The Global Practice of Forensic Science
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About the editor

**Douglas H. Ubelaker, PhD,** is a curator and senior scientist at the Smithsonian Institution’s National Museum of Natural History in Washington, DC, where he has been employed for nearly four decades. Since 1978, he has served as a consultant in forensic anthropology. In this capacity he has served as an expert witness, reporting on more than 900 cases, and has testified in numerous legal proceedings.

He is a Professorial Lecturer with the Departments of Anatomy and Anthropology at The George Washington University, Washington, DC, and is an Adjunct Professor with the Department of Anthropology, Michigan State University, East Lansing, Michigan.


Dr. Ubelaker received a Bachelor of Arts Degree and a Doctor of Philosophy from the University of Kansas. He has been a Member of the American Academy of Forensic Sciences since 1974 and achieved the status of Fellow in 1987 in the Physical Anthropology Section. He served as the 2011–2012 President of the AAFS. He is a Fellow of the Washington Academy of Sciences and is a Diplomate of the American Board of Forensic Anthropology. He is a member of the American Association of Physical Anthropology and the Paleopathology Association.

Dr. Ubelaker has received numerous honors including the Memorial Medal of Dr. Aleš Hrdlička, Humpolec, Czech Republic; the Anthropology Award of the Washington Academy of Sciences; the T. Dale Stewart Award by the Physical Anthropology Section of the American Academy of Forensic Sciences; the FBI Director’s Award for Exceptional Public Service; the Federal Highway Administration Pennsylvania Division Historic Preservation Excellence Award; a special recognition award from the FBI; and was elected Miembro Honorario of the Sociedad de Odontoestomatólogos Forenses Ibero Americanos.
List of contributors

**Hugo Rodríguez Almada** MD is the Director of the Legal Medicine Department (School of Medicine in the University of the Republic, in Montevideo city, Uruguay). He has worked since 1993 in Legal Medicine as a forensic doctor, professor and researcher. He is currently employed by the public University of Uruguay and is head of the Department of Legal Medicine, where Uruguayan experts in forensic medicine are educated and trained. Dr Rodríguez Almada has also been a visiting professor of other Latin American universities and has been Adjunct Director of the virtual Master in Forensic Medicine of the University of Valencia, Spain, since 2002. He has published several scientific papers and books on various topics of forensic sciences, especially in the field he calls "Legal Medicine of women and children". Much of his research is focused on sudden unexpected infant death. He has also served broadly as an editor or scientific adviser of several local and international journals and has been a member of their editorial boards or a peer reviewer. He is currently the editor in chief of the *Uruguayan Medical Journal* (RMU), the most widely spread biomedical journal in his country. Although he is not presently employed in the judicial system he is continually participating actively in several complex forensic investigations when requested by prosecutors or judges. Many of these cases are related to violations of human rights in the recent past committed during the civic–military dictatorship (1973–1985), some serial murders and several cases of medical malpractice. He is an honorary adviser of the National Institution of Human Rights and Uruguayan Ombudsman. He has been a representative of Uruguay in the Iberoamerican Network of Legal Medicine and Forensic Science Institutions since its beginnings in 2007. He has held several positions in national and international medical institutions. In 2000 he founded the Iberoamerican Society of Medical Law (SIDEME). In 2003, he was elected President of the Latin American and Caribbean Medical Confederation (CONFEMEL). More recently, he was elected by his colleagues as a member of the first Ethics Tribunal of the Medical Association of Uruguay (CMU), created by law in 2009.

**Mario Alva-Rodríguez** obtained his MD from the Military Medical School of Mexico and was a Postgraduate in Human Morphology at the Anatomical Institute in Münster, Westphalia, Germany. He has been Chief of the Department of Anatomy at the Military Medical School, Chief of the Department of Anatomy at the School of Medicine of the Anahuac University, General Subdirector of the Medical Services of Mexico City, Director of the El Rosario General Hospital in Mexico City, Subdirector of the Medical Military School, Chief of the Criminalistics Laboratory of the Attorney General Office in Mexico City, Subdirector of the Postgraduate Military Medical School, Founder and Chief of the Mastership in Forensic Medicine at the Postgraduate Military Medical School, Director of the School of Medicine at the Anahuac University, Chief of Forensic Medicine at the Attorney General Office of the Mexican Republic, General Director of the Medical Examiner Office of Mexico City, Founder and Chief of the Specialty in Forensic Medicine at the Medical Examiner Office of Mexico City, General Director of the Forensic Sciences Department at the Attorney General Office of the Mexican Republic, Director of Behavior Promotion at the National Institute of Drugs Enforcement, Coordinator of Criminalistics and Forensic Medicine at the National Institute of Penal Sciences, Director of the Educational Department at the National Institute of Penal Sciences, Coordinator of the Academic Committee of Legal Medicine at the Postgraduate Division of the Medicine Faculty of the National Autonomous University of Mexico and a Fellow of the Mexican Society of Criminology, Mexican Academy of Penal Sciences, Mexican Academy of Surgery, Mexican Academy of Bioethics, Mexican Council of Legal and Forensic Medicine, and the American Academy of Forensic Sciences. He participated in many Courses, Congresses and Symposia as organizer, teacher, lecturer or adviser for undergraduate
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Philip Beh MD graduated from the Faculty of Medicine
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22 scientific articles published in peer reviewed journals
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1998 he has acted as forensic consultant during which
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Luis Bosio MD of the Forensic Medical Corps, Buenos
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as a forensic doctor at the Cuerpo Medico Forense (CMF) de la Corte Suprema de Justicia de la Nación, Argentina. He was head of the CMF (2008–2010) and is now retired and is an independent consultant. He teaches at the Faculty of Medicine of the University of Buenos Aires.

