ABSTRACTS

Presenting authors are listed by last name in alphabetical order; sessions are indicated in bold at the top of abstract. The Plenary Session is from 11:15 am to 4:00 pm on Tuesday, March 30, 2021.; The main session **(PST)** is from 11:am-3:00pm EST on Tuesday, March 30, 2021. Podium sessions 11:00 am-3:00pm are on Wednesday March 31 and Thursday April 1 from 11:00am-3:00pm. Placed Human Biology Human Biology podium (**Podium Mexico**) and poster session (**P/Mexico**) are on Friday 11:00 am to 2:30 pm.

PODIUM B

Workday and non-workday salivary cortisol circadian parameters differ by family living and ethnicity among healthy premenopausal women.

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We previously found that among healthy premenopausal women: the diurnal salivary cortisol slope determined on a workday was significantly steeper than on a non-work day; the workday area under the curve (AUC) was substantially smaller; and earlier awakening contributed to both a steeper slope and smaller AUC. We have now evaluated the influence of family characteristics (living with a partner (yes, n=111, no, n=98), parental status (children yes, n=70, no, n=140)), and ethnicity (white, n=161, non-white, n=50) on workday and non-workday diurnal slopes and AUC. Two hundred twenty women (aged 25–49 years, mean=33.7±7.7) were studied in their luteal phase. Saliva free cortisol sampling was begun at work and home approximately 3 hours after waking, with samples collected every two hours thereafter (maximum 6 collections). Cortisol concentrations were determined by enzymatic immunoassay (Salimetrics, State College, PA, USA). Diurnal slope and AUC were calculated using established methods. Comparisons were evaluated using t-tests, with statistical significance at p<.05. The results show that women with children had a flatter workday slope (p=.011) due to higher evening levels. White women had steeper diurnal slopes on both workdays (p=.001) and non-workdays (p=.043) due to lower evening levels. Lastly, women living with a partner had a smaller AUC on both days (p=.006; p=.008). These results suggest possible stress-related effects on cortisol: 1) the presence of children may elevate workday evening cortisol, 2) life stresses may remain higher across the day in non-white women, and 3) living with a partner may reduce overall stress and cortisol levels. Supported in part by NIH Grant R01CA129557

PLENARY

What is normal bone health? A bioarcheological perspective on meaningful measures and interpretations of bone strength, loss, and aging.

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Bioarchaeology (the study of archaeological human remains together with contextual and documentary evidence) offers a unique approach to examine variation in skeletal morphology related to influences such as activity, disease, and nutrition. As a dynamic tissue that is forged by biocultural factors over the entire lifecourse, the human skeleton provides a record of individual and community history. Various aspects of adult bone health, particularly bone maintenance and fragility of bone tissue, and the associated skeletal disease, osteoporosis have been examined in numerous past populations. The focus of bone loss in the past has been on females as a "weaker sex" and interpretation has traditionally been on the signature of normative aging and diminished reproductive capabilities and fragility, contrasted against the male

signature of bone strength. However, empirical research on bone maintenance and aging in the Medieval archaeological record, together with comparative historical data, will be presented that show that patterns of bone loss do not constitute predictable consequences of aging or biological sex. Instead, the critical examination of bioarchaeological data highlights the complex and changing processes that craft the human body over the life course, and calls for us to question the ideal or "normal" range of bone quantity and quality in the human skeleton, and to critically reflect on what measures are actually biologically and/or socially meaningful. The *a priori* expectation of normative sex-related bone loss/fragility in bioanthropological studies illustrates the wider gender-ideological bias that continues in research design and data analysis in the field.

PST 28

Population dynamics in Mexico through history.
A. J. Aguirre-Samudio and B. Z. González-Sobrino, Laboratorio de Anthropologian Genética, Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México.

Great cultural diversity and different marital habits from various places in Mexico have been observed through history. In early times, plurality obeyed mainly to demographic variables such as fertility, mortality, nuptiality and migration. Nowadays, migration obeys to poverty, inequality and the search for better living conditions. In order to understand the population dynamics through the history of Mexico, we trace movements from the Classic period (200-600 AD) and from current groups, which add the effect of colonization and the immigration of Asian, African and European individuals. We examine genetic diversity since the Classic period on Amerindian mtDNA from six sectors of Teotihuacan and compare them with other pre-Columbian groups. Ten urban and nine indigenous current groups have been examined by the mtDNA and Y-chromosome phylogeographies. Differentiation analyses have not identified differences between regional groups but showed differences between ancient populations indicating regional gene flow and local isolation. The current groups show urban regionalization as center, south and north; northern indigenous groups show a geographical arrangement different that of the center and south and indicative of isolation by distance. The Y-chromosome primarily distinguished the separation between urban and indigenous groups. We found larger Amerindian genetic variation in cities compared with current indigenous people.The movement and gene flow patterns in Mexican populations through history have been and are complex in urban regions. Historically, the displacement of women has played an important role whilst isolation and migration to urban settlements are relevant to account for the current structure of indigenous populations.

PODIUM B

Effects of sanitation, health and nutrition interventions on the nutritional status of 0-36 months children, in rural Jigawa, Nigeria.
S Ako, E Rousham, M Inês Varela-Silva, School of Sport, Exercise and Health Sciences, Loughborough University, UK
Since the year 2000, NGOs in collaboration with the Federal Government of Nigeria have been involved in intervening in several areas of healthcare. These include: i) the provision of primary health care (PHC) services and opening of health centres, ii) providing safe drinking water, and iii) training of community members on sanitation and hygiene under the WASH component (Water Sanitation and Hygiene). These measures aim to address and curb the main causes of childhood undernutrition (stunting, wasting and underweight), especially focusing on children under three years of age. The introduction of the nutrition component, which adds a third dimension to PHC and WASH interventions was aimed at directly managing undernutrition through the distribution of therapeutic food fortified with micronutrients at designated centres. Studies suggested several approaches to remedy global nutrition challenges, including addressing various

combinations of WASH, and/or PHC and /or NUT interventions aiming at increasing child health and survival. It is therefore important to examine these areas in a context where child health, growth, and survival statistics currently raise concerns. We used cross-sectional data of 191 children aged 0-36 months (110 boys and 81 girls) and their mothers collected between April and June 2017. The study investigated the impact of three types of interventions (PHC, WASH, and NUT) on child nutritional status as single, combined, and integrated interventions with the aim of reducing child malnutrition within selected rural communities in northern Nigeria. Our results revealed overall high prevalence of undernutrition with the highest (63%) stunting rates in PHC only interventions areas, underweight (67%) and wasting (63%) rates were highest in integrated (PHC+WASH+NUT) intervention areas.

