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MOLECULAR BIOLOGY OF THE CELL

FORENSIC SCIENCE AND HUMANITARIAN ACTION

INTERACTING WITH THE DEAD AND THE LIVING

John Wiley & Sons **Widens traditional concepts of forensic science to include humanitarian, social, and cultural aspects Using the preservation of the dignity of the deceased as its foundation, Forensic Science and Humanitarian Action: Interacting with the Dead and the Living is a unique examination of the applications of humanitarian forensic science. Spanning two comprehensive volumes, the text is sufficiently detailed for forensic practitioners, yet accessible enough for non-specialists, and discusses both the latest technologies and real-world interactions. Arranged into five sections, this book addresses the 'management of the dead' across five major areas in humanitarian forensic science. Volume One presents the first three of these areas: History, Theory, Practice, and Legal Foundation; Basic Forensic Information to Trace Missing Persons; and Stable Isotopes Forensics. Topics covered include: Protection of The Missing and the Dead Under International Law Social, Cultural and Religious Factors in Humanitarian Forensic Science Posthumous Dignity and the Importance in Returning Remains of the Deceased The New Disappeared – Migration and Forensic Science Stable Isotope Analysis in Forensic Anthropology Volume Two covers two further areas of interest: DNA Analysis and the Forensic Identification Process. It concludes with a comprehensive set of case studies focused on identifying the deceased, and finding missing persons from around the globe, including: Forensic Human Identification from an Australian Perspective Skeletal Remains and Identification Processing at the FBI Migrant Deaths along the Texas/Mexico Border Humanitarian Work in Cyprus by The Committee on Missing Persons (CMP) Volcán De Fuego Eruption – Natural Disaster Response from Guatemala Drawing upon a wide range of contributions from respected academics working in the field, Forensic Science and Humanitarian Action is a unique reference for forensic practitioners, communities of humanitarian workers, human rights defenders, and government and non-governmental officials.**

STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES

A PATH FORWARD

National Academies Press **Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.**

FORENSIC DNA TYPING

BIOLOGY, TECHNOLOGY, AND GENETICS OF STR MARKERS

Elsevier **Forensic DNA Typing, Second Edition, is the only book available that specifically covers detailed information on mitochondrial DNA and the Y chromosome. It examines the science of current forensic DNA typing methods by focusing on the biology, technology, and genetic interpretation of short tandem repeat (STR) markers, which encompass the most common forensic DNA analysis methods used today. The book covers topics from introductory level right up to cutting edge research. High-profile cases are addressed throughout the text, near the sections dealing with the science or issues behind these cases. Ten new chapters have been added to accommodate the explosion of new information since the turn of the century. These additional chapters cover statistical genetic analysis of DNA data, an emerging field of interest to DNA research. Several chapters on statistical analysis of short tandem repeat (STR) typing data have been contributed by Dr. George Carmody, a well-respected professor in forensic genetics. Specific examples make the concepts of population genetics more understandable. This book will be of interest to researchers and practitioners in forensic DNA analysis, forensic scientists, population geneticists, military and private and public forensic laboratories (for identifying individuals through remains), and students of forensic science. *The only book available that specifically covers detailed information on mitochondrial DNA and the Y chromosome *Chapters cover the topic from introductory level right up to "cutting edge" research *High-profile cases are addressed throughout the book, near the sections dealing with the science or issues behind these cases *NEW TO THIS EDITION: D.N.A. Boxes--boxed "Data, Notes & Applications" sections throughout the book offer higher levels of detail on specific questions**

THE HANDY TECHNOLOGY ANSWER BOOK

Visible Ink Press **Technology pervades our daily lives and modern society, and not just when it comes to computers and smart phones. Before there was the computer, there was the abacus. Before the smart phone, there was the telegraph and ball point pen. Electricity, penicillin, and the compass have all led to revolutionary changes in how we live. The Handy Technology Answer Book explains how technology has revolutionized the way people live, work, and play. It covers a broad range of fields, including medicine, mining, buildings, transportation, the military, and agriculture, and how they have been changed by technology. From the relationship between science and technology to nanotechnology, robots, and predictions for future technology, The Handy Technology Answer Book presents the latest and historical in an engaging and informative format. It brings well-researched answers to more than 1,100 common questions on technology, such as What are the major time periods of technology? Who is considered to be the first engineer? Which individual was granted the most U.S. patents? What is a Uniform Resource Locator, or URL? What products are made from recycled plastic? Can human beings be cloned? What is the future of wearable technology in health care?**

THE HANDY BIOLOGY ANSWER BOOK

Visible Ink Press **Gene Therapy. DNA Profiling. Cloning. Stem Cells. Super Bugs. Botany. Zoology. Sex. The study of life and living organisms is ancient, broad, and ongoing. The thoroughly revised and completely updated second edition of The Handy Biology Answer Book examines, explains, and traces mankind’s understanding of this important topic. From the newsworthy to the practical and from the medical to the historical, this entertaining and informative book brings the complexity of life into focus through the well-researched answers to nearly 1,300 common biology questions, including … • What is social Darwinism? • Is IQ genetically controlled? • Do animals commit murder? • How did DNA help “discover” King Richard III? • Is obesity inherited? The Handy Biology Answer Book covers all aspects of human, animal, plant, and microbial biology. It also introduces the scientists behind the breathtaking advances, tracing scientific history and milestones. It explains the inner workings of cells, as well as bacteria, viruses, fungi, plant and animal characteristics and diversity, endangered plants and animals, evolution, adaption and the environment, DNA and chromosomes, genetics and genetic engineering, laboratory techniques, and much more. This handy reference is the go-to guide for students and the more learned alike. It’s for anyone interested in life!**

