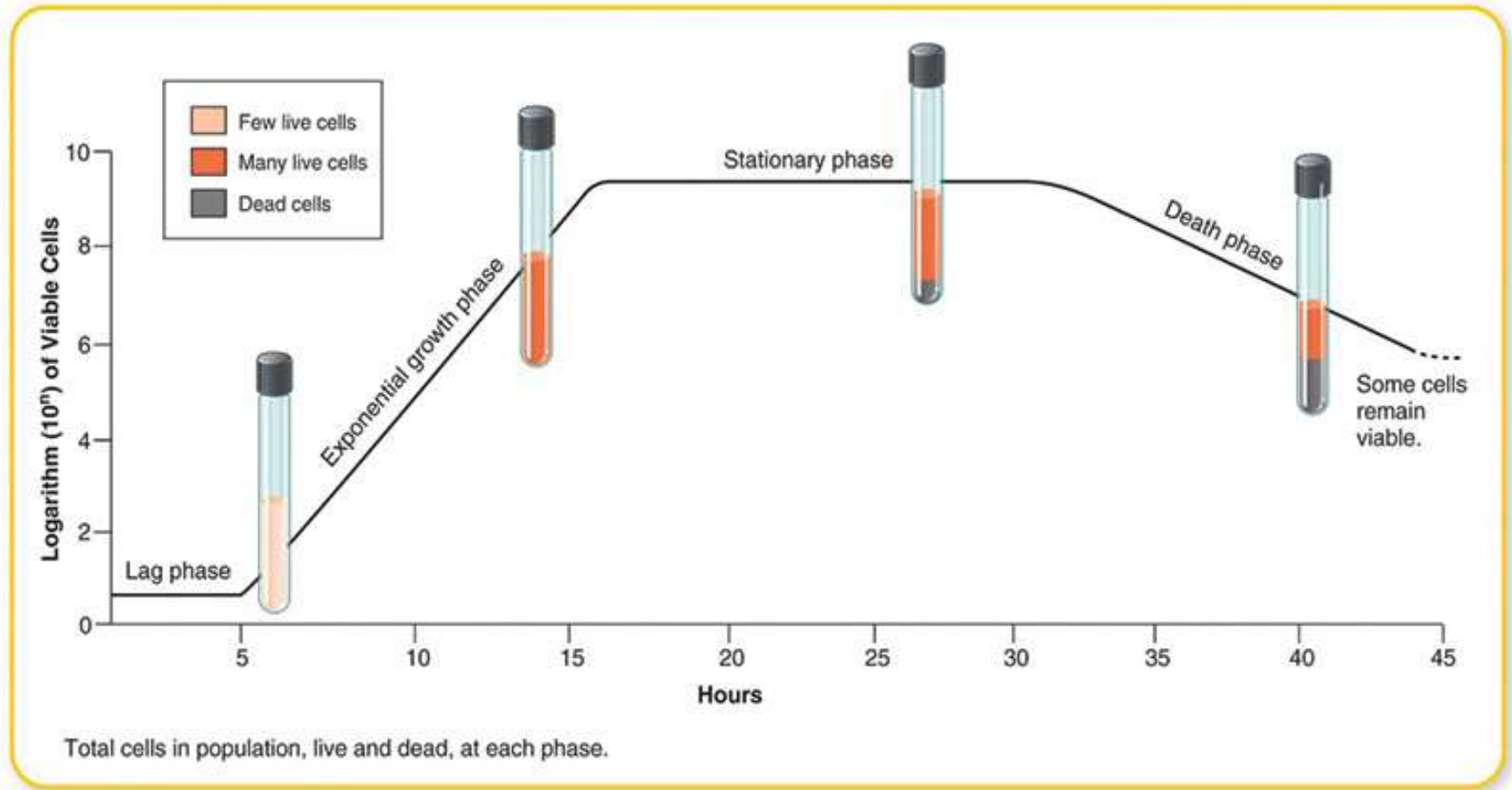


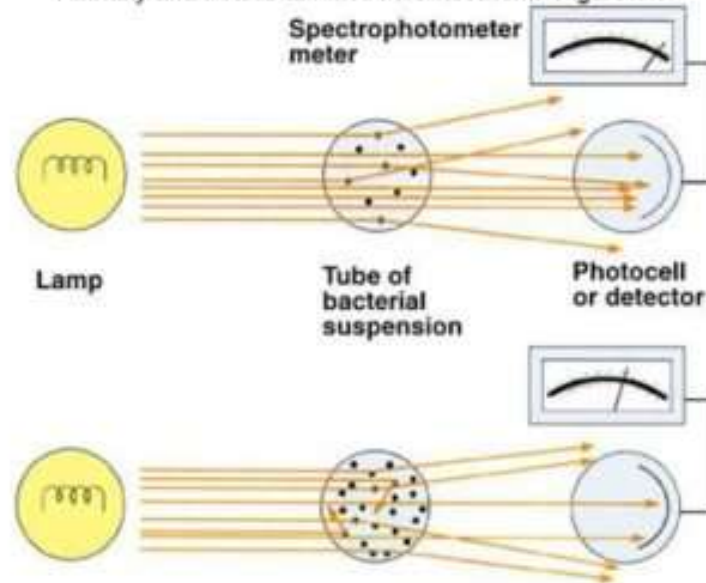
Bacterial Growth curve by