PST/Mexico 2

Asociación between maternal and infant characteristics, and developmental dysplasia of the hip in newborns from Yucatán.
A Álvarez-Baeza, NI Méndez-Domíngez, RA Alejos-Gómez, F Pacheco-Medina, Health Sciences Department, Universidad Marista de Mérida, Mérida, Yucatán, México.

Introduction: Developmental displasia of the hip (DDC) is a disease that can occur congenitally. The incidence and associated factors vary according to the population studied, being insufficient in mayan population.
Objective: To analyze the maternal and child characteristics associated with DDC in newborns of Yucatán.
Material and methods: Retrospective cross-sectional analytical study, using the records of live newborns from the state of Yucatán with a diagnosis of DDC and the reference population in the same number without that diagnosis.
Results: A total of 271 live newborns registered with DDC. The incidence was 1.47 cases per 1000 newborns. The average age of the mothers was 25.93 years. The female sex of the newborns represented the 65.31% of the cases. The proportion of mothers living outside the capital city and the percentage of newborns with Mayan surnames was significant. The average gestational age was 38.81 ± 1.62 weeks. The average size was 49.17 cm and the weight 3083.61 g. Only 1.48% were macrosomic newborns, however, adjusted to ≥90th percentile they represented 9.23%. In the adjusted logistic regression model the female sex, Mayan surnames, those residing outside the capital city, the lowest gestational age, the first born products and the larger size were associated to DDC.
Conclusions: The Mayan surnames and the mothers residing outside the capital city are characteristics associated with the disease. Weight and fetal macrosomia are not associated, however, the larger size does, since theoretically the occupation and mechanical forces would cause an impact in the development of the disease.

PST 19

Infant mortality risk associated with decreased male commitment and shorter interbirth intervals among American births.
KG Anderson, Department of Anthropology, University of Oklahoma, Norman OK.

Infant mortality (death before first birthday) is predicted to be influenced by male investment (greater investment reducing risk of infant death) and interbirth interval (IBI) (risk of mortality decreasing as duration since previous live birth increases). This study uses 2014-2015 merged natality and mortality files for 3,946,963 U.S. births (second birth or greater). Infant mortality rate is 5 deaths/1000 births. Mean IBI is 50.0 months. Male commitment is measured by maternal marital status: married (63.2% of births), unmarried with paternity acknowledged (26.0%), and unmarried with paternity not acknowledged (i.e., no father on birth certificate) (10.8%). Male commitment is expected to be highest for married women and lowest for unmarried women without paternity acknowledgment. Logistic regression models that control for maternal sociodemographic factors (age, ethnicity, education, income, BMI) and birth factors (caesarian, premature, birthweight, sex) show higher infant mortality

for unmarried women both with (OR=1.08, p<0.001) and without (OR=1.37, p<0.001) paternity acknowledgement, relative to married women. IBI has a weak linear relationship with infant mortality (OR=0.998, p<0.001), but a stronger nonlinear relationship when divided into thirds; compared with long IBI (>53 months), increased odds of infant death are associated with short IBI (<=28 months) (OR=1.28, p<0.001) and medium IBI (28 to 53 months) (OR=1.07, p<0.001). Interactions between marital status and IBI were nonsignificant. Infant mortality risk is greater when the father does not acknowledge paternity or when IBI is short. These results advance life history theory by supporting predictions regarding parental investment and tradeoffs between current and future reproduction.

Keyword 1: Human Biology
Keyword2: Human
Keyword3: Demography; Life History, Reproduction

[notes and key points:]

- Mortality associated with marriage and paternity type: lowest among married women, highest among unmarried women without paternity acknowledged.
- Interbirth interval no associated with mortality (no main effect)
- Interact between interbirth interval and marriage/paternity: mortality associated with longer IBI among married women, but with shorter IBI among unmarried women (both with and without paternity acknowledged) (but not in the multivariate model)

Note: restricted to singleton births

Interbirth interval by marital/paternity status and subsequent mortality
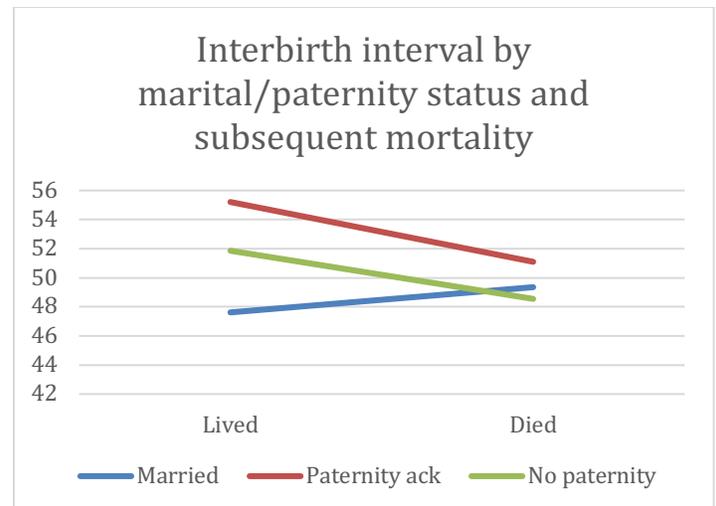
PST 20

Care analysis on human skeletal remains from a post-medieval London cemetery.
PN Arnett, University of Alabama, Tuscaloosa, Alabama

Providing care to individuals that are affected by illness and injury is one of the most common human behaviors, yet the mechanisms of care which include social support tend to be overlooked for working class and prison populations. The characteristics of the care provided by these groups can reflect the motivation and commitment of the caretakers among the underprivileged, low social status members of society. This may be especially so for the working class of 17-19th century London, whose remains are analyzed by this project. Through the examination of a cemetery population consisting of individuals who were of low socioeconomic status and likely from the Bridewell Workhouse and Fleet Prison, this study addresses how social support in terms of care may be the mediator for physiological effects of this group. Using the bioarchaeology of care model of analysis, this study examines the amount of care exhibited in human skeletal remains of a 17-19th century cemetery in London. The goal of this study is to determine how many individuals were affected by pathologies and traumas that required care provisioning and how these disabilities impacted

both the individuals requiring care and those providing it through examining relationships between care identified on the bones and the low socioeconomic status of the population.

PST 21

Gene expression profiles indicating inflammation and glucocorticoid resistance during pregnancy predict greater offspring adiposity shortly after birth in Cebu, Philippines.

