Welcome & Words for Honors Students – Rob Scott, Undergraduate Director, Anthropology

Message for Honors Students and Guests – Craig Feibel, Chair, Anthropology

HONORS PRESENTERS:

Matthew Baldes - Area 116 and the Burgi Unconformity
Advisor Craig Feibel; Major Evolutionary Anthropology, Second Major Geological Sciences; Second Reader Kenneth Miller (Earth and Planetary Sciences)

Olivia Boss - Comparative dental microwear textural analysis: Pitheciines, Alouatta, and Ateles
Advisor Rob Scott; Major Evolutionary Anthropology; Second Reader Hylke de Jong

Brianna Christian - Do nothing without intention: Politics of care and authority as commanded by communities of Black women
Advisor Christien Tompkins; Major Cultural Anthropology; Second Reader Bridget Purcell

Rohan Ferriols Alibutud - Prioritization of autism candidate genes from whole-genome sequences of affected families
Advisors Jinchuan Xing (Genetics) and Erin Vogel; Majors Evolutionary Anthropology and Genetics; Second Reader James Millonig (Center for Advanced Biotechnology & Medicine)

Christopher Kotkin - FTIR Analysis of Ceramics from the Roman Villa of Vacone
Advisor Dan Cabanes; Major Anthropology; Second Reader Gary Farney (History, Rutgers, Newark)

Frank Short – An Investigation of Orangutan Bimaturism through Continuous-Time Movement Modeling
Advisor Erin Vogel; Major Evolutionary Anthropology; Second Reader Richard Lathrop (SEBS – Ecology, Evolution and Natural Resources)

Not presenting today - Nishita Patel - An Analysis of Preventative and Curative Medicine Practices in Rural and Metropolitan Gujarat
Advisor Pilar Rau; Major Biological Sciences, Minor Cultural Anthropology; Second Reader Omar Dewachi

Thank you for your interest in the work of our students!
Honors Participant: Matthew Baldes  
Advisor: Craig Feibel  
Major: Evolutionary Anthropology  
Second Major: Geological Sciences  
Second Reader: Kenneth Miller, Earth and Planetary Sciences (EPS)  
Award: Highest Honors  

Topic: *Area 116 and the Burgi Unconformity*  
Description: The previously unmapped Area 116 contains the clearest exposures of The Burgi Unconformity, a disconformity representing a depositional hiatus in the Koobi Fora Formation of over 0.5 Myr separating the Tulu Bor Member from the Upper Burgi Member. This study documents the stratigraphy and depositional environments above and below the unconformity in Area 116. The identification of the arenaceous bioclastic carbonate marker bed ‘f’ and its correlation to work done by previous studies places Area 116 within the broader stratigraphy of the region. Tulu Bor floodplain deposits transition to deltaic Upper Burgi deposits punctuated by transgressions associated with a fluctuating Lorenyang Lake. This study is the first to document the facies associations separating these two members in a manner that describes the nature of the Burgi Unconformity on the landscape at various scales.
**Honors Participant:** Olivia Boss  
**Advisor:** Rob Scott  
**Major:** Evolutionary Anthropology  
**Second Reader:** Hylke de Jong  
**Award:** Highest Honors

**Topic:** *Comparative dental microwear textural analysis: Pitheciines, Alouatta, and Ateles*

**Description:** Dental microwear texture analysis is an important technique in the study of fossil hominin diets because it focuses on a direct point of contact between food and the body. The study of microwear in extant primates with observable diets is vital to interpreting what its results in extinct species might imply about the material properties of what was eaten. This project examines occlusal microwear patterns on the lower molars of *Pithecia*, *Chiropotes*, *Alouatta*, and *Ateles* specimens. Through 3D textural analysis and a focus on surface complexity and anisotropy, this project evaluates whether these characteristics correspond with expectations based on the observed hardness or toughness of these genera’s diets. *Pithecia* and *Chiropotes* did not exhibit significantly more complexity than taxa that eat hard foods less frequently, and *Alouatta* did not exhibit significantly more anisotropy than most taxa presumed to eat tough foods less frequently. *Ateles* exhibited somewhat more complexity than other taxa, and its complexity was varied. These results suggest that microwear signals do not strictly conform to the broad dietary categories of the genera studied, and that tough foods may play a larger role in the diets of seed predators than expected.
Honors Participant: Brianna Christian
Advisor: Christien Tompkins
Major: Cultural Anthropology
Second Reader: Bridget Purcell
Award: High Honors

Topic: Do nothing without intention: Politics of care and authority as commanded by communities of Black women

Description: A wealth of research has been produced to validate the very real effects of marginalization and disenfranchisement that continue to impact Black communities. Although numerous contributions to anthropology by Black anthropologists have been produced, their works are often ignored and forgotten by the broader anthropological community. As a result, newer contributions are subject to repeating the same cycle as it is impossible to build off of things you do not know. This refrain of exclusion and invalidation is mirrored within the medical establishment as internal ways of knowing the body commanded by BIPOC are dismissed for their lack of scientific corroboration. To compensate for the lack of care and communication provided by medical establishments, Black women have learned to hone these internal ways of knowing, gaining authority over their own bodies and medical care, effectively working to heal traumas rooted in the past and present. Like Black anthropology, contributions made by prior generations of Black women have been excluded from discourses about health, wellness, and historical trauma. This paper documents the ways in which Black women repurpose traditional methods of knowing and healing to enact agency over marginalization and disenfranchisement as experienced today.
Honors Participant: Rohan Ferriols Alibutud  
Advisors: Jinchuan Xing (Genetics), Erin Vogel  
Major: Evolutionary Anthropology, Genetics  
Second Reader: James Millonig (Center for Advanced Biotechnology and Medicine)  
Award: Highest Honors