turbidometric methods



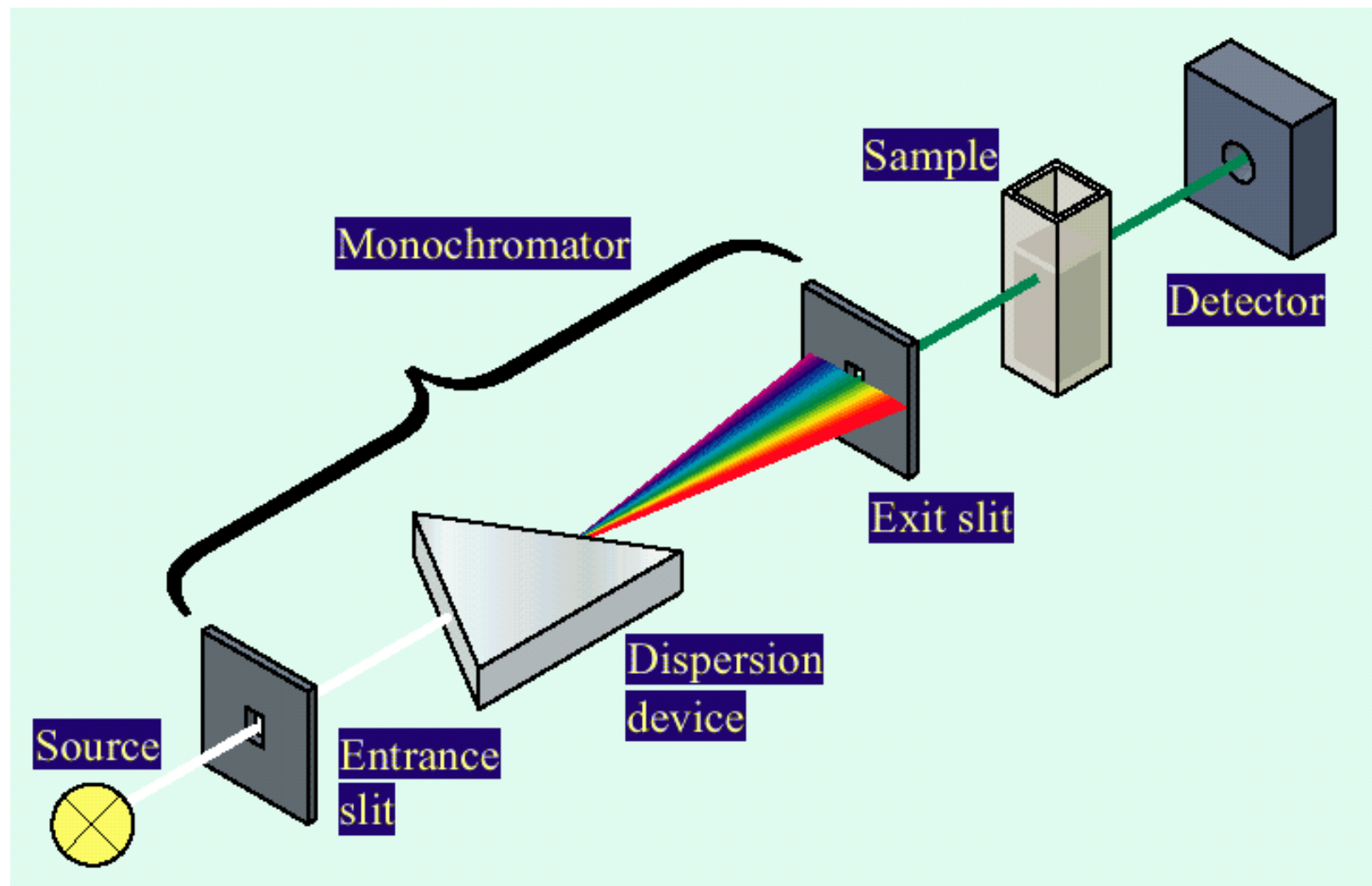
Spectrophotometric measurement of bacterial growth