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Adiposity trajectories predict later life health, particularly in the case of cardiometabolic disease. These trajectories are believed to be influenced by environments as early as the prenatal period. However, pathways linking maternal physiology during pregnancy to offspring adiposity trajectories remain incompletely understood. Here we tested whether profiles of gene expression indicative of glucocorticoid resistance and inflammation in third-trimester pregnant women prospectively predicted their offspring's adiposity shortly after birth. Data came from 152 mother-infant dyads as part of the Cebu Longitudinal Health and Nutrition Survey (CLHNS) in the Philippines. We used expression of NR3C1, which codes for the glucocorticoid receptor, as a marker of glucocorticoid resistance. For inflammation we relied on a collection of inflammatory genes previously shown to co-express, summing standardized values to provide a single measure. Our offspring adiposity measure included the sum of skinfolds across biceps, triceps, calf, subscapular, suprailiac and thigh (in mm). After adjusting for a host of confounders, including maternal adiposity, diet and breastfeeding, both inflammatory ($b = 0.014$, $p < 0.05$) and NR3C1 ($b = -0.134$, $p < 0.05$) gene expression were significantly associated with offspring adiposity. In light of previous research implicating glucocorticoid resistance as a pathway linking chronic stress to inflammation, our findings might indicate that physiological manifestations of chronic stress in pregnancy shape offspring adiposity in early life. These findings add to the growing literature on early life experiences and adiposity trajectories.

PST 12

Body mass index, fat percentage and the relationship with body dissatisfaction in dance students from Mérida, Yucatán.

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Dance is a discipline that teaches a lifestyle where encourages physical discipline, providing multiple benefits from the biomorphofunctional part, among others. Being increasingly popular with teenagers and young adults. Adolescence is characterized by presenting an accelerated rate of growth and development with important biological, physical and social changes, sometimes presenting dissatisfaction with their own body, which can cause alterations in their integral growth of the adolescent or young adult. To determine the body mass index, fat percentage and the relationship with body dissatisfaction in dance students from Mérida, Yucatán. Cross-sectional descriptive study, with 194 participants aged 12 to 24 years from the Municipal Dance Center (CMD) of Mérida, Yucatán, in seven disciplines. Height, weight, and percentage body fat (PBF) were measured with the InBodyR20, and the Body Shape Questionnaire (BSQ) was applied. 182 women and 12 men with a mean of 16.2 ± 2.8 years. The prevalence of overweight/obesity was 19.6% and underweight 10.9%, the body dissatisfaction (BD) was 22.1%. Where Jazz was the discipline with the highest frequency of BD (5.6%), followed by Mexican (3.6%). 69.5% of the participants had healthy BMI. 58.9% presented elevated PBF. A significant association was found between BD and PBF, but not with BMI. Although most of the participants presented a healthy BMI, most do not feel comfortable with their body, this may be related to their social,

family or even school environment that in the long run could affect their physical and mental development and only to reach an ideal established by dance.

PST 22
Food production and nutritional problems in Argentina: Analysis and integration of biological and cultural factors.

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The United Nations and the World Bank classify Argentina as an exporter of medium-technology goods, but mainly food. Argentina's size and geographical characteristics -one of the largest fertile grasslands in the world- allowed a large and diversified production of food (grains, cereals, meat of bovine origin, pork, etc.) for almost two centuries. It also has an extensive sea, and some of the largest rivers in the world, which allowed intensive fishing. Paradoxically, whether due to the capitalist mode of production, inequalities, corruption, etc., most of the population has had and still has serious food-nutritional problems. However, nutritional problems -due to lack or excess of certain types of nutrients- are not strictly due to economic reasons but rather to the adoption of cultural and nutritional guidelines from developed countries, especially the United States, within the food transition process, has exacerbated these problems. This work, based on a historical-economic, bio-anthropological and cultural approach, shows how the increase in local production of cheap-priced, calorie-rich but low-quality foods from the 1970s-1980s to our days has been accompanied by an increased overweight and obesity as well as other concomitant nutritional problems. Results also show that beyond the type and quantity of food consumed, other factors such as the organization of family meals and parental surveillance in key stages of the generation of healthy patterns such as childhood and adolescence can contribute to a more healthy diet and life. We propose the latter as an hypothesis for future work.

PST 1

Ethnic Tibetan mothers with larger lungs experience fewer child deaths.

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The low partial pressure of oxygen at high altitudes results in drawing fewer oxygen molecules into the lungs and diffusing into the circulation. Such unavoidable stress on the oxygen transport system may be partly offset by larger lung volumes measured as Forced Vital Capacity or its equivalent, the Forced Expiratory Volume at 6 seconds (FEV6). Substantial evidence shows that large lung volumes relative to body size characterize highlanders and those who migrate to high altitude during development. We examined functional and genetic associations with variation in FEV6 in a sample of 421 ethnically Tibetan women ranging from 48 to 86 years old residing at 3500-4100m in Nepal. We elicited their reproductive histories and took non-invasive biological measurements. They experienced an average of 1.4 (SD 1.62) deaths to sub-adult children and had an average FEV6 of 2.7 L (SD 0.67). Poisson regression analysis controlling for sociocultural determinants of fertility found women with larger FEV6 had fewer children dying before reaching their own reproductive age of 15. A one-liter larger FEV6 predicted 18% fewer offspring deaths. We detected 28 single-nucleotide polymorphisms (SNPs) associated with FEV6 at genome-wide significance levels on chromosome 5 having a major allele frequency of 0.95 and effect size of 0.53 L/major allele. Thus, homozygotes for the major alleles enjoy at least 18% fewer child deaths than minor allele homozygotes. Yet no SNPs indicated signals of adaptive allele frequency divergence suggesting that selection on these SNPs did not occur according to a

PST 23

Human vitamin C deficiency: implications for COVID-19 and the cytokine storm.

