

Instructional Terminology

Bioscience - 41.0100.00



DOMAIN 1: Basic Lab Skills (Standards 8, 9, 11, & 14)

Standard 8: DEMONSTRATE BASIC LAB SKILLS IN THE USE OF EQUIPMENT AND INSTRUMENTATION

Measurement Criteria: 8.2

Beaker- Cylindrical glassware used for preparing solutions

Flask- Glassware with a narrow opening, usually conical shaped

Graduated Cylinder- Narrow cylindrical glassware used to accurately measure a volume in milliliters

Hot Hands- A silicone rubber cover used to protect hands when handling hot or cold items

Media Bottles- Glass bottle with lid that is used to store media such as LB broth

Test Tubes- Narrow glass tube closed at one end

Measurement Criteria: 8.3

Analytical Balance - A sensitive device that determines the mass of a substance in milligrams

Level- Adjusting the feet of a balance to ensure the base is on a

horizontal plane which allows for the balance to accurately determine mass

Table Top Balance - A device that determines the mass of a substance in grams

Tare/Zero - Calibrating a balance to deduct the weight of the measurement container

Weigh Paper - A thin paper used to hold a substance when being massed on a balance

Weigh Boat - A plastic bowl shaped container that holds a substance when being massed on a balance

Measurement Criteria: 8.4

1st Stop- the position the micropipette plunger is depressed to in order to dispense the specified volume of air in order to fill the tip with that volume of liquid when the plunger is released

2nd Stop- the position the micropipette plunger is depressed to in order to dispense the liquid in the tip

Aliquot - To distribute a specific volume of liquid

Micropipette - An instrument used to measure and deliver very small volumes; usually less than 1 mL

Pipettor - An instrument that can be set to draw up a specific

This Instructional Terminology is aligned to both the Program Blueprint for Instruction & Assessment as well as the Instructional Framework. It corresponds with the technical standards adopted February 2015. Use of content-specific terminology is provided to help identify consistent definitions.

volume (in milliliters) of liquid when used in conjunction with a serological pipet

Pump- An instrument used draw up a liquid into a serological pipet

Serological Pipet - A thin graduated tube of glass or plastic used to measure milliliter volumes of liquid

Tip- a single use (disposable) plastic end added to a micropipette, used to avoid cross contamination

Measurement Criteria: 8.5

Absorbance - A measurement of the amount of light that does not pass through (is absorbed by) a sample (unit is au - absorbance unit)

Blank - A solution of solvent or diluent that does not contain the analyte, used to zero a spectrophotometer

Concentration - The amount of solute as a proportion in a solution (ex: mg/mL, g/L, molarity, %)

Cuvette- the container that holds a sample for analysis in a spectrophotometer

Lambda (λ)- the greek symbol used to represent the wavelength

λ_{\max} (lambda max) - The wavelength at which the maximum amount of light (energy) is absorbed by a solution

Spectrophotometer- a laboratory instrument that measures that amount of light transmitted through a sample relative to wavelength

Transmittance - A measurement of the amount of light that

passes through a sample (unit is %)

UV Spectrophotometer - Measures the amount of light passing (transmitting) through a sample from 180-380nm, utilized to determine concentration

Visible Spectrophotometer - Measures the amount of light passing (transmitting) through a sample from 380-750nm, utilized to determine concentration

Wavelength - Distance between peaks or valleys in a light wave

Measurement Criteria: 8.6

Centrifuge - A piece of equipment that spins samples at a high rate of rotation in order to separate solids from liquids or liquids of differing densities

Pellet - The liquid remaining of the tube after it has been centrifuged

Supernatant - The liquid above the solid mass that forms at the bottom of a tube after it has been centrifuged

Measurement Criteria: 8.7

Autoclave - A machine used to sterilize lab equipment and media using high temperatures and pressure

Sterilize- A process to destroy microorganisms

Measurement Criteria: 8.8

Biological Safety Cabinet - An enclosed, ventilated workspace for safely of user working with materials contaminated with (or potentially contaminated with) pathogens

Fume Hood - A cabinet that uses negative airflow to draw fumes and vapors away from the user

