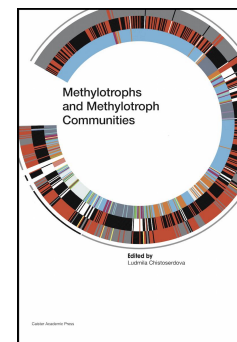


Methylotrophs and Methylotroph Communities



Edited by: **Ludmila Chistoserdova**
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Published: April 2019. **Pages:** vi + 272

ISBN: Book: 978-1-912530-04-5. Ebook: 978-1-912530-05-2 £199, \$399

Published by: Caister Academic Press www.caister.com

The field of methylotrophy has experienced a remarkable rejuvenation in recent years and undergone a major transformation in terms of discovery of novel types of methylotrophs, novel modes of methylotrophy and novel metabolic pathways. New questions are being asked and novel approaches are being employed to improve the current understanding of methylotrophy as a metabolic phenomenon.

This comprehensive volume is a compilation of articles, some written by established scientists, others by young and upcoming methylotrophy researchers. Under the expert guidance of the editor the authors present the current data and novel outlooks in this diverse area of research, encompassing fundamentals, such as biochemistry, physiology and systematics of methylotrophs, that underpin the field, as well as newly emerging areas, such as laboratory evolution of methylotrophs, enumeration in novel environments e.g. clouds, and experimenting with synthetic methylotrophs and methylotroph communities.

The volume covers a huge diversity of topics providing a timely overview of the field. It will be essential reading for everybody working in the field of methylotrophy, from seasoned researchers to newcomers to the field.

Chapter 1. Methanotrophy - Environmental, Industrial and Medical Applications (*Jeremy D. Semrau and Alan A. DiSpirito*)

Chapter 2. Diversity of Methane Cycling Microorganisms in Soils and Their Relation to Oxygen (*Claudia Knief*)

Chapter 3. Metagenomic Approaches Unearth Methanotroph Phylogenetic and Metabolic Diversity (*Garrett J. Smith and Kelly C. Wrighton*)

Chapter 4. Metabolic Features of Aerobic Methanotrophs: News and Views (*Valentina N. Khmelenina, Sergey Y. But, Olga N. Rozova and Yuri A. Trotsenko*)

Chapter 5. Lanthanides in Methylotrophy (*Elizabeth Skovran, Charumathi Raghuraman and Norma Cecilia Martinez-Gomez*)

Chapter 6. Diversity of Methylotrophy Pathways in the Genus *Paracoccus* (Alphaproteobacteria) (*Jakub Czarnecki and Dariusz Bartosik*)

Chapter 7. Microbiology and Ecology of Methylated Amine Metabolism in Marine Ecosystems (*Michaela A. Mausz and Yin Chen*)

Chapter 8. Methylotrophs and Methylotroph Populations for Chloromethane Degradation (*Françoise Bringel, Ludovic Besaury, Pierre Amato, Eileen Kröber, Steffen Kolb, Frank Keppler, Stéphane Vuilleumier and Thierry Nadalig*)

Chapter 9. Microbial Cycling of Methanethiol (*Hendrik Schäfer and Özge Eyice*)

Chapter 10. Systems Biology Meets Enzymology: Recent Insights into Communal Metabolism of Methane and the Role of Lanthanides (*Zheng Yu, Yue Zheng, Jing Huang and Ludmila Chistoserdova*)

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