

Symposium and Training VII: ¹³C in Metabolic Research

Thursday, May 6, 1999

Presented by

**The Mary Nell and Ralph B. Rogers
Magnetic Resonance Center**

and

The National Center for Research Resources in association with



Program Objective

This symposium brings together research from laboratories at UT Southwestern and our outstanding guest speakers. The morning session is devoted to training for physicians, biomedical scientists and students who are interested in ¹³C NMR isotopomer analysis for metabolic studies. In this session, Dr. Dean Sherry will present an overview of basic concepts for ¹³C NMR isotopomer analysis, Dr. Craig Malloy will discuss extracting metabolic information from NMR data, Dr. Thomas Szyperski will present the use of 2D techniques, and Dr. Robert Lenkinski will discuss the application of ¹H NMR to *in vivo* metabolic studies.

The afternoon session focuses on ¹³C NMR and ¹³C Mass Spectrometry in research on intermediary metabolism. Dr. Gary Lopaschuk will discuss the heart with Dr. Denis McGarry presenting applications to the liver. Following these presentations, Dr. Christopher Newgard, Dr. Marc Hellerstein, and Dr. John Jones will present their applications to intermediary metabolism.

The reception and dinner is designed to provide an opportunity for interaction between attendees and speakers. After dinner, Dr. Henri Brunengraber from Case Western Reserve University will discuss the use of metabolic studies in medical decisions.

Guest Speakers

Thomas Szyperski, PhD, Associate Professor of Chemistry and Biochemistry, State University of New York at Buffalo, Buffalo, NY

Robert E. Lenkinski, PhD, Professor of Radiologic Science, Magnetic Resonance Imaging, Department of Radiology, University of Pennsylvania Medical Center, Philadelphia, PA

Gary Lopaschuk, PhD, Professor of Pediatrics, Adjunct Professor of Pharmacology, University of Alberta, Edmonton, Alberta, Canada

Marc Hellerstein, MD, PhD Associate Professor in Nutritional Sciences, University of California at Berkeley, and Associate Professor of Medicine, University of California at San Francisco

Henri Brunengraber, MD, Ph.D Chair and Professor, Department of Nutrition, Case Western Reserve University, Cleveland, OH

UT Southwestern Speakers

A. Dean Sherry, PhD, Professor of Radiology at the University of Texas Southwestern Medical Center and Professor of Chemistry at the University of Texas at Dallas

Craig R. Malloy, MD, Professor of Radiology and Internal Medicine, and Director of the Southwestern Biomedical Magnetic Resonance Facility at the Mary Nell and Ralph B. Rogers Magnetic Resonance Center, University of Texas Southwestern Medical Center, Dallas, Texas

J. Denis McGarry, PhD, Professor of Internal Medicine and Biochemistry, University of Texas Southwestern Medical Center, Dallas, TX

Christopher B. Newgard, PhD, Professor of Biochemistry and Internal Medicine, University of Texas Southwestern Medical Center, Dallas, TX

John G. Jones, DSc, Instructor of Radiology, University of Texas Southwestern Medical Center, Dallas, TX

Program Schedule

8:00 a.m.	On Site Registration
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TRAINING: INTRODUCTION TO ^{13}C ISOTOPOMERS

8:30 a.m.	How Metabolic Pathways Influence ^{13}C and ^1H NMR Spectra A. Dean Sherry, PhD
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9:00 a.m.	How to Obtain Metabolic Information from ^{13}C and ^1H NMR Spectra Craig R. Malloy, MD
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9:30 a.m.	Problem Sets
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10:30 a.m.	Break
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10:45 a.m.	Indirect Detection of ^{13}C Using 1D ^1H and 2D [$^{13}\text{C},^1\text{H}$]-Correlation NMR Spectroscopy Thomas Szyperski, PhD
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11:30 a.m.	Analysis of Metabolic Pathways <i>in vivo</i> by ^1H MRS Robert E. Lenkinski, PhD
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12:00 a.m.	Lunch on your own
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SYMPOSIUM: PROBLEMS IN INTERMEDIARY METABOLISM

1:00 p.m.	Malonyl CoA Control of Fatty Acid Oxidation in the Heart Gary Lopaschuk, PhD
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1:45 p.m.	Fatty Acid Cross-Talk in the Liver and Pancreatic Beta Cell J. Denis McGarry, PhD
2:30 p.m.	Discussion
2:45 p.m.	Break
3:00 p.m.	Genetic Engineering Applied to Metabolic Control Mechanisms Christopher B. Newgard, PhD
3:45 p.m.	Quantitation of Metabolic Pathway Fluxes <i>in vivo</i> by GC/MS Marc Hellerstein, MD, PhD
4:30 p.m.	Krebs Cycle Contribution to Gluconeogenesis by NMR John G. Jones, DSc
5:30 p.m.	Wine and cheese reception
6:30 p.m.	Buffet dinner
7:15 p.m.	Medical Decisions Based on Metabolic Analysis Henri Brunengraber, MD, PhD

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