NEW PERSPECTIVES IN FORENSIC HUMAN SKELETAL IDENTIFICATION

Academic Press **New Perspectives in Forensic Human Skeletal Identification provides a comprehensive and up-to-date perspective on human identification methods in forensic anthropology. Divided into four distinct sections, the chapters will reflect recent advances in human skeletal identification, including statistical and morphometric methods for assessing the biological profile (sex, age, ancestry, stature), biochemical methods of identification (DNA analysis, stable isotope analysis, bomb curve analysis), and use of comparative radiography. The final section of this book highlights advances in human identification techniques that are being applied to international populations and disaster**

victims. The contributing authors represent established experts in forensic anthropology and closely related fields. New Perspectives in Forensic Human Skeletal Identification will be an essential resource for researchers, practitioners, and advanced students interested in state-of-the-art methods for human identification. A comprehensive and up-to-date volume on human identification methods in forensic anthropology Focuses on recent advances such as statistical and morphometric methods for assessing the biological profile, biochemical methods of identification and use of comparative radiography Includes an entire section on human identification techniques being applied to international populations and disaster victims

DNA TECHNOLOGY IN FORENSIC SCIENCE

National Academies Press **Matching DNA samples from crime scenes and suspects is rapidly becoming a key source of evidence for use in our justice system. DNA Technology in Forensic Science offers recommendations for resolving crucial questions that are emerging as DNA typing becomes more widespread. The volume addreses key issues: Quality and reliability in DNA typing, including the introduction of new technologies, problems of standardization, and approaches to certification. DNA typing in the courtroom, including issues of population genetics, levels of understanding among judges and juries, and admissibility. Societal issues, such as privacy of DNA data, storage of samples and data, and the rights of defendants to quality testing technology. Combining this original volume with the new update--The Evaluation of Forensic DNA Evidence--provides the complete, up-to-date picture of this highly important and visible topic. This volume offers important guidance to anyone working with this emerging law enforcement tool: policymakers, specialists in criminal law, forensic scientists, geneticists, researchers, faculty, and students.**

MISSING PERSONS AND UNIDENTIFIED REMAINS

THE NATION'S SILENT MASS DISASTER

FORENSIC DENTAL EVIDENCE

AN INVESTIGATOR'S HANDBOOK

Elsevier **Forensic Dental Evidence: An Investigators Handbook highlights the discussion regarding unjust convictions caused by inaccurate bitemark opinions. The book focuses on cases that use forensic techniques, emphasizing modern methods and protocols. Through this book, the latest information available is offered to the forensic community. This book demonstrates expertise in forensic dentistry by presenting chapters on human identification in domestic and international situations; investigations on missing person and violent crimes against persons; mass-disaster planning and disaster response; and new threats from terrorist attacks on urban centers. Furthermore, it discusses topics regarding bitemark evidence, such as forensic photography, analysis and legal issues. The book also presents two chapters on new scientific topics: The Next Level in Victim Identification: Materials Properties as an Aid in Victim Identification; and DNA for First Responders: Recognizing, Collecting, and Analyzing Biological Evidence Related to Dentistry (chapters 3 and 8, respectively). This book is suited to anyone seeking knowledge on forensic dentistry; it will be of great value to investigators, lawyers, medical examiners, nurses, and dentists with an interest in forensic dental cases. Contributions by internationally recognized and experienced forensic experts cover missing persons cases and mass disaster cases from around the world Contains over 200 full-color photographs of crime scene evidence, human identification cases and bitemark details Includes many new exoneration cases derived from the Editor's work with the Innocence Project**

DNA ANALYSIS FOR MISSING PERSON IDENTIFICATION IN MASS FATALITIES

CRC Press **Advances in DNA technology have expanded such that forensic DNA profiling is now considered a routine method for identifying victims of mass fatalities. Originating from an initiative funded by a grant from the U.S. Department of State, DNA Analysis for Missing Person Identification in Mass Fatalities presents a collection of training modules that supply comprehensive instruction in these complex techniques. The book begins with a concise overview of DNA analysis methods and their use in identifying victims of mass fatalities. It then goes on to explore: Mass fatality response operations, including body recovery, mortuary operations, family assistance, the identification of human remains, and psychosocial support for families Best practices in DNA sample collection and the different types of reference samples that can be used to identify a reported missing (RM) individual Autosomal short tandem repeat (STR) DNA profile analysis and interpretation, and procedures to ensure data accuracy Major steps involved in generating a DNA profile and the complex aspects of data analysis and interpretation The importance of data management using information technology tools, and tips for maintaining quality operations**

Accreditation and standards and the major elements of a DNA quality program Setting up a laboratory operation, including planning, staffing, identifying types of equipment and supplies, and the procedures for ensuring that laboratory equipment performs appropriately The book includes a discussion of the key steps in the preparation, delivery, and evaluation of training sessions for personnel responding to a mass fatality human identification event. It also provides a comprehensive vocabulary list with terms related to mass fatality DNA identification. This text is a must-read for organizations contemplating the use of DNA in human identification initiatives following mass fatalities. It is also a tremendous value to emergency manager/planners, medical legal authorities, and forensic DNA laboratories.