Microbiology, 3rd ed., by Prescott/Harley/Klein, © 1995 Times Mirror Higher Education Group, Inc.

Turbidity and Microbial Mass Measurement. Figure 6.9

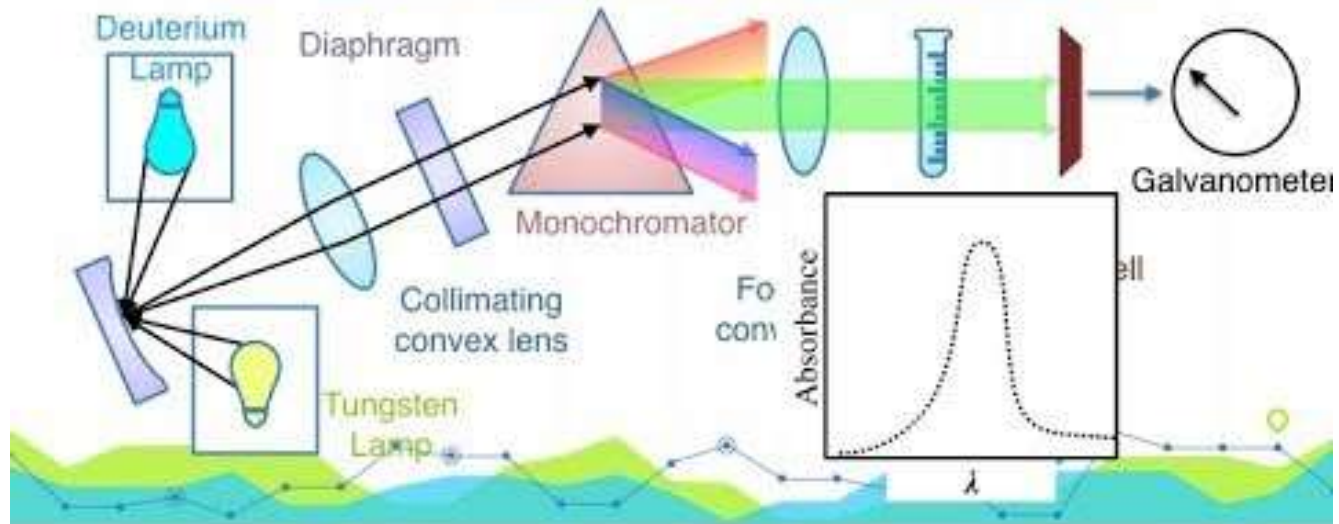


Parts of spectrophotometer



Spectroscopy

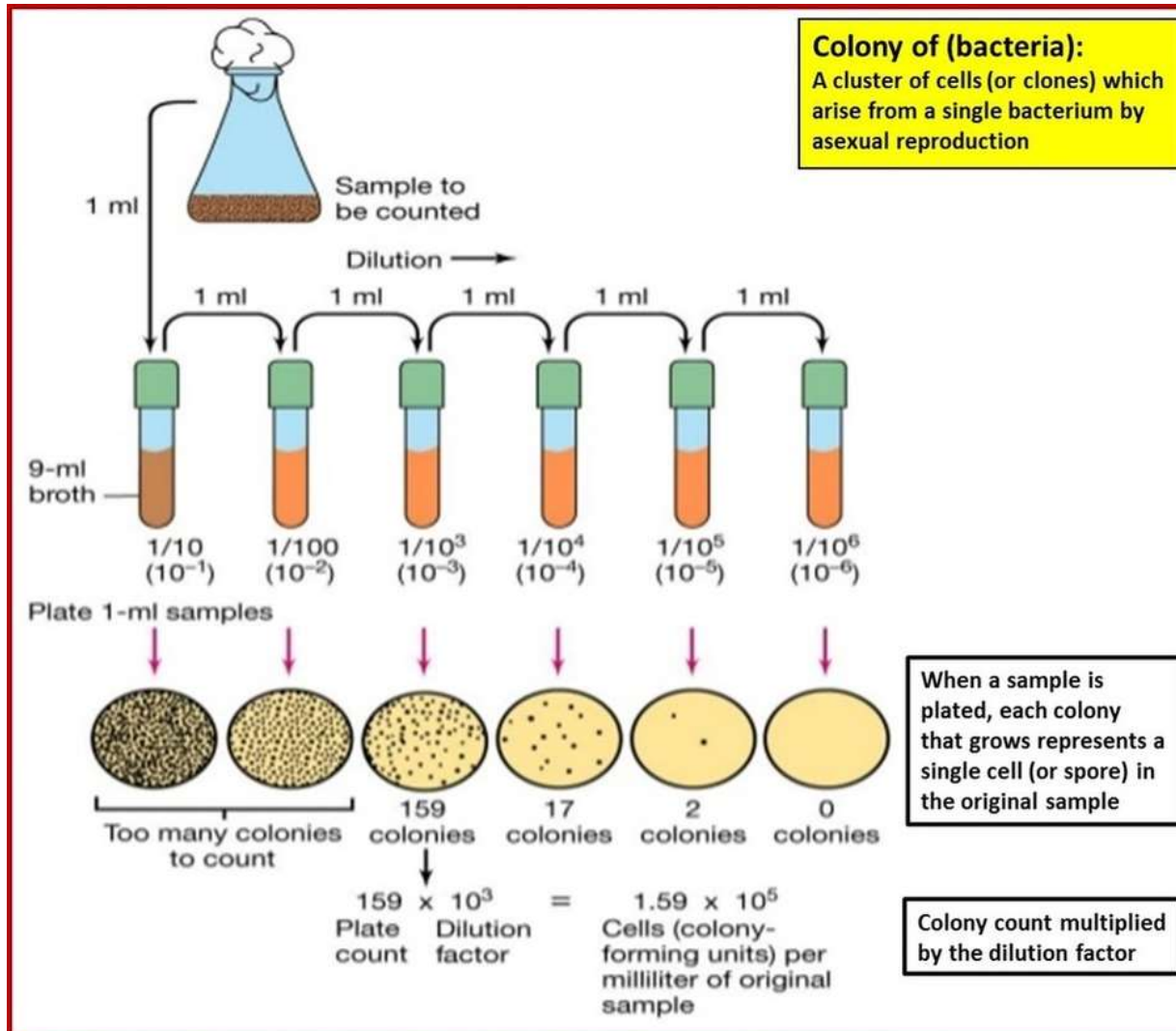
SINGLE BEAM SPECTROPHOTOMETER.



Spectrophotometer

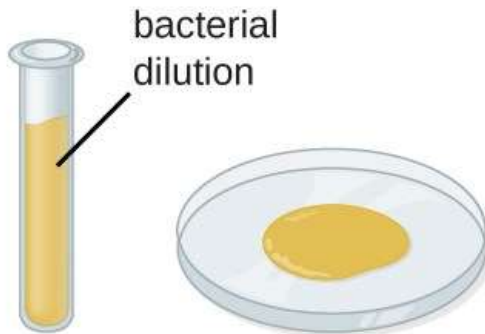


Growth Curve by Plate Count Method



Spread Plate Method

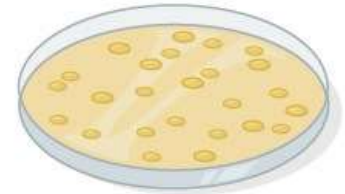
- 1 Sample (0.1 mL) poured onto solid medium