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Using an evolutionary genetic disease model, this presentation considers Vitamin C (VC) and its potential for treating COVID-19 (CV-19). The model's validity rests on VC's strong antioxidant property and the mutation sustained by the primate ancestor (est.) 60 MYA that left humans unable to produce VC. The result is humans cannot -by diet or oral supplementation- achieve plasma VC concentrations typical of vitamin C synthesizers. This may leave normal humans vulnerable to infectious disease but not deficient enough to sustain scurvy. The deficiency can become more acute during severe disease and, because of the relationship between disease severity and oxidative stress, can intensify the oxidative load and associated inflammation. During acute disease, oxidative stress becomes oxidative distress when highly reactive oxidants are produced at a rate faster than normal homeostatic mechanisms can quench them, such as with the inflammatory cytokine storm characteristic of severe CV-19. Cytokine storms underly the severe complications of CV-19, e.g., SARS-CoV-2 pneumonia, acute respiratory distress syndrome (ARDS), and multiple organ dysfunction syndrome (MODS). Infusions of VC into the plasma achieve concentrations that can exceed those of VC synthesizing species. At such concentrations, VC's action as a non-rate limited antioxidant may lower the probability of a cytokine storm and the risk of tissue injury. I suggest that VC may prove a useful treatment in such contexts. In advance of ongoing clinical trials, this presentation will extrapolate a picture of VC's potential therapeutic impact on the inflammatory cytokine storm and the associated complications characteristic of severe CV-19.

PODIUM D

Childhood environments influence epigenetic ageing and stability in Bangladeshi women.

R Stöger[1], G Leeman[1], M Choi[2], RD Emes[3], K Begum[4], P Melamed[5], GR Bentley[4] [1]School of Biosciences, University of Nottingham, UK;[2] Neurosciences Program, Stanford University, USA; [3]Advanced Data Analysis Centre, University of Nottingham, UK; [4] Department of Anthropology, Durham University, Durham, UK; [5] Faculty of Biology, Technion-Israel Institute of Technology, Haifa, Israel.

Bangladeshi women vary in their reproductive phenotype depending on their developmental environments in either Bangladesh or the UK. A childhood spent in Bangladesh where infectious disease loads are higher, is associated with a shortened reproductive life span and lower levels of reproductive hormones compared to growing up in the UK. Here, we explored the impact of growing up in either Bangladesh or the UK on epigenetic age and stability. We used buccal swab DNA to investigate if the childhood developmental environment is reflected in age-estimates of epigenetic clocks. Women who grew up in Bangladesh (n=15) had a mean epigenetic age of 35.6 years, significantly older than their mean chronological age (30.5 years, Pearson r=0.61, p=0.02). In contrast, women who grew up in the UK (n=11) had a mean epigenetic age of 25.6 years, making them 1.5 years younger, on average, than their mean chronological age of 27.1 years. We further investigated the stability of epigenetic information at the luteinizing hormone receptor (*LHR*) locus, containing a CpG site contributing to Steven Horvath's multi-tissue epigenetic clock. Our data suggest that a childhood in Bangladesh leads to increased stability of DNA methylation at the *LHR* locus. This CpG 'clock' site might have diminished capacity to respond to current and future environmental information in buccal cells of women who grew up in Bangladesh. Our study indicates that the childhood environment influences the tick-rate of the epigenetic clock. It also demonstrates the suitability of the buccal cell methylome for epigenetic age estimates using cross-sectional studies.

PODIUM C
Skeletal growth status in a physically abused juvenile: Growth under atypical early life adversity. MM Bleuze [1], SM Wheeler [2], LJ Williams [2] [1]Department of Anthropology, California State University Los Angeles, Los Angeles, CA; [2] Department of Anthropology, University of Central Florida, Orlando, FL

This case study provides a summary of the skeletal growth status in a 2.0–2.5-year-old (Burial 519) victim of long-term, non-accidental trauma (i.e., physical abuse) from the Kellis 2 cemetery (AD 100–400), Dakhleh Oasis, Egypt. Growth status is assessed in two ways. First, absolute size is examined by comparing cranial and postcranial measurements in Burial 519 to distributions from a comparative sample from Kellis 2. Second, skeletal growth deficits and cumulative growth failure in Burial 519 are evaluated by comparing percentages of size attained to the reference sample. Absolute size of postcranial elements in Burial 519 is generally more similar to distributions in a cohort of 1.5–1.9-year-olds than to distributions in his/her age-matched cohort. Within the postcranial skeleton, growth deficits and cumulative growth failure are least in the bones of the pectoral girdle and greatest in the lower limb when compared to an age-matched cohort. Among the major anatomical regions examined, the skull shows the least magnitude of growth deficits and growth failure fitting with evidence that this region may be less sensitive to environmental stressors than the postcranial skeleton. Variation in the degree of growth deficits and growth failure in different regions of the postcranial skeleton is explained from a functional perspective. This analysis of Burial 519 provides a unique case study to assess the effects of chronic maltreatment and deprivation on skeletal growth and provides a scenario for which to examine broader biocultural sources of adversity on skeletal growth in early life.

PST 24

Fear, violence, inequality and stunting in Guatemala.
B Bogin[1], Michael Hermanussen[2], Christiane Scheffler[3] [1]Health and Wellbeing Global Challenge, Loughborough University, LE11 3TU, UK, [2]Aschauhof, 24340 Eckernförde - Altenhof, Germany, [3]University of Potsdam, Human Biology, 14469 Potsdam, Germany.

In terms of low height-for-age (stunting) the planet is divided into two worlds: 1) low and lower middle-income countries, with prevalences of 35.6% and 32.2%, and 2) upper middle- and high-income countries with prevalences of 6.9% and 2.5% (World Bank 2019). Under 5-year olds living in the first group of countries are at high risk for stunting across all levels of material wealth. The most recent Demographic and Health Surveys report the prevalence of stunting for the wealthiest 20% of families to be: Bangladesh-21%, India-24%, Nepal-12%, Pakistan-28%, Guatemala-17%. Such high prevalence of stunting in the wealthiest quintile is unexpected and unlikely to be due to the WHO predictors of stunting: poor nutrition, repeated infection, and inadequate psychosocial stimulation. Common to the five countries listed above are violence, strong social and economic inequalities, government/business corruption, and insecurities in housing, employment, sanitation infrastructure, education, and health services. Focusing on Guatemala, there is also a legacy of insecurity from the civil war of 1960-1996 and the threat of kidnapping for ransom for the wealthiest families. The high level of persistent insecurity and violence creates an ecology of fear and biosocial stress. This emotional stress is transduced by the neuroendocrine system to produce hormonal profiles that inhibit skeletal growth and cause stunting for people of all income levels. The global percentage of stunting due to biosocial stress is likely to exceed that caused by the conventional criteria proposed by the WHO, World Bank, and most public health authorities.

