

Microbiology: An Historical Continuum

Resource Type: Curriculum: Classroom

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headlines" chosen, this activity may address concepts in all five of the core themes. More specifically, the topics addressed in this activity are: 1. Microbial cell biology - cellular structure and function; 2. Microbial consequences, and uses of mutations; 3. Microorganisms and humans - disease transmission, antibiotics, genetic engineering, biotechnology; 4. Microorganisms in the environment - adaptation and natural selection, microbes transforming environments; 5. Integrating themes - microbial evolution, microbial diversity.

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In this activity, students will have an understanding that the continuum of human history parallels, and is often dependent upon the history of the microbial inhabitants of the planet. This exercise will also

- From life's earliest beginnings to the present, focusing on biogeological and biochemical events.
- The Golden Age of Microbiology, focusing on infectious diseases.
- The lifetime of the students in the class, focusing on developments in basic research.

A list of sample headlines is provided (see **Appendix 1**). Alternatively, the instructor may assign a time period (a decade during the Golden Age, for example) and allow the students to come up with appropriate headlines.

3. The event depicted in the headline will be investigated by the team, to identify:

- The date (or approximate time period) when the event occurred.
Details about the specific event (such as: what microorganism was involved, the sequence of occurrences during the

13. Physician Declared Insane!

Dr. Ignaz Semmelweis is declared insane when he continues to insist that doctors should wash their hands.

14. Nucleated Cells Emerge from a Sea of Procaryotes

Complex cells with intracellular compartments found.

15. Woese Proclaims Three Domains

Carl Woese determines that some microbes are as distinct from each other as they are from eucaryotes.

16. A Patent on Life?

25. Natural Resistance to HIV Identified

Researchers claim that 2% of Caucasians are homozygous for a gene that protects against HIV infection.

26. New Uses for Agar

Polysaccharide used in Asian cooking found to solidify microbiological media.

27. Humpty Dumpty Revisited on a Submicroscopic Scale

Frankle-Conrat disassembles and reassembles Tobacco Mosaic Virus in a test tube.

28. Flesh-Eating Bacterium Strikes in England

A particular virulent strain of *Streptococcus* eats the face off a man in Great Britain.

29. Three Hundred Russians Die of Anthrax

Was it bad sausage or the intentional release of a biological weapon that killed scores of people in Sverdlovsk?

30. CDC Investigates Bloody Deaths in Kitwit, Zaire

The rural hospital which is the site of the latest outbreak of Ebola Hemorrhagic Fever is empty; most of the personnel have died or run away.

31. Bacterial Behemoth Found in the Gut of a Fish

The discovery of a bacterium visible to the naked eye leaves scientists rethinking the classic postulate that procaryotes have to be small.

32. Human Drug Produced by Yeast

Fungal cells engineered with human genes produce vast quantities of human insulin.

33. Brain-Eaters Sickened

Guiducek deduces that an encephalitis-like disease emerging among brain-eating cannibals is caused by a prion, a new type of infectious agent.

34. Cells Acquire Energy-Producing Structures

A merger between procaryotes and eucaryotes creates a more energy-efficient way of life.

35. American Legion Felled in Philadelphia

Hundreds of Legionnaires fall ill with a mysterious pneumonia at convention.

36. Responsible or Not? Koch Reports New Way to Know for Sure

Robert Koch presents his protocol to determine the microbial agent responsible for a particular disease.

37. **Bacteria Do the Dirty Work**

Billions of bacteria remove hydrocarbons left on Alaska=s rocks and beaches after the Exxon *Valdez* spills her oil.

38. **Algae, or Bacteria?**

In a development sure to startle taxonomists, blue green algae are reclassified as cyanobacteria.

39. **Killer Revealed**

A staining technique developed by Christian Gram reveals pneumonia-causing microbe in the lungs of victims.

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