Contents

Foreword Preface Contributors		xi xiii xv
	Section I	
	SAMPLE COLLECTION, SAMPLE STORAGE, AND DNA EXTRACTION	
1	Forensic DNA Evidence Collection at a Crime Scene: An Investigator's Commentary JOSEPH BLOZIS	3
2	Optimizing Storage and Handling of DNA Extracts STEVEN B. LEE, CECELIA A. CROUSE, AND MARGARET C. KLINE	19
3	Extraction of DNA from Forensic Biological Samples for Genotyping JAMES E. STRAY, JASON Y. LIU, MAXIM G. BREVNOV, AND JAIPRAKASH G. SHEWALE	39
4	Extraction of DNA from Human Remains JAMES E. STRAY AND JAIPRAKASH G. SHEWALE	65
	Section II SAMPLE ASSESSMENT	
5	RNA Profiling for the Identification of the Tissue Origin of Dried Stains in Forensic Biology ERIN K. HANSON AND JACK BALLANTYNE	81
6	Assessment of DNA Extracted from Forensic Samples Prior to Genotyping MAURA BARBISIN AND JAIPRAKASH G. SHEWALE	101

viii Contents

	Section III	
	STRs—PROVEN GENOTYPING MARKERS	
7	Principles, Practice, and Evolution of Capillary Electrophoresis as a Tool for Forensic DNA Analysis	131
	JAIPRAKASH G. SHEWALE, LIWEI QI, AND LISA M. CALANDRO	
8	Next-Generation STR Genotyping Kits for Forensic Applications	163
	JULIO J. MULERO AND LORI K. HENNESSY	
9	Biology and Genetics of New Autosomal STR Loci Useful for Forensic DNA Analysis	181
	JOHN M. BUTLER AND CAROLYN R. HILL	
10	Hidden Variation in Microsatellite Loci: Utility and Implications for Forensic DNA	199
	JOHN V. PLANZ AND THOMAS A. HALL	
11	Additional Y-STRs in Forensics: Why, Which, and When	221
	KAYE N. BALLANTYNE AND MANFRED KAYSER	
	Section IV	
	EXPANDING THE GENOTYPING CAPABILITIES	
12	Forensic Mitochondrial DNA Analysis: Current Practice and Future Potential	249
	MITCHELL HOLLAND, TERRY MELTON, AND CHARITY HOLLAN	1D
13	Applications of Autosomal SNPs and Indels in Forensic Analysis	279
	CHRISTOPHER PHILLIPS	
14	Deep-Sequencing Technologies and Potential Applications in Forensic DNA Testing	311
	ROXANNE R. ZASCAVAGE, SHANTANU J. SHEWALE, AND JOHN V. PLANZ	

Contents

15	Sample-to-Result STR Genotyping Systems: Potential and Status	
	JENNY A. LOUNSBURY, JOAN M. BIENVENUE, AND JAMES P. LANDERS	
	Section V	
	TRAINING	
16	Training of Forensic DNA Scientists—A Commentary MEREDITH A. TURNBOUGH, ARTHUR J. EISENBERG, LISA SCHADE, AND JAIPRAKASH G. SHEWALE	381
Index		391