Microbiology Chapter 8 Microbial Genetics

Bonnie Bassler

for Microbiology (2011) and served on the National Science Board with a term expiring May 10, 2016. She was an editor of the Annual Review of Genetics from

Bonnie Lynn Bassler (born 1962) is an American molecular biologist; the Squibb Professor in Molecular Biology and chair of the Department of Molecular Biology at Princeton University; and a Howard Hughes Medical Institute Investigator. She has researched cell-to-cell chemical communication in bacteria and discovered key insights into the mechanism by which bacteria communicate, known as quorum sensing. She has contributed to the idea that disruption of

chemical signaling can be used as an antimicrobial therapy.

Esther Lederberg

Lederberg: Pioneer in Microbial Genetics". In Whitaker RJ, Barton HA (eds.). Women in Microbiology. American Society for Microbiology. pp. 305–315. doi:10

Esther Miriam Zimmer Lederberg (December 18, 1922 – November 11, 2006) was an American microbiologist and a pioneer of bacterial genetics. She discovered the bacterial virus lambda phage and the bacterial fertility factor F, devised the first implementation of replica plating, and furthered the understanding of the transfer of genes between bacteria by specialized transduction.

As a woman in a male-dominated field and the wife of Nobel laureate Joshua Lederberg, Esther Lederberg...

Bassler has received numerous awards for her research, including the Princess of Asturias Award (2023), Paul Ehrlich and Ludwig Darmstaedter Prize (2021), the Pearl Meister Greengard Prize (2016), the L'Oreal-UNESCO award (2012), the Richard Lounsbery Award (2011), the Wiley Prize...

N. Louise Glass

California, Berkeley. She specialises in plant and microbial biology, particularly fungal cell biology and genetics Glass gained her Ph.D. in plant pathology from

N. Louise Glass is the Fred E. Dickinson Chair of Wood Science and Technology at the University of California, Berkeley. She specialises in plant and microbial biology, particularly fungal cell biology and genetics

Microorganism

are immune. Catalogue of Life Impedance microbiology Microbial biogeography Microbial intelligence Microbiological culture Microbivory, an eating behavior

A microorganism, or microbe, is an organism of microscopic size, which may exist in its single-celled form or as a colony of cells. The possible existence of unseen microbial life was suspected from antiquity, with an early attestation in Jain literature authored in 6th-century BC India. The scientific study of microorganisms began with their observation under the microscope in the 1670s by Anton van Leeuwenhoek. In the 1850s, Louis Pasteur found that microorganisms caused food spoilage, debunking the theory of spontaneous generation. In the 1880s, Robert Koch discovered that microorganisms caused the diseases tuberculosis, cholera, diphtheria, and anthrax.

The scientific rationale of the function of microbes in fermentation started to be built with the discoveries of Louis Pasteur...

Norman R. Pace

assistant professor of biophysics and genetics. In 1975, Pace was promoted to associate professor of biophysics and genetics at the University of Colorado Medical

Norman Richard Pace Jr. (born 1942) is an American biochemist, and is Distinguished Professor Emeritus of Molecular, Cellular and Developmental Biology at the University of Colorado. He is principal investigator at the Pace lab.

Hydrothermal vents are located where the tectonic plates are moving apart and spreading. This allows water from the ocean to enter into the crust of the earth where it is heated by the magma. The increasing...

Trait inheritance and molecular inheritance mechanisms of genes are still primary principles of genetics in the 21st century, but modern genetics has expanded to study the function and behavior...

Lederberg also founded and directed the now-defunct Plasmid Reference Center at Stanford University, where she maintained, named, and distributed plasmids of many types, including those coding for antibiotic resistance, heavy metal resistance, virulence, conjugation, colicins, transposons, and other unknown factors.

Pathogen

Bernstein C, Michod RE (January 2018). "Sex in microbial pathogens". Infection, Genetics and Evolution. 57: 8–25. doi:10.1016/j.meegid.2017.10.024. PMID 29111273

In biology, a pathogen (Greek: ?????, pathos "suffering", "passion" and -?????, -gen?s "producer of"), in the oldest and broadest sense, is any organism or agent that can produce disease. A pathogen may also be referred to as an infectious agent, or simply a germ.

Microorganisms are extremely diverse, representing most unicellular organisms in all three domains of life: two of the three domains, Archaea...

Microbial food cultures

Microbial food cultures are live bacteria, yeasts or moulds used in food production. Microbial food cultures carry out the fermentation process in foodstuffs

Microbial food cultures are live bacteria, yeasts or moulds used in food production. Microbial food cultures carry out the fermentation process in foodstuffs. Used by humans since the Neolithic period (around 10,000 years BCE) fermentation helps to preserve perishable foods and to improve their nutritional and organoleptic qualities (in this case, taste, sight, smell, touch). As of 1995, fermented food represented between one quarter and one third of food consumed in Central Europe. More than 260 different species of microbial food culture are identified and described for their beneficial use in fermented food products globally, showing the importance of their use.

Hydrothermal vent microbial communities

The hydrothermal vent microbial community includes all unicellular organisms that live and reproduce in a chemically distinct area around hydrothermal

The hydrothermal vent microbial community includes all unicellular organisms that live and reproduce in a chemically distinct area around hydrothermal vents. These include organisms in the microbial mat, free floating cells, or bacteria in an endosymbiotic relationship with animals. Chemolithoautotrophic bacteria derive nutrients and energy from the geological activity at Hydrothermal vents to fix carbon into organic forms. Viruses are also a part of the hydrothermal vent microbial community and their influence on the microbial ecology in these ecosystems is a burgeoning field of research.

Bernard Davis (biologist)

major contributions in microbial physiology and metabolism. Davis was a prominent figure at Harvard Medical School in microbiology and in national science

Bernard David Davis (January 7, 1916 – January 14, 1994) was an American biologist who made major contributions in microbial physiology and metabolism. Davis was a prominent figure at Harvard Medical School in microbiology and in national science policy. He was the 1989 recipient of the Selman A. Waksman Award in Microbiology from the National Academy of Sciences.

The term pathogen came into use in the 1880s. Typically, the term pathogen is used to describe an infectious microorganism or agent, such as a virus, bacterium, protozoan, prion, viroid, or fungus. Small animals, such as helminths and insects, can also cause or transmit disease. However, these animals are usually referred to as parasites rather than pathogens. The scientific study of microscopic organisms, including microscopic pathogenic organisms, is called microbiology, while parasitology refers to the scientific study of parasites...

Genetics

Bernstein C, Michod RE (January 2018). "Sex in microbial pathogens". Infection, Genetics and Evolution. 57: 8–25. Bibcode:2018InfGE..57....8B. doi:10.1016/j

Genetics is the study of genes, genetic variation, and heredity in organisms. It is an important branch in biology because heredity is vital to organisms' evolution. Gregor Mendel, a Moravian Augustinian friar working in the 19th century in Brno, was the first to study genetics scientifically. Mendel studied "trait inheritance", patterns in the way traits are handed down from parents to offspring over time. He observed that organisms (pea plants) inherit traits by way of discrete "units of inheritance". This term, still used today, is a somewhat ambiguous definition of what is referred to as a gene.

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