PODIUM B

Evaluating the impact of urbanization on child growth in an indigenous Bolivian high-altitude population. ME Burris [1], EM Chester [2], and VJ Vitzthum [1,2] [1]Department of Anthropology, Indiana University, Bloomington, IN; [2] Evolutionary Anthropology Lab, Indiana University, Bloomington IN

There is an on-going debate as to whether the most suitable comparison for evaluating child growth in high altitude populations is the World Health Organization references or, because of adaptation to the unavoidable harsh physical environment, high-altitude specific references. This question has become even more important because of increasing rural to urban migration in many high-altitude populations, which may positively and negatively impact child growth. We compared anthropometric measurements of 101 adolescents in El Alto, a rapidly growing peri-urban community adjacent to La Paz, Bolivia, to four rural and urban high-altitude samples in Bolivia and Peru (Stinson et al. 1980; Greksa et al. 1984; Pawson et al. 2001; Cossio-Bolanos et al. 2020) and to WHO references and references developed by Cossio-Bolaños et al. (2020) for high-altitude children. El Alto adolescents, on average, were taller, weighed more, and had larger arm circumferences compared to all high-altitude samples. El Alto adolescents, on average, fell below the WHO's 50th percentile for height but well above the 3rd percentile; 18.8% of the sample was stunted. Both sexes fell approximately one standard deviation below the WHO reference median for height-for-age. Approximately 4% of the sample was considered underweight, 14.9% were overweight, and none were obese using the WHO references. In contrast, 2% of El Alto adolescents were underweight, 6.9% were overweight, and 5% were obese according to the Cossio-Bolaños references. We conclude substantial variation exists within and between Altiplano populations likely due to differences in socioeconomics and structural environments (e.g., rural vs. urban).

PST/México

Spatial distribution of causes of death in children under five years of age. The case of Oaxaca city 1800-1840.
MA Camacho[1] [1]Posgrado en Antropología Física, LE Bioarqueología, Escuela Nacional de Antropología e Historia, Ciudad de México.

The calculation of infant mortality has been used to measure well-being in a population, the causes of high or low infant mortality will depend on the social, economic, political, time and place in which it is investigated. The present research aims to reveal the spatial distribution of the causes of death in children under five years old in the city of Oaxaca by churches and convents from 1800 to 1840. To assess whether living conditions by neighbourhoods affected the survival of minors five-year-olds, thereby demonstrating the adaptation processes of children in unsanitary and low-income environments. The social stratification is usually reflected in the settlement pattern of the populations of the past, during the 19th century, the Spanish and indigenous caciques were in the core of the city of Oaxaca and in the peripheries were the indigenous, mestizos and castas. The methodology used is the statistical techniques of historical demography using as a general framework the biocultural approach that study the human being as a biological and sociocultural being. The base material of the investigation are the parish archives of El Sagrario Metropolitano in the city of Oaxaca from 1800 to 1840. The results indicate a differential distribution of the causes of death, in the indigenous neighbourhoods predominate the gastrointestinal diseases; while in central areas, one of the main causes of mortality was "alferecia", which could indicate meningitis. This demonstrates how the living conditions affected the survival and the adaptation of children in an unhealthy environment.

PST 2

Sex differences in the development of adiposity among Pume foragers.
BC Campbell[1], KL Kramer[2], Achenbach[2] [1]Department of Anthropology, University of Wisconsin-Milwaukee, Milwaukee, WI; [2] Department of Anthropology, University of Utah, Salt Lake City, UT

Hunter-gatherers are central to evolutionary theories of human obesity, because they typify the environmental fluctuation thought to select for deposition and utilization of fat stores. Yet few data are available on the development of adiposity among hunter-gather populations. Here we describe the development of adiposity among the Savanna Pumé, foragers of Venezuela. Results are based on a sample of 113 girls and 89 boys, ages 3 to 20. Measures, including height, weight and triceps skinfolds, were fit with Loess curves, the timing of takeoff, maximum gain and completion derived from a two phase growth model, and the results compared to NHANES III. Both sexes showed little change in skinfolds throughout childhood. For girls the adiposity rebound at 6 years lagged NHANES III by ½ year, while for boys the adiposity rebound at 7 ½ years lagged the reference by 1 ½ years. For girls, triceps skinfolds showed an increase at 9 years that continued through puberty. For boys, triceps skinfolds peaked at 11 years, prior to the onset of pubertal growth, and then declined. Our results suggest that 1) sex differences in the timing of the adiposity rebound may vary across populations, 2) among girls the pubertal increase in adiposity is conserved because of its importance for reproduction, 3) for boys a transient increase in adiposity is important for the initiation of puberty. We call for wider study of adiposity among hunter-gathers to help illuminate the role of adipose development in subsistence populations and its implications for the current obesity epidemic.

PST 25

Socioeconomic Determinants of Breastfeeding Intentions and Duration Among African-American Women in Central North Carolina.
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Differences in breastfeeding by income and race/ethnicity are well-documented, but less research examines the effect of income on breastfeeding beliefs and practices among Black women. This study analyzed the relationship between yearly household income, and breastfeeding attitudes, intentions as well as duration among Black women living in central North Carolina. Variable measurements were documented from 428 Black women enrolled in the Mothers and Others randomized trial. Mothers' infant feeding habits were documented over the course of 15 months. Baseline characteristics such as household income were measured at 28 weeks' gestation. Infant feeding intentions and attitudes were measured at baseline using the Iowa Infant Feeding Intentions Scale and the Infant Feeding Attitudes Scale.

Linear regression defined the relationship between household income and breastfeeding duration through 15 months. When adjusted for marital status, the number of previous children and education, breastfeeding duration was shown to increase by 0.17 months (approximately 5 days) for every increase in household income by $10,000. When adjusted for marital status and education, linear regression used to assess the association between income and breastfeeding intention and attitude scores showed an increase of 0.22 in IFI scores and an increase by 0.43 IIFA points for every increase of $10,000 in household income. Finally, a logistic regression model controlling for marital status and education showed that low-income women were 24% less likely to have ever breastfed than women who are not low income. Our analysis supports socioeconomic status as a significant predictor of breastfeeding rates in Black mothers.

PST 26

A critical evaluation of a point-of-care device for measuring intestinal inflammation in remote field settings.

