



Forensic Technology

CENTER OF EXCELLENCE

A program of the National Institute of Justice

ADVANCING TECHNOLOGY | SHARING KNOWLEDGE | ADDRESSING CHALLENGES



AAFS HUMANITARIAN AND HUMAN RIGHTS

POSTER AND NETWORKING SESSION

The Humanitarian and Human Rights Resource Center, an organization within the American Academy of Forensic Science supported by NIJ's Forensic Technology Center of Excellence, hosts this Poster Session as an open meeting where attendees can meet our HHRRC researchers and learn about the application of forensic science to investigate humanitarian and human rights injustices.



Moderator: Doug Ubelaker, PhD
HHRRC Chair
Smithsonian National Museum
of Natural History
Washington, DC

Co-Moderator: Jeri Roper-Miller, PhD
2019-2020 AAFS President Elect
FTCOE Project Director
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HUMANITARIAN AND HUMAN RIGHTS RESOURCE CENTER

The HHRRC seeks to utilize the assets of the AAFS to promote the application of contemporary forensic science and forensic medicine principles to global humanitarian and/or human rights projects requiring special assistance. The Center is funded in part through the Forensic Technology Center of Excellence (FTCoE), a program of the National Institute of Justice.

HHRRC projects are those selected for support by the International Advisory Council of the HHRRC led by Dr. Ubelaker and can include research applied to humanitarian and human rights projects, training materials and equipment, and advising or subject matter expertise. The HHRRC also aims to provide support and encouragement to AAFS members to increase their engagement in applying contemporary forensic science to global humanitarian matters. In addition to direct support for forensic studies, the HHRRC provides access to publications and educational materials to disseminate knowledge on the issues and application of contemporary forensic science and forensic medical principles. The HHRRC assists projects by making laboratory and analysis equipment available. To strengthen the available pool of advisors, the HHRRC established a database of volunteers willing to assist and make a difference in global humanitarian issues and possible violations of human rights.

The FTCoE highlights projects selected by the International Advisory Council of the HHRRC through dissemination including this poster symposium to further the application of forensic science to global humanitarian and human rights issues.

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HHRRC PROJECTS HIGHLIGHTED

Urban Scavenging of Skeletal Remains by the Slender Mongoose (*Galerella Sanguinea*) in Johannesburg, South Africa | *Craig A. Keyes, MSc(Med); Jolandie Myburgh, PhD; Desiré Brits, PhD*

Scattered human remains exhibiting animal bite marks are frequently recovered in South Africa. The slender mongoose (*Galerella sanguinea*) is a common scavenger in South Africa. This study determined their scattering pattern and bite marks. Mongooses scavenged six pig carcasses diurnally (peak: 14h00-16h59) during the advanced decomposition stage and scattered remains in two directions (NW & SE), within a radius of 10.49 meters. Bite marks on the ribs, vertebrae, and mandible are described.

Application of Stable Isotopes for Geolocating Unidentified Border Crossers from the Texas-Mexico Border | *Eric J. Bartelink, PhD; Sarah Hall, MA; Sam Mijal; Vanessa Reeves; Alina Tichinin*

This poster uses stable isotope analysis in the identification of deceased undocumented border crossers from the US-Mexico border. Since the 1990s, the US launched security operations along the southern US border to curb undocumented immigration. This led to an increase in deaths, and created a massive identification challenge. This study uses isotopic data on border crossers to develop prediction tools for narrowing region-of-origin, which ultimately will aid in identification efforts.

A Protocol Validation of Qualitative and Quantitative Methods and Its Application in Forensic Anthropology: A Pilot Study | *Cláudia Regina Plens, PhD; Camila Diogo de Souza, PhD; Thais Torralbo Lopez Cappiii, PhD*

The present project is a pilot study for a protocol validation of qualitative and quantitative methods in Forensic Anthropology in Brazilian context. The preliminary results show that the quantitative methodologies were easily calibrated among the examiners compared to the qualitative methods. Disagreements between the results of the applied methods point out the need to apply more than one method in the analysis of the biological profile characteristics and constructions of a decision table.

The Humanitarian and Human Rights Crisis in South Texas Exemplified through the Tres Norias Cemetery | *Kate Spradley, PhD; Tim Gocha, PhD; Chloe McDaneld, MA; Courtney Siegert, MA*

South Texas continues to experience a human rights crisis regarding unidentified, presumed migrant remains. In the recent past, this includes remains being buried without proper investigation or DNA collection, creating a scenario of long-term unidentified. Through the efforts of Operation Identification at Texas State University, these long-term unidentified are located and exhumed for identification and repatriation purposes. This presentation focuses on exhumations from Tres Norias Cemetery as an example of the broader South Texas crisis.

Detection of Chemical Weapon Nerve Agents in Bone: Expanding the Post-Incident Interval for Verifying Nerve Agent Exposure Using Biomatrices | *Katie M. Rubin, PhD; Bruce A. Goldberger, PhD*

For the first time, nerve agent (NA) exposure has been detected experimentally in the bones of animals exposed to NAs in vivo. The bone preparation and semi-quantitative LC-MS/MS methods were validated for NA metabolites corresponding to five different NAs, and low limits of detection (5-350 pg/g) were achieved. The protocols are adaptable, with potential application to other matrices. This research may expand the post-incident window for verifying chemical-weapon-based human rights violations.

Conservation and Analysis of Human Remains from the Khmer Rouge–Period Mass Gravesite of Krang Ta Chan, Cambodia | *Julie M. Fleischman, PhD*

Krang Ta Chan (KTC) is a 1970s Cambodian mass gravesite from the Khmer Rouge (KR) genocide. Eight mass graves were excavated in the 1980s with 10,000+ victims. The HHRRC funded a 2016 project to preserve and study these remains. A Cambodian team analyzed 5,000+ bones. Sex and age for 1,904 crania were estimated: 57% were male, 44% were 20-34 years old. Most injuries (84%) were blunt force trauma. This project details victims' skeletal injuries and provides further comprehension about the KR era.

