ROME: Response of Organisms to the Martian Environment
Contents

Foreword v

Introduction vii

1. Mars Simulations - Past Studies on the Biological Response to Simulated Martian Conditions
   Aviaja Anna Hansen 1

2. Possible Atmospheric and UV Conditions on Mars in the Past - Biological Implications
   H. Lammer, Yu. N. Kulikov 19

3. The Microbial Case for Mars and its Implication for Human Expeditions to Mars
   Gerda Horneck 35

4. Response of Organics to Simulated Martian Conditions
   J.R.C. Garry, I.L. ten Kate, P. Ehrenfreund, B.H. Foing 47

5. Mars Simulation Experiments with Complex Microbial Soil Communities
   Kai Finster, Aviaja A. Hansen, Lars Liengaard, Karina Mikkelsen, Tommy Kristoffersen, Jonathan Merrison, Per Nornberg, Bente Aa. Lomstein 59

6. Fungi From Antarctic Desert Rocks as Analogues for Martian Life

7. The Response of Bacillus Subtilis to Simulated Martian Conditions and to the Space Environment
   Petra Rettberg 87

8. Photosynthetic Organisms on Mars - Prospects and Limitations
   Charles S. Cockell, Andrew C. Schuerger, Daniela Billi, E. Imre Friedmann, Corinna Panitz 99

9. Viable Haloarchaea from Ancient Salt Sediments and their Response to Simulated Mars Conditions
   Helga Stan-Lotter, Sergiu Fendrihan 117

10. Response of Methanogenic Archaea from Siberian Permafrost to Martian Thermophysical Conditions
    Daria Morozova, Diedrich Möhlmann, Dirk Wagner 129

11. Adaptation of the Lichen Rhizocarpon Geographicum to Harsh High-Altitude Conditions: Relevance to a Habitable Mars
    Rosa de la Torre, Leopoldo Garcia-Sancho, Gerda Horneck 145
12. Photosynthetic Life Support Systems in the Martian Conditions
   Kirst Lehto, Eira Kanervo, Kuri Stähle, Harry Lehto, Milja Tammi,
   Joni Virtanen

13. Photo-Catalytic Redox-Processes and Adsorption Water on Mars
   Chr. Jung, D. Möhlmann, Chr. Sattler, R. Staudt, M. Weeks

14. Design, Building and Applications of a Portable Martian
    UV Simulator
    C. Kolb, R. Abart, A. Bérces, J.R.C. Garry, A.A. Hansen, W. Hohenau,

15. Raman Spectroscopic Analysis of Extremophilic Organisms
    Under Martian Conditions
    Howell G.M. Edwards