

Forensic Anthropology Center

WARNING Graphic Photographs

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Role of Forensic Anthropology

- Forensic Anthropology lies at the intersection of biological anthropology and forensic science
- Forensic anthropology is the application of anthropological methods and theory – particularly those relating to the recovery and analysis of human remains – to resolve legal matters

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Role of Forensic Anthropology

- Search and recovery of human remain
- Establish the forensic context
- Develop a biological profile
- Interpret trauma and postmortem damage to skeletal remains
- Estimate the time-since-death
- · Write legal reports and testify in court
- Research and Training

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SEARCH AND RECOVERY

- Locating bodies
- Excavation of remain and artifacts
- Archaeological techniques







ESTABLISHING THE FORENSIC CONTEXT Is it human? Morphology Are the remains contemporary? Preservation Artifacts Morphology

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BIOLOGICAL CHARACTERISTICS

- Biological Profile
- Age
- Sex
- Ancestry
- Stature
- Weight

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- Identifying Characteristic
- Antemortem trauma,
- disease, surgery



TIME-SINCE-DEATH

- Decomposition rates
- Insect evidence
- Animal evidence
- Botanical evidence
- Weathering



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- Murder, Suicide, Accident, Unknown
- Perimortem Trauma Analysis









Burial Damage

MASS DISASTER / GENOCIDE



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RESEARCH

- Conducting Research
 - Methods for determining biological characteristics based on studies of human variation
 - Trauma
 - Taphonomy
- Building Anatomical Collections and Databases



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Training

- Training Workshops
 - Recovery of Buried Remains
 - Facial Reconstruction
 - Forensic Taphonomy
 - Human Osteology
 - Human versus nonhuman bone
 - Trauma Analysis
 - Forensic Anthropological Methods





TEXAS STATE

Forensic Anthropology Center

- VISION To be the premier educational, research, and service center in forensic anthropology and taphonomy.
- MISSION Advance forensic anthropology through world-class education, research, service, and outreach

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FACTS STRUCTURE

- Programs & Projects
 - Willed Body Donation Program
 - Operation Identification (OpID)
- Buildings/Facilities
 - Grady Early Building (GEB)
 - Grady Early Forensic Anthropology Research Lab (GEFARL)
 - Forensic Anthropology Research Facility (FARF)
 - Osteology, Research, & Processing Lab (ORPL)
 - Freeman Center Multi-Purpose Classroom (MPC)





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WILLED BODY DONATION PROGRAM

- Donated exclusively to FACTS under the Texas
 Anatomical Gift Act
- Ethical approval covered by Texas Health and Safety Title 8, Chapter 691.001 and 692.001, and the Texas Administrative Code Title 25, Part 4, Chapters 477-485.

DONATION TYPES

- Pre-Registered "Living":
 - Complete documentation and express wish to donate prior to death
- Next-of-Kin:
 - Legal NOK donates remains
 - Cannot be estranged
- Restrictions
 - <500 lbs. and no active infectious disease</p>
 - Cremation not ground

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PRIMARY REASONS FOR DONATING

- An interest in the scientific process
- Desire to be helpful
- Desire for an alternative to traditional funeral
- Living donors motivated by cost savings
- Next-of-kin donors motivated by desire to honor the wish of the deceased.

Based on thesis by Hilary Martinez 2013 don't need it, you can have it: motivations for whole body donation

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THE DONATION PROCESS

- Age, sex, height, weight, forensic race, national origin
- Medical and dental history
- Occupation / Habitual Activities
- Photographs
- Locations lived
- · Changes in weight

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FACTS DONATION PROGRAM DATA

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FACTS DONATION PROGRAM DATA



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Receiving a Donation



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Measurement















MULTIPURPOSE TEACHING CLASSROOM AND OSTEOLOGICAL RESEARCH AND PROCESSING LABORATORY





















Graduate students learning about human skeletal variation using the Texas State University Donated Skeletal Collection

TRAINING

- Recovery of Buried Remains
- Facial Reconstruction
- Forensic Taphonomy
- Human Osteology
- Human versus nonhuman bone
- Trauma Analysis
- Forensic Anthropological Methods



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Karen Taylor, internationally known facial artists, provides training in facial reconstruction methods at the Forensic Anthropology Center











CASE 0438

A man illegally crossed the border into South Texas, died on the journey and was never identified. His remains were buried in a milk crate, his skull stained red from its contact with a bandanna.









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EPISODE 68: ALL THE TIME IN THE WORLD (6.1.2017)

TUNES DOWNLOAD SUBSCRIBE

The "body farm" at Texas State University is a place almost no one except researchers and law enforcement is able to see, because it's one of very few places in the world that deliberately puts out human bodies to decompose in nature. Formsic Anthropologists observe decomposition in order to help law enforcement discern when and how someone may have died. We asked if we could visit, and they agreed.







Inside the Largest Body Farm with Dr. Daniel J. Wescott



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Podcasts Worth a Listen

2: Midsomer Murders may Killings At Badger's Drift These sep O Play Later 01

December Book Club – Death's Acre // Interview with Dr. Daniel Wescott 1

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THE BROOKS COUNTY MASS DISASTER







Community Service Immigrant Bodies Exhumed in Falfurrias





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RESEARCH REQUESTS

- Research requests are subject to thorough review
- Approved researchers must follow detailed handling and safety procedures
- Research must agree to treat all remains and data collected ethically.