**Angel Carracedo** is a Professor at the University of Santiago de Compostela, Spain, Director of the Institute of Forensic Science (USC), Director of the Galician Foundation of Genomic Medicine (SERGAS, Galician Service of Health), Director of the Spanish National Genotyping Center and a Member of the Centre for Biomedical Network Research on Rare Diseases (CIBERER). In a first step of his career his activity was mainly devoted to population and forensic genetics. His group leads scientific production in the SCI area of legal and forensic science worldwide (http://sciencewatch.com/ana/tea/11julaugFea). He was a Director of the Institute of Legal Medicine (USC) from 1995 and from 2002 has also been working in the clinical genetics area, where he has set up the Galician Foundation of Genomic Medicine. Most of his recent research is now mainly concentrated in forensic genetics and genetics of complex traits (particularly sudden cardiac death, cancer, psychiatric diseases and pharmacogenomics). He has had 12 books and over 480 papers published in SCI journals, including papers in *Nature, Nature Genetics, Science, PNAS, American Journal of Human Genetics, Gene, European Journal of Human Genetics* and especially in Forensic Science journals. He is a highly cited researcher in Molecular Biology and Clinical Medicine and a Board member and external adviser of different national and international institutions, foundations and societies on Forensic Science (IALM, ISFG, MAFS), Genetics and Pharmacogenomics. He is a Director of 70 PhDs, all with the highest qualifications and 18 with University or National Awards. He is also a representative of Spain in the European Medicine Agency (Pharmacogenetics Working Group) and different regulatory boards (i.e. IRDiRC, ICRC, CNUFADN), the Editor of *Forensic Science International Genetics* and a member of the editorial board of a number of the international and national journals on genetics, cancer and forensic science. Prizes and distinctions include the Jaime I Award, Adelaide Medal, Galien Medal, Medal Castelao, Medal of Galicia, Medal to the Police Merit, Galician Prize of Research, Fernandez Latorre Award, Prisms Award and various prizes from foundations and scientific societies. He is a Doctor Honoris Causa for different universities in Europe and the Americas.

**Cristina Cattaneo**, a forensic pathologist and anthropologist, received a BSc in Biomedical Sciences at McGill University, Canada, an MA in Osteology, Funerary Archaeology and Palaeopathology and a PhD in Pure Sciences at the University of Sheffield, UK, and then moved to Italy where she graduated in Medicine and went on to specialize in Legal Medicine. She is currently Associate Professor of Legal Medicine at the Faculty of Medicine of the Università degli Studi di Milano (Italy), founder and director of LABANOF, Laboratorio di Antropologia e Odontologia Forense at the Institute of Legal Medicine of the Dipartimento di Scienze Biomediche per la Salute and teaches Anthropology at the Faculty of Sciences and Arts at the same University. She is author and co-author of books and scientific articles concerning anthropology and forensic pathology in general, identification, trauma and clinical forensic medicine, as well as a legal expert in forensic pathology, anthropology and clinical forensic medicine for various courts in Italy and occasionally in Europe. She is co-founder and vice-president of FASE (Forensic Anthropology Society of Europe), a subsection of IALM (International Academy of Legal Medicine) and a member of the Swiss DVI (Disaster Victim Identification) team. She is associate editor for the journal *Forensic Science International*. Since 2007 she has been actively involved with the Italian Ministry of Internal Affairs in the creation of a national database for unidentified human remains and has recently been involved in the development of a forensic humanitarian service for asylum seekers in the city of Milano.

