Friday and Saturday
November 14-15
Sam Houston State University

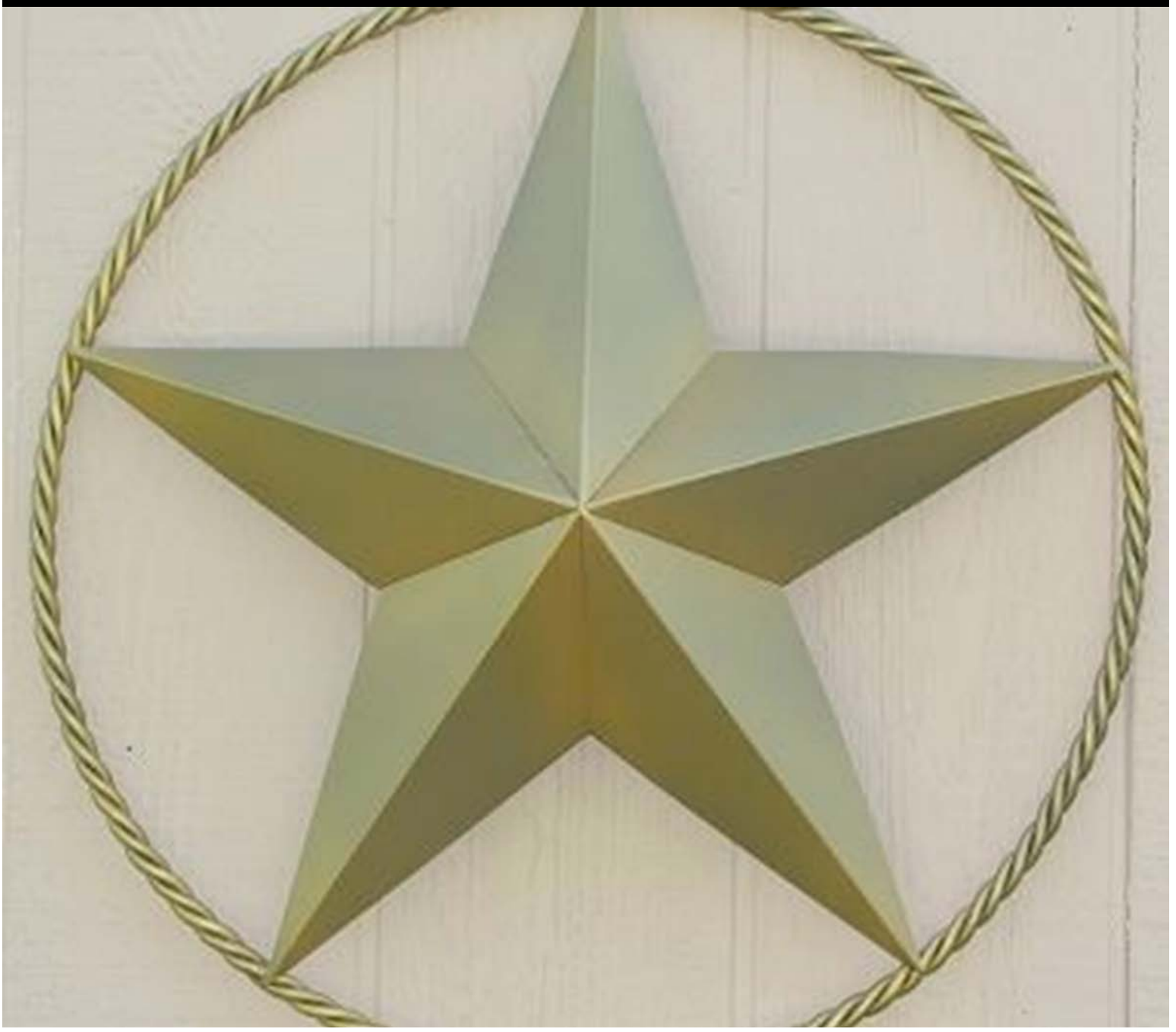
Primate Behavior
Socioecology

Forensics
Human Variation

Paleoanthropology
Paleoprimatology

TABA **Texas Association of Biological Anthropologists**

Annual Meeting 2014



SCHEDULE OF EVENTS

Friday, November 14, 2014

1:00-5:00 STAFS Open House and Tours

5:00-6:00 Registration
Lee Drain Atrium, Second Floor

6:00-7:00 Keynote Address: Douglas Ubelaker, Department of Anthropology, National Museum of Natural History, Smithsonian Institution, *The Use of Modern Radiocarbon to Assess the Birth and Death Dates of Human Remains.*
Lee Drain Room 213

7:00-8:00 Opening Reception
Lee Drain Atrium

Saturday, November 15, 2014 (Lee Drain Room 213)

9:15-10:15 Opening Remarks
Podium Presentations (Session I)

10:15-10:30 Coffee Break
Lee Drain Atrium

10:30-11:30 Podium Presentations (Session II)

11:30-1:15 Lunch Break
Lee Drain Atrium

1:15-2:00 Podium Presentations (Session III)

2:00-2:15 Coffee Break

2:15-3:15 Podium Presentations (Session IV)

3:15-3:30 Coffee Break

3:30-4:30	Poster Presentations Lee Drain Building, First Floor
4:30-5:30	Business Meeting and Election of Officers Lee Drain Room 213
6:00	Social Gathering (The Draft Bar)

STAFS OPEN HOUSE AND TOURS

Friday, November 14, 2014

1:00-5:00 PM

The Southeast Texas Applied Forensic Science (STAFS) Facility is a willed-body donor facility, recognized by the Anatomical Board of Texas, Chapter 692, Texas Anatomical Gift Act, accepting human body donations for the purposes of scientific research. The knowledge developed here can be used by professionals in the field to help solve criminal cases and to develop the skills of future crime scene investigators.

KEYNOTE ADDRESS

Friday, November 14, 2014

6:00 PM

THE USE OF MODERN RADIOCARBON TO ASSESS THE BIRTH AND DEATH DATES OF HUMAN REMAINS

DOUGLAS UBELAKER, Department of Anthropology, National Museum of Natural History, Smithsonian Institution

PODIUM TALKS

Saturday, November 15, 2014

SESSION I

9:15 Opening remarks

9:30 **Recent Hominin Fossil Discoveries from South Africa.** DARRYL J. DE RUITER[1,2]. [1]Department of Anthropology, Texas A&M University, College Station, TX, [2]Evolutionary Studies Institute, University of the Witwatersrand, Johannesburg, South Africa.

9:45 **The Utility of Mammal Faunas as Paleoenvironmental Indicators: A Case Study from the Koanaka Hills, Botswana.** PATRICK J. LEWIS and MONTE L. THIES. Department of Biological Sciences, Sam Houston State University, Huntsville, TX.

10:00 **Anxiety-related Behavior of Orphan Chimpanzees (*Pan troglodytes schweinfurthii)* at Gombe National Park, Tanzania.** MARIA BOTERO[1], SUZANNE MACDONALD[2], and ROWLAND MILLER[1]. [1]Psychology and Philosophy Department, Sam Houston State University, Huntsville, TX, [2]Department of Psychology, York University, Toronto, Ontario, Canada.

10:15-10:30 Coffee Break

SESSION II

10:30 **Temporomandibular disease in anthropoid primates.** CLAIRE A. KIRCHHOFF[1] and CLAIRE E. TERHUNE[2]. [1]Department of Integrative Physiology and Anatomy, University of North Texas Health Science Center, Fort Worth, TX, [2]Department of Anthropology, University of Arkansas, Fayetteville, AR.

10:45 **Mandibular Notch shape in Extant Hominidae using 2D Elliptic Fourier Analysis.** TIMOTHY L. CAMPBELL[1], THOMAS J. DEWITT[2], and DARRYL J. DE RUITER[1]. [1]Department of Anthropology, [2]Department of Wildlife and Fisheries, Texas A&M University, College Station, TX.