STAG	ES OF DEC	OMPOSITION	1	
Hours - Days	Days - Weeks	Weeks - Months	Months - Year	Years
Fresh	Early Decomposition	Advanced Decomposition	Skeleton	Extreme Decomposition
No observable decomposit ion Mortis	Bloat Skin slippage Marbling Discoloration Purge	Post-bloat Moist with bone exposure Adipocere Mummification	Greasy Bones Some desiccated soft tissue Dry Bones	Bleaching Exfoliation Cancellous bone exposure

STAC	GES OF DECC	OMPOSITION		
Hours - Days	Days - Weeks	Weeks - Months	Months - Year	Years
Fresh	Early Decomposition	Advanced Decompositio	n Skeleton	Extreme Decomposition
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No	Bloat	Post-bloat	Greasy Bones	Bleaching
observable	Skin slippage	Moist with	Some	Exfoliation
decomposit	Marbling	bone exposure	desiccated soft	Cancellous
ion	Discoloration	Adipocere	tissue	bone exposure
Mortis	Purge	Mummification	Dry Bones	











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Forensic Science International 261 (2016) 93-100

92233368	Contents lists available at ScienceDirect	
	Forensic Science International	Julia
ELSEVIER	journal homepage: www.elsevier.com/locate/forsciint	13

CrossMark

Comparison of decomposition rates between autopsied and non-autopsied human remains

Lennon N. Bates *, Daniel J. Wescott







eLife

RESEARCH ARTICLE

The 'ForensOMICS' approach for postmortem interval estimation from human bone by integrating metabolomics, lipidomics, and proteomics

Andrea Bonicelli¹⁴, Hayley L Mickleburgh^{2,3}, Alberto Chighine⁴, Emanuela Locci⁴, Daniel J Wescott², Noemi Procopie¹³⁴¹ The Forensic Science Unit, Faculty of Health and Life Sciences, Northumbria University. Newcastle upon True. United Kindom²: Amsterdam Centre for

The Forensic Science Unit, Faculty of Health and Life Sciences, Northumbria University, Newcastie upon Tyne, United Kingdom; 'Amsterdam Centre for Ancient Studies and Archaeology (ACASA). Department of Archaeology, Faculty of Humanities, University of Amsterdam, Amsterdam, Netherlands; "Forensic Anthropology Center, Texas State University, San Marcos, United States;

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Microbial Signatures of Cadaver Gravesoil During Decomposition

Sheree J. Finley, Jennifer L. Pechal, M. Eric Benbow, B. K. Robertson & Gulnaz T. Javan



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The Effects of Soil Texture on the Ability of Human Remains Detection Dogs to Detect Buried Human Remains



The effects of decomposition and environment on antemortem H-Pb-Sr isotope compositions and degradation of human scalp hair: Actualistic taphonomic observations

Lisette M. Kootker^{a,b,*}, Isabella C.C. von Holstein^{*}, Jelle Broeders^c, Daniel J. Wescott^d, Gareth R. Davies^{a,b}, Hayley L. Mickleburgh^{e,e,*}

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Non-invasive post-mortem interval diagnostics using a hand-held Raman spectrometer Usis Balde', Charles Farber', Mark Krimmer', Daniel Wescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, Mark Mark, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, Mark Mark, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 17784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 1784, Daniel Mescott', Dmitry Kurouski ^{16,6,1} Dependend diversity of Market, 1784, D	FISEVIER	iourni	al homepage: www.elsevier.com/locate/forc	
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Review 13 July 2000 Review 27 August 2000 Accepted 31 August 2000 DOI: 101111/1056-40921607 PAPER General Estimating postmortem interval for human cadavers in a sub-tropical climate using UV-Vis-near-infrared Spectroscopy	Department of Anthropology, Tex Department of Biochemistry and I The Institute for Quantum Science	as State University, San Marcos, Biophysics, Texas A&M University e and Engineering, Texas A&M U	TX 78666, United States y, College Station, TX 77843, United States Internity, College Seation, TX 77843, United States	
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Charit for

Controlled experimental observations on joint disarticulation and bone displacement of a human body in an open pit: Implications for funerary archaeology

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Bioarchaeology International DOI: 10.5744/bi.2022.0003

An Actualistic Taphonomic Study of Human **Decomposition in Coffins**

Clara Alfsdotter,^{a,b#} Megan F. Veltri,^{b,c} Crystal L. Crabb,^b and Daniel J. Wescott^b

"Department of Archaeology, Bohuslins Museum, Uddevalla, Sweden "Department of Anthropology, College of Laberal Arts, Texas State University, San Marcos, TX, USA "Department of Anthropology, College of Laberal Arts, The Pennsylvanis State University University Park, PA, USA "Correspondence to: Clara Alfsdotter, Department of Archaeology, Bohusläns Museum, Museigatan I, Uddevalla, Sweden - email: Clara. Alfsdotter@bohuslansmuseum.se



Forensic Science International: Genetics 63 (2023) 102825



Comparative study of Rapid DNA versus conventional methods on compromised bones

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Forensic Anthropology Vol. 1, No. 2: 124–140 DOI 10.5744/fa.2018.0013

REVIEW ARTICLE

The Use of X-ray Computed Tomography Technologies in Forensic Anthropology

Angi M. Christensen, PhD^{a*}•Michael A. Smith, PhD^a•Devora S. Gleiber, BA^b• Deborah L. Cunningham, PhD^b•Daniel J. Wescott, PhD^b





Reevaluation of the body mass estimate for the KNM-ER 5428 *Homo erectus* talus

Deborah L. Cunningham¹ | Melinda V. Rogers¹ | Daniel J. Wescott¹ | Robert C. McCarthy²





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