- 2 Spread sample evenly over the surface



- 3 Plate incubated until bacterial colonies grow on the surface of the medium



Spread-plate method

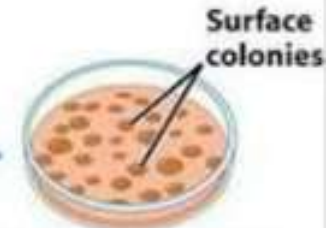


Sample is pipetted onto surface of agar plate (0.1 ml or less)



Sample is spread evenly over surface of agar using sterile glass spreader

Incubation



Typical spread-plate results

Pour-plate method

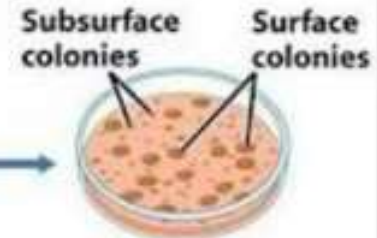


Sample is pipetted into sterile plate



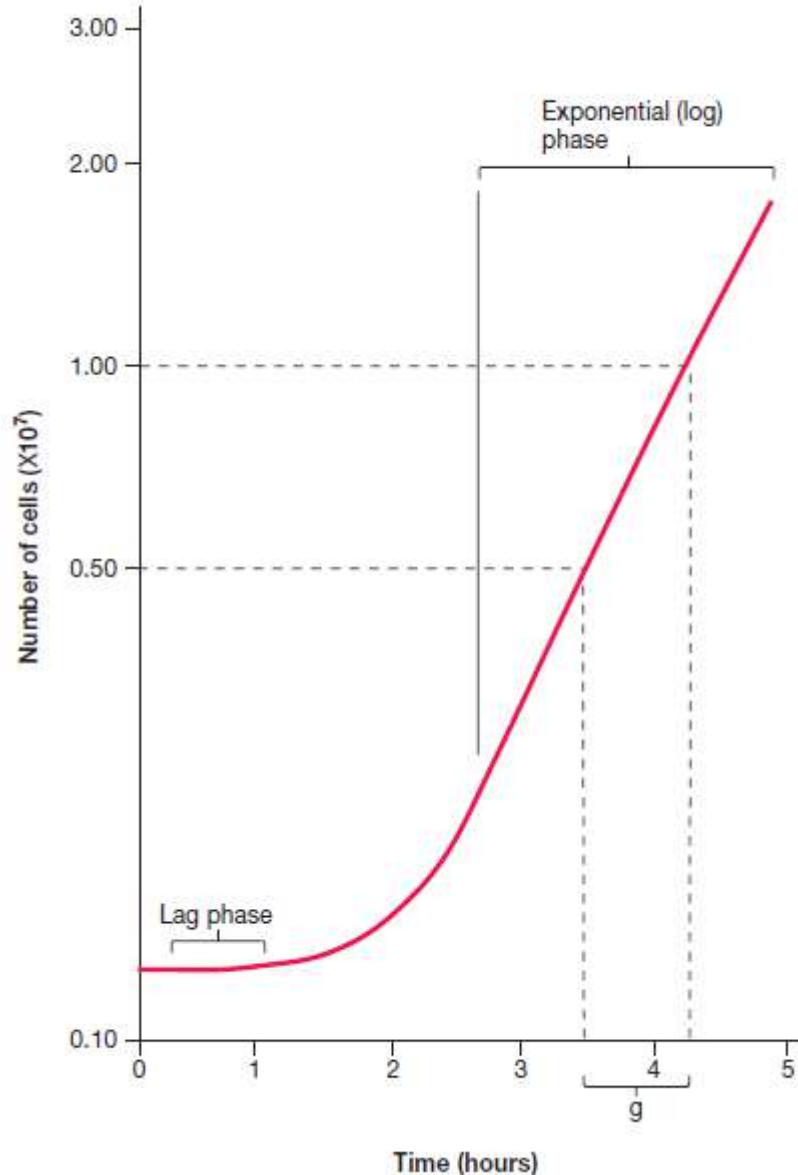
Sterile medium is added and mixed well with inoculum