Strategies for the Identification of Migrants in the Mediterranean: The Shipwreck of April 18th, 2015 | *Cristina Cattaneo, MD, PhD; Debora Mazzearelli; Giulia Caccia, MS; Danilo De Angelis, DDS; Annalisa Cappella, PhD; Pasquale Poppa, PhD; Douglas Ubelaker, PhD; Luca Sconfienza, MD; Zuzana Obertova, PhD; Richard L. Jantz, PhD; Steve Ousley, PhD; Laura Manthey, MD; Tony Fracasso, MD; Lucie Biehler-Gomez, MS; Barbara Bertoglio, PhD; Carlo Previderé, PhD; Morris Tidball-Binz, MD; José Pablo Baraybar do Carmo, PhD; Oran Finegan, MS; Rossella Di Liberto; Federica Giannotta; Giuliana Perrotta, MA*

The Office of the Extraordinary Commissioner for Missing Persons of the Italian government and the University of Milan have brought experts together to create a model that collects and compares ante- and post-mortem information from unidentified migrant decedents in the Mediterranean. To date, over 2,000 records have been collected and 40 individuals identified through genetic and anthropological methods in the first systematic attempt in Europe to harmonize international activities toward the identification of migrants.

Scene Documentation for Human Rights Investigators | *Tal Simmons, PhD; Scott Edwards, PhD*

Workshops teaching minimum standards, best-practice approaches to scene documentation in hostile environments. Goals were to: 1) enable investigators to provide better documentation for fact-finding and enhance the ability of forensic experts to interpret evidence provided; 2) build capacity of Amnesty International to equip civil society partners with tech capacity for photo and video documentation; and 3) highlight the forensic value of open-source documentary materials for investigations.

Building Forensic Capacity in Post-Conflict Uganda | *Hugh Tuller, MA; Paul Emanovsky, PhD; Jaymelee Kim, PhD; Dawnie Wolfe Steadman, PhD*

To assist Ugandan reconciliation and conflict stabilization programs after 30 years of war, a forensic science training seminar aimed at Ugandan forensic practitioners, government officials, and NGOs was conducted. The aim of the seminar was to educate participants on best practices of large-scale forensic investigations used in post-conflict contexts with the intent of opening further dialogue for future communication, training, and assistance.

Isotopes and Isoscapes: Their Potential and Limitations in Aiding the Identification Process of Undocumented Border Crossers from Mexico | *Saskia Ammer, MSc*

Presentation of the results of isotopic analysis in human hair for Strontium, Oxygen, Carbon, Nitrogen, and Sulfur plus tap water isotopic analysis for Oxygen and Hydrogen from over 50 locations throughout Mexico as an attempt to aid the identification of undocumented border crossers. The developed isoscapes from these elements, as well as region-of-origin predictions, will be showcased with their potential, limitations, and future directions.

Using Environmental and Archaeological Samples to Build Forensic Isoscapes of the Peruvian Andes: Paths Forward for Identifying Victims from the Time of Violence in Peru (1980-1990s) | *Beth K. Scaffidi, PhD, Gwyneth Gordon, PhD, Roberto C. Parra, MSc, Kelly J. Knudson, PhD, Martha R. Palma, MSc, and Tiffany A. Tung, PhD*

Isoscapes are geospatially explicit predictive models of isotope values. They have successfully been used to constrain samples to locations of likely geographic origin using "local" isotope values from environmental baseline materials. This research evaluated prediction accuracy for single and dual-isotope models generated from surface water in the Peruvian Andes. These models were then used to identify origins of archaeological human samples from victims of violence in Peru during the 1980s and 1990s.

Humanitarian Forensic Action for Resolving and Preventing the Missing | *Morris Tidball Binz, MD; Oran Finegan, MSc; Pierre Guyomarc'h, PhD; Doug Ubelaker, PhD*

Today, forensic science is recognized as essential for the resolution and prevention of the missing from armed conflicts and catastrophes. This requires special forensic procedures, skills, and standards, such as the invaluable research supported by the HHRRC and developed for humanitarian forensic action.



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JUST SCIENCE PODCAST



A podcast for forensic science professionals and anyone with an interest in learning more about how real crime laboratories are working to do their job better by producing more accurate results, becoming more efficient, and solving more crimes.

Just So You Know Episode | AAFS Humanitarian and Human Rights Resource Center

Just Science interviews Dr. Douglas Ubelaker about the HHRRC's efforts and his contributions to an in-brief about how the NIJ's Forensic Technology Center of Excellence aids their mission.

For more information visit:
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ARCHIVED WEBINARS



The FTCoe provides no-cost educational opportunities for those looking to learn more about specific topics or advances in the fields of Biology & DNA, Controlled Substance, Crime Scene Investigation, MDI, Impression & Pattern Evidence, Toxicology, and other special initiatives.

HHRRC Archived Webinars

- Building Forensic Capacity Post-Conflict: Lessons from Uganda
- Stable Isotope Analysis in a Humanitarian Context
- Isotopes Aiding Identification of Undocumented Border Crosser Human Remains
- A Review of Forensic Anthropology in Mexico
- Stable Isotope Forensics & Unknown Persons
- Analysis & Conservation of Remains in Cambodia
- Nerve Agent Uptake and Detection in Human Bone

For more information visit:
<http://ow.ly/3VAH50xpSx3>

COLLABORATORS AND FUNDING

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