11:00 **Study of Two Faces: Preliminary study on the use of a 3D Scanner in determining asymmetry in the craniofacial bones.** KAITLIN DILLIARD[1], DAVID HOFFPAUIR[2], and JOAN A. BYTHEWAY[1]. [1]College of Criminal Justice, [2]Office of Research and Sponsored Programs, Sam Houston State University, Huntsville, TX.

11:15 **Cadaver Decomposition Island Interval in Southeast Texas.** TONYA PARNELL[1], KATHERINE TANNER[2], and JOAN BYTHEWAY[2]. [1]Department of Biology, [2]College of Criminal Justice, Sam Houston State University, Huntsville, TX.

11:30-1:15 **Lunch Break**
Lee Drain Atrium

SESSION III

1:15 **Experimental Assessment: Heavy Bladed Tool Mark Analysis in Relation to Dismemberment and Its Implications for Forensic Identification.** MELANIE HIGHSMITH, and ROBERT R. PAINE. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

1:30 **Vertebral lesions from a Geriatric sample exhumed from the St. Nicholas Cemetery, Limassol, Cyprus**. CAITLIN E. MAYER[1], ROBERT PAINE[1] and XENIA-PAULA KYRIAKOU[2]. [1]Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX, [2]Anthropological Curator, St. Nicholas Cemetery Cyprus

1:45 **An assessment of degenerative joint disease of the hip and shoulder in a Cypriot community from Limassol, Cyprus**. LIZETTE RODRIGUEZ. Department of Sociology, Anthropology, and Social Work, Texas Tech University

2:00-2:15 Coffee Break

SESSION IV

2:15 **Degenerative Joint Disease in the Hands and Feet Relative to Sex and Body Mass: A Study of Skeletons from St. Nicholas Cemetery in Limassol, Cyprus.** LISA C. HIGHSMITH[1], ROBERT R. PAINE[1], and XENIA-PAULA KYRIAKOU[2]. [1]Department of Sociology, Anthropology, and Social Work, Texas Tech University, [2] Limassol, Cyprus.

2:30 **Lurking in the genes: A case study of reactive arthropathy in comparison to other HLA-B27 related conditions and DISH.** WILLIAM D. CAWLEY. Department of Sociology, Anthropology and Social Work, Texas Tech University.

2:45 **Abnormal healing of a femoral spiral fracture and its functionality in a Cypriot Geriatrician**. SEWASEW HAILESELASSIE. Department of Sociology, Anthropology and Social Work, Texas Tech University

3:00 **Biological Anthropology Field School experiences while in Cyprus**. ROBERT R. PAINE. Department of Sociology, Anthropology, and Social Work, Texas Tech University.

3:15-3:30 Coffee Break

POSTER SESSION

3:30-4:30 Poster Presentations
Lee Drain Building, First Floor

1. Lemurs as gardeners of Madagascar's rainforests: impacts on plant recruitment success. ONJA H. RAZAFINDRATSIMA and AMY E. DUNHAM. Rice University, Houston, TX.

2. **A description of kissing behaviors in three species of captive owl monkey (Azara's night monkey, *Aotus azarae*; Nancy Ma's night monkey, *Aotus nancymaae*; and Spix's night monkey, *Aotus vociferans*).** ASHLEY M. CARTER[1], KERRIE LEWIS GRAHAM[1], AND LAWRENCE E. WILLIAMS[2]. [1]Department of Anthropology, Texas State University, [2]Department of Veterinary Sciences, University of Texas MD Anderson Cancer Center.

3. **Cranial Capacity by the Packing Method to Estimate Ancestry.** ALEXANDRIA TROMBLEY[1], TONYA PARNELL[2], and JOAN A. BYTHEWAY[1]. [1]College of Criminal Justice, [2]Department of Biology, Sam Houston State University, Huntsville, TX.

4. **A Paleopathological Comparison between Two Prehistoric Texas Populations. Inland VS Coastal: Who had it Best?** JENNIFER ZONKER RICE. Department of Anthropology and Center for Archaeological Research, The University of Texas at San Antonio, San Antonio, TX.

5. **A preliminary study of shifting oral and fecal bacterial communities during human cadaver decomposition in southeast Texas.** ZACHARY T. LUECK[1], DALTON A PLUMMER[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], SIBYL R. BUCHELI[1], and AARON M. LYNNE[1]**.** [1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX

6. **A preliminary study of shifting skin bacterial communities during human cadaver decomposition in southeast Texas.** LAURA M. PAEZ[1], JACQUELYN K. VASQUEZ[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], SIBYL R. BUCHELI[1], and AARON M. LYNNE[1]. [1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX.

7. **A Preliminary Study of Shifting Bacterial Communities of the Face during Human Cadaver Decomposition in Southeast Texas.** LAUREN R. SMITH[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], AARON M. LYNNE[1], and SIBYL R. BUCHELI[1]. [1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX.

8. **A preliminary study of season effect on bacterial communities during human cadaver decomposition in southeast Texas.** CHRISTINE M. WOELFEL-MONSIVAIS[1], MATTHEW J. GREENWOOD[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], SIBYL R. BUCHELI[1], and AARON M. LYNNE[1]. [1]Department of Biological Sciences, Sam Houston State University,

Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX.

4:30-5:30 Business Meeting and Election of Officers
Lee Drain Room 213

ABSTRACTS (In order of presentation)

SESSION I

Recent Hominin Fossil Discoveries from South Africa

DARRYL J. DE RUITER[1,2]. [1]Department of Anthropology, Texas A&M University, College Station, TX, [2]Evolutionary Studies Institute, University of the Witwatersrand, Johannesburg, South Africa.

Dated to ca. 1.977 Ma, the site of Malapa, South Africa has yielded partial skeletons of several individuals, including well-preserved cranial remains belonging to a juvenile probable male (MH1) and an adult probable female (MH2). Continued preparation of surrounding matrix, alongside digital reconstruction of cranial remains via synchrotron and CT scans, has allowed us to examine certain areas of the skull of *Australopithecus sediba* in greater detail than was previously possible. Some aspects of the neurocranium, cranial base, face, and mandible align *Au*. *sediba* more closely with specimens attributed to *Homo*, while others align *Au*. *sediba* more closely with other australopiths, in particular *Au*. *africanus*. However, morphology of mandibular remains of *Au. sediba*, including newly recovered material, shows that it is not merely a late-surviving morph of *Au. africanus* as has been claimed. Rather—as is seen elsewhere in the cranium, dentition, and postcranial skeleton—these mandibular remains share similarities with other australopiths but can be differentiated from the hypodigm of *Au*. *africanus* in both size and shape as well as in their ontogenetic growth trajectory.

More recently, we have recovered more than 1200 hominin fossils from a new cave system in South Africa, known as Rising Star. At least a dozen individuals are represented, including instances of almost every bone in the skeleton. Preliminary analysis indicates that these fossils display a mixture of morphological features. The age of the site is currently unknown.

The Utility of Mammal Faunas as Paleoenvironmental Indicators: A Case Study from the Koanaka Hills, Botswana

PATRICK J. LEWIS and MONTE L. THIES. Department of Biological Sciences, Sam Houston State University, Huntsville, TX.

Recent excavations of fossiliferous deposits from Bone Cave, located in the southern most of the Koanaka Hills of northwestern Ngamiland, Botswana, have produced a diverse Pleistocene mammalian fauna in an area underrepresented for the period. A large assemblage of micromammals has been excavated from the cave and consists primarily of rodents and shrews. Taphonomy of this material is consistent with an owl accumulation and *Tyto alba* (Barn Owl) is the most likely accumulating agent. Our research

attempted to identify these fossils to their lowest taxonomic level to better inform on the regional paleoenvironment. Comparison of the fossil material with recently trapped modern specimens from the Koanaka area and specimens from the Transvaal Museum in Pretoria call into question the reliability of diagnosing rodents based on dentition alone, in particular for many murine taxa. Of further concern is genetic work on the modern Koanaka rodents which finds genetically distinct cryptic taxa of murines that are morphologically indistinguishable. It has been standard practice in the region for several decades to diagnose similar rodent fossils to the level of genus, and frequently to species, using only dental characters. A detailed comparison of qualitative characters and quantitative analyses of large sample sizes, however, have failed to produce reliable apomorphies for identifying most taxa below subfamily. Variation in isotopes and an over generalization of environmental tolerances also plague current methods of paleoenvironmental reconstruction. Until they can be reexamined, available taxonomic lists and their associated paleoenvironmental reconstructions for southern African Plio-Pleistocene localities incorporating rodents should be used cautiously.