LESSONS LEARNED FROM 9/11: DNA IDENTIFICATION IN MASS FATALITY INCIDENTS, SEPTEMBER 2006

ALL HANDS

NATIONAL INSTITUTE OF JUSTICE JOURNAL

FORENSIC SCIENCE AND HUMANITARIAN ACTION

INTERACTING WITH THE DEAD AND THE LIVING

John Wiley & Sons **Widens traditional concepts of forensic science to include humanitarian, social, and cultural aspects Using the preservation of the dignity of the deceased as its foundation, Forensic Science and Humanitarian Action: Interacting with the Dead and the Living is a unique examination of the applications of humanitarian forensic science. Spanning two comprehensive volumes, the text is sufficiently detailed for forensic practitioners, yet accessible enough for non-specialists, and discusses both the latest technologies and real-world interactions. Arranged into five sections, this book addresses the 'management of the dead' across five major areas in humanitarian forensic science. Volume One presents the first three of these areas: History, Theory, Practice, and Legal Foundation; Basic Forensic Information to Trace Missing Persons; and Stable Isotopes Forensics. Topics covered include: Protection of The Missing and the Dead Under International Law Social, Cultural and Religious Factors in Humanitarian Forensic Science Posthumous Dignity and the Importance in Returning Remains of the Deceased The New Disappeared – Migration and Forensic Science Stable Isotope Analysis in Forensic Anthropology Volume Two covers two further areas of interest: DNA Analysis and the Forensic Identification Process. It concludes with a comprehensive set of case studies focused on identifying the deceased, and finding missing persons from around the globe, including: Forensic Human Identification from an Australian Perspective Skeletal Remains and Identification Processing at the FBI Migrant Deaths along the Texas/Mexico Border Humanitarian Work in Cyprus by The Committee on Missing Persons (CMP) Volcán De Fuego Eruption – Natural Disaster Response from Guatemala Drawing upon a wide range of contributions from respected academics working in the field, Forensic Science and Humanitarian Action is a unique reference for forensic practitioners, communities of humanitarian workers, human rights defenders, and government and non-governmental officials.**

MOLECULAR MECHANISMS OF TRANSCRIPTION REGULATION BY NON-CODING RNAS AND THE DNA HELICASE RECQL5

Transcription is the process of copying a fragment of DNA in the cell's nucleus into RNA. This copy is then used as a template to produce proteins, or it functions by itself as an enzyme, structural element or regulator. Transcription of protein-coding genes in eukaryotes is achieved by RNA polymerase II (Pol II), an enzyme that is tightly regulated to allow for the adaptation of transcript levels to both extracellular conditions as well as intracellular needs. My research has focused on understanding transcriptional regulation by two distinct factors: non-coding RNAs (ncRNAs) that are upregulated in response to cellular stress, and the DNA helicase RECQL5, a member of the highly conserved family of RecQ helicases involved in DNA repair. Non-coding RNAs are an important transcriptional regulator when cells adapt to extreme conditions such as heat shock. In mouse and human cells, heat shock triggers an increase in levels of B2/B1 RNA and Alu RNAs, respectively, which regulate expression of protein-coding genes by Pol II. Although it had been shown that ncRNAs interact directly with Pol II to regulate transcription, many important questions remained unanswered: Where is the binding site for ncRNAs located? Does binding of ncRNAs interfere with the binding of DNA to Pol II? How are repressive and non-repressive ncRNAs, which are both upregulated in response to heat shock and which both bind to Pol II with high affinity, distinguished? To address these questions, I employed single-particle cryo-electron microscopy (cryo-EM) to determine the structures of human Pol II in complex with six different repressive and non-repressive ncRNAs from mouse and human. The structural data allowed me to identify a conserved docking site for ncRNAs in the active site cleft of Pol II; the location of this site was later confirmed independently by cross-linking studies in collaboration with the laboratory of James Goodrich. Collectively, my analysis of the cryo-EM reconstructions of ncRNA-Pol II complexes in conjunction with biochemical data from the Goodrich lab suggest that the distinction between repressive and non-repressive