Incubation



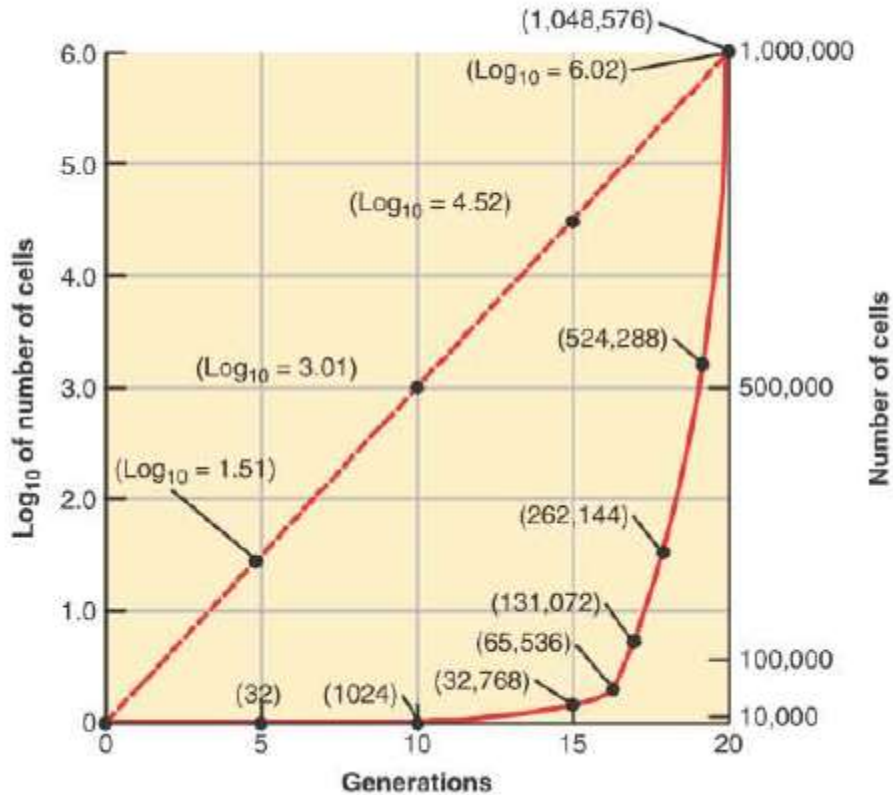
Typical pour-plate results

Generation Time Determination.



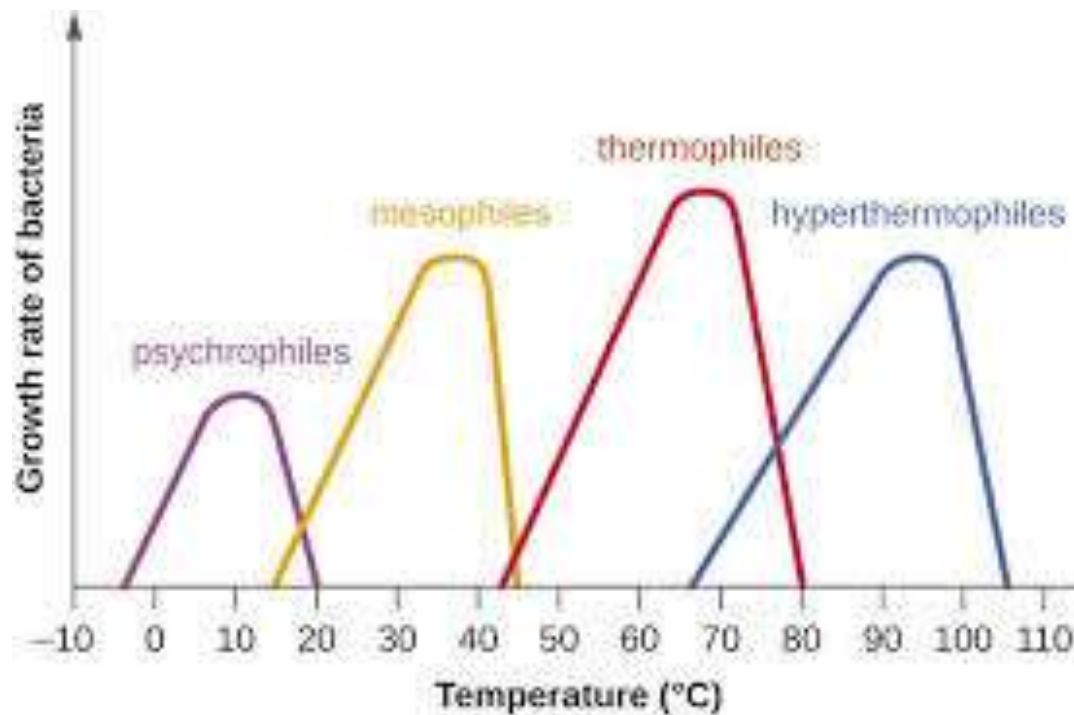
The generation time can be determined from a microbial growth curve. The population data are plotted with the logarithmic axis used for the number of cells. The time to double the population number is then read directly from the plot. The log of the population number can also be plotted against time on regular axes.