Anxiety-related Behavior of Orphan Chimpanzees (*Pan troglodytes schweinfurthii)* at Gombe National Park, Tanzania

MARIA BOTERO[1], SUZANNE MACDONALD[2], and ROWLAND MILLER[1]. [1]Psychology and Philosophy Department, Sam Houston State University, Huntsville, TX, [2]Department of Psychology, York University, Toronto, Ontario, Canada.

This study examines the anxiety levels and social interactions of two orphan and four mother-reared adolescent chimpanzees (*Pan troglodytes schweinfurthii*) in the Kasekela community at Gombe National Park, Tanzania. These individuals were observed as adolescents, using focal sampling in the field at Gombe. Their social interactions and anxious behavior, measured as rough scratching, were recorded. The two orphan adolescent chimpanzees differed from other adolescents of a similar age, exhibiting higher levels of anxiety and lower levels of play. These results suggest that a mother's absence, even in naturalistic conditions in which other members of the community are available to the orphan, may have long-lasting impact on an adolescent's anxiety and its ability to engage in complex social interactions such as play.

SESSION II

Temporomandibular disease in anthropoid primates

CLAIRE A. KIRCHHOFF[1] and CLAIRE E. TERHUNE[2]. [1]Department of Integrative Physiology and Anatomy, University of North Texas Health Science Center, Fort Worth, TX, [2]Department of Anthropology, University of Arkansas, Fayetteville, AR.

While temporomandibular disease (TMD) is a clinical concern for contemporary humans, its evolutionary context is not well understood – in part because the prevalence of TMD remains relatively unexplored in nonhuman primates. Here we present preliminary analyses examining covariation between dental wear, antemortem tooth loss, and the presence of TMD in a multi-species sample of anthropoid primates. We scored dental wear using broad categories previously developed for humans and applied to nonhuman primates, indicated whether teeth had been lost antemortem based on alveolar remodeling, and determined TMD presence using previously published criteria. We collected data for a sample of 60 primates including *Pan troglodytes, Gorilla gorilla, Pongo pygmaeus, Papio hamadryas,* and contemporary *Homo sapiens*. There were no sex differences in any of the examined variables. For animals with TMD, average tooth wear (U = 156.5, p = 0.031) as well as wear score for the most worn tooth (X^2 = 8.825, df = 3, p=0.032) differed from animals without TMD. Neither the presence of antemortem tooth loss (X^2 = 0.117, df = 1, p = 0.732) nor the percentage of teeth lost (U = 255.0, p = 0.709) differed for animals with versus without TMD. The same pattern was found when anterior and posterior teeth were considered separately, in contrast to findings for contemporary humans. Our results suggest that further inquiry into the relationship between dental attrition and TMD in non-human primates is warranted; inter- and intraspecific comparisons would provide an important comparative framework for understanding pathology of the temporomandibular joint.

Mandibular Notch shape in Extant Hominidae using 2D Elliptic Fourier Analysis

TIMOTHY L. CAMPBELL[1], THOMAS J. DEWITT[2], and DARRYL J. DE RUITER[1].
[1]Department of Anthropology, [2]Department of Wildlife and Fisheries, Texas A&M University, College Station, TX.

Considerable variation exists in the mandibular ramal morphology of living apes and humans. Recent studies have demonstrated that analyses of ramal morphology can yield high classification rates among taxa. Additionally, pronounced morphological differences in the superior portion of the mandibular ramus have been consistently identified, including aspects of the coronoid process and sigmoid notch. In many of these analyses, however, only a portion of the condylar process has been included resulting in a larger emphasis placed on the superior and anterior portions of the ramus. In this study we assess the superior ramal morphology of extant adult apes and humans and include the entire ramal morphology around the sigmoid notch using 2D Elliptic Fourier Analysis. Results from both shape and form analyses show highly significant differences between genera and classification rates comparable to previous studies. These results indicate that this portion of the mandible can be successfully used to differentiate modern apes and humans. We also discuss ongoing work for including proportionally greater amounts of the superior ramal contour, and the logistics of its application to studies of fragmentary fossilized specimens.

Study of Two Faces: Preliminary study on the use of a 3D Scanner in determining asymmetry in the craniofacial bones.

KAITLIN DILLIARD[1], DAVID HOFFPAUIR[2], and JOAN A. BYTHEWAY[1]. [1]College of Criminal Justice, [2]Office of Research and Sponsored Programs, Sam Houston State University, Huntsville, TX.

Studies have shown that most individual's faces are asymmetrical. Computer technology can be used to visually prove face asymmetry. But does asymmetry exhibit itself in facial soft tissue, craniofacial bones, or both? Betty Pat Gatliff, a Forensic Facial Reconstructionist, discovered that there was asymmetry present in the craniofacial bones when she tried to complete a facial reconstruction by reconstructing one side and then creating a mirror image of the other. However, this was simple based on observation of gross morphology. Cadaver studies have been conducted on the asymmetry of facial tissues by measuring and comparing the tissue depths of the right and left sides of the face. These studies surmised that there was little significance in the tissue depth differences between the right and left side. Most studies have focused on soft tissue with limited studies on asymmetry in the craniofacial bones using quantitative methods, such as linear measurements.

This preliminary study focuses on the measurable difference between the left and right craniofacial bones of three main ancestral groups by utilizing a 3D scanner. Accuracy of craniofacial measurements were compared between a scanned skull using the Artec Eva™ 3D scanner and software and direct traditional linear measurements. Results show that the average error was 1.2mm on the first skull and less than 1mm a second skull. In addition, five skulls from various ancestries were scanned and measured to compare average error and to determine the degree of asymmetry of the craniofacial skeleton. Results showed that while there are measurable differences between the right and left sides, there are few of significance; most are within the 2mm range for linear measurements. The results also show that there are shared measurements that have a higher level of significance than the rest between scanned skulls. More research is needed to verify that the differences between the left and right craniofacial measurements, that are significant, are consistent between or within the ancestral groups and not due to individual characteristics.

Cadaver Decomposition Island Interval in Southeast Texas

TONYA PARNELL[1], KATHERINE TANNER[2], and JOAN BYTHEWAY[2]. [1]Department of Biology, [2]College of Criminal Justice, Sam Houston State University, Huntsville, TX.

Cadaver Decomposition Island, or CDI, is the localized area found below and around remains where the vast majority of decompositional fluids have leached into the soil. This massive influx of organic matter and microorganisms eliminates already present vegetation and provides for a robust

regrowth within the confines of the CDI. Previous research has been done using *Sus scrofa*, the pig (Tibbet and Carter 2006), although no literature to date has recorded the CDI interval for humans or the variables and their effects. To show how interval and scavenger disturbances influence CDI formation, in southeast Texas, the present study placed six individuals, in regions of similar terrain, with five protected from terrestrial and avian predation and one left unprotected. The individuals were later relocated at predetermined intervals of zero, two, four, and six weeks after leaching. Observations have shown that the CDI is greatest under the trunk, reduced under the head, and further reduced under the limbs. In 2013, a pilot study was conducted at The Southeast Texas Applied Forensic Science Facility, STAFS, methodology was based on only gross observation. Results show vegetation begins to return, first, where the lowest levels of CDI were present, with final growth occurring in places with the highest CDI concentrations. For the present study, as of day 69, no growth was observed within the confines of the CDI, however, observations are continuing.

