

INQUIRY

Scientific Inquiry

Process Skills

___ Conduct systematic experiments, report and display results. **Micro-01**

Technological Design

___ Propose and compare different solution designs to the design problem based upon given constraints including available tools, materials and time. **Micro-02**

___ Develop working visualizations of the proposed solution designs (e.g. blueprints, schematics, flowcharts and animations). **Micro-03**

CONTENT

Life Science

History of Microbiology

___ Summarize the historical significance of Koch's postulates and how they are used to identify microbiological samples. **Micro-04**

Modern Developments in Microbiology

___ Explain the importance of concepts such as modern biotechnology, recombinant DNA technology and human resistance. **Micro-05**

Microscopy

___ Name the parts and functions of a compound light microscope. **Micro-06**

Basic Lab and Culture Techniques

___ Conduct accurate sterilization techniques to isolate pure bacterial cultures and maintain their survival. **Micro-07**

Fundamental Overview of Eukaryotic and Prokaryotic Cells

___ Identify bacteria as either gram positive or gram negative based on proper staining techniques and name the bacteria based on their structure. **Micro-08**

Microbial Metabolism

___ Describe the metabolic diversity among microorganisms and classify bacteria based on their enzymatic function. **Micro-09**

Microbial Growth and Control

___ Describe the physical and chemical requirements for controlling the growth of bacteria. **Micro-10**

Classification of Microorganisms

___ Name microorganisms using correct nomenclature and use *Bergey's Manual* to classify them. **Micro-11**

Prokaryotes: Bacteria and Archaeobacteria

___ Compare and contrast gram positive and gram negative bacteria. **Micro-12**

Eukaryotes

___ Identify diseases caused by fungi. **Micro-13**

Viruses

___ Explain how viral replication allows viruses to spread easily among bacteria and other hosts. **Micro-14**

Epidemiology

___ Explain how normal microbiological flora protect and aid the body in natural defenses against invading microbes. **Micro-15**

Microbial Genetics

___ Identify how biotechnology can be used to fight against bacterial or viral infections. **Micro-16**

CONNECTIONS

Science Practices

___ Explain, using a practical example (e.g. reaction of bacteria culture to antibiotics), why experimental replication and peer review are essential to scientific claims. **Micro-17**

S/T/S (Science, Technology and Society)

___ Analyze and describe the processes and effects of scientific and technological breakthroughs. **Micro-18**