Laminar Flow Hood - A cabinet in which air is drawn through a HEPA filter and blown in parallel (horizontal) flow toward the user in order to minimize sample contamination

Measurement Criteria: 8.9

Biological Stain- Dye that is used to better visualize the features of a microscopic specimen

Cover Slip- Small square of glass or plastic used to cover a specimen on a microscope slide

Magnification- How much a microscope increases the image in proportion to the actual size

Objective- the lens of the microscope that produces the desired magnification of the specimen

Resolution- The ability of a microscope to distinguish two separate points of a specimen in the image; affects image clarity

Slide - Rectangular piece of glass used to hold a microscope specimen

Measurement Criteria: 8.10

Decolorizer- An alcohol that dehydrates the cell wall of bacteria to assist with removal of a stain

Differential Staining - A specific type of biological process that often uses more than one type of reagent. It is used to distinguish one specimen from another; example: Gram Stain

Gram Negative- bacteria that appears red/pink after gram staining

occurs because the primary stain is washed away due to minimal layers of peptidoglycan in the cell wall

Gram Staining- A preliminary identification technique to identify bacteria as gram positive or gram negative

Gram Positive- Bacteria that appears red/pink after gram staining occurs because the primary stain is washed away due to minimal layers of peptidoglycan in the cell wall

Mordant- A reagent that combines with a stain to fix (adhere); also known as a fixative

Primary Stain- The initial stain in a staining process

Secondary Stain- The stain that follows the primary stain in a staining process

Simple Stain - Use of only one stain to identify organisms or their defining structures.

Measurement Criteria: 8.11

Hot Plate/Stirrer - An instrument that has separate operations to heat, stir, or do both simultaneously

Stir Bar - A plastic covered magnet placed into a solution on a hot plate stirrer to help mix the solution when the stir feature is turned on

Measurement Criteria: 8.12

Incubator - A piece of equipment that can be set to a specific temperature in order to culture organisms

Shaking Incubator - A piece of equipment that can be set to a specific temperature and rotational speed in order to culture

organisms in liquid media, usually bacteria

Measurement Criteria: 8.13

Heat Block- A piece of equipment containing an aluminum block that can be set to a specific temperature in order to heat a sample

Water Bath - A piece of equipment filled with water that can be set to a specific temperature used to heat a sample

Measurement Criteria: 8.14

Acid - A solution with a pH below 7, having a high concentration of hydrogen ions than hydroxide ions

Base - A solution with a pH above 7, having a lower concentration of hydrogen ion than hydroxide ions

Buffer - A solution that resists a change in pH when an acid or base is added to it

Calibrate - Correlate instrument readings with those of a standard in order to ensure the instrument's accuracy

Logarithmic scale - A scale that each increase of 1 on the scale indicates a 10x increase in concentration, the pH scale is logarithmic

Neutral - A solution with a pH 7, having an equal concentration of hydrogen and hydroxide ions

pH - A measurement of the concentration of hydrogen ions in a solution

Measurement Criteria: 8.15

Agarose - A polysaccharide substance that makes up the gel for electrophoresis

Anode - An electrode that has a positive charge and is the source of electrons in an electrophoresis box

Band- A mass of DNA or protein in a gel after electrophoresis has occurred, only visible if a stain is used

Cathode - An electrode that has a negative charge and attracts the electrons in an electrophoresis box

Comb - A piece of plastic used to create wells in a gel

DNA Migration- The movement of a DNA away from the cathode (toward the anode) during electrophoresis

Electrophoresis- The use of electric current to separate molecules based on size and charge through a solid media, such as agarose or polyacrylamide

Electrophoresis Chamber - A container that transmits a controlled electric current through a solution in order to separate molecules located inside a gel

Gel tray - The plastic container where a gel is molded

Power Source - The device used to manipulate the electric current from an outlet in order to maintain a specified voltage in the electrophoresis chamber

Ladder/Standard/Marker - A sample of DNA or protein with known sizes, used to create a standard curve in order to determine the unknown size of DNA or protein samples

Loading Dye - A dye that increases the density of a DNA or protein

sample to help it fall into the well, also provides a visual (dye front) of a known fragment size to monitor DNA migration