SESSION III

Experimental Assessment: Heavy Bladed Tool Mark Analysis in Relation to Dismemberment and Its Implications for Forensic Identification.

MELANIE HIGHSMITH, and ROBERT R. PAINE. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

Although there a number of reports specific to dismemberment, it appears that more research is required. The purpose of this project is to contribute to the literature and techniques associated with the identification of tool marks caused by heavy bladed instruments during dismemberment. This research attempts to match specific trauma patterns with a specific weapon (machete or axe).In addition, the fracture patterns are studied in an attempt to reconstruct the number of blows that occurred during the dismemberment process. A number of variables are accounted for such as soft tissue depth, the time it takes to dismember limbs, and the body weight of the volunteers used to dismember the limbs. A macroscopic assessment of the trauma produced during this experiment is used to identify the tool used and the number of strikes. Fully fleshed pig limbs (*Sus scrofa*) were dismembered by 4 volunteers in a blind test in which the main researcher MH was not present. The weight and height of the tools and volunteers were taken in order to demonstrate the range of variability possible when heavy bladed tools are wielded. The difficulty of assessing tool type shows that it may not be possible to differentiate between machete and axe strikes.

Vertebral lesions from a Geriatric sample exhumed from the St. Nicholas Cemetery, Limassol, Cyprus

CAITLIN E. MAYER[1], ROBERT PAINE[1] and XENIA-PAULA KYRIAKOU[2]. [1]Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX, [2]Anthropological Curator, St. Nicholas Cemetery Cyprus

During the 2014 Texas Tech Field School season in Nicosia, Cyprus a geriatric burial sample was analyzed for the presence of skeletal lesions. The sample is comprised of 30 male and female individuals with ages ranging from 60-100 years old. The burials were exhumed from the St. Nicholas cemetery in Limassol, Cyprus and they come with known demographic data specific to sex and age. As one might expect this sample of geriatricians exhibited considerable amount of Osteoarthritis (OA) and Degenerative Joint disease (DJD) as well as other lesion patterns show on the vertebral column. These patterns include Diffuse Idiopathic Skeletal Hyperostosis (DISH), and Ankylosing Spondylitis (AS). These are progressive diseases that affect the vertebral column; a discussion of the frequency of these skeletal defects is the focus of this study. DISH is categorized as the ossification of the right anterior portion of the vertebral column that results in a smooth surface "bridge" that fuses four or more vertebrae together preserving a space between the vertebral bodies. Ankylosing Spondylitis is defined as a chronic and progressive disease that begins in the thoracic vertebrae and continues into the lumbar region as bones are fused. OA lesions were ranked on a scoring system depending on the percentage of surface area covered and by the number of bones fused. The data collected from this geriatric sample of 720 vertebral bones demonstrates how common these conditions are within this unique Cypriot sample, 21% of males show DISH and 31% of the females show DISH.

An assessment of degenerative joint disease of the hip and shoulder in a Cypriot community from Limassol, Cyprus

LIZETTE RODRIGUEZ. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

Degenerative joint disease (DJD) is one of the most common pathological conditions observed in skeletal collections. DJD is the destruction of articular cartilage and bone at the joint surface. It can be associated with advanced age, work habits, mechanical stress or the result of injury to the limbs. Evidence of DJD is visible through a series of lesions including porosity, lipping, osteophytes, eburnation, and, in rare but severe cases, ankylosis of the joint. This research focuses on degenerative joint disease of the hip and shoulder among remains exhumed from the St. Nicholas Cemetery in Limassol, Cyprus. This sample of burials was examined during the 2014 study abroad field school sponsored by Texas Tech University. The sample is unique in that we are provided with known demographic information regarding age and sex. The purpose of this project is to assess the frequency of degenerative joint disease

specific to the hip and shoulder joints in Cypriot individuals from this community. Thirty geriatric skeletal remains are analyzed for the common lesions associated with DJD. Each joint is treated as an individual unit. Lesions were scored to type (eburnation, osteophytes, and porosity) and to the degree of severity. Since the sample is small, analysis of data is completed using the Fisher's exact test. We find that degenerative joint disease of the hip and shoulder is not sex specific for this sample and that old age is a critical factor in the presence of severe lesions.

SESSION IV

Degenerative Joint Disease in the Hands and Feet Relative to Sex and Body Mass: A Study of Skeletons from St. Nicholas Cemetery in Limassol, Cyprus.

LISA C. HIGHSMITH[1], ROBERT R. PAINE[1], and XENIA-PAULA KYRIAKOU[2]. [1]Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX, [2]Limassol, Cyprus.

The purpose of this research is to provide a paleopathology assessment for the exhumed remains from the St. Nicholas Cemetery of Limassol, Cyprus. These remains are unique in that they have demographic information specific to age and sex and that they are mostly geriatricians. In this project we focus specifically on the degenerate joint disease (DJD) of joints from the hands and feet of 33 individuals. In doing so, degenerate joint disease is assessed by joint in regards to the presence and severity of lesions exhibiting microporosity, macroporosity, lipping, osteophytes, eburnation, and joint fusion. Although, (DJD) can be found on articular joints throughout the body; with the shoulder, knee, hip, and vertebral joints, most commonly affected areas; DJD specific to the hands and feet are not well discussed in the literature. In evaluating the frequencies of these lesions we use factors such as sex, age grouping, body mass and stature. Skeletons in this sample range from 30-100 years of age, 51.5% are males and 48.5% are females. Results show that women, in this population, exhibit higher frequencies and severity of DJD in both the hands and feet compared to men; suggesting that body mass is not a factor in the frequency of lesions specific to the hands and feet.

Lurking in the genes: A case study of reactive arthropathy in comparison to other HLA-B27 related conditions and DISH

WILLIAM D. CAWLEY. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

During the 2014 Texas Tech University anthropological field school in Nicosia, Cyprus; a female geriatrician from the St. Nicholas cemetery in Limassol showed definitive evidence of having severe reactive arthropathy (Reiter's syndrome). The individual exhibited lesions specific to fusion of the thoracic and lumbar spinal column primarily along the posterior aspect of the spine with no intervertebral fusion. There

were additional fusions observed at the sacroiliac joint, at the left femoral head, and acetabulum. Severe Lanois deformity was observed with no corresponding fusion or arthritis mutilans of the hands. Lanois deformity is characterized by a fusion of foot bones in a claw-like orientation. The overall lesion pattern of this individual suggests that reactive arthropathy is the likely origin of these lesions and not the more common HLA-B27 related seronegative spondyloarthropathies such as ankylosing spondylitis, psoriatic arthropathy, or enteropathic arthropathy. Although an individual with HLA-B27 might live unaffected and void of joint lesions, reactive arthropathy can be induced at any time via common bacterial infections. This rare example of such a severe case of reactive arthropathy exemplifies how seronegative spondyloarthropathies might be differentiated from other HLA-B27 conditions via skeletal lesion patterns. The uniqueness of this condition is illustrated by comparing the lesions from individuals from the same sample with DISH and ankylosing spondylitis.

Abnormal healing of a femoral spiral fracture and its functionality in a Cypriot Geriatrician

SEWASEW HAILESELASSIE. Department of Sociology, Anthropology and Social Work, Texas Tech University, Lubbock, TX.

While the study of exhumed burial remains from the St. Nicholas cemetery of Cyprus was undertaken by the 2014 field school held by Texas Tech University a very unusual fracture pattern to the left femur was identified in burial number 14. The purpose of this presentation is to share information specific to this unique fracture. In addition to this fracture, the individual showed numerous skeletal traumas including: a dislocated left shoulder joint, fractured radius, multiple blunt force traumas to the skull and an unhealed le fort III fracture of the splanocranium. Unique to this project, demographic records kept at the cemetery are available and the records show that this decedent lived to be 100 years old. Similar to most of the injuries shown by the individual, the break of the femoral neck from the shaft did not receive medical attention and the healing was not set in normal anatomical position. To accommodate continued use, skeletal features show that he developed a pseudo-joint replacing the hip joint by utilizing the posterior surface of the femoral head and the posterior surface of the lesser trochanter. Eburnation on both of these surfaces indicates that this pseudo-joint was functional. This paper will discuss the skeletal structures that have been affected by this modification and biomechanical functionality.

