

1. Record Nr.	UNINA9910137532203321
Autore	Axel Schippers
Titolo	Deep subsurface microbiology // edited by Andreas Teske, Jennifer F. Biddle, Virginia P. Edgcomb and Axel Schippers
Pubbl/distr/stampa	Frontiers Media SA, 2015 France : , : Frontiers Media SA, , 2015
ISBN	9782889195367 (ebook)
Descrizione fisica	1 online resource (303 pages) : illustrations, charts
Collana	Frontiers Research Topics
Soggetti	Microbiology & Immunology Biology Health & Biological Sciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references.
Sommario/riassunto	<p>Deep subsurface microbiology is a highly active and rapidly advancing research field at the interface of microbiology and the geosciences; it focuses on the detection, identification, quantification, cultivation and activity measurements of bacteria, archaea and eukaryotes that permeate the subsurface biosphere of deep marine sediments and the basaltic ocean and continental crust. The deep subsurface biosphere abounds with uncultured, only recently discovered and – at best - incompletely understood microbial populations. In spatial extent and volume, Earth's subsurface biosphere is only rivaled by the deep sea water column. So far, no deep subsurface sediment has been found that is entirely devoid of microbial life; microbial cells and DNA remain detectable at sediment depths of more than 1 km; microbial life permeates deeply buried hydrocarbon reservoirs, and is also found several kilometers down in continental crust aquifers. Severe energy limitation, either as electron acceptor or donor shortage, and scarcity of microbially degradable organic carbon sources are among the evolutionary pressures that have shaped the genomic and physiological repertoire of the deep subsurface biosphere. Its biogeochemical role as long-term organic carbon repository, inorganic electron and energy</p>

source, and subduction recycling engine continues to be explored by current research at the interface of microbiology, geochemistry and biosphere/geosphere evolution. This Research Topic addresses some of the central research questions about deep subsurface microbiology and biogeochemistry: phylogenetic and physiological microbial diversity in the deep subsurface; microbial activity and survival strategies in severely energy-limited subsurface habitats; microbial activity as reflected in process rates and gene expression patterns; biogeographic isolation and connectivity in deep subsurface microbial communities; the ecological standing of subsurface biospheres in comparison to the surface biosphere – an independently flourishing biosphere, or mere survivors that tolerate burial (along with organic carbon compounds), or a combination of both? Advancing these questions on Earth's deep subsurface biosphere redefines the habitat range, environmental tolerance, activity and diversity of microbial life.
