

1. Fluorescence microscopy:

- A. Is used to detect Gram-stained bacteria.
- B. Produces high contrast 3-D like images.
- C. Is generally used for extremely thin cells such as *Treponema pallidum*.
- D. Can be used with certain unstained cells as well as with specially stained cells.
- E. Requires staining with electron-dense metal ions.

2. According to the following multiple alignment of partial rRNA sequences, isolates C & D are identical. Which of the remaining isolates is closest to the C & D pair?

Isolate A	AAUCUGGGUCUA
Isolate B	AAACCGGGUCUA
Isolate C	AAAUCGUGGCUA
Isolate D	AAAUCGUGGCUA
Isolate E	AAAUCGAGGCUA

- A. A
- B. B
- C. E
- D. A & B are equally distant to C & D
- E. B & E are equally distant to C & D

3. The high-temperature limit to life is probably governed by:

- A. The rate of protein denaturation (precipitation).
- B. The decomposition (hydrolysis) of nucleotides such as ATP.
- C. The unraveling of double-stranded DNA.
- D. Disintegration of the cell walls.
- E. Thermal instability of the nuclear membrane.

4. The late 1800's were a particularly exciting time in Microbiology with many important medical and ecological discoveries. Which of the following events did not occur in the 1880-1900 time period?

- A. Identification of the microbes associated with tuberculosis, diphtheria, typhoid fever, gonorrhea, bubonic plague, and several other human diseases.
- B. Development of methods to grow pure cultures of bacteria on solid medium.
- C. Discovery of penicillin, the first known antibiotic, by Alexander Fleming.
- D. Identification of the central role of microbes in the nitrogen cycle.
- E. Discovery of "autotrophic" bacteria that use CO₂ as their sole carbon source.