## Contents

List of Contributors v

1 Magic in Solution: an Introduction and Brief History of PCR 1
   Carl T. Wittwer and Jared S. Farrar

2 Difficult Templates and Inhibitors of Polymerase Chain Reaction 23
   Jack M. Gallup

3 Significance of Controls and Standard Curves in PCR 67
   Ian Kavanagh, Gerwyn Jones and Saima Naveed Nayab

4 Obtaining Maximum PCR Sensitivity and Specificity 79
   Cameron N. Gundry and Matthew D. Poulson

5 RT-PCR Optimization Strategies 97
   Martina Reiter and Michael W. Pfaffl

6 Real-Time PCR Instrumentation: an Instrument Selection Guide 119
   Sandrine Javorski and Ivan Delgado Orlic

7 Quantitative PCR Data Analysis – Unlocking the Secret to Successful Results 137
   Jan Hellemans and Jo Vandesompele

8 The MIQE Guidelines Uncloaked 149
   Greg Shipley

9 PCR Applications for Epigenetics Research 163
   Gavin Meredith, Miro Dudas, Mark Landers, Vasiliki Anest, Jonathan Wang, Caifu Chen, Peter Jozsi and Christopher Adams

10 High-Resolution Melting Analysis 197
    John F. Mackay and Carl T. Wittwer

11 Microfluidic Emulsion PCR 213
    N. Reginald Beer and John H. Leamon

Index 229

Colour plates A1