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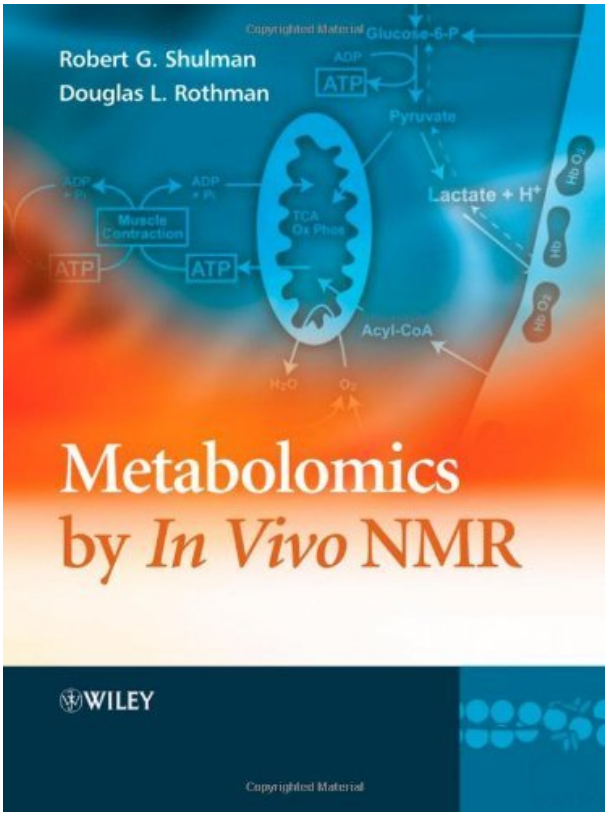

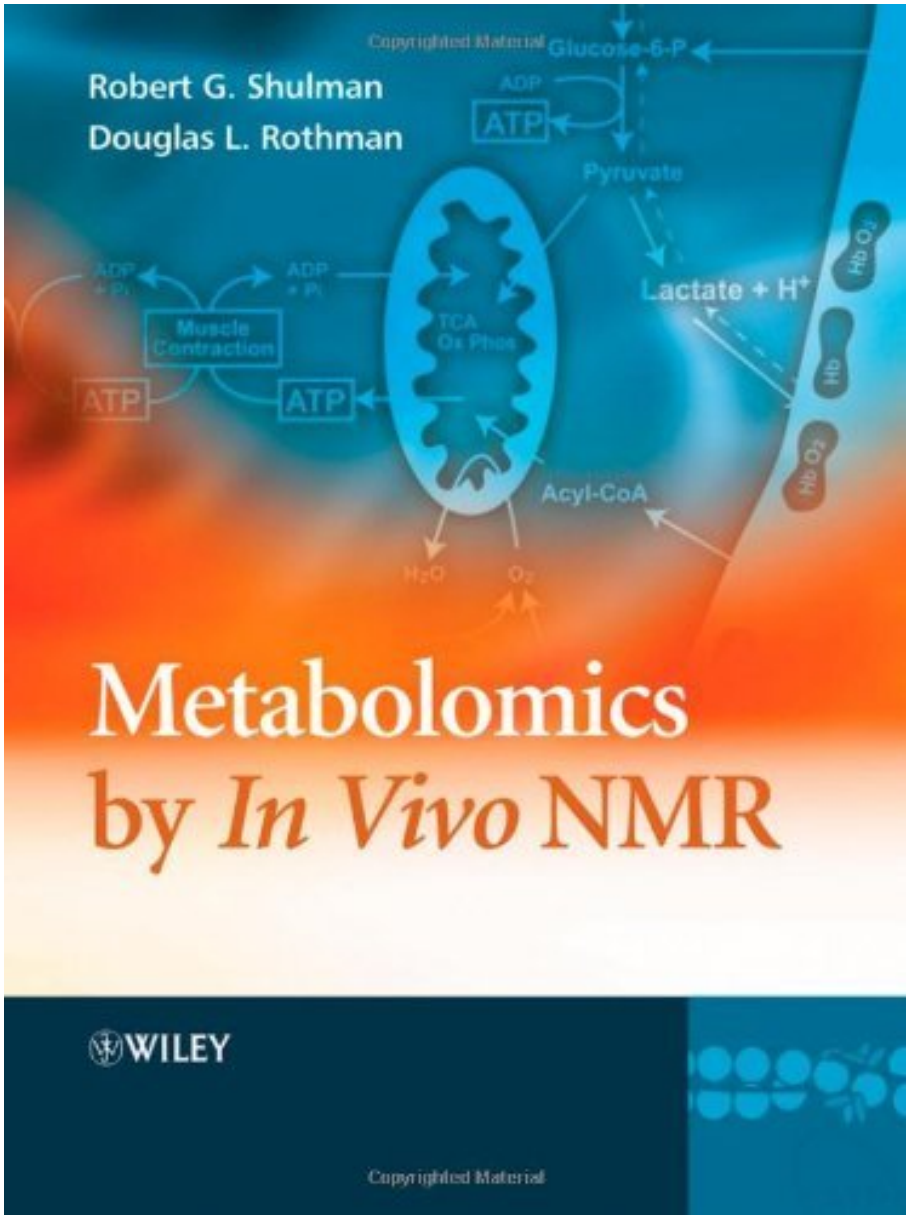

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From the Back Cover
In vivo NMR of metabolites has built upon classical metabolic pathways to revolutionize our understanding of metabolism. In this book in vivo studies of metabolic fluxes in human muscle, heart and liver have utilized Metabolic Control Analysis (MCA) to relate metabolism to higher-level physiological functions. These novel approaches have located the genetic defect of Type II diabetes in recruitment of the muscle glucose transporter during glycogen synthesis, and have evaluated effects of diet and exercise upon this crucial step.

Flux control in muscle serves to guide interpretations of glucose consumption in the heart, and in yeast suddenly faced with more glucose than they need to oxidize. NMR studies show how reverse flows, so called "futile cycling" play an important role for yeast in these transient conditions. Isotopomer analysis of labelling data show how in vivo pathway fluxes can be obtained from body fluids in ways capable of high throughput.

In contrast to unproven hopes of going from metabolites directly to organismic function, this book moves by in vivo NMR from the molecules of metabolism to the conditions set by systemic physiology. This book will appeal to all readers looking for information on the following topics:

- Up to date methodology and applications of in vivo NMR spectroscopy;
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This book will appeal to the medical, biochemical and physiological communities, particularly those members who wish to understand the metabolic basis of human functions in modern quantitative terms, and the methods of in vivo NMR and Metabolic Control Analysis which have provided these insights.

About the Author
Editors: Robert G. Shulman and Douglas L. Rothman, Yale University School of Medicine, New Haven, Connecticut, USA

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Metabolism By In Vivo NMR reviews and extends the experimental and theoretical reports concerning in vivo NMR, a pioneering approach that offers versatile new ways of studying metabolic pathways. Perfectly timed to coincide with recent findings that demonstrate the novelty and strength of this approach, the book covers recent applications in biochemistry, medicine, and psychology; in vivo NMR techniques; MCA; glucose metabolism focusing on glycogen; the value of muscle glycogen measurements in exercise; and much more.

- This book is unique in linking in vivo 13C NMR measurements of neuronal activity and energetics with applications to functional imaging and certain disease states
- Provides a fundamental neurochemical explanation of brain activity applicable to functional imaging, theories of neuronal activity and disease states, e.g. epilepsy, psychiatric diseases and developmental disorders
- Novel and potentially controversial
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