ncRNAs is made by the general transcription factor TFIIF based on certain flexible RNA elements that extend beyond the docking site. RECQL5 is a DNA helicase implicated to function at the interface of the cellular DNA replication, DNA repair, and RNA transcription machineries. Although RECQL5 had previously been shown to interact directly with Pol II, its molecular mechanism of action remained elusive. My work aimed to answer the following questions: Where is the binding site for RECQL5 located on the surface of Pol II? Does binding of RECQL5 interfere with the binding of DNA or other transcription factors during transcription initiation or elongation? How is transcriptional repression by RECQL5 achieved at the molecular level? To answer these questions, we employed an integrative experimental approach, combining biochemical assays, X-ray crystallography, cryo-EM and small angle X-ray scattering. The crystal structure of a fragment of RECQL5's Pol II binding domain suggested that the topology of this domain is similar to a domain found in the transcription elongation factor TFIIS, which promotes continued transcription of arrested elongation complexes by stimulating the intrinsic RNA cleavage activity of Pol II. Using pull-down assays, I showed that RECQL5 and TFIIS compete for binding to Pol II, suggesting that the two proteins bind to overlapping sites. I corroborated these initial findings using an in vitro transcription assay, which confirmed that binding of RECQL5 to Pol II interferes with the function of TFIIS to promote read-through of intrinsic blocks to elongation. Using cryo-EM, I obtained a high-resolution reconstruction of an elongating Pol II complex repressed by RECQL5. By docking the known crystal structures of individual components into the EM map, I generated a pseudo-atomic model of the complex. This model confirmed the location of the binding site, and suggests a novel, dual mechanism for the regulation of transcription by RECQL5 that includes structural mimicry of the Pol II-TFIIS interaction. Both ncRNAs and RECQL5 are important regulatory factors in human cells whose molecular mechanisms of transcriptional repression remained unknown. My research has provided important insights into their structure and function and, in the case of RECQL5, uncovered a novel mechanism of transcription regulation that might be employed by a number of other factors involved in transcriptional repression at the interface of the DNA recombination, replication and repair machineries.

FORENSIC DENTAL EVIDENCE

AN INVESTIGATOR'S HANDBOOK

Elsevier **Forensic Dental Evidence, 2nd Edition establishes a foundation for dental investigation methodology - not only the reasons and the need behind the protocols, but the processes that should be used in gathering and preserving evidence to extract vital physical (impression) or biological (DNA) information. Included are details on how to identify various types of dental evidence, how to document, collect and preserve the evidence and the legal requirements regarding collection, storage and chain of custody issues. This new edition will be of great utility for forensic scientists and law enforcement involved in processing crime scenes, conducting criminal investigations, and analyzing crime scene and dental evidence. This book will also serve as an excellent reference for other forensic professionals such as: medical examiners, forensic pathologists, crime scene investigators, who are often called on as expert witnesses. Defense and prosecuting attorneys will also find this title a must have for their library. * Provides the basis of knowledge and training in forensic odontology that will extend into crime scene investigations and the crime laboratory. * Contains over 200 photographs of crime scene evidence and bitemark details. * Offers previously unavailable facts on digital comparison techniques and the latest technology used in photographing and recording dental evidence.**

MANUAL OF FORENSIC TAPHONOMY

CRC Press **"The main goals in any forensic skeletal analysis are to answer who is the person represented (individualization), how that person died (trauma/pathology), and when that person died (the postmortem interval or PMI). The analyses necessary to generate the biological profile include the determination of human, nonhuman, or nonosseous origin, the minimum number of individuals represented, age at death, sex, stature, ancestry, perimortem trauma, antemortem trauma, osseous pathology, odontology, and taphonomic effects-the postmortem modifications to a set of remains. The Manual of Forensic Taphonomy, Second Edition covers fundamental principles of these postmortem changes encountered during case analysis. Taphonomic processes can be highly destructive and subtract information from bones regarding their utility in determining other aspects of the biological profile, but they also can add information regarding the entire postmortem history of the remains and the relative timing of these effects. The taphonomic analyses outlined provide guidance on how to separate natural agencies from human-caused trauma. These analyses are also performed in conjunction with the field processing of recovery scenes and the interpretation of the site formation and their postdepositional history. The individual chapters categorize these alterations to skeletal remains, illustrate and explain their significance, and demonstrate differential diagnosis among them. Such observations may then be combined into higher-order patterns to aid forensic investigators in determining what happened to those remains in the interval from death to analysis, including the environment(s) in which the remains were deposited, including buried, terrestrial surface, marine, freshwater, or cultural contexts. Key Features: Provides nearly 300 full-color illustrations of both common and unique taphonomic affects to bones, derived from actual forensic cases Presents new research including experimentation on recovery rates during surface search, timing of marine alterations; trophy skulls; taphonomic laboratory and field**

methods; laws regarding the relative timing of taphonomic effects; reptile taphonomy; human decomposition; and microscopic alterations by invertebrates to bones Explains and illustrates common taphonomic effects and clarifies standard terminology for uniformity and usage within in the field. While the book is primarily focused upon large vertebrate and specifically human skeletal remains, it effectively synthesizes data from human, ethological, geological/paleontological, paleoanthropological, archaeological artifactual, and zooarchaeological studies. Since these taphonomic processes affect other vertebrates in similar manners, The Manual of Forensic Taphonomy, Second Edition will be invaluable to a broad set of forensic and investigative disciplines"--

