstations, and fire extinguishers. The safety equipment may be located in the hallway near the laboratory entrance.
- Know emergency exit routes.
- Avoid skin and eye contact with all chemicals.
- Minimize all chemical exposures.
- No horseplay will be tolerated.

- Assume that all chemicals of unknown toxicity are highly toxic.
- Post warning signs when unusual hazards, hazardous materials, hazardous equipment, or other special conditions are present.
- Avoid distracting or startling persons working in the laboratory.
- Use equipment only for its designated purpose.
- Combine reagents in their appropriate order, such as adding acid to water.
- Avoid adding solids to hot liquids.
- All laboratory personnel should place emphasis on safety and chemical hygiene at all times.
- Never leave containers of chemicals open.
- All containers must have appropriate labels. Unlabeled chemicals should never be used.
- Do not taste or intentionally sniff chemicals.
- Never consume and/or store food or beverages or apply cosmetics in areas where hazardous chemicals are used or stored.
- Do not use mouth suction for pipetting or starting a siphon.
- Wash exposed areas of the skin prior to leaving the laboratory.
- Long hair and loose clothing must be pulled back and secured from entanglement or potential capture.
- No contact lenses should be worn around hazardous chemicals – even when wearing safety glasses.
- Laboratory safety glasses or goggles should be worn in any area where chemicals are used or stored. They should also be worn any time there is a chance of splashes or particulates to enter the eye. Closed toe shoes will be worn at all times in the laboratory. Perforated shoes or sandals are not appropriate.
- Determine the potential hazards and appropriate safety precautions before beginning any work.
- Procedures should be developed that minimize the formation and dispersion of aerosols.
- If an unknown chemical is produced in the laboratory, the material should be considered hazardous.
- Do not pour chemicals down drains. Do NOT utilize the sewer for chemical waste disposal.
- Keep all sink traps (including cup sink traps and floor drains) filled with water by running water down the drain at least monthly.
- Do not utilize fume hoods for evaporations and disposal of volatile solvents.
- Perform work with hazardous chemicals in a properly working fume hood to reduce potential exposures.
- Avoid working alone in a building. Do not work alone in a laboratory if the procedures being conducted are hazardous.
- Laboratory employees should have access to a chemical inventory list, applicable SDSs, Department Laboratory Safety Manual, and relevant SOPs.
- Access to laboratories and support areas such as stockrooms, specialized laboratories, etc. should be limited to approved personnel only.

- All equipment should be regularly inspected for wear or deterioration.
- Equipment should be maintained according to the manufacturer's requirements and records of certification, maintenance, or repairs should be maintained for the life of the equipment.
- Designated and well-marked waste storage locations are necessary.
- No cell phone or ear phone usage in the active portion of the laboratories, or during experimental operations.
- Clothing made of synthetic fibers should not be worn while working with flammable liquids or when a fire hazard is present as these materials tend to melt and stick to exposed skin.
- Laboratory coats should not be stored in offices or break rooms as this spreads



contaminates to other areas.

- Computers and instrumentation should be labeled to indicate whether gloves should be worn or not. Inconsistent glove use around keyboards/keypads is a source of potential contamination.
- Avoid wearing jewelry in the lab as this can pose multiple safety hazards.

### **Laboratory Specific Safety Rules**

Safety rules for laboratory specific operations will be provided in appropriate laboratory SOPs



## **Question number:2**

### **Answer:**

### **Corona virus:**

### **History:**

Coronaviruses are a big family of different viruses. Some of them cause the common cold in people. Others infect animals, including bats, camels, and cattle. But how did SARS-CoV-2, the new coronavirus that causes COVID-19, come into being?

Here's what we know about the virus that was first detected in Wuhan, China, in late 2019 and has set off a global pandemic.

### **Where Did the Coronavirus Come From?**

Experts say SARS-CoV-2 originated in bats. That's also how the coronaviruses behind Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) got started.

SARS-CoV-2 made the jump to humans at one of Wuhan's open-air "wet markets." They're where customers buy fresh meat and fish, including animals that are killed on the spot.

Some wet markets sell wild or banned species like cobras, wild boars, and raccoon dogs. Crowded conditions can let viruses from different animals swap genes. Sometimes the virus changes so much it can start to infect and spread among people.

Still, the Wuhan market didn't sell bats at the time of the outbreak. That's why early suspicion also fell on pangolins, also called scaly anteaters, which are sold illegally in some markets in China. Some coronaviruses that infect pangolins are similar to SARS-CoV-2.

As SARS-CoV-2 spread both inside and outside China, it infected people who have had no direct contact with animals. That meant the virus is transmitted from one human to another. It's now spreading in the U.S. and around the globe, meaning that people are unwittingly catching and passing on the coronavirus. This growing worldwide transmission is what is now a pandemic.

Corona virus affect globally. More than 180 countries are affected by corona virus. These countries face a lot of troubles. They affected medically, economically, socially and also affect by education.

**STATISTICAL DATA OF COVID-19 AFFECTEES:**

<b>Countries affected by COVID-19</b>	<b>Confirmed cases</b>	<b>Deaths</b>	<b>Recovered</b>
Pakistan	246,351	5,123	152,134
India	844,777	22,589	532,532
Iran	255,117	12,635	217,666
China	83,587	4,634	78,623
Italy	242,639	34938	194,273
Germany	199,588	9130	184,500