Biological Anthropology Field School experiences while in Cyprus.

ROBERT R. PAINE. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

During the last ten years a trend towards offering skeletal biology fields school offered

by universities is becoming common place. While the study of exhumed burials from the St. Nicholas cemetery of Limassol, Cyprus was undertaken by the 2014 field school offered by Texas Tech, a number of skeletal lesions and defects were identified. Over thirty geriatric Cypriot remains were analyzed during the 5 week period. The purpose of this presentation is to report on our findings and to share with the audience the overall experience of working in Cyprus. A number of reports by students have been given. Besides an over view of the collection's state of health, I will also discuss the working and living conditions while Cyprus. In general, we can say that the presence of skeletal lesions for most health conditions is not sex specific. This should not be a surprise given the unique age grouping of these individuals. The capital of Cyprus, Nicosia is one of the very few Capitals that are divided by an UN neutral zone. The divided state of the island and of Nicosia is the direct result of the Turkish invasion of the island in 1974. Such a circumstance offered an unusual living condition for the field school students and it provided them the rare opportunity to learn about forensic anthropology at an international level. They were invited to the Neutral zone to see how war causalities were examined and identified by the UN/Cypriot Missing person's laboratory personnel.

POSTER SESSION

1. Lemurs as gardeners of Madagascar's rainforests: impacts on plant recruitment success

ONJA H. RAZAFINDRATSIMA and AMY E. DUNHAM. Rice University, Houston, TX.

The majority of frugivorous primates play critical roles as seed dispersers of their feeding plants. Thus, understanding how seed dispersal by frugivorous primates contributes to tree recruitment is important for understanding the ecological consequences of primate-plant mutualism, and for predicting the stability of such mechanism in the face of anthropogenic change. In this study, we assessed 1) how nonrandom dispersal of seeds by three lemur species in the southeastern rainforest of Madagascar contributes to the recruitment of their common host-plant, and 2) how their loss might affect plant recruitment. To do that, we used mathematical models parameterized with data from lemur behavioral observations, fecal analyses and 3-year seed experiments. We found that seed dispersal by lemurs increased modeled per-seed sapling recruitment 4-fold compared to seeds simply falling under parent trees. Seeds dispersed by one lemur species, *Eulemur rubriventer,* had higher modeled recruitment porbability than seeds dispersed randomly. However, as a group, our models suggest that seed dispersal by lemurs would have resulted in lower plant recruitment than random dispersal of seeds. These results suggest that loss of lemur dispersers could have

important negative impacts on plant populations, and may lead to drastic changes to the structure of tree communities in Madagascar's rainforests.

2. A description of kissing behaviors in three species of captive owl monkey (Azara's night monkey, *Aotus azarae*; Nancy Ma's night monkey, *Aotus nancymaae*; and Spix's night monkey, *Aotus vociferans*).

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We observed and video-recorded behavior of 3 species of captive owl monkeys at the University of Texas, M.D. Anderson Cancer Center, Bastrop, Texas, between March and July 2014. Specifically, we observed 2 cages of Azara's night monkey, (*Aotus azarae*), comprising in total 2 male-female adult pairs with their three respective offspring, 7 cages of Nancy Ma's owl monkey (*Aotus nancymaae*), comprising 7 male-female adult pairs and their 13 respective offspring, and 3 cages of Spix's night monkey (*Aotus vociferans*), comprising 3 male-female adult pairs and their 6 respective offspring. During observations of these 3 species, we recorded a behavior very similar in appearance to human kissing. The "kissing" behavior typically occurred between different members of the closely-bonded family groups in which the monkeys live (e.g., adult-adult, parent-offspring, sibling-sibling). Within the described category "kissing", there are some notable behavioral variations, including, but not limited to: mouth-to-mouth touching, nose-to-nose bumping, and "face-smooshing" (where one individual grabs the face of a conspecific, and pulls it into a kiss). Several contextual variations of kissing behaviors were noted. Face kissing behaviors generally occurred during feeding times, often as a food sharing behavior; additionally it occurred in a play context, and sometimes as a stress-reliever. We discuss the possible functions of this behavior, and the extent to which it differs across the species we observed. It is likely that face-kissing behaviors serve affiliative or stress-relief purposes among kin in owl monkeys.

3. Cranial Capacity by the Packing Method to Estimate Ancestry

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Cranial capacity is the cubic capacity of the braincase. Capacity can be determined for the skull by filling the skull with a particulate material and measuring the volume. Although cranial capacity has had many studies done in the past, there have been only a few studies that compared and examined cranial capacity done throughout multiple ancestries groups. Most previous studies have compared cranial capacity between males and females, throughout a population in a certain subgroup (Gohiya

2012). Cranial capacity has been measured in three ways; linear measurements, radiological methods, and packing methods. The mustard seeds technique is one packing method that has been used in multiple other studies (Ramteerthakar 2013); in this method, the skull is filled, with uniformed sized seeds. The seeds are then poured into a volumetric jar or cylinder through a funnel, and volume is recorded from the reading from jar or cylinder is taken (Ramteerthakar 2013). In this preliminary study, the cranial capacity of 10 dried skulls (5 females and 5 males) from five ancestral groups was measured using the packing method to determine if there was a viable correlation between cranial capacity and determining ancestry. The five ancestral groups were African, Asian, European, Hispanic, and Native American. Results show a statistically significant difference in cranial capacity between European and African males (with a p value of .0298, with the sample means 1649.25-1227.92), but no statistically significant differences between female ancestries.

4. A Paleopathological Comparison between Two Prehistoric Texas Populations. Inland VS Coastal: Who had it Best?

JENNIFER ZONKER RICE. Department of Anthropology and Center for Archaeological Research, The University of Texas at San Antonio, San Antonio, TX.

The occurrence of pathological lesions in skeletal remains of two Late Prehistoric populations from the Texas Gulf Coast and South Texas were compared for the purpose of assessing differences in patterns of disease and disease presence. Jamaica Beach (41GV5) is a mortuary site from Galveston, Texas that dates from 814-514 BP, while the Coleman site (41BX568) is a mortuary site in south Bexar County Texas dating from 656-506 years BP. A total of 48 skeletons were analyzed to determine incidence of anemia, dental enamel hypoplasia, infection, arthritis, dental lesions, Harris lines (Coleman only), and trauma. Results indicate slightly differential disease profiles between these two groups. Incidence of arthritis and porotic hyperostosis was higher in the Jamaica Beach individuals, while infection, dental caries and abscesses were higher in the Coleman group. Enamel hypoplasia was not observed in the Jamaica Beach collection due to extreme dental wear. While it is difficult to precisely identify possible reasons for differential disease occurrence and rate between these two prehistoric populations, we can assume that stressors for each population were significant.