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Markers of inflammation are increasingly important in population-based research, shedding light on variation in immune function and health from evolutionary and life history perspectives. Because human biologists often work in environments with limited electricity and cold storage access, more work should be devoted to evaluating point-of-care technologies for use in the field. Here, we present a preliminary evaluation of the Bühlmann Quantum Blue (QB) point-of-care device for measuring fecal calprotectin (FC; a marker of intestinal inflammation), comparing QB results to enzyme-linked immunosorbent assay (ELISA) results, and discussing applications for this technology in field settings. Stool samples were collected from 24 children in rural Mississippi. Results from the two methods were highly correlated ($r = 0.931$; $p < 0.001$). Mean FC from the QB (181 ug/g) was higher than from ELISA (159 ug/g). Based on QB results, 3 children showed no evidence of intestinal inflammation (FC < 50 ug/g), 12 showed mild elevation (FC = 50-200 ug/g), and 9 had high elevation (FC > 200 ug/g), compared to 4, 14, and 6, respectively based on ELISA. The QB may overestimate FC levels but could be useful for comparing elevation ($\geq$ 50 ug/g) to no elevation (< 50 ug/g). The QB is lightweight, battery-powered, requires only a small amount of stool, and quickly produces results. A vortex is useful (though not necessary) for sample preparation, although this requires electricity and a stable surface. While less specific than ELISA, this point-of-care device could provide useful measurements of elevated intestinal inflammation in remote regions. Support: Boettcher Foundation's Webb-Waring Biomedical Research Grant; Dartmouth College McKennan Postdoctoral Fellowship

PST 3

Serum estradiol levels show no impact of developmental conditions among adult women.

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While many aspects of female ovarian function are sensitive to environmental stressors, such as energy availability, physical activity and immune challenges, limited research suggests that estradiol (E2) is less sensitive than progesterone, except under extreme ecological conditions. However, earlier studies relied on saliva samples, considered less accurate than blood samples. We therefore investigated E2 variation among 178 Bangladeshi and white women, aged 35-59, from single serum samples obtained by venipuncture and analyzed using electrochemiluminescence. We collected samples on days 4-6 of the menstrual cycle in menstruating women and anytime for post-menopausal women. Participants included Bangladeshi sedentees (n=36), women who migrated to the UK as adults (n=52), women who migrated as children (n=40), and UK white women matched for neighborhood residence to the migrants (n=50). We collected supplementary sociodemographic and reproductive data through questionnaires and

anthropometry and analyzed our data using multivariate regression. We found no significant differences in E2 levels between groups controlling for age, BMI, physical activity, psychosocial stress, parity, and time since last birth (parous women only) across all stages of reproductive life (pre-, peri- and post-menopause). Paralleling studies of E2 in saliva, serum E2 levels did not differ among women who experienced different developmental conditions. Our results provide further support to the hypothesis that E2 levels are more robust under challenging environmental conditions compared to progesterone, with variation among populations likely only arising under long-term conditions of extreme nutritional scarcity, energy expenditure, or high disease burden.

PST 27

Maturation of the menstrual cycle in healthy adolescent girls from El Alto, Bolivia.

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Puberty is a time of great change in girls' bodies that may occur on different time courses in different individuals within and between populations. Little is known about the variation in hormone concentrations during this transition, particularly with respect to extra-somatic factors that may affect physiology and maturation. We present data from El Alto, Bolivia, an economically diverse peri-urban population that experiences the same climatic conditions and, for the most part, shares cultural attitudes, languages and lifeways.   The study sample comprised 60 peri-menarcheal girls (ages 11-14 years). Mean [SD] age was 13.4 [0.66] years (range 11.9-14.7) for post-menarcheal (n=36) and 12.8 [0.59] years (range 11.5-13.9) for pre-menarcheal girls. Age at menarche averaged 12.5 [0.95] years (range 10-14.42). Progesterone was measured in saliva daily from the late follicular phase to late luteal phase in a subset of post-menarcheal girls. Cycles were classified according to their progesterone profiles. A semi-parametric model was fitted for each profile category to characterize the progesterone concentration over a single cycle. From the model, we summarized each hormonal profile as an area under the curve (AUC). We tested whether we can predict the extent of the luteal rise based on age, age at menarche, and markers of allostatic load. Our results suggest that in girls' profiles that display a luteal progesterone peak, these individual factors are potential predictors of hormone profile characteristics.

PST 28

The role of individual and subjective neighborhood socio-cultural identity and ethnic attitudes in maternal mental health in a pregnant Latina population.

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Latina women in the United States experience disproportionally higher rates of mental health disorders (e.g., depression) compared to their non-Latina White counterparts. Mental health disorders during pregnancy are also associated with adverse infant outcomes (e.g., cognitive developmental deficits). While neighborhood context (e.g., poverty, danger) and maternal acculturation have been studied as independent factors in child development and mental health, no work has investigated the impact of socio-cultural orientations at both the individual- and neighborhood-level on perinatal mental health. This work is motivated by fetal programming, a theoretical framework that describes how the persistent influence and experiences from a mother's prenatal environment can impact offspring phenotypes. An important first step in testing our model is to address the influence of external stressors on perinatal mental health. We examine how (1) socio-cultural orientations and ethnic attitudes at both the individual- and neighborhood-level and (2) the discrepancy between individual and neighborhood socio-cultural orientations (i.e., socio-cultural

discrepancy) relate to perinatal mental health. We surveyed 245 pregnant Latina women on their mental health as well as individual and neighborhood socio-cultural orientations (acculturation) and ethnic attitudes. We found that living in neighborhoods with more favorable views of Latinos is associated with lower levels of depression (pooled β = -.973, p = .005) and pregnancy-related anxiety (pooled β = -.098, p = .040). Larger socio-cultural discrepancies were only associated with higher levels of pregnancy-related anxiety (pooled β = .056, p = .034). Our findings highlight perinatal mental health as an important but underexplored area of fetal programming.

P/Mexico

Cardiometabolic health among Purepecha in Michoacán, Mexico.

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Cardiometabolic health (CMH) conditions have a high prevalence among Latin American immigrants in the U.S. The primary explanation rests on cultural changes yet few studies have included a comparison group made up of the source population. This study describes CMH outcomes among 151 indigenous Purepecha, aged 28 to 80, in Michoacán, Mexico and tests whether health outcomes differ by cultural affiliation. Approximately 71% of participants were women. Over 57% of participants were hypertensive, 95% were centrally obese, and 76% were overweight/obese using BMI. In this sample, 64% had a hemoglobin A1c below 5.7 %. Lipid metabolism was as follows: 77% of participants had a total cholesterol under 200

mg/dL, 47% had LDL-C above 100 mg/dL, 61% had triglycerides above 150 mg/dL and 88% had HDL-C below the recommended 60 mg/dL. We used Spanish and Pure language proficiency as well as self-description of cultural association to determine whether individuals saw themselves as either culturally Purepecha (7%), Mexican (3%), or as having a dual identity (90% of sample). Purepecha language proficiency was associated with elevated odds of hypertension (OR: 2.0, 95% CI: 0.99-4) but not significantly associated with central obesity, hbA1c, or lipids. In bivariate analysis, cultural identity was associated with total cholesterol (X^2=10.9; p=0.004), but not with other cardiometabolic markers. Overall, these results suggest a high prevalence of CMH conditions in the immigrant source population. Further research that includes more specific metrics of cultural identity is necessary to better understand the role of cultural affiliation on CMH outcomes.

