A6 A Survey of Skeletal Trauma Within the Southeast Texas Applied Forensic Science Collection: A Wealth of Research Opportunity

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Learning Overview: After attending this presentation, attendees will better understand the wide range of skeletal trauma represented within the skeletal collection at the Southeast Texas Applied Forensic Science (STAFS) facility.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by exploring the opportunities available for multidisciplinary forensic research at STAFS.

The STAFS facility is a willed body donor program located in Huntsville, TX, under the direction of the Department of Forensic Sciences at Sam Huston State University (SHSU). STAFS aims to advance forensic knowledge and practice by providing cadavers for research in forensic, anthropological, geological, chemical, and biological sciences, while also offering education and training to internal and external agencies. The facility has received 636 willed body donations since it opened in 2009, with an average of 53 donations per year. STAFS currently operates both outdoor and indoor research facilities. The two-acre outdoor facility provides numerous research opportunities to recreate forensically relevant scenarios and perform taphonomic and other forensic analyses of human remains during the decomposition process. The indoor facility is a Biosafety Level 2 (BSL2) laboratory and includes an intake area, donor storage, necropsy suite for autopsy or maceration, temperature-controlled skeletal collection room, X-ray equipment, digitizer, microtome, and blunt force trauma simulator. The collection currently holds 337 skeletons obtained through the donor program with family consent. The skeletal collection consists primarily of individuals of European descent (83%), with smaller proportions representing African (5.5%), Hispanic (4.4%), and Asian, Middle Eastern, or Native American (1.5%) ancestries. Additionally, the skeletal collection offers opportunities to study the many skeletal pathologies, anomalies, and traumas represented in the collection.

This current project involves surveying the extent of skeletal trauma represented in the collection. Cranial and postcranial elements have been evaluated, with particular attention to those areas that are forensically significant (i.e., head, thorax, and long bones). Each specimen exhibiting perimortem skeletal trauma has been documented, photographed, and categorized (blunt force trauma [n=40], gunshot trauma [n=30], and sharp force trauma [n=10]). By exploring a variety of 2D and 3D imaging modalities, including radiography, photogrammetry, surface scanning, and computed tomography, this project will report on methods for precise imaging, measurement, and documentation of skeletal trauma. The data from this preliminary study will then form the basis for future controlled cadaver trauma studies at STAFS.

In conclusion, the STAFS facility offers broad potential for research and training to advance the application of anthropology, entomology, microbiology, chemistry, geology, and forensic science to medicolegal death investigation.

Outdoor Research, Skeletal Collection, Skeletal Trauma

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