NATIVE AMERICAN SACRED PLACES

HEARING BEFORE THE COMMITTEE ON INDIAN AFFAIRS, UNITED STATES SENATE, ONE HUNDRED SEVENTH CONGRESS, SECOND SESSION, ON THE PROTECTION OF NATIVE AMERICAN SACRED PLACES AS THEY ARE AFFECTED BY DEPARTMENT OF DEFENSE UNDERTAKINGS

INVESTIGATING BONES

Enslow Publishing, LLC **Bones are a powerful tool for forensic anthropologists. They can indicate age and gender, and a set of teeth or a fragment of bone can even show when a person died, as well as how long the body has been decomposing. Did the person die from natural causes or was it foul play? With the help of authorities, including the FBI and CIA, forensic anthropologists can find out the answers with a few small clues. Readers will be captivated by ancient and modern real-life cases. A chapter on careers allows students to dig deeper and find out what it takes to work in this fascinating field.**

KOENIG AND SCHULTZ'S DISASTER MEDICINE

COMPREHENSIVE PRINCIPLES AND PRACTICES

Cambridge University Press **As societies become more complex and interconnected, the global risk for catastrophic disasters is increasing. Demand for expertise to mitigate the human suffering and damage these events cause is also high. A new field of disaster medicine is emerging, offering innovative approaches to optimize disaster management. Much of the information needed to create the foundation for this growing specialty is not objectively described or is scattered among multiple different sources. This definitive work brings together a coherent and comprehensive collection of scientific observations and evidence-based recommendations with expert contributors from around the globe. This book identifies essential subject matter, clarifies nomenclature, and outlines necessary areas of proficiency for healthcare professionals handling mass casualty crises. It also describes in-depth strategies for the rapid diagnosis and treatment of victims suffering from blast injuries or exposure to chemical, biological, and radiological agents.**

THE HANDY FORENSIC SCIENCE ANSWER BOOK

READING CLUES AT THE CRIME SCENE, CRIME LAB AND IN COURT

Visible Ink Press **Covering the fundamentals, science, history, and analysis of clues, The Handy Forensic Science Answer Book: Reading Clues at the Crime Scene, Crime Lab and in Court provides detailed information on crime scene investigations, techniques, laboratory finding, the latest research, and controversies. It looks at the science of law enforcement, how evidence is gathered, processed, analyzed, and viewed in the courtroom, and more. From the cause, manner, time of a death, and autopsies to blood, toxicology, DNA typing, fingerprints, ballistics, tool marks, tread impressions, and trace evidence, it takes the reader through the many sides of a death investigation. Arson, accidents, computer crimes, criminal profiling, and much, much more are also addressed. The Handy Forensic Science Answer Book gives real-world examples and looks at what Hollywood gets right and wrong. It provides the history of the science, and it introduces the scientists behind breakthroughs. An easy-to-use and informative reference, it brings the complexity of a criminal investigation into focus and provides well-researched answers to over 950 common questions, such as ... & bull; What is the difference between cause of death and manner of death? & bull; How did a person’s skull fit into criminal evidence in the early 1800s? & bull; When were fingerprints first used to identify a criminal? & bull; How is the approximate time of death of a crime scene victim determined? & bull; What is forensic serology? & bull; What is the National Missing and Unidentified Persons System? & bull; Can a forensics expert look at skeletal remains and tell whether the person was obese? & bull; How can a simple knot analyzed in the crime lab be used as evidence? & bull; Can fingerprints be permanently changed or destroyed? & bull; How fast does a bullet travel? & bull; How was a chemical analysis of ink important in the conviction of Martha Stewart? & bull; What**

types of data are often retrieved from a crime scene cellphone? & bull; Can analyses similar to those used in forensics be used to uncover doping in athletics? & bull; What is the Personality Assessment Inventory? & bull; What are some motives that cause an arsonist to start a fire? & bull; What state no longer allows bite marks as admissible evidence in a trial? & bull; What is the Innocence Project? & bull; Why are eyewitness accounts not always reliable? & bull; Who was “Jack the Ripper”? Providing the facts, stats, history, and science, The Handy Forensic Science Answer Book answers intriguing questions about criminal investigations. This informative book also includes a helpful bibliography, glossary of terms, and an extensive index, adding to its usefulness.

CLINICAL TUBERCULOSIS

CRC Press Completely updated and revised, Clinical Tuberculosis continues to provide the TB practitioner-whether in public health, laboratory science or clinical practice-with a synoptic and definitive account of the latest methods of diagnosis, treatment and control of this challenging and debilitating disease.New in the Fifth Edition:Gamma interferon-based