PST 4

Use of social media and digital technologies and perceptions of body size in a market-integrating population in Argentina.

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Human societies have historically perceived fat bodies as symbols of health and beauty. However, in populations undergoing nutritional, sociocultural and economic change, exposure to Western and globalized media is accompanied by increasing idealization of thinness. The Qom are an indigenous population in northern Argentina who are experiencing a nutritional transition and rising prevalence of obesity. We hypothesized that in market-integrating populations, engagement with globalized media is associated with perceptions that thin bodies are healthy and ideal. In 2019, we asked Qom adults and adolescents (n=87) residing in Namqom, Argentina to select body sizes from the Stunkard Figure Rating Scale (FRS) that

they perceived to reflect their current body size, the healthiest body size, and the most ideal body size. We measured frequency of media and digital technology engagement using an 18-item Likert scale survey. In comparison to a similar 2010 study in this community, participants perceived thinner bodies as healthiest (Cohen's d = 1.67), suggesting a growing idealization of thinness. A majority of men (78%) and women (68%) perceived sizes corresponding to "normal" body mass indices (BMIs) as healthiest and ideal (78% and 72%, respectively), while 47% men and 55% of women selected a smaller ideal body size than their perceived current size. When controlling for age, gender and BMI, frequency of social media and technology engagement did not influence healthy or ideal body size perceptions. Our results suggest that engagement with globalized media is not a good predictor of the growing idealization of thin bodies in this population.

PST 29

Interrelationships between blood pressure and lipid profile characteristics among postmenopausal women at Naxalbari in Darjeeling, West Bengal. S Datta Banik, Department of Human Ecology, Centro de Investigación y de Estudios Avanazados del IPN (Cinvestav). Km 6, Antigua Carretera a Progreso. Merida, Yucatan, Mexico. Postal Code: 97310 Email: dattabanik@cinvestav.mx

Abstract
Objective: To find the association between blood pressure and lipid profile characteristics among postmenopausal women. **Methods:** A cross-sectional study was carried out in 2015 at Naxalbari in Darjeeling district of West Bengal, India. The sample included 129 women aged between 35 and 55 years, representing three neighboring endogamous communities namely, Dhimal, Limbu, and Mech. Blood pressure (systolic and diastolic) was recorded and levels of triglycerides (TG), high-density lipoprotein cholesterol (HDL-C), and low-density lipoprotein cholesterol (LDL-C) were estimated. Derived lipid profile parameters were total cholesterol, non-HDL-C, Castelli Risk Index (CRI) I and II, atherogenic coefficient, and atherogenic index of plasma (AIP). Hypertension (systolic/diastolic $\geq$130/85 mmHg), hypertriglyceridemia ($\geq$150 mg/dL), high LDL-C ($\geq$130 mg/dL), and low HDL-C (<50 mg/dL) were diagnosed. Correlation and binomial logistic regression analyses were done to find the association between variables. **Results:** Mean values of age and age at menopause were 50.34 years and 45.36 years respectively. Prevalence of hypertension (65.89%), hypertriglyceridemia (21.71%), high LDL-C (43.41%), and low HDL-C (48.06%) were remarkable. Binomial logistic regression models after adjusting for age, showed that lipid parameters (TG, non-HDL-C and AIP) significantly predicted hypertension. AIP was observed to be the best predictor of hypertension (classification rate = 76.34%, Youden index = 1.52) and odds ratio showed that one unit increase in AIP had a chance of 24% rise in odds of having hypertension. **Conclusion:** Hypertensive postmenopausal women had higher mean values and prevalence of lipid parameters. Age at menopause had significantly negative association with blood pressure and lipid profile parameters.

PODIUM B

Y-chromosome microsatellite analysis of Bougainville, New Ireland, and New Britain Austronesian and non-Austronesian speakers. KL DeRosa[1], DA Merriwether[1] [1]Department of Anthropology, State University of New York at Binghamton, Binghamton, NY

The settlement of the Pacific Islands occurred in two major waves - first in Near Oceania ~40-60 KYA with non-Austronesian speaking populations and second in both Near and Remote Oceania ~3.5 KYA with Austronesian speaking populations. Genetic studies of these populations shown there are distinct mitochondrial and Y-chromosome lineages associated with each of these settlements and have found there are positive correlations between language spoken and genetic distance. Previous studies have found haplogroup M to be the dominant Y-chromosome lineage for non-Austronesian speaking populations while haplogroup O was found to be the dominant Y-

chromosome lineage in Austronesian speaking populations. This study expanded on these previous works in Near Oceania by focusing on non-Austronesian and Austronesian speakers from the islands of Bougainville (n=67), New Ireland (NI) (n=85) and New Britain (NB) (n=308) with a total of 14 microsatellite markers (*DYS19, DYS385a&b, DYS388, DYS389I&II, DYS390, DYS391, DYS392, DYS393, DYS437, DYS438, DYS439,* and *DYS448).* Preliminary analysis shows haplogroup O3 is the dominant lineage for both Austronesian and non-Austronesian speaking populations in Bougainville and NB, and in non-Austronesian speaking populations in NI. Haplogroup C3 was found to be the most common in Austronesian speaking populations in NI. Analysis of these populations will be expanded by increasing the sample sizes for Bougainville, NI, and NB to better assess the genetic diversity of the Y-chromosome in Near Oceania. Additional analyses of genetic variation in relation to language spoken will be performed to better understand how linguistics influence gene flow among these Near Oceanic islands.

PODIUM D

Air pollution and exposure profiles among women in eastern Zambia: sources and mediators.

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Environmental toxicants precipitate the premature deaths of approximately 9 million people every year, far outstripping infectious diseases such as malaria, HIV, and tuberculosis. Relatively few studies document the issue of household or personal exposure to air pollution in sub-Saharan Africa (SSA). As such, this study measures personal exposure to airborne toxicants in Eastern Zambia. This cross-sectional study compares two populations based on household fuel use: one utilizing mixed electric/charcoal and a second using exclusively charcoal/wood with the goal of linking behaviors to exposures to airborne toxicants.