PAGE (Polyacrylamide Gel Electrophoresis) - A technique that utilizes a vertical electrophoresis chamber to separate proteins by charge and size while the protein is in the native state

Pre-stain - Adding a stain to a sample or gel prior to electrophoresis (ex. syber green, ethidium bromide, EZ Vision) to allow visualization of samples

Post-stain - A stain a gel is soaked in after electrophoresis to allow visualization of bands (ex. Fast blast, coomassie blue, ethidium bromide)

SDS-PAGE- A technique that utilizes a vertical electrophoresis chamber to separate proteins by molecular while the protein is in a denatured state

Wells - Small divots in a gel into which samples are aliquoted for electrophoresis

Western Blot - A technique utilized to identify proteins from a gel by transferring the proteins to a membrane and using antibody binding to detect a specific protein

Measurement Criteria: 8.16

PCR (Polymerase Chain Reaction) - A technique used to amplify a segment of DNA into millions of copies of the same DNA sequence

Thermal Cycler - A piece of equipment used for PCR that rapidly repeatedly cycles through specific temperatures to amplify DNA

Measurement Criteria: 8.17

Affinity Chromatography - Separation of molecules based on specific interactions between: antigen and antibody, enzyme and substrate, or receptor and ligand

Column Chromatography - A method of separating molecules in a vertical chamber relying on gravity and molecular interaction

Elute - To remove a substance from a chromatography column by rinsing the column with a solvent

Elution - The process of separating one molecule from another by rinsing it with a solvent

Fraction - A sample collected during chromatography elution

Hydrophobic Interaction Chromatography (HIC) - Separation of molecules based on their hydrophobicity

Ion Exchange Chromatography - Separation of ions and polar molecules based on their affinity to an ion exchanger

Size Exclusion Chromatography - Column chromatography that separates molecules based on size using a resin substrate

Thin Layer Chromatography (TLC) - A technique that separates analytes in a solvent mixture onto TLC paper via capillary action

Standard 9: DEMONSTRATE MICROBIOLOGY SKILLS

Measurement Criteria: 9.2

Agar - A type of polysaccharide from algae used to solidify growth media

Broth - A liquid growth media

Media - A solid or liquid growth substance used for microbial cultures

Measurement Criteria: 9.3

CFU (colony forming unit) - A microbiology technique used to estimate the number of microorganisms in a sample

Culture (verb) - To maintain the conditions necessary for growth of an organism

Culture (noun) - The intentional growth of a microorganism in media, typically housed in a petri dish.

Inoculate - Process used to add microorganisms to a sterile medium

Propagate - To culture or grow up a sample of an organism

OD600 - Use of a spectrophotometer to on 600 nm to calculate the concentration of bacteria in a liquid culture

Streak - Technique used in microbiology to place bacteria on solid media often in a specific pattern for isolating colonies

Measurement Criteria: 9.4

Glycerol Stock - A type of lipid mixed with liquid cultures to create frozen stocks for long term storage

Liquid Nitrogen- Nitrogen in the liquid state utilized for long term storage in microbiology due to the low temperature

Slant - A bacterial culture made by streaking bacteria onto solid growth medium poured in a glass tube and solidified at an angle

Stab - A bacterial culture made by piercing solid growth medium with an inoculating needle poured in a glass tube

Measurement Criteria: 9.5

Pure Culture - a culture in which a single strain of bacteria is present

Measurement Criteria: 9.6

Transformation - (often bacterial transformation) A process used to incorporate new genes into an organism via plasmid uptake

Plasmid - A small, circular piece of DNA found in prokaryotes; often used in recombinant technology

Recombinant DNA - Novel DNA created by cutting and combining DNA from two or more sources

Measurement Criteria: 9.7

Sodium Hypochlorite- Bleach, a 10% bleach concentration is used to disinfect surfaces

Sterilize- A process to destroy microorganisms

Standard 11: DEMONSTRATE MATERIAL PREPARATION AND STORAGE

Measurement Criteria: 11.1

Buffer - A solution that resists a change in pH when an acid or base is added to it

Concentration - The amount of solute as a proportion in a solution

% M/V (Percent Mass Volume) - A type of concentration where the amount of mass is expressed as a percent of the total volume