Topic: Prioritization of autism candidate genes from whole-genome sequences of affected families  

Description: Autism spectrum disorder (ASD) is a developmental disorder with a range of neurological and psychological signs and symptoms. Due to its many different presentations, it can be difficult to diagnose ASD, and although it is heritable, its genetic causes are not yet completely understood. The goal of the project was to identify candidate genes from three previously identified cell-signaling pathways (MAPK, mTOR, and Akt) for future research by analyzing the whole-genome sequences (WGS) of related individuals in families with ASD members. Beginning with the whole-genome sequences of 15 individuals divided into 3 families, we prioritized the potentially causal genes found in the three aforementioned cell-signaling pathways. After prioritization, a final candidate gene list was created, comprising 183 variants spanning 141 genes, each of which met the criteria to be considered potentially causal for autism spectrum disorder.
Honors Participant: Christopher Kotkin  
Advisor: Dan Cabanes  
Major: Anthropology  
Second Reader: Gary Farney (History, Rutgers Newark)  
Award: Highest Honors

**Topic:** *FTIR Analysis of Ceramics from the Roman Villa of Vacone*

**Description:** Few anthropogenic remains preserve as well as ceramics in archaeological sites, and fewer civilizations can boast a more enduring ceramic legacy than the Romans of antiquity. While the literature on macroscopic studies of Roman ceramics is expansive in scope and scale, the same cannot be said of microscopic methodologies of ceramic studies of the same materials. Fourier-Transform Infrared Spectroscopy (FTIR) is an analytical technique utilized to identify organic, polymeric, and inorganic materials. Utilizing small quantities of sample material ranging from 0.1 to 0.25 ml, the chemical composition of inorganic ceramic materials can be measured in a short amount of time and precise manner. This methodology has been applied to ceramics, primarily building material, dating to the early Roman Imperial period from a villa located near the modern-day town of Vacone (Italy). Data gathered from this process revealed ceramic material from the site was fired at temperatures around or exceeding 900 °C. Other observations include recurring minerals, such as clay and calcite, appearing in consistent but not uniform patterns between otherwise visually identical building ceramics, implying a local ceramic production near the villa itself rather than a more advanced kiln in an urban center which would produce more uniform results. This method of analysis, with an ability to gather a great deal of material data in a short and inexpensive manner, can be applied to a variety of archaeological areas of interest to supplement other conventional methods available today.
Honors Participant: Frank Short
Advisor: Erin Vogel
Major: Evolutionary Anthropology
Second Reader: Richard Lathrop (Ecology, Evolution and Nat. Resources)
Award: High Honors

Topic: An Investigation of Orangutan Bimaturism through Continuous-Time Movement Modeling

Description: Orangutans (*Pongo pygmaeus*) are unique among primates for demonstrating a pronounced form of bimaturism through the alternative male morphs of “flanged” males with secondary sexual characteristics and “unflanged” males with no secondary sexual characteristics. Many ultimate evolutionary theories have been proposed as an explanation of this phenomenon, and these are discussed. Research has primarily focused on assessing the comparative reproductive success of the two morphs through microsatellite analyses, or on conducting endocrinological studies to investigate the proximate mechanisms behind bimaturism. This study is the first to utilize continuous-time movement modeling (ctmm) to test hypotheses on the behavior of the male morphs. GPS data from 100 follows conducted at the Tuanan Orangutan Research Station were used to estimate the Day Journey Lengths (DJL) of each morph, and these were compared to the fruit availability index (FAI) of the month of the follow. Unflanged males were found to travel farther than flanged males each day, even when controlling for the effect fruit availability. While our findings support the “alternative tactics” hypothesis with flanged males preferring a sit, call, and wait sexual strategy and unflanged males instead searching for mates, more research is needed in this area both to see if this occurs with larger sample sizes and to test if the same results can be achieved on Sumatra. The utility of the rapidly developing field of animal movement ecology and its strength in testing sexual selection theory is highlighted.
Not presenting today

Honors Participant:  Nishita Patel  
Advisor:  Pilar Rau  
Major:  Biological Sciences  
Minor:  Cultural Anthropology  
Second Reader:  Omar Dewachi  
Award:  Interdisciplinary Honors  
Topic:  An Analysis of Preventative and Curative Medicine Practices in Rural and Metropolitan Gujarat  

Description: The purpose of this study is to examine the relationships between patients’ daily healthcare practices in rural and metropolitan areas of Gujarat. I conducted fieldwork in Surat, a large city, and Dharmaj, a small farm town. There, I interviewed and surveyed adult patients in various clinical facilities. In Surat, I interviewed 37 patients and surveyed 25 patients. In Dharmaj, I interviewed 42 patients and surveyed 18 patients. I audio-recorded the interviews and translated 55 interviews from Gujarati to English. Data analyzed from 94 pages of transcriptions revealed spontaneous associations between terms related to housework, yoga, and prayer for women between the ages of 18-35. I analyzed the results of survey questions concerning hypothetical health scenarios the patients might face, and also studied the relationships between patients who have underlying conditions but do not take action to promote a healthy lifestyle. I also noted patients who refused to answer certain survey questions, especially questions regarding difficulty breathing and a baby falling ill. In my paper, I further discuss possible explanations for the results, as well as possible sources of error. I hope that this study adds to our understanding of cultural ideas underlying healthcare practices.