5. A preliminary study of shifting oral and fecal bacterial communities during human cadaver decomposition in southeast Texas

ZACHARY T. LUECK[1], DALTON A PLUMMER[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], SIBYL R. BUCHELI[1], and AARON M. LYNNE[1]. [1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and

Microbiology, Baylor College of Medicine, Houston, TX

Decomposition is a dynamic and continuous process whereby features of a cadaver change in a relatively predictable pattern over time relative to temperature and specific ecological scenario. As a cadaver decomposes, it passes through several major stages of tissue change leading from wet decomposition (fresh, bloat) to dry decomposition (decay, mummification, and/or skeletonization). Early stages of decomposition are wet and marked by discoloration of the flesh and the onset and cessation of bacterially-induced bloat. Intrinsic bacteria begin to digest the intestines from the inside out, eventually digesting away the surrounding tissues. During putrefaction, bacteria undergo anaerobic respiration and produce gases as by-products, the buildup of which creates pressure, inflating the cadaver, and eventually forcing fluids out (purge). In the trunk, purge is associated with an opening of the abdominal cavity to the environment. While bacteria are credited as a driving force of decomposition; relatively little is known about bacterial succession during decomposition. Understanding the bacterial basis of decomposition is crucial to understanding decomposition as a whole and may help explain the variation of decomposition seen between cadavers. To investigate community structure of internal body sites, human cadavers were placed outdoors to decompose under natural conditions at the Southeast Texas Applied Forensic Science (STAFS) facility (a willed body facility) at the Center for Biological Field Studies (CBSF), Sam Houston State University, Huntsville, Texas. The oral and fecal regions of six cadavers were sampled by internally swabbing the left inner cheek and externally swabbing the rectum through the stages of decomposition. To assess alpha and beta diversity, sample processing, 16S rRNA gene amplification, and Illumina sequencing were performed following protocols benchmarked as part of the Human Microbiome Project. 16s data were processed and analyzed using QIIME version 1.7.0. Samples were grouped according to body site, cadaver of origin, and accumulated degree hours. Initial results suggest different microbial communities before and after purge. Ultimately, bacterial data such as these can be refined to develop a model of microbial succession that can be used to estimate the postmortem interval, or the time since death.

6. A preliminary study of shifting skin bacterial communities during human cadaver decomposition in southeast Texas

LAURA M. PAEZ[1], JACQUELYN K. VASQUEZ[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], SIBYL R. BUCHELI[1], and AARON M. LYNNE[1]. [1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX.

Decomposition is dynamic and continuous process whereby features of a cadaver

change in a relatively predictable pattern over time relative to temperature and specific ecological scenario. As a cadaver decomposes, it passes through several major stages of tissue change leading from wet decomposition (fresh, bloat) to dry decomposition (decay, mummification, and/or skeletonization). Early stages of decomposition are wet and marked by discoloration of the flesh and the onset and cessation of bacterially-induced bloat. Intrinsic bacteria begin to digest the intestines from the inside out, eventually digesting away the surrounding tissues. During putrefaction, bacteria undergo anaerobic respiration and produce gases as by-products, the buildup of which creates pressure, inflating the cadaver, and eventually forcing fluids out (purge). In the trunk, purge is associated with an opening of the abdominal cavity to the environment. While bacteria are credited as a driving force of decomposition; relatively little is known about bacterial succession during decomposition. Understanding the bacterial basis of decomposition is crucial to understanding decomposition as a whole and may help explain the variation of decomposition seen between cadavers. To investigate community structure of the skin, human cadavers were placed outdoors to decompose under natural conditions at the Southeast Texas Applied Forensic Science (STAFS) facility (a willed body facility) at the Center for Biological Field Studies (CBSF), Sam Houston State University, Huntsville, Texas. The skin of six cadavers was sampled by externally swabbing the right cheek, right bicep, and torso through the stages of decomposition. To assess alpha and beta diversity, sample processing, 16S rRNA gene amplification, and Illumina sequencing were performed following protocols benchmarked as part of the Human Microbiome Project. 16s data were processed and analyzed using QIIME version 1.7.0. Samples were grouped according to body site, cadaver of origin, and accumulated degree hours. Initial results suggest different microbial communities before and after purge. Ultimately, bacterial data such as these can be refined to develop a model of microbial succession that can be used to estimate the postmortem interval, or the time since death.

7. A Preliminary Study of Shifting Bacterial Communities of the Face during Human Cadaver Decomposition in Southeast Texas

LAUREN R. SMITH[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], AARON M. LYNNE[1], and SIBYL R. BUCHELI[1]. [1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX.

The Human Microbiome Project brought attention to the community of organisms that live and thrive on and in the bodies of humans. While this microbiome is important to understand in living humans, it is just as important to understand once human life has ceased and the microbial communities are allowed to proliferate over the course of decomposition. The microbiome of human decomposition is an emerging aspect of

forensic research and holds the potential of providing a collaborative estimate of the post mortem interval. Preliminary studies have shown a shift in the communities across the varying stages of decomposition. One aspect left to be studied is whether samples that are taken vary temporally or spatially on a cadaver. In this preliminary study of the influence and shift in microbial composition of human decomposition, two human cadavers were placed outdoors at the Southeast Texas Applied Forensic Science (STAFS) facility at the Center for Biological Field Studies (CBFS) in Huntsville, Texas. Both cadavers were allowed to decompose in a natural setting while external samples were taken at eighteen locations on the face in six hour intervals for four days. Face samples were processed using 16S rRNA gene amplification, following the protocol modeled by the Human Microbiome Project. The QIIME software, version 1.7.0, was used to analyze the data produced. The results show a temporal and special change in microbial structure. Overall, these results can be used to fine-tune sampling protocols in large-scale studies to more accurately sample for the changing diversity of microbes present on a decomposing cadaver and may strengthen the ability to more accurately determine the postmortem interval.

8. A preliminary study of season effect on bacterial communities during human cadaver decomposition in southeast Texas

CHRISTINE M. WOELFEL-MONSIVAIS[1], MATTHEW J. GREENWOOD[1], DANIEL P. HAARMANN[1], JOSEPH F. PETROSINO[2], SIBYL R. BUCHELI[1], and AARON M. LYNNE[1].
[1]Department of Biological Sciences, Sam Houston State University, Huntsville, TX, [2]Alkek Center for Metagenomics and Microbiome Research, Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX.

Decomposition is dynamic and continuous process whereby features of a cadaver change in a relatively predictable pattern over time relative to temperature and specific ecological scenario. As a cadaver decomposes, it passes through several major stages of tissue change leading from wet decomposition (fresh, bloat) to dry decomposition (decay, mummification, and/or skeletonization). Early stages of decomposition are wet and marked by discoloration of the flesh and the onset and cessation of bacterially-induced bloat. Intrinsic bacteria begin to digest the intestines from the inside out, eventually digesting away the surrounding tissues. During putrefaction, bacteria undergo anaerobic respiration and produce gases as by-products, the buildup of which creates pressure, inflating the cadaver, and eventually forcing fluids out (purge). In the trunk, purge is associated with an opening of the abdominal cavity to the environment. While bacteria are credited as a driving force of decomposition; relatively little is known about bacterial succession during decomposition. Understanding the bacterial basis of decomposition is crucial to understanding decomposition as a whole and may help explain the variation of decomposition seen between cadavers. To

investigate the effect of seasonality of the community structure during decomposition, six human cadavers were placed outdoors to decompose under natural conditions at the Southeast Texas Applied Forensic Science (STAFS) facility (a willed body facility) at the Center for Biological Field Studies (CBSF), Sam Houston State University, Huntsville, Texas during winter, spring and summer months. The six cadavers were sampled by externally swabbing the various body locations through the stages of decomposition. To assess alpha and beta diversity, sample processing, 16S rRNA gene amplification, and Illumina sequencing were performed following protocols benchmarked as part of the Human Microbiome Project. 16s data were processed and analyzed using QIIME version 1.7.0. Samples were grouped according to body site, cadaver of origin, and season placed. Initial results suggest season has an effect on the microbial communities during decomposition. Ultimately, bacterial data such as these can be refined to develop a model of microbial succession that can be used to estimate the postmortem interval, or the time since death.

