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Nota di contenuto	Contents; Contributors; Current Books of Interest; Preface; 1: Trends in Corynebacterium glutamicum Research and Application; From glutamate producer to a biotechnology workhorse; Systems biology; Corynebacterium glutamicum as a synthetic biology platform; Corynebacterium glutamicum-based green technology; 2: Proteomics of Corynebacterium glutamicum; Introduction; Understanding Corynebacterium glutamicum physiology with proteomics: application examples; Methods of Corynebacterium glutamicum proteomics; Conclusion and outlook 3: Developing Interpretation of Intracellular Metabolism of Corynebacterium glutamicum by Using Flux Analysis TechnologyIntroduction; Understanding the physiology of Corynebacterium glutamicum lysine production and glutamate production through conventional metabolic flux analysis; Fractional 13C enrichment-based metabolic flux analysis; Improvement in metabolic flux analysis precision; Conclusion; 4: Growth and Production Capabilities of Corynebacterium glutamicum: Interrogating a Genome-scale Metabolic Network Model; Introduction; The metabolic network of Corynebacterium glutamicum Stoichiometric modelling fundamentalsModel validation; Predicting production capabilities for amino acids; Uncertainties in metabolic network models; Metabolic flux analysis; Conclusions; 5: Metabolic

Engineering of Corynebacterium glutamicum for Alternative Carbon Source Utilization; Introduction; Engineering of Corynebacterium glutamicum for alternative carbon sources; Complex carbon sources; Summary and outlook; 6: Manipulation of Nitrogen Metabolism and Alternative Nitrogen Sources for Corynebacterium glutamicum; Ammonium assimilation in Corynebacterium glutamicum
Regulation of nitrogen metabolismManipulation of nitrogen metabolism for amino acid production; Overexpression, deletion and heterologous expression of glutamate dehydrogenase; Overexpression of glutamine synthetases; Influence of glutamate synthase on L-glutamate biosynthesis; Changing ammonium assimilation and amino acid production by manipulation of -ketoglutarate supply; Influence of ammonium and glutamate transport systems on amino acid production; Manipulation of nitrogen regulation: influences on metabolite pools; Assimilation of alternative nitrogen sources; Concluding remarks
7: Transport, Degradation and Assimilation of Aromatic Compounds and their Regulation in Corynebacterium glutamicum Introduction; What do the Corynebacterium glutamicum genomes predict for degradation and assimilation of aromatic compounds?; Corynebacterium glutamicum grows on various aromatic compounds; Physiological adaptation of Corynebacterium glutamicum growing on aromatic compounds compared with carbohydrates; Uptake and transport of aromatic compounds in Corynebacterium glutamicum; Aromatic compounds degraded via protocatechuate branch of the -ketoadipate pathway
Aromatic compounds degraded via the catechol branch of the -ketoadipate pathway

Sommario/riassunto

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 suga