**P.K. Chattopadhyay**, formerly Professor and Founder Head of the Department of Forensic Science, Punjabi University, Patiala, did his MSc and PhD in Anthropology at the University of Delhi. He started his teaching career as Lecturer in Forensic Science, Delhi University in 1968 before moving to Patiala to set up the first fully fledged Department of Forensic Science in the world. Professor Chattopadhyay has delivered Key Note and Plenary Addresses and Chaired Sessions at several International Congresses in India and abroad, including the International Meeting of Forensic Sciences (he Chaired the Session on Forensic Anthropology at Zurich, Switzerland, in 1975, the only Indian to have been so
honoured; he also Chaired the Session on Forensic Education at the International Meeting of Forensic Sciences at Hong Kong in 2005), the World Congress on Medical Law at Gent, Belgium, in 1991, the International Symposium on Advances in Legal Medicine, Osaka, Japan, in 1995, and the International Congress of Anthropological and Ethnological Sciences in 1978 at Delhi. He has had more than 100 original research papers on various aspects of forensic sciences published, including ones on the determination of sex, blood groups and enzyme types from hair, bones, teeth, muscles, stains of blood, semen, saliva, urine, genetics of the dermal ridges and hair keratin, drugs from hair, insecticides in mothers’ milk, salivary agglutinins, determination of hand and finger from a single fingerprint, effect of alcohol on handwriting, determination of sex from handwriting, pattern of suicides, autosomal and Y-STR types from blood stains (DNA profiling), membrane associated transfer protein (MATP), gene and the founder’s effect, etc. Several students have worked with him for their PhD Degree (18) and MD in Forensic Medicine (2). Two students are working with him for their PhD now. A Visiting Fellow of the Indian Council for Medical Research in 1973, Dr Chattopadhyay has received extensive training on various aspects of Forensic Sciences at the Central Forensic Institute, Calcutta, and in Forensic Medicine at the Calcutta Medical College. He has been a Visiting Professor with the Department of Anthropology, Manipur University, Imphal, Manipur, in 1987, Institut für Rechtsmedizin, Christian Abrechts University, Kiel, Germany, in 1994, the Departments of Forensic Medicine, Nagasaki and Akita University Medical Schools in 1993, 1995, 2002 and 2008 and the University of Kebangsaan, Malaysia, in 2009, and a Visiting Scientist to the United Kingdom, the United States, Germany, France, Belgium, Australia, Singapore, the Czech Republic, Switzerland, Yugoslavia, Nepal, Thailand, Bangladesh, Hong Kong, Indonesia, Egypt, Sri Lanka and several other countries of the developed world in 1972,1973,1975, 1982, 1984, 1986, 1988, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1998, 1999, 2001, 2002, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012 and 2013 and lectured extensively on various aspects of Forensic Science, Forensic Medicine, Genetics and Anthropology. A member of several national and international societies (he has been a Vice-President of the Indo-Pacific Association of Law, Medicine and Science) and the Editorial Board of a number of journals, including the Legal Medicine, an Elsevier publication. A Fellow of the Indian Academy of Forensic Sciences, Indian Academy of Forensic Medicine and the Indian Association of Medico-Legal Experts, Dr Chattopadhyay has won several Prizes and honours such as the Dr S.S.Sarkar Oration Award in Anthropology in 2000, Best Researcher Award of the Indian Academy of Forensic Medicine in 1997, Best Teacher and Forensic Scientist of the Decade of the Medico-legal Society of India in 1998, Forensic Scientist of the Millennium Award of the Medico-Legal Society of India in 2002 and a Special Award from the Indo-Pacific Association of Law, Medicine and Science at Manila, Philippines, in 2004 for his contributions to knowledge and development of Forensic Science in the region. Professor Chattopadhyay has been the Congress Chairman of the 10th Indo-Pacific Congress on Legal Medicine and Forensic Science, 2010, and President of the Indo-Pacific association of Law, Medicine and Science for the years 2010–2013. Professor Chattopadhyay has just been invited by the Kwame Nkrumah University of Science and Technology, Ghana, to join the Department of Biochemistry and Biotechnology as a Visiting Professor of Forensic Science for the year 2014–2015 and joined the Amity in April 2004 as Director (2004–2013) and Advisor (February 2013–January 2014) of the Amity Institute of Forensic Science, NOIDA–201303, UP, India.

**Paul Chui** is a qualified practicing Senior Consultant forensic pathologist, accredited as a specialist in pathology by the Specialist Accreditation Board of the Ministry of Health, Singapore. He is also a gazetted forensic pathologist under the Coroner’s Act 2010.