MULTI-SCALE ANALYSIS OF CHROMOSOME AND NUCLEAR ARCHITECTURE

Mammalian nuclear function depends on the complex interaction of genetic and epi-genetic elements coordinated in space and time. Structure and function overlap to such a degree that they are usually considered as being inextricably linked. In this work I combine an experimental approach with a computational one in order to answer two main questions in the field of mammalian chromosome organization. In the first section of this thesis, I attempted to answer the question, to what extent does chromatin from different chromosome territories share the same space inside the nucleus? This is a relatively open question in the field of chromosome territories. It is well-known and accepted that interphase chromosomes are spatially constrained inside the nucleus and that they occupy their own territory, however, the degree of spatial interaction between neighbouring chromosomes is still under debate. Using labelling methods that directly incorporate halogenated DNA precursors into newly replicated DNA without the need for immuno-detection or in situ hybridization, we show that neighbouring chromosome territories colocalise at very low levels. We also found that the native structure of DNA foci is partially responsible for constraining the interaction of chromosome territories as disruption of the innate architecture of DNA foci by treatment with TSA resulted in increased colocalisation signal between adjacent chromosomes territories. The second major question I attempted to answer concerned the correlation between nuclear function and the banding pattern observed in human mitotic chromosomes. Human mitotic chromosomes display characteristic patterns of light and dark bands when visualized under the light microscope using specific chemical dyes such as Giemsa. Despite the long standing use of the Giemsa banding pattern in human genetics for identifying chromosome abnormalities and mapping genes, little is known about the molecular mechanisms that generate the Giemsa banding pattern or its biological relevance. The recent availability of many genetic and epigenetic features mapped to the human genome permit a high-resolution investigation of the molecular correlates of Giemsa banding. Here I investigate the relationship of more than 50 genomic and epigenomic features with light (R) and dark (G) bands. My results confirm many classical results, such as the low gene density of the most darkly staining G bands and their late replication time, using genome-wide data. Surprisingly, I found that for virtually all features investigated, R bands show intermediate properties between the lightest and darkest G bands, suggesting that many R bands contain G-like sequences within them. To identify R bands that show properties of G bands, I employed an unsupervised learning approach to classify R bands on their genomic and epigenomic properties and show that the smallest R bands show a tendency to have characteristics typical of G bands. I revisit the evidence supporting the boundaries of G and R bands in the current cytogenomic map and conclude that inaccurate placement of weakly supported band boundaries can explain the intermediate pattern of R bands. Finally, I propose an approach based on aggregating data from multiple genomic and epigenomic features to improve the positioning of band boundaries in the human cytogenomic map. My results suggest that contiguous domains showing a high degree of uniformity in the ratio of heterochromatin and euchromatin sub-domains define the Giemsa banding pattern in human chromosomes.

ORTNER'S IDENTIFICATION OF PATHOLOGICAL CONDITIONS IN HUMAN SKELETAL REMAINS

Academic Press Ortner's Identification of Pathological Conditions in Human Skeletal Remains, Third Edition, provides an integrated and comprehensive treatment of the pathological conditions that affect the human skeleton. As ancient skeletal remains can reveal a treasure trove of information to the modern orthopedist, pathologist, forensic anthropologist, and radiologist, this book presents a timely resource. Beautifully illustrated with over 1,100 photographs and drawings, it provides an essential text and material on bone pathology, thus helping improve the diagnostic ability of those interested in human dry bone pathology. Presents a comprehensive review of the skeletal diseases encountered in archaeological human remains Includes more than 1100 photographs and line drawings illustrating skeletal diseases, including both microscopic and gross features Based on

extensive research on skeletal paleopathology in many countries Reviews important theoretical issues on how to interpret evidence of skeletal disease in archaeological human populations

NEW METHOD OF IDENTIFYING FAMILY RELATED SKULLS

FORENSIC MEDICINE, ANTHROPOLOGY, EPIGENETICS

Springer Science & Business Media **If DNA cannot be isolated, don't give up the identification! The author has used for the same purpose methods ranging from physical anthropology to forensic medicine and especially a recent method of comparison of epigenetic traits, which proved to be very useful for the identification of family related skulls in connection with historical and other data. The kinship of 18 identified skulls (buried together in a family vault) is established by comparison of X-ray images of paranasal cavities (frontal and maxillary sinuses, orbital and nasal cavities), the shape and size of which are strongly genetically determined. The comparison also extends to numerous other epigenetic trait similarities on the skulls. It is recommended for: scientists working on human identification and studying heredity, forensic scientists, physical anthropologists, radiologists, stomatologists, paleopathologists, geneticists, historians and many others.**

THE DOUBLE HELIX

A PERSONAL ACCOUNT OF THE DISCOVERY OF THE STRUCTURE OF DNA

Simon and Schuster **The classic personal account of Watson and Crick’s groundbreaking discovery of the structure of DNA, now with an introduction by Sylvia Nasar, author of A Beautiful Mind. By identifying the structure of DNA, the molecule of life, Francis Crick and James Watson revolutionized biochemistry and won themselves a Nobel Prize. At the time, Watson was only twenty-four, a young scientist hungry to make his mark. His uncompromisingly honest account of the heady days of their thrilling sprint against other world-class researchers to solve one of science’s greatest mysteries gives a dazzlingly clear picture of a world of brilliant scientists with great gifts, very human ambitions, and bitter rivalries. With humility unspoiled by false modesty, Watson relates his and Crick’s desperate efforts to beat Linus Pauling to the Holy Grail of life sciences, the identification of the basic building block of life. Never has a scientist been so truthful in capturing in words the flavor of his work.**

