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Nota di bibliografia	Incudes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Literature Review -- A Genome-scale Metabolic Model of M. maripaludis S2 for CO2 Capture and Conversion to Methane -- Flux Measurements and Maintenance Energy for CO2 Utilization by M. maripaludis -- Diazotrophy Enhances CO2 to Methane Conversion in M. maripaludis -- Contributions and Future Recommendations.
Sommario/riassunto	This thesis explores the ability of M. maripaludis to capture and convert CO2 to methane in the presence of free nitrogen, and offers a consolidated review of the metabolic processes and applications of M. maripaludis. Further, it develops, validates and analyzes the first genome-scale metabolic model (iMM518) of M. maripaludis. Readers will discover, for the first time, the impact of nitrogen fixation on methane production. As such, the thesis will be of interest to researchers working on M. maripaludis, biofuels and bioenergy,

systems biology modeling and its experimental validation, estimation of maintenance energy parameters, nitrogen fixing microbes, and bioremediation.