After graduating with an MBBS in 1983 from the National University of Singapore, he subsequently trained in forensic pathology from 1986 and spent 2 years in the United Kingdom from 1989 to 1991, where he attained both the Diploma in Medical Jurisprudence (DMJ) and Membership of the Royal College of Pathologists (Forensic) in 1991 and Masters in Business Administration (NUS) in the mid-1990s. In 1996, under an HMDP Fellowship, Dr Chui spent 3 months at the Coroner’s/Medical Examiner’s offices in Pittsburgh, Chicago and Los Angeles.

Over the years, Dr Chui has been involved in numerous Coroner cases and homicides, including a number of notable court cases, such as *Public Prosecutor vs Chee Cheong Hin Constance (Sindee Neo case)* and *Public Prosecutor
vs. Tok Leng How (Huang Na Case). He has also provided consultancy and technical assistance to overseas clients regionally. He testified on the forensic autopsy evidence before the Saket Court (Delhi, India) in the high profile gang-rape murder trial in February 2013, and was closely involved in the Coroner’s Inquiry into the high profile case of Shane Todd Truman in May 2013.

Dr Chui took on the Directorship of the Centre of Forensic Medicine (CFM, later renamed the Forensic Medicine Division in 2008) when the Health Sciences Authority (HSA) was formed in 2001. Computerized tomography (CT) scanning capability was added in 2010 to support the work of FMD, and a forensic anthropology laboratory was established in 2011. In April 2013, Dr Chui was appointed Chief, Forensic Medicine. The Division successfully attained accreditation from the National Association of Medical Examiners (NAME) in 2005 and has been successfully reaccredited by NAME in 2011 for another five years.

In 2003, during the SARS outbreak, Dr Chui was personally involved in autopsy examination of deaths suspected as being due to SARS. He was involved in developing the world’s first mobile containerized biosafety level 4 autopsy facility, which was commissioned in 2005 and is still operational. The experience from SARS had also led to a major revamp of biosafety procedures and workplace practices in the mortuary.

Dr Chui is a Fellow of the American Academy of Forensic Sciences and a full member of the National Association of Medical Examiners (NAME). He has been a long-time serving member of the International Ad-hoc Committee under NAME, and a certified NAME Accreditation Inspector from 2011 to 2016.

Since 2001, Dr Chui had also served in various concurrent corporate capacities such as Director (Corporate Management), Director (Office for Innovation and Enterprise), Chief Information Officer (CIO), etc., within the HSA. He had also been directly involved in leading the implementation of key IT operational Systems (LISA and FIONA) supporting the work in the Applied Sciences Group. Both LISA and FIONA won regional awards in IT excellence. Dr Chui served as the Group Director of the Applied Sciences Group (ASG) of HSA from July 2006 to January 2011. In 2011, Dr Chui received the Becton–Dickinson Award in Pathology, awarded by the Singapore Society of Pathology. He is one of the founding members in the forerunner group that spearheaded the formation of the Asian Forensic Sciences Network (AFSN), a regional professional association of forensic institutes in Asia, and was its President from October 2008 to May 2011. Presently, Dr Chui is also serving as the current Chairman of the DSO–SAF Institution Review Board, as well as a member of the Singapore Armed Forces Medical Advisory Board.

Heesun Chung PhD is a Dean and Professor of the Graduate School of Analytical Science and Technology, Chungnam National University, South Korea. She obtained her PhD in Pharmacy from Sookmyung Women’s University, South Korea, in 1987 and subsequently was awarded a Foreign Commonwealth Office Scholarship to do further postdoctoral study at King’s College, London. She was the Director General of the National Forensic Service (formally the National Institute of Scientific Investigation), South Korea from 2008 to 2012. She had also held many top forensic related posts in South Korea such as Head of Department of Forensic Science, Director of Narcotics Analysis Division, Director of Drug and Toxicology at the National Institute of Scientific Investigation and many more. She lectures at Sookmyung Women’s University, Korean National Police University, Korean Police Investigation Academy, Central Officials Training Institute and Dongguk University. She is the current president of the International Association of Forensic Sciences (IAFS) and is also the President-elect for the International Association of Forensic Toxicologists (TIAFT). These are just two of her many involvements with forensic professional bodies. She is also on the Editorial Board of Forensic Toxicologists and Forensic Science International. Dr Chung is a licensed Pharmacist and Toxicologist and has presented findings at numerous international meetings and symposia. Her research has resulted in the publication of over 100 scientific articles. For the last five years, 40 articles have been published in international and national journals. She is the holder of several patents and the writer of books. Her research interests are the analysis of abused drugs in biological fluids and other alternative specimens including hair and impurity profiling of illicit methamphetamine. Dr Chung has been awarded many medals and awards, including a medal for distinguished service by the Korean Government, a medal for excellence in Forensic Science from the Mongolian Government and an award as a reviewer in Pharmacy and Medicine by the Medical News Agency. She received the most outstanding Woman Scientist award from the Ministry of