

1. Record Nr.	UNINA9910261143603321
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Titolo	Actinobacteria in Special and Extreme Habitats: Diversity; Function Roles and Environmental Adaptations
Pubbl/distr/stampa	Frontiers Media SA, 2016
Descrizione fisica	1 online resource (229 p.)
Collana	Frontiers Research Topics
Soggetti	Microbiology (non-medical)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>Actinobacteria are highly diverse prokaryotes that are ubiquitous in soil, freshwater and marine ecosystems. Although various studies have focused on the ecology of this phylum, data are still scant on the diversity, abundance and ecology of actinobacteria endemic to special and extreme environments, such as gut, plant, alkaline saline soil, deep sea sediments, hot springs and other habitats. Actinobacteria are well-known producers of a vast array of secondary metabolites, many of which have useful applications in medicine and agriculture. Furthermore, actinobacteria also have diverse functions in different environments apart from antibiotic production. For example, actinobacteria are reported to contribute to the break-down and recycling of organic compounds. They play a significant role in fixation of nitrogen, improvement plant growth, biodegradation, bioremediation and environmental protection. Therefore, understanding the actinobacterial diversity and distribution in such special environments is important in deciphering the ecological roles of these microorganisms and for biotechnological bioprospecting. Recent advances in cultivation, DNA sequencing technologies and -omics (metagenomics, metaproteomics etc) methods have greatly contributed to the rapid advancement of our understanding of microbial diversity, function and they interactions with environment. Furthermore, comparative genomic studies can provide overall information about actinobacterial speciation, evolution, metabolism and environment</p>

adaptation mechanisms. This research topic comprising reviews and original articles highlights the recent advances regarding the unexpectedly diverse/rare group of actinobacteria with special selective isolation methods or culture-independent methods, as well as their biological activities, ecophysiological function and mechanisms from diverse special and extreme environments.

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