M/V (Mass Volume) - A type of concentration where a specific amount (mass) is proportional to a volume. Ex: g/ mL, mg/ mL, or g/ L

Molarity - A type of concentration where the mass is expressed in moles per liter of volume (or a fraction of that unit)

Solute - The part of the solution that gets dissolved

Solution - A mixture of two or more substances where at least one solute is dissolved in a solvent

Solvent - The part of a solution that dissolves the solute

Measurement Criteria: 11.2

Diluent - The solvent used to dilute a solution

Dilution - A solution, or series of solutions that have a reduced concentration of solute

Serial Dilution - A series of dilutions in which each step is constant

Measurement Criteria: 11.3

Mole - 6.02×10^{23} atoms or molecules

Molar Mass - The mass (g) of one mole of an atom or molecule

Standard 14: DEMONSTRATE SCIENTIFIC MEASUREMENTS

Measurement Criteria: 14.1

Scientific Notation - A simplification of a very large or very small number by identifying a basic whole number and the magnitude of 10, (ex: 0.000000028 is written as 2.8×10^{-9})

Measurement Criteria: 14.2

Milli - The prefix in the metric system that indicates 1 thousandth of the standard unit

Micro - The prefix in the metric system that indicates 1 millionth of the standard unit

Nano - The prefix in the metric system that indicates 1 billionth of the standard unit

SI units - A system of units that is organized in multiples of ten which are indicated by prefixes

Measurement Criteria: 14.4

Linear Regression- A model that visualizes the relationship between 2 variables

Mean - A calculated average of a set of values

Median - The middle value of a set of values that are placed in numerical value

Mode - The value that occurs the most in a set of values

Range- The calculated difference between the highest and lowest values in a set of values

Standard Deviation- A calculation of how diverse a set of values is

DOMAIN 2: DNA and Protein Technology **(Standards 10, 12, & 13)**

Standard 10: DEMONSTRATE PROTEIN TECHNIQUES

Measurement Criteria: 10.1

Antibody/Immunoglobulin - Proteins made by the immune system in response to antigens

Antigen - A substance that generally evokes an immune response in an organism when bound by an antibody

Direct ELISA - An ELISA designed to detect the presence of antigens in a solution (usually a sample from a patient)

Enzyme Linked Immunosorbent Assay (ELISA) - A technique that utilizes chemical specificity to detect and quantify a specific protein in a solution (usually a sample from a patient)

Indirect ELISA - An ELISA designed to detect the presence of antibodies in a solution (usually a sample from a patient)

Western Blot - A technique utilized to identify proteins from a gel by transferring the proteins to a membrane and using antibody binding to detect a specific protein

Measurement Criteria: 10.2

Denature - When a protein loses its secondary structure (shape or conformation), the primary structure is not affected

Extract - The removal of a specific molecule from a solution or preparation

Protein Precipitation - A method in biotechnology to concentrate proteins and purify them from contaminants

Measurement Criteria: 10.3

Amino Acid -The subunit (monomer) molecule of a protein

Column Chromatography - A method of separating molecules in a vertical chamber relying on gravity and molecular interaction

Hydrophilic - The state of having a high affinity (attraction) for water molecules

Hydrophobic - The state of being repelled by water molecules

SDS-PAGE- A technique that utilizes a vertical electrophoresis chamber to separate proteins by molecular while the protein is in a denatured state

Measurement Criteria: 10.4

Assay - A test to determine the quality or quantity of a sample

Bradford Assay- A protein identification technique that utilizes a non-specific protein binding dye

Lowry Assay- A protein identification technique that utilizes a protein-copper chelation which results in reduced copper producing a color change

Protein Assay (general)- A laboratory technique to identify or quantify proteins in a sample

Standard 12: DEMONSTRATE THE USE OF BIOINFORMATIC RESOURCES

Measurement Criteria: 12.1

Genome - The genetic material in an organism

NCBI (National Center for Biotechnology Information)- an organization provides access to biomedical and genomic information

Proteome - All of the proteins expressed by a genome

Sequence - The order of bases in a nucleic acid segment

Measurement Criteria: 12.3

BLAST (Basic Local Alignment Search Tool)- An online software that compares a nucleotide or protein sequence to a database and determines the statistical significance