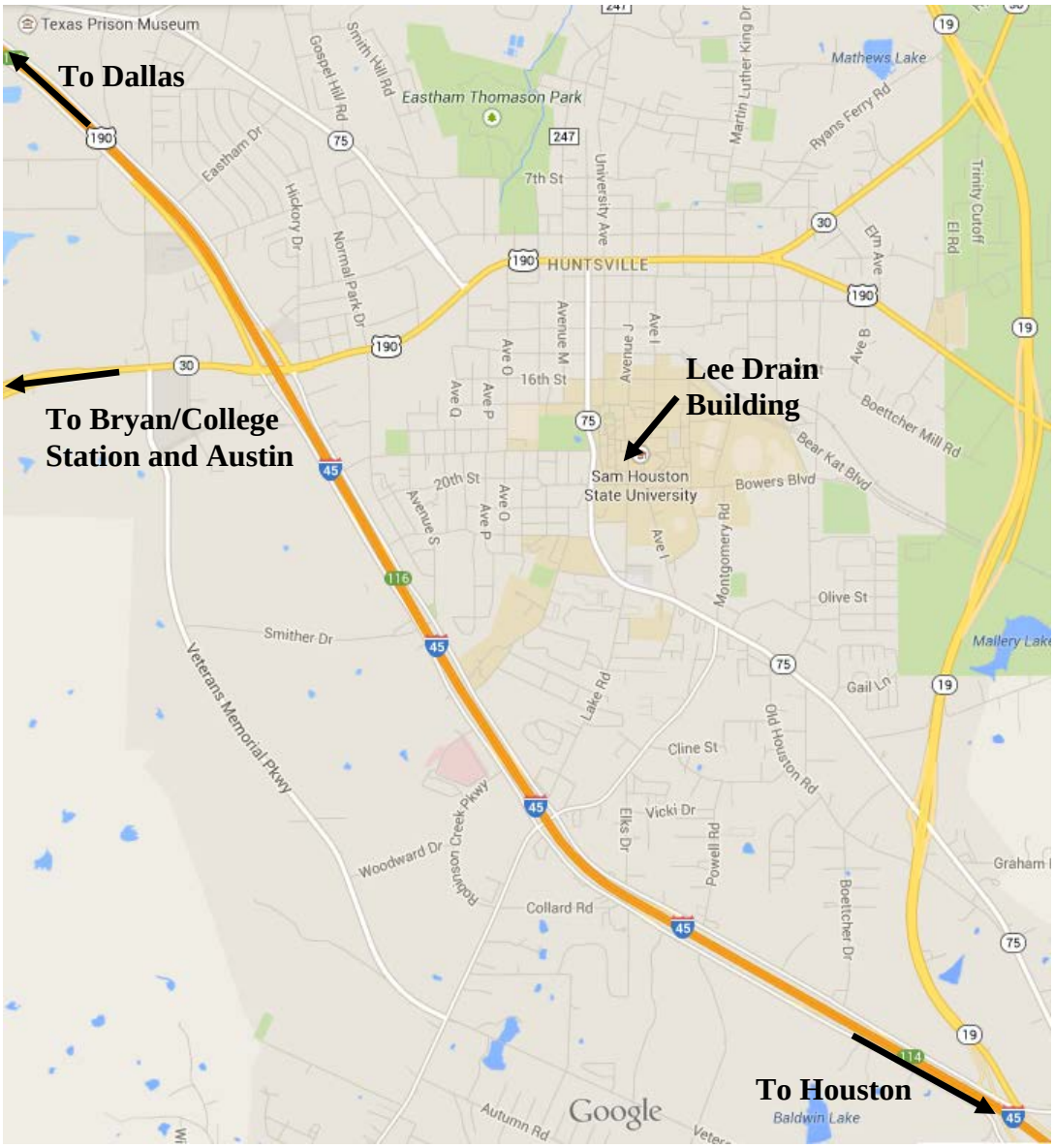
SOCIAL GATHERING

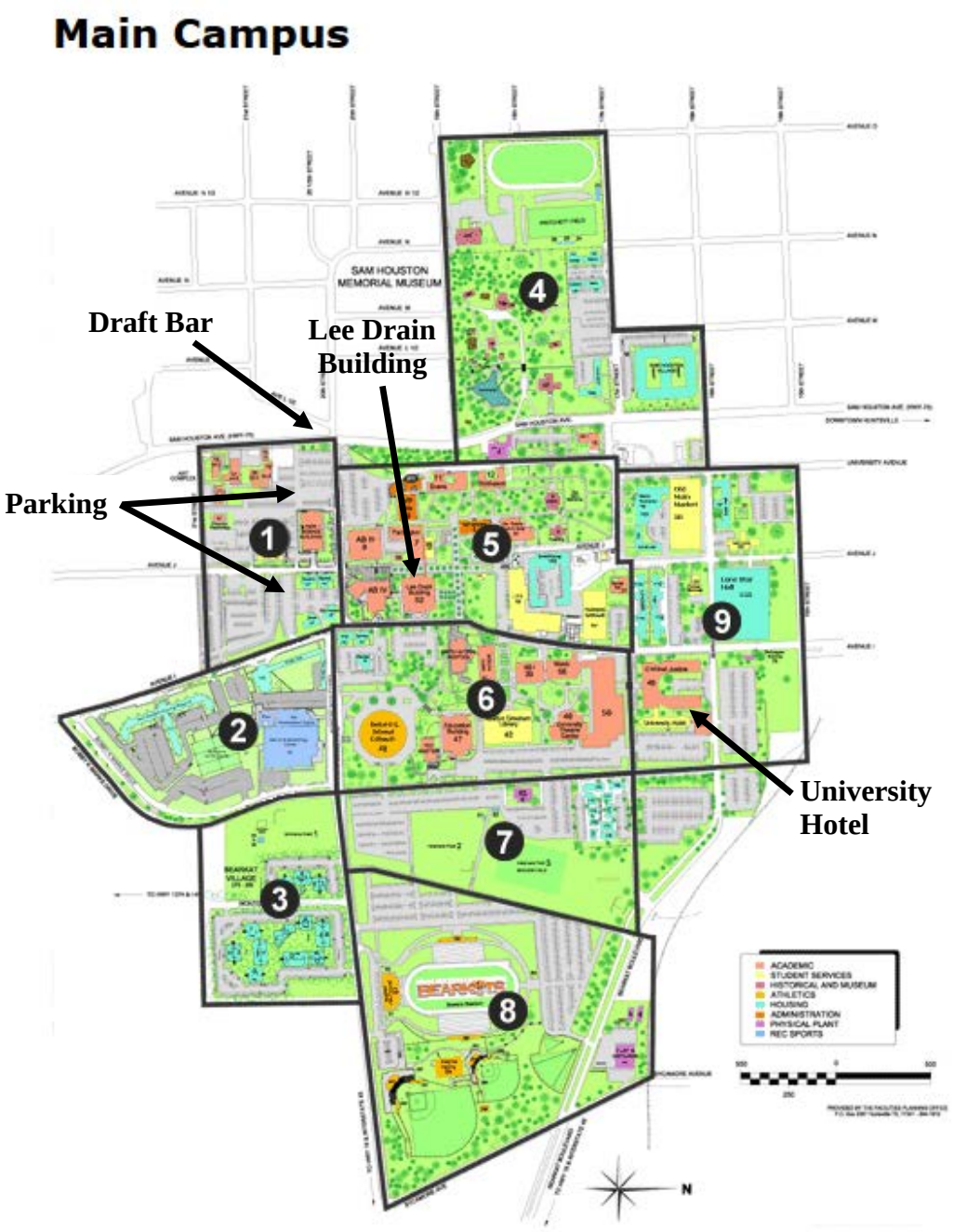
At 6:00, we will gather at the Draft Bar across the street from the main SHSU campus entrance. Food and drink are available for purchase. The bar's location is indicated on the campus map and is in very easy walking distance from campus.

CONFERENCE LOCATION & PARKING

The conference will be held on the Sam Houston State University Main Campus in the Lee Drain Building. Registration will be held in the 2nd floor atrium, the Plenary Session and podium presentations will be held in Room 213, and the poster session will be held on 1st floor of the Lee Drain Building. The closest parking is in student lots located to the south and west of the Lee Drain Building.

Additional parking options can be found on the visitor map at http://www.shsu.edu/map/.