Logarithmic vs arithmetic growth curve

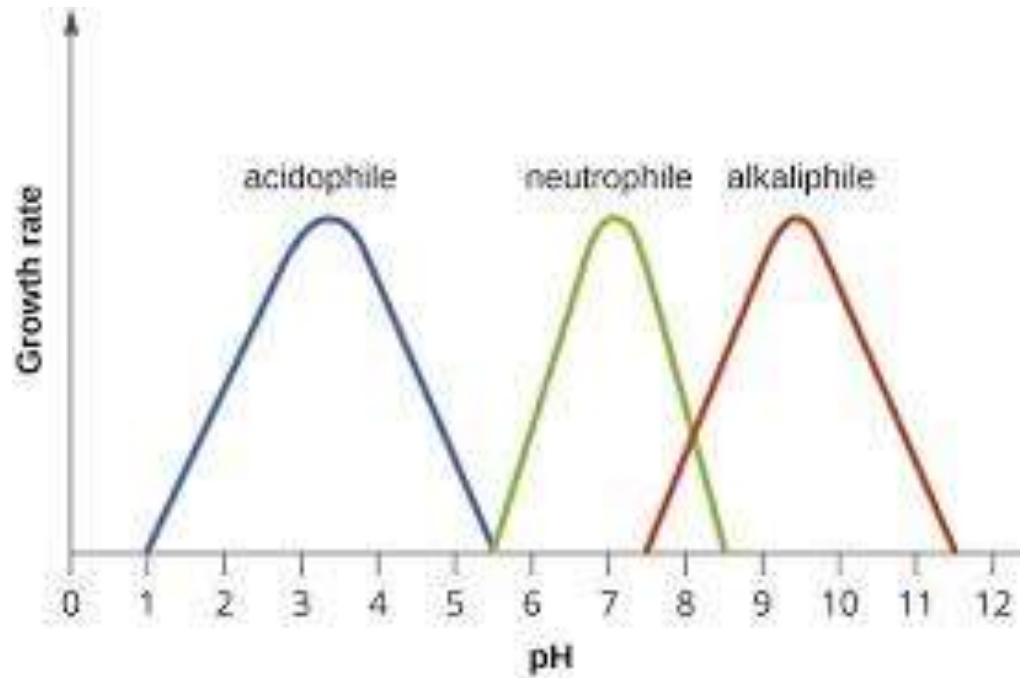


This figure demonstrates why it is necessary to graph changes in the immense numbers of bacterial populations by logarithmic plots rather than by arithmetic numbers. For example, note that at ten generations the line representing arithmetic numbers has not even perceptibly left the baseline, whereas the logarithmic plot point for the tenth generation (3.01) is halfway up the graph.

Effect of temperature on bacterial growth



Effect of pH on bacterial Growth



Plaque assay



Figures 1: Soft agar overlay technique which shows well isolated plaques of Salmonella phage..

Figure 2. Bacteriophage enumeration by double agar layer method

