

Foreword

The book, *Digital Forensics for the Health Sciences: Applications in Practice*, should be of great interest to forensic investigators throughout the world. The editor, Dr. Andriani Daskalaki, who works in the field of molecular medicine and bioinformatics at the Max Planck Institute for Molecular Genetics, has gathered experts from across the globe to contribute. From England, Italy, France, India, China, the United States of America, Australia, Greece, Egypt, Belgium, and of course Germany, the contributors write about forensic topics including anthropology, odontology, medical imaging, genetics and the genome, microarray analysis, facial reconstruction, machine learning, and forensic statistics.

The book consists of three sections, the first of which is *Digital Forensics Best Practices in Medicine*. From the Smithsonian Institution comes a discussion of new techniques, technologies, and approaches to anthropology and outlines how some of these have become part of the practice of forensic anthropology. Three-dimensional visualization of forensic samples such as fingerprints, hair, and skin abrasions among others utilizing fluorescent and reflective confocal laser imaging coupled with new software is the focus of Australian contributors. From India, authors discuss the security of medical images such as adding non-visible watermarks to assure authenticity. The digital use of morphometry in forensics is discussed in an Italian contribution. And from France comes a discussion on the use of computer-assisted method for facial reconstruction.

The second section, *Basic Research: A Bridge to Digital Forensics* begins with a discussion of the possible forensic value of the (RNA) transcriptome authored by the first group of contributors from Greece. Other Greek authors discuss the growing importance of microarray analysis in distinguishing forensic samples. From Germany comes a discussion of extended analytical consideration of mathematical modeling the microRNA role in complex networks. Part two concludes with an offering from China discussing the growing role, challenges, and novel machine learning techniques in clinical data sets.

Section three is focused on *Digital Forensics Applications in Dentistry*. The United States submits an article discussing the impact of digital advances on techniques in dental identification, disaster victim identification, and bitemark comparison. The English contribution discusses biologic variability of the growth of teeth in dental age assessment methods. Egyptian contributors present a method for identifying individuals using an automated system to compare postmortem and antemortem dental radiographic images. Right-left asymmetries in the articular surfaces of the temporomandibular joint are investigated by authors from Belgium. The final chapter, also contributed from the USA, reviews the application of statistical methods and the assumptions which underlie statistical analysis in the presentation of evidence at trial.

Too often forensic scientists fail to look beyond their borders in their discipline, their country, or their continent. This book crosses those borders and ties us all together.

Robert E. Barsley
LSUHSC School of Dentistry, USA
July 2010

Robert E. Barsley, DDS, JD is a 1977 graduate of the LSU School of Dentistry and a 1987 graduate of the Loyola University School of Law in New Orleans. He was admitted to the bar in Louisiana in 1987. He joined the faculty of the LSU School of Dentistry in 1980, advancing to the rank of Professor. He currently serves as Director of Oral Health Resources, Community and Hospital Dentistry. Dr. Barsley became a diplomat of the ABFO in 1985 and is currently the Vice-president. A past-president of the ASFO, he serves as forensic dental consultant for several parishes (counties) in Louisiana. He is a Magistrate Judge for Ponchatoula, Louisiana. He is a fellow of the American College of Dentists, the International College of Dentists, and the Odontology Section of the American Academy of Forensic Sciences and currently serves as Secretary of the AAFS and Treasurer of the Forensic Science Foundation. He has also served as a Robert Wood Johnson Foundation Congressional Health Policy Fellow in the office of Senator John Breaux. The author of numerous articles and chapters on the subject of forensic dentistry, he has lectured to national and international audiences concerning forensic dentistry. One of the lead dentists in the identification process resulting from Hurricane Katrina in 2005, he has confirmed the identity of hundreds of other bodies, has analyzed numerous bite mark cases, and testifies in court on a regular basis.