Homologous - A gene sequence that has the same origin or function as another

Measurement Criteria: 12.4

DNA Subway - A genome database to compare sequences and work with phylogenetic relationships

MEGA (Molecular Evolutionary Genetics Analysis) - A tool for conducting automatic and manual sequence alignment, inferring phylogenetic trees, mining web-based databases, estimating rates of molecular evolution, and testing

Measurement Criteria: 12.5

FlyBase - A database for drosophila genetics and molecular biology

Genome.org - A peer-reviewed genome sciences journal

NCBI - The National Center for Biotechnology Information advances science and health by providing access to biomedical and genomic information

Measurement Criteria: 12.6

Copy Number Variant - The number of copies of a gene that varies from one individual to another

Inversion - A segment of DNA that is reversed end to end

SNP (Single Nucleotide Polymorphism) - A difference of one nucleotide between homologous sequences

Translocation - A segment of DNA that is inserted into a nonhomologous chromosome

Measurement Criteria: 12.7

E-Value - The expected number of hits to see by chance when searching a sequence database, the E-Value decreases exponentially as the Score (S) of the match increases

Measurement Criteria: 12.8

RCSB PDB (Protein Data Base)- Data base of the 3D shapes of proteins, nucleic acids, and complex molecules

Measurement Criteria: 12.9

Forward Primer- The primer that binds to the start codon on the template strand during PCR

PCR (Polymerase Chain Reaction) - A technique used to amplify a segment of DNA into millions of copies of the same DNA sequence

Primer - A section of single stranded DNA that is complementary to a specific sequence of DNA

Reverse Primer- The primer that binds to the stop codon of the complementary strand during PCR

Standard 13: DEMONSTRATE NUCLEIC ACID TECHNIQUES

Measurement Criteria: 13.1

Antiparallel - Strands of molecules (DNA or RNA) that are complementary and aligned in opposite directions

DNA (Deoxyribose Nucleic Acid)- The main component of a chromosome; a double stranded nucleic acid consisting of an unique order of bases (A, T, G, C)

DNA/Plasmid Prep - A method of isolating DNA or plasmids from bacteria by way of a column

Genomic DNA- The chromosomal DNA that makes up an organism's genome, does not include plasmids

Nucleic acids - Information coding molecules (DNA and RNA) composed of nucleotide subunits (phosphate group, nitrogenous base, and a 5-carbon sugar)

Nucleotide- The subunit (monomer) molecule of a nucleic acid

Plasmid - A small, circular piece of DNA found in prokaryotes; often used in recombinant technology

Measurement Criteria: 13.2

Blunt End - The result of a restriction digest using an enzyme that cuts a double stranded nucleic acid in same places on the complementary strands

Restriction Digest - The procedure of cutting nucleic acids into segments using enzymes with known restriction sites

Restriction Enzyme - An enzyme/endonuclease that cuts nucleic acids at specific restriction/recognition sites

Restriction/Recognition Site - A sequence in a nucleic acid that is recognized by a specific enzyme

Sticky End - The result of a restriction digest using an enzyme that cuts a double stranded nucleic acid in different places on the complementary strands

Measurement Criteria: 13.3

Anode - An electrode that has a positive charge and is the source of electrons in an electrophoresis box

Buffer - A solution that resists a change in pH when an acid or base is added to it

Cathode - An electrode that has a negative charge and attracts the electrons in an electrophoresis box

Electrolysis- Using an electrical current in a buffer to split a molecule

See Standard 8.15 for additional terms about gel electrophoresis

Measurement Criteria: 13.4

DNA Band - The segment of stained/visible nucleic acid in a gel after electrophoresis

Semi-log Graph Paper- A tool used to plot data of an exponential relationship in a linear model; one axis is linear, the other is logarithmic

Standard Curve- The use of a set of values derived from known properties to generate a calibration curve, which is then used to determine the same properties of an unknown sample

Measurement Criteria: 13.6

Maxam-Gilbert Sequencing- Using chemical modification of DNA followed by cleave at bases complementary to modified nucleotides

Next Generation Sequencing - Any of a variety of high throughput sequencing methods; Sanger and Maxam Gilbert considered the First Generation

