



# **Bacterial Cellular Metabolic Systems: Metabolic Regulation of a Cell System with $^{13}\text{C}$ -Metabolic Flux Analysis (Woodhead Publishing Series in Biomedicine)**

*K. Shimizu*

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The metabolic regulation of a cell system is of critical importance in systems biology, and a robust model of these mechanisms is essential in predicting the effects on the metabolism of both the culture environment and the knockout of specific genes. Bacterial cellular metabolic systems focuses on this highly topical subject in relation to culture environment and provides a detailed analysis from gene level to metabolic level regulation, as well as offering a discussion of the most recent modelling approaches. The book begins with an introduction to metabolic mechanisms and to the metabolic regulation of a cell, before moving on to discussing the action of global regulators in response to a specific culture environment. The second half of the book examines conventional flux balance analysis and its applications, <sup>13</sup>C-metabolic flux analysis, and the effect of a specific gene knockout on the metabolism.

- Comprehensive account of metabolic regulation via global regulators in response to changes in the culture environment
- Basic formulation of <sup>13</sup>C-metabolic flux analysis based on <sup>13</sup>C-labelling experiments
- Systems biology approach for the modelling and computer simulation of the main metabolic pathways of a cell system

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