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6 Glucose Kinetics: Measurement of Flux Rates Introduction; Measurement of glucose production and uptake by the liver - tissue balance techniques; Properties of glucose tracers; Measurement of glucose production and uptake by the liver - systemic techniques; Conclusion; Acknowledgements; 7 Xenobiotics as Probes of Carbohydrate Metabolism; Introduction; Glucuronidation; Glutamination; Ribosylation; Acetylation; Glycination; 8 Tracing Hepatic Glucose and Glycogen Fluxes with $2H_2O$; Introduction; Methodology; Theoretical considerations; Quantifying hepatic glucose and glycogen metabolism Conclusion 9 Lipid Kinetics; Introduction; Tracers for the study of adipose tissue lipolysis; Tracers for the study of triglyceride-rich lipoprotein kinetics; Conclusion; Acknowledgements; 10 Protein and Amino Acid Kinetics; Introduction; Measuring amino acid turnover; Measuring protein turnover; Proteome dynamics; Urea kinetics; Determining the molecular control of protein dynamics; Conclusion; Acknowledgements; 11 Assessment of Metabolic Fluxes by In Vivo MR Spectroscopy; Phenomena of nuclear magnetic resonance - imaging and spectroscopy; Skeletal muscle; Liver; Brain; Conclusion 12 Positron Emission Tomography in Metabolic Research Introduction; Tracers for metabolic imaging; Principles of modeling; Future perspectives; 13 Assessment of Body Fat Content and Distribution; Introduction; Measurement techniques; Body fat distribution and insulin resistance; 14 Tissue Biopsies in Diabetes Research; Introduction; Percutaneous needle biopsy of skeletal muscle; Biopsy procedure and sample handling; Discomfort and complications of needle biopsy; Advantages and limitations of needle biopsy; Application of muscle biopsy in diabetes; Morphology of skeletal muscle Application of muscle morphology in type 2 diabetes

Sommario/riassunto

A practical "how to" guide for multiple methods in metabolism, with a critical and objective discussion of strengths, limitations, and appropriate applications of the described methods. Edited by the winner of the Oskar-Minkowski Prize of the EASD in 2006 Clinical trials in populations at risk of or with overt diabetes mellitus are being performed all around the world to test novel drugs and approaches to managing these diseases. During the last decade, new methods and techniques have been introduced - and are being developed further - that facilitate monitoring of metaboli