THE YEAST TWO-HYBRID SYSTEM

Oxford University Press, USA **This volume, part of the Advances in Molecular Biology series, presents work by pioneers in the field and is the first publication devoted solely to the yeast two-hybrid system. It includes detailed protocols, practical advice on troubleshooting, and suggestions for future development. In addition, it illustrates how to construct an activation domain hybrid library, how to identify mutations that disrupt an interaction, and how to use the system in mammalian cells. Many of the contributors have developed new applications and variations of the technique.**

LAW ENFORCEMENT WITHIN THE FRAMEWORK OF PEACE SUPPORT OPERATIONS

BRILL **Since the end of the Cold War and the emergence of a oeasymmetrica threats like terrorism, the military has been increasingly entrusted with tasks traditionally belonging to the police. This development is visible through the new challenges posed to modern Peace Support Operations (PSO), intended as an umbrella definition covering different types of post-conflict peace operations, be these mandated under Chapter VI or Chapter VII of the United Nations Charter, with either peace-keeping, peace-enforcing or even peace-building goals. The aim of this volume is primarily to provide guidance, in the format of a handbook, to those deployed in the field and who are confronted with legal issues. In order to achieve this goal, the handbook is structured as follows: after this introduction, Part II addresses the general question whether law enforcement shall be a PSO task. Law enforcement is perceived by some states as a matter of self-defense.Part III then addresses the limits and possibilities of law enforcement by PSO.The discussion continues with Part IV, which provides some practical tools for those deployed to the field. Part V focuses instead on law enforcement within PSO, illustrating problems related to the prosecution of members of PSO forces suspected of illegal activities, and Part VI then draws the conclusions.**

DEATH INVESTIGATION

AN INTRODUCTION TO FORENSIC PATHOLOGY FOR THE NONSCIENTIST

Routledge **Death Investigation: An Introduction to Forensic Pathology for the Nonscientist provides students and law enforcement professionals with an accurate, clear overview of forensic pathology. It presents death investigation at the scene and autopsy, providing readers with a broad understanding of forensic pathology and giving them a clear picture of what happens after the examination of the scene. Readers learn what first responders should (and should not) do at the scene, and get a forensic pathologist's perspective on the importance of preserving evidence. Death Investigation methodically explains what happens during autopsy to determine cause and manner of death — including particulars of blunt force trauma, sharp force injuries, asphyxia, and gunshot wounds — and how findings are presented in court. Written for a criminal justice audience by a practicing forensic pathologist and educator, Death Investigation makes challenging forensics concepts accessible to nonscientists.**

OXFORD HANDBOOK OF FORENSIC MEDICINE

OUP Oxford **Forensic medicine covers an amazing range of different subjects and no single individual can expect to be an expert in all of them. The Oxford Handbook of Forensic Medicine provides comprehensive coverage of all areas within this complex discipline. Written for specialists and non-specialists alike, it will appeal to practising forensic scientists, as well as lawyers, police officers, and forensic science students. It shows how forensic medicine has been used in specific cases enabling the reader to apply their knowledge in real life. A detailed glossary of medical terms helps those without medical training to understand medical reports and practices. This easily-portable guide is essential reading for the busy clinical forensic doctor or nurse, and others working at the interface between medicine and law.**

UNFORGETTABLE

ENABLING DEEP AND DURABLE LEARNING

Wipf and Stock Publishers **We have an uneasy relationship with the relentless deluge of information gushing out of academia and our media outlets. To turn it off is escapist, but to attempt to cognitively grapple with it is overwhelming. In Unforgettable: Enabling Deep and Durable Learning, a nationally recognized master teacher gives professors and their students the means to chart a clear path through this information explosion. Humans crave explanatory patterns, and this book enables teachers to think deeply about their academic disciplines to find and articulate their core explanatory principles and to engage their students in a compelling way of thinking. An alternative title for this book could be Why the Best College Teachers Do What They Do because the author articulates a compelling rationale that will equip faculty to create and deliver transformative courses. Students in transformative courses grapple with essential questions and gain mental muscle that equips them for real world challenges.**

IMPLEMENTATION OF THE CRIME VICTIMS' RIGHTS PROVISIONS OF THE JUSTICE FOR ALL ACT

HEARING BEFORE THE SUBCOMMITTEE ON THE CONSTITUTION OF THE COMMITTEE ON THE JUDICIARY, HOUSE OF REPRESENTATIVES, ONE HUNDRED NINTH CONGRESS, SECOND SESSION, JUNE 21, 2006

MOLECULAR MEDICINE

GENOMICS TO PERSONALIZED HEALTHCARE

Academic Press **Molecular medicine is the application of gene or DNA based knowledge to the modern practice of medicine. This book provides contemporary insights into how the genetic revolution is influencing medical thinking and practice on a broad front including clinical medicine, innovative therapies and forensic medicine. Extensively revised just after the completion of the Human Genome Project, it provides the latest in molecular medicine developments The only book in Molecular Medicine that has undergone three editions Current practice as well as future developments identified Extensive tables, well presented figures - resources for further understanding**

