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Revolution in Microbial Bioprospecting via the Development of Omics-Based Technologies -- Microbial Nanowires: Future of Bioenergy Applications.

Sommario/riassunto

The sharp rise, in recent years, of novel resistant pathogenic microorganisms has sparked renewed interest in the practice of bioprospecting, or the systematic identification, evaluation and exploitation of the diversity of life in a certain place. Bioprospecting is an increasingly popular means of mining microorganisms for what is known as exploitable biology, or valuable genetic information. This information can then be used in the development of novel antibiotics, enzymes, biopesticides, biofertilizers, food sources, and energy sources, with marked impacts across the agricultural, pharmaceutical, biomedical and bioenergetic fields. While microbe-derived bioactive compounds play an increasingly key role in sustainability directives such as pollution control and green tech development, production challenges still pose a barrier to the large-scale commercialization of these microbe-derived products. Bioprospecting of Microbial Resources for Agriculture, Environment and Bio-Chemical Industry is a topical review of the achievements reached and challenges faced by the microbe-derived compound industry to date. As the preservation of global biodiversity and the production of novel antibiotics are of significant importance to researchers and the general public alike, this text offers a timely and comprehensive look into the many uses of microbial products across industries. Specific uses covered in the text include the microbial-based recovery of metals for e-waste and the use of microbial nanowires in bioenergy applications. Bioprospecting of Microbial Resources for Agriculture, Environment and Bio-Chemical Industry offers invaluable insights for administrators and policy makers as well as researchers in the areas of microbiology, plant biotechnology, industrial microbiology, biochemical engineering and environmental science.