Sanger Method Sequencing - Using chain-terminating dideoxynucleotides to create various incomplete nucleic acid fragments; only used for strands 100-1000 bp

Shotgun Sequencing - Breaking long strands into random pieces then sequence using chain terminating ddnts and overlapping the duplicate sequences

Measurement Criteria: 13.7

Annealing Stage (PCR)- The second stage of PCR when lower temperature allow the primer to bond to the template DNA

Denature Stage (PCR)- The first stage of PCR when higher temperature allow double stranded DNA to become single stranded

DNA Polymerase- The enzyme responsible for the addition of complementary bases during DNA Replication

DNA Replication- The natural process of making a copy of DNA

dNTP- Free floating nucleotides used in DNA Replication and PCR

Extension/Elongation Stage (PCR)- The third stage of PCR when mid-range temperature allow Taq polymerase to bond the complementary bases

Helicase- The enzyme in DNA Replication that breaks the hydrogen bonds between base pairs

Ligase- The enzyme that repairs nicks on the lagging strand during DNA Replication

Master Mix- A solution of Taq polymerase, dNTPS, and all the reagents necessary for PCR

PCR (Polymerase Chain Reaction) - A technique used to amplify a segment of DNA into millions of copies of the same DNA sequence

Primase- The enzyme that generates a primer during DNA Replication

Primer- A section of single stranded DNA that is complementary to a specific sequence of DNA

Taq Polymerase- A thermostable DNA polymerase utilized for PCR

Thermal Cycler - A piece of equipment used for PCR that rapidly repeatedly cycles through specific temperatures to amplify DNA

Measurement Criteria: 13.9

Transformation - (most often bacterial transformation) A process used to incorporate new genes into an organism via plasmid uptake

Measurement Criteria: 13.10

Alternative Splicing- Process by which mRNA is cut into fragments and some fragments are reconnected

Exon- A segment of a gene that is transcribed and translated or fully expressed as a protein

Gene Regulation- The use of proteins and nucleic acid to turn a gene on or off

Intron- A segment of a gene that is transcribed but not translated

Operon- A sequence of prokaryotic DNA that includes one or more genes and the regulatory elements

DOMAIN 3: Research and Problem Solving Skills

(Standards 3, 4, & 7)

Standard 3: DEMONSTRATE CRITICAL THINKING AND SCIENTIFIC PROBLEM-SOLVING SKILLS

Measurement Criteria: 3.2

Tractable- An idea or concept that is able to be tested with all limitations considered (time, cost, equipment)

Measurement Criteria: 3.3

Control - A predetermined consistency throughout an experiment

Dependent Variable - The factor of an experiment that is altered as a result of the independent variable

Hypothesis - A testable concept based upon factual information

Independent Variable - The factor of an experiment that is mindfully varied throughout an experiment

Variable - A factor in an experiment that is either purposely changed or altered as a result of another variable

Measurement Criteria: 3.6

Column/Bar Graph- A visual model of data comparing categories on a like topic with bars

Pie/Circle Graph- A visual model of data comparing the percentage of categories on a like topic

Scatter/Line Graph- A visual model of the relationship of 2 or more variables

Standard 4: DEMONSTRATE RESEARCH AND INVESTIGATIVE SKILLS

Measurement Criteria: 4.2

Gray Literature- Professional literature that has not been peer reviewed

Peer Reviewed- When information is confirmed as accurate by a person of equal educational knowledge

White Paper- Information printed from a credible institute such as a government agency

Measurement Criteria: 4.3

Abstract- A summary of the crucial factors of a paper

Literature Review- A secondary source that summarizes current knowledge on a topic

Standard 7: UNDERSTAND THE ROLE OF LIVING ORGANISMS IN BIOSCIENCE RESEARCH

Measurement Criteria: 7.1

Model Organism- A species utilized in research due to characteristics (short life span, easy to culture, short generation time)

Measurement Criteria: 7.4

Cell Line- A culture that has a uniform genetic makeup due to it

being generated from a single cell

Measurement Criteria: 7.5

Propagate- To culture or grow up a sample of an organism

DOMAIN 4: Safety and Regulatory Procedures (Standards 1, 2, 5, & 6)

