Corynebacterium glutamicum: From Systems Biology to Biotechnological Applications

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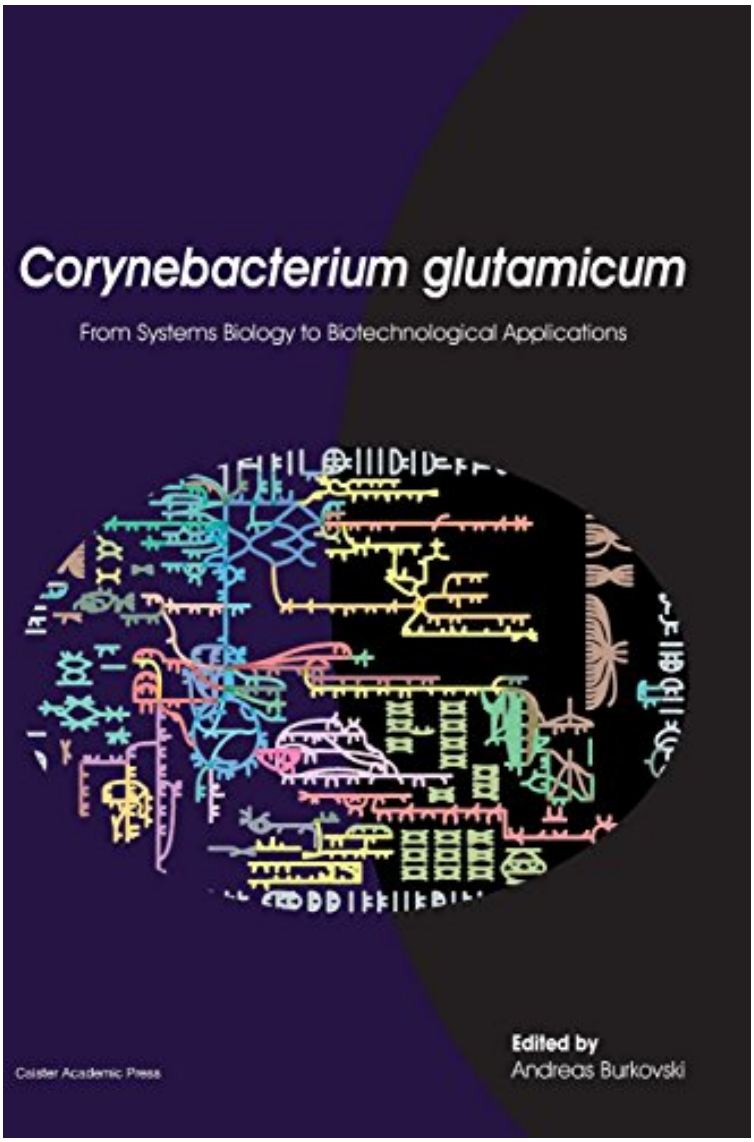

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Corynebacterium glutamicum is most widely known for its role in the industrial production of L-glutamate and L-lysine and as a platform organism for the production of a variety of fine chemicals, biofuels, and polymers. The organism's accessibility to genetic manipulation has resulted in a wealth of data on its metabolism and regulatory networks; this in turn makes C. glutamicum the model organism of choice in white biotechnology. A key development in recent years has been the engineering of C. glutamicum to utilize a broader spectrum of carbon sources (e.g. glycerol, galactose, and pentose sugars), in addition to the traditional hexoses. Given its unique ability to co-utilize mixed carbon sources, C. glutamicum could be used for the clean-up of wastes from agricultural or other industries, simultaneously producing useful compounds such as L-lysine or putrescine. This book provides a comprehensive overview of current knowledge and research on C. glutamicum systems biology and biotechnological applications. Written by a team of prominent scientists, the topics covered include: proteomics * flux analysis technology for metabolic analysis * metabolic engineering for alternative carbon source utilization * manipulation of nitrogen metabolism * transport, degradation, and assimilation of aromatic compounds and their regulation * engineering for production of organic acids and alcohols * microbial factory for the production of polyesters * biotechnological application under oxygen deprivation * the secretory production of heterologous proteins * genetically-encoded biosensors. Packed with practical information and state-of-the-art science, this concise volume is an essential handbook for everyone working with Corynebacterium and related organisms in academia, biotechnology companies, and the pharmaceutical industry, It is a recommended volume for all microbiology libraries. [Subject: Microbiology, Life Science, Biotechnology]