

Real-Time PCR

Advanced Technologies and Applications



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Real-time PCR technology is an established powerful research tool used in many scientific disciplines and is also utilised for mainstream testing in the regulated markets such as food, veterinary and human *in-vitro* diagnostics.

This essential manual provides both the novice and experienced user with an invaluable reference to a wide-range of real-time PCR technologies and applications and provides an overview of the theory of this increasingly important technique. Renowned international authors present detailed technical insights into the underlying principles, methods and practice of real-time PCR. The initial chapters cover the important aspects of real-time PCR including choosing an instrument and probe system, set-up, nucleic acid synthesis, sample extraction controls, and validation and data analysis. Further chapters provide a comprehensive overview of important real-time PCR methodologies such as quantification, expression analysis and mutation detection. This is complemented by the final chapters, which address the application of real-time PCR to diagnosis of infectious diseases, biodefence, veterinary science, food authenticity and molecular haplotyping. This timely and authoritative volume serves both as a basic introduction to real-time PCR and as a source of current trends and applications for those already familiar with the technology. The editors also aim to stimulate readers of all levels to develop their own innovative approaches to real-time PCR.

An essential book for all laboratories using PCR.

Chapter 1. Homogenous Fluorescent Chemistries for Real-time PCR. *Martin A. Lee, David J. Squirrell, Dario L. Leslie and Tom Brown*

Chapter 2. Internal and Other Controls for Real-time PCR Validation. *Martin A. Lee, David J. Squirrell and Dario L. Leslie*

Chapter 3. Analysis of mRNA Expression by Real-time PCR. *Stephen A. Bustin and Tania Nolan*

Chapter 4. Applications of Real-time PCR to Biothreat Analysis. *Christina Egan and Cassandra D. Kelly-Cirino*

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Chapter 7. The Extraction and Purification of Nucleic Acids for Analysis by PCR. *Chaminda Salgado and Waqar Hussain*

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Chapter 9. Real-time PCR Arrays. *Nick A. Saunders*

Chapter 10. The Validation of Real-time PCR Assays for Infectious Diseases. *Melvyn Smith*

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