Standard 1: MAINTAIN A SAFE WORK ENVIRONMENT

Measurement Criteria: 1.1

Personal Protective Equipment (PPE)- Safety attire that is worn in a laboratory for safety reasons

Measurement Criteria: 1.2

Safety Data Sheet (SDS)- A document that specifies information needed to use, store and dispose a chemical

Measurement Criteria: 1.6

Biohazard- Any agent that poses a safety hazard to biological entities

Measurement Criteria: 1.7

Globally Harmonized System (GHS)- An agency that defines the hazards associated with chemical by way of labels and safety data sheets

Occupational Safety & Health Administration (OSHA)- An agency that defines proper safety regulations for the workplace

Measurement Criteria: 1.8

Biosafety Level- A defined set regulations a laboratory is held to based on the biohazard potential of the agents they utilize

Measurement Criteria: 1.9

Biohazard - Any agent that poses a safety hazard to biological entities

Biosafety Level (BSL) - A defined set of regulations a laboratory is held to based on the biohazard potential of the agents they utilize

BSL 1 - Agents shown to not regularly cause disease in a healthy adult

BSL 2 - Agents associated with human disease from broken skin, ingestion or mucous membrane exposure

BSL 3 - Indigenous or exotic pathogenic agents with potential air transmission, disease may have lethal consequences

BSL 4 - Dangerous/exotic agents with high rate of mortality, any and all modes of transmission

Globally Harmonized System (GHS) - An agency that defines the hazards associated with chemical by way of labels and safety data sheets

Occupational Safety & Health Administration (OSHA) - an agency that defines proper safety regulations for the workplace

Personal Protective Equipment (PPE) - Safety attire that is worn in a laboratory for safety reasons

Safety Data Sheet (SDS) - A document that specifies information needed to use, store and dispose a chemical

Standard Operating Procedure (SOP)- A specified protocol (step by step procedures) that is utilized to carry out a process or technique

Safety symbols - visual images that identify potential dangers; images/symbols generated and regulated by OSHA and GHS

Standard 2: DEMONSTRATE STANDARD OPERATING PROCEDURES (SOPS) IN THE LABORATORY

Measurement Criteria: 2.1

AZDEQ (Arizona Department of Environmental Quality) - A government agency that oversees the planning, permitting, and compliance of the state's environmental laws

EPA (Environmental Protection Agency)- A government agency that focuses on human and environmental health

FDA (Food and Drug Administration)- A government agency that focuses on the regulation of food and drug safety

NIH (National Institutes of Health)- A government agency that focuses on biomedical and public health research

OSHA (Occupational Safety & Health Administration)- An agency that defines proper safety regulations for the workplace

Measurement Criteria: 2.2

cGMP (Current Good Manufacturing Practice)- Regulations provided by the FDA that focuses on the appropriate design, monitoring and control of manufacturing processes

CIP (Common Industry Practice)- Techniques and methods

generally accepted by the majority of an industry

GLP (Good Laboratory Practices)- A set of guidelines to ensure quality and integrity in a laboratory

SIP (Standard Industry Practice)- Regulated techniques and methods of an industry

SOP (Standard Operating Procedure)- A specified protocol (step by step procedures) that is utilized to carry out a process or technique

Standard 5: DEMONSTRATE ETHICAL AND LEGAL CONDUCT

Measurement Criteria: 5.1

Ethics- Behavior governed by moral principles that takes into account all stakeholders

Measurement Criteria: 5.3

Bioethics- The ethics surrounding biological research

Genetically Modified Organisms (GMO)- An organism whose has been given a gene from another organism

Stakeholders- A person, organization, or business that has a particular interest in a situation

Measurement Criteria: 5.4

Risk Management- The evaluation of a situation to assess the potential hazards

Standard 6: DEMONSTRATE QUALITY CONTROL PROCEDURES

Measurement Criteria: 6.3

Quality Control- Testing of a product continually to ensure it fits the expectations

Measurement Criteria: 6.4

Quality Assurance- Maintaining the quality of a product by examining the manufacturing process over extended amounts of time

Trend Analysis- Long term evaluation of data to identify trends