To Dallas
To Bryan/College Station and Austin
Lee Drain Building
To Houston
Texas Prison Museum
Eastham Thomason Park
HUNTSVILLE
Sam Houston State University
Mathews Lake
Mallery Lake
Baldwin Lake
Google


Main Campus
Draft Bar
Lee Drain Building
Parking
University Hotel
SAM HOUSTON MEMORIAL MUSEUM
1
2
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4
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9
ACADEMIC
STUDENT SERVICES
HISTORICAL AND MUSEUM
ATHLETICS
HOUSING
ADMINISTRATION
PHYSICAL PLANT
REC SPORTS
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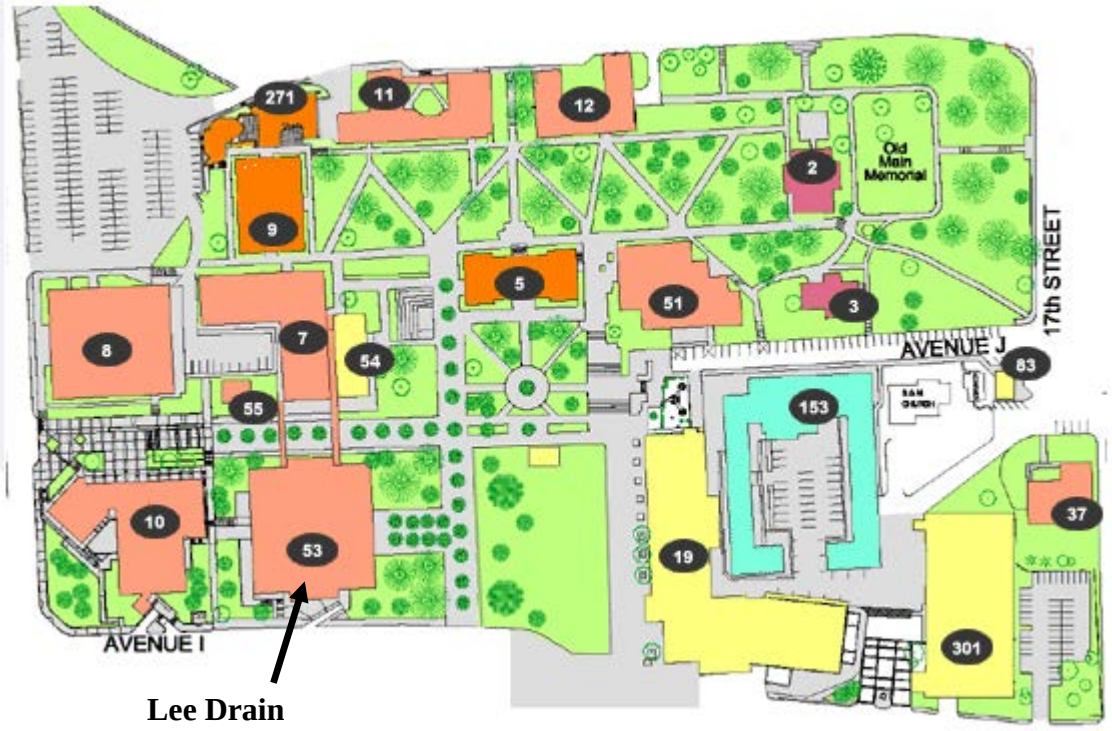
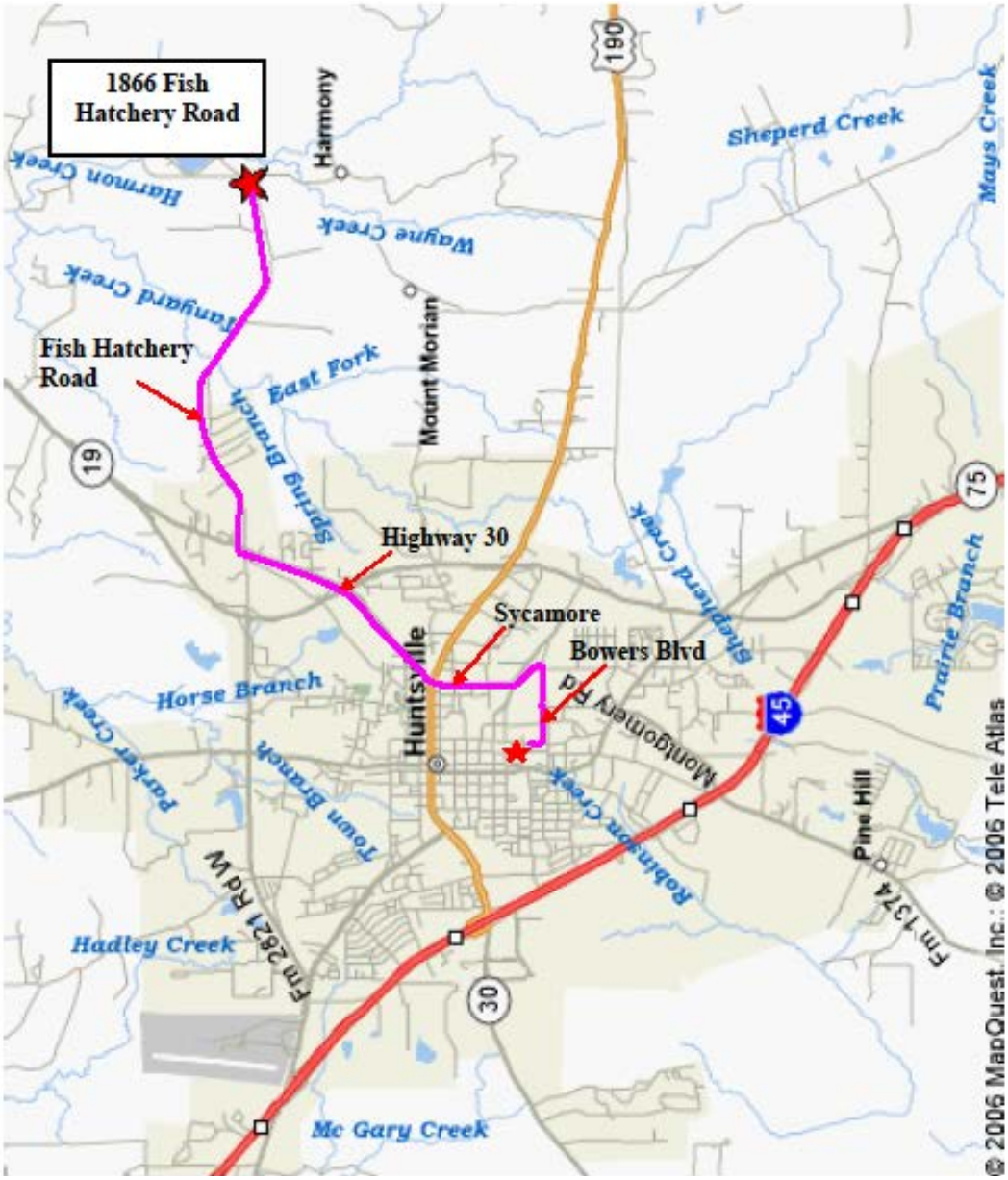
Campus Map > Section 5



Directions to STAFS



Area Lodging

The SHSU University Hotel has blocked off a number of rooms for us at their standard conference

rate of $82.95 plus tax. It is located on the northeastern corner of campus, offers free parking for guests, and is an easy 5 minute walk from the Lee Drain Building.

http://www.shsuhotel.org/ (936) 291-2151

Huntsville offers other accommodations that are reasonably close to campus and cover most of the national chains, but most are not within walking distance. Rates vary depending on motel and include choices like the Holiday Inn, Best Western Comfort Suites, Super 8, and Motel 6. Rates are generally good and we thought it would be better to allow attendees to choose where they would rather stay rather than try to obtain a block of rooms at one off-campus venue. Holiday Inn Express & Suites Huntsville has a nightly rate is $135 per night. Comfort Suites is $70 per night, which includes breakfast.

http://www.comfortsuites.com/hotel-huntsville-texas-TXA73?sid=xmnCli.5o8LIgnwc.46