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Bacterial Metabolism

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To Ellen

Preface

This book has been written for students who are taking a course in bacterial metabolism. I hope, however, that scholars will also find it useful either as a help in teaching bacterial metabolism or as a review on the special aspects of metabolism in bacteria.

The concept of this book results from my experience in teaching bacterial metabolism. In the first chapters the principal reactions of the energy and biosynthetic metabolism have been discussed using *Escherichia coli* as a model organism. Then the diversity of aerobic metabolism has been outlined. Following a brief description of the regulation of the level and the activity of enzymes in bacteria the characteristic features of fermentative, chemolithotrophic and phototrophic metabolism have been discussed. Finally, the last chapter has been devoted to nitrogen fixation. Throughout the text I have tried not only to describe metabolic pathways and enzyme reactions but also to elucidate the physiology of the microorganisms which carry out all these metabolic reactions.

Two comments regarding the formulas used in this book are necessary. Organic acids are usually called after the names of their salts which are shorter (formate for formic acid, pyruvate for pyruvic acid). However, in schemes and figures the formulas of the free acids are given. Furthermore, it should be pointed out that NADH_2 and NADPH_2 and not NADH and NADPH are used as abbreviations for reduced nicotinamide-adenine dinucleotide and reduced nicotinamide-adenine dinucleotide phosphate, respectively. This has been done as these compounds are two electron carriers and redox reactions involving these carriers are thus easier to formulate.

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GERHARD GOTTSCHALK

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