FORENSIC DENTISTRY

CRC Press **Identification of unknown individuals and the determination of their age, race, and sex is one of the most important functions of forensic dentistry. Throughout history, this procedure has been used to establish difficult identifications, including Adolph Hitler, Eva Braun, Lee Harvey Oswald, and actor William Holden. Other essential applications of forensic dentistry include mass disaster investigations, evaluating bite marks and bitemark evidence in death investigations, child abuse investigations, and in civil litigation for evaluating oral or temporomandibular injuries related to accidents. This book explains these procedures in a comprehensive way that takes you step-by-step through the world of forensic dental investigations. The areas of forensic dentistry have come a long way in recent years. New and unique discussions offer information that will benefit professionals faced with many of the current aspects of the science. Topics include how to deal with a trial or an aggressive attorney and how to assess buried crime scene evidence (the application of forensic geotaphonomy in forensic archaeology). Forensic Dentistry illustrates the proper handling and evaluation of dental evidence. Its broad coverage also includes important information for legal and police science professionals who must properly evaluate and present dental findings. This book covers all standard examination practices of dental evidence, including identification of unknown individuals (age, race, sex). Whether you are a medical examiner or a pathologist who needs to know about the proper handling and evaluation of dental evidence, a legal or police science professional who needs to know how to deal with the proper presentation of dental findings in a court of law, or a dentist who wants to use your training and experience in a unique, interesting, and challenging way, this book is for you!**

INNOVATION, COMMUNICATION AND ENGINEERING

CRC Press **This volume represents the proceedings of the 2013 International Conference on Innovation, Communication and Engineering (ICICE 2013). This conference was organized by the China University of Petroleum (Huadong/East China) and the Taiwanese Institute of Knowledge Innovation, and was held in Qingdao, Shandong, P.R. China, October 26 - November 1, 2013. The conference received 653 submitted papers from 10 countries, of which 214 papers were selected by the committees to be presented at ICICE 2013. The conference provided a unified communication platform for researchers in a wide range of fields from information technology, communication science, and applied mathematics, to computer science, advanced material science, design and engineering. This volume enables interdisciplinary collaboration between science and engineering technologists in academia and industry as well as networking internationally. Consists of a book of abstracts (260 pp.) and a USB flash card with full papers (912 pp.).**

SAFETY OF GENETICALLY ENGINEERED FOODS

APPROACHES TO ASSESSING UNINTENDED HEALTH EFFECTS

National Academies Press **Assists policymakers in evaluating the appropriate scientific methods for detecting unintended changes in food and assessing the potential for adverse health effects from genetically modified products. In this book, the committee recommended that greater scrutiny should be given to foods containing new compounds or unusual amounts of naturally occurring substances, regardless of the method used to create them. The book offers a framework to guide federal agencies in selecting the route of safety assessment. It identifies and recommends several pre- and post-market approaches to guide the assessment of unintended compositional changes that could result from genetically modified foods and research avenues to fill the knowledge gaps.**

A COMPANION TO FORENSIC ANTHROPOLOGY

John Wiley & Sons **A Companion to Forensic Anthropology presents the most comprehensive assessment of the philosophy, goals, and practice of forensic anthropology currently available, with chapters by renowned international scholars and experts. Highlights the latest advances in forensic anthropology research, as well as the most effective practices and techniques used by professional forensic anthropologists in the field Illustrates the development of skeletal biological profiles and offers important new evidence on statistical validation of these analytical methods. Evaluates the goals and methods of forensic archaeology, including the preservation of context at surface-scattered remains, buried bodies and fatal fire scenes, and recovery and identification issues related to large-scale mass disaster scenes and mass grave excavation.**

KNIGHT'S FORENSIC PATHOLOGY FOURTH EDITION

CRC Press **The fourth edition of Knight's Forensic Pathology continues to be the definitive international resource for those in training and in practice, covering all aspects of the medico-legal autopsy, including the cause and time of death, interpretation of wounds and every other facet of the investigation of a fatality. The contents are intended to lead the**

pathologist – and in some countries, the non-pathologist – through the procedures needed in the examination of a body found under obscure, suspicious or even criminal circumstances. Although police procedures and the habits of pathologists may vary from country to country, the philosophy and techniques presented in this book offer a guide to good practices that can be modified according to local circumstances. In this new edition the text has been thoroughly updated and is complemented by the addition of over 200 new colour illustrations. It maintains the praised tradition of clarity and readability established since Prof. Bernard Knight's first edition was published in 1991, with an emphasis on the practical application of knowledge and research findings and the avoidance of over-interpretation.

ASSESSING GENETIC RISKS

IMPLICATIONS FOR HEALTH AND SOCIAL POLICY

National Academies Press **Raising hopes for disease treatment and prevention, but also the specter of discrimination and "designer genes," genetic testing is potentially one of the most socially explosive developments of our time. This book presents a current assessment of this rapidly evolving field, offering principles for actions and research and recommendations on key issues in genetic testing and screening. Advantages of early genetic knowledge are balanced with issues associated with such knowledge: availability of treatment, privacy and discrimination, personal decisionmaking, public health objectives, cost, and more. Among the important issues covered: Quality control in genetic testing. Appropriate roles for public agencies, private health practitioners, and laboratories. Value-neutral education and counseling for persons considering testing. Use of test results in insurance, employment, and other settings.**