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Editorial

Forensic identification in a multidisciplinary perspective focusing on big challenges

This Special Issue focuses on critical identification cases, as forensic experts increasingly face significant challenges in identifying human remains, both in routine and extraordinary circumstances. The primary goal of this Special Issue has been to emphasize the significance of collaborative, evidence-based, and unbiased approaches, utilizing cutting-edge technologies and the expertise of interdisciplinary teams where forensic anthropologists play a key role. In addition to case studies, the issue also features theoretical contributions.

We are pleased to present 13 articles featuring authors from 11 countries across the globe. The diversity and complexity of the featured cases, and the methods used to solve them, offer valuable insights into addressing diverse forensic identification scenarios, including bodies in advanced stages of decomposition, skeletonized, burned, or mummified remains.

A key takeaway is that even in the most challenging cases, perseverance is essential. One of the most effective approaches is to adopt a holistic, multidisciplinary strategy, drawing on various scientific disciplines, such as genetics, chemistry, odontology, anthropology, and pathology. Several articles underscore the importance of integrating multiple methods and contextual evidence.

Biro et al. [1] from France discuss the significant challenge of unidentified bodies in Paris (2018–2023), calling attention to the need for standardized case file procedures and documentation. They emphasize the importance of access to such documents by the various entities involved in the identification process. The authors also remind us about the crucial role of the national database to properly document and disseminate information on missing persons.

Malfroy Camine et al. [2] from Switzerland present the benefits of leveraging technological advances, particularly the use of virtual re-association (VRA) of fragmented human remains via post-mortem CT scans. This technique not only enhances the identification process but may help reduce the number of genetic tests required.

Moravanský et al. [3] from Slovakia share an interdisciplinary forensic approach used in the case of a mummified child with signs of abuse and neglect, emphasizing the growing role of forensic anthropology in cases involving child abuse.

Blau et al. [4] from Australia revisit a cold case from 1928, demonstrating how a multidisciplinary approach, despite limited contextual information and poor preservation, led to identification. Only through the integration of anthropology, odontology, molecular biology, radiocarbon dating, historical research, and genealogy were the remains of a cold case from 1928 able to be identified.

Lemos et al. [5] from Brazil illustrate cases where conventional identification methods could not be applied. In a dam mass disaster, as well as in cases involving burned and extensively decomposed human remains, identification was achieved by comparing medical findings using the shadow position technique. The cases suggest that comparisons of skeletal and interventional findings on medical imaging may increasingly be considered as primary biological identifiers rather than secondary ones.

Gaudio and Betto [6] from the UK and Italy discuss the identification of a WWI soldier, showing how the use of cutting-edge archaeological techniques, combined with forensic anthropological expertise, can advance the investigation of historical and recent events.

Bertrand et al. [7] from France focus on evaluating medico-legal significance through reliable techniques to estimate the postmortem interval (PMI). They highlight the importance of radiocarbon dating and bomb-pulse dating and recommend incorporating these methods into routine forensic investigations.

Long et al. [8] from North Carolina, USA, demonstrate the use of stable isotope analyses and 3D assessment of the remains in solving cases. Their work underscores the value of multidisciplinary collaboration in the investigation of unidentified decedents.

Flouri et al. [9] from Crete, Greece, explore a unique case of mummification under extreme conditions. The multidisciplinary approach and incorporation of contextual information related to both the scene and the deceased led to case resolution.

Soler et al. [10] from New York City, USA, present how long-term unidentified persons are identified at the NYC Office of Chief Medical Examiner. Their holistic approach involves a comprehensive review of postmortem data along with a targeted collection of antemortem information specific to forensic identification.

Adserias-Garriga et al. [11] from Mercyhurst, USA, discuss three skeletonized cases where identification was achieved through dental treatment records, implanted surgical devices, anatomical variations, and healed skeletal trauma. They emphasize the need for best practice guidelines for the number of matching points in identification.

Petaros et al. [12] from Sweden highlight the importance of antemortem trauma as a biological identifier, despite the complexities of interpreting such trauma. In some contexts, if not correctly documented and reported, antemortem trauma can lose its discriminatory value. The same applies to surgical implants, which are often confounded with antemortem trauma.

Obertová et al. [13] from Australia discuss accreditation challenges in forensic fields related to human identification. Their survey of European facial examiners points to the need for a better understanding of accreditation requirements and best practices to harmonize procedures within and across forensic disciplines.

This Special Issue offers a comprehensive exploration of forensic human identification, emphasizing the power of collaborative, multidisciplinary, and innovative approaches to solving complex cases. Moreover, these articles bear witness to the growth of forensic anthropology as an increasingly robust discipline whose future is firmly anchored in interdisciplinary collaboration.

Authors' contributions

Both authors wrote and edited the manuscript and approved the final version.

Compliance with ethical standards

This article does not contain any studies with human participants or animals performed by any of the authors.

Conflict of interest

Eugénia Cunha holds the position of Editorial Board Member for *Forensic Sciences Research*.

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Eugénia Cunha
Centre for Functional Ecology, Laboratory of Forensic Anthropology, Department of Life Sciences, Calçada Martim de Freitas, University of Coimbra, 3000-456 Coimbra, Portugal
National Institute of Legal Medicine and Forensic Sciences, Lisbon, Portugal
Corresponding author. Centre for Functional Ecology, Laboratory of Forensic Anthropology, Department of Life Sciences, Calçada Martim de Freitas, University of Coimbra, Coimbra, Portugal
E-mail: eugenia.m.cunha@inmlcf.mj.pt

Zuzana Obertová
Centre for Forensic Anthropology, School of Social Sciences, The University of Western Australia, Crawley Western, Australia
E-mail: zuzana.obertova@uwa.edu.au

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