Perceptions of risk associated with using biomass fuel sources and subsequent behaviors were assessed through participant observation/interviews, time allocation observations, and Bayesian cultural consensus analysis. Airborne toxicants measured were ultrafine particulate matter (PM_{10} and $PM_{2.5}$) and polycyclic aromatic hydrocarbons (PAHs). Individual and household exposures were assessed using two methods (1) active air quality monitor measuring PM (2) and urinary analysis to measure PAH metabolites. Both groups were exposed to significantly elevated levels of airborne toxicants, particularly the charcoal/wood exclusive group—far higher than safe levels outlined by WHO guidelines. The charcoal/wood group averaged 183.68 and 39.68 $\mu g/m^3$ for PM_{10} and $PM_{2.5}$ respectively, while the mixed electric averaged 84.19 and 27.54 $\mu g/m^3$. Urinary metabolites, show significant intragroup variation, but were significantly higher in the charcoal/wood group at 0.889 ng/mL compared to 0.476 ng/mL. Inter and intra-group findings suggest specific behaviors alter exposure profiles despite differences in fuel availability and demographics.

PODIUM D

Intestinal microbiota and iron supplementation efficacy in Peruvian pre-school aged children.

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We use an evolutionary medicine perspective to explore the role of intestinal microbiota diversity and composition on recovery from childhood anemia in 50 Peruvian pre-school-aged children. This study asks: Do baseline and post-treatment gut microbiota diversity and predominant taxa predict response and non-response to iron

supplementation? Do these differences persist after controlling for relevant pathogenic exposures? We tested for differences in alpha and beta diversity and relative taxa abundance using QIIME 2 and Stata 13. We ran multivariate regression models to assess whether the abundance of taxa differed by timing and response when controlling for pathogenic exposures. While there were a number of differences observed between responders and non-responders at baseline, few were in taxa with greater than 1% relative abundance. In models controlling for pathogenic exposures, response to iron supplementation was associated with a lower abundance of Proteobacteria (b: -2.71, p-value: 0.06), Enterobacteriales (b: -3.62, p-value: 0.02), and Lactobacillales (b:-3.19, p-value 0.01) in post-supplementation stool samples. While more specific approaches are needed to provide more accurate identification of key taxa and functionality in the utilization of iron, this study provides some evidence for the gut microbiome as a potential pathway that links iron supplementation and child recovery from anemia. These findings suggest that investigating environmental pathogen exposure and microbial health is important to better understand the impact of iron fortification on child health and development.

PST 70

Risk of Lyme disease in residential neighborhoods in a newly endemic region of upstate New York.

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Lyme disease (LD) is a dramatically increasing vector-borne disease in the northeastern United States, which has now become endemic in the Upper Susquehanna River Basin (USRB) of New York State. Recent studies have shown that ticks infected with *Borrelia burgdorferi*, the pathogenic agent of LD, are commonly found in built environments or areas of developed land and fragmented forest patches such as parks, playgrounds and residential areas. The Neighborhoods Project (NP) was developed to gather behavioral, ecological and risk assessment data for LD in the USRB. Volunteers living in urban and peri-urban residences in Broome County, NY completed a 49-item questionnaire focused on the participants' knowledge of and exposure to LD within their residential environments. Ticks and mice were collected from participants' backyards to determine LD infectivity among various community neighborhoods. Preliminary data shows that 46.5% of residences (n=43) reported an individual with a previous tick bite and 40% a previous LD diagnosis. Ticks (n=126), 40 of which were positive for LD, appear to favor specific spatial features in a residential backyard, including the property perimeter (53%) and vegetation (25%). This suggests residents may have an increased risk for LD based on their outdoor activities. The overall goal of this project is to develop a multi-focal model of LD to inform people how they can stay safe at their own residences and to increase awareness of LD within the USRB region. Studies are ongoing, with plans to expand the project to surrounding counties.

PST 30

The impact of food and diet on mental health of immigrants from a biocultural perspective.

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The relationship between food and mental health has been of growing interest for public health specialists, nutritionists and medical anthropologists over the last few decades. The food/diet-mental health relationship can be particularly unique and critical among immigrants owing to socio-cultural and

ecological factors, such as mainstream language illiteracy and inaccessible food systems in the destination country. This review of the literature employs a biocultural framework that focuses on the dynamic interactions between human biology and the wider surrounding cultural and socio-physical environment. This review aims to examine the impact of food (in)security, ethnic foods and gender's role in food security on immigrants' mental health in Western countries (Canada, the US, Europe, Australia and New Zealand). Food insecurity and associated hunger significantly increased depression, psychological distress and anxiety amongst immigrants via different pathways, including loneliness, family conflicts and insomnia. Ethnic food consumption protected immigrants against mental health issues and improved their psychological well-being through various mechanisms. These included strengthening ethnic identity, relieving homesickness, eliciting a sense of belonging and enhancing social connectedness with others. The gender's role in food security contributed to both positive and negative impacts on immigrant women's mental health. The positive impacts emanated from women's practical ability to serve as gatekeepers of food preparation/provision to their family, whereas the negative impacts stemmed from women's harmful sacrifices to feed their children (e.g. compromising own diet). Biocultural-informed, mixed-method research is needed to thoroughly understand the diet/food-mental health relationship among immigrants, informing effective, culturally-sensitive interventions and policies.

PST 5

Women's lifetime reproductive profiles and frailty among aging populations in the US and the Philippines.

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Frailty, particularly traits which are related to sex-steroid hormone production, results from the age-associated decline in function considered to be part of the typical aging process. This process may vary with influences including environmental, biological, or lifestyle factors. An area of concern that has received relatively little attention is the impact of cumulative lifetime changes in sex steroid hormones related to the traits we see that typify the human aging process. Women's lifetime reproductive profiles include menstrual/ovulatory cycles, gestation, and lactation, all which see changes in sex steroid hormone levels. Here, we review data on reproductive profiles and risks of frailty among post-menopausal women. In the current study, our team collected reproductive histories of women to determine the estimated number of lifetime reproductive cycles (ELC). We interviewed 44 women in the US and 67 women in the Philippines over 65 years old to collect data on reproductive cycles, pregnancy, and breastfeeding. Participants completed several frailty tasks including grip strength, a sit-to-stand test, and gait speed. While ELC was not associated with frailty in the US population, higher ELC was associated with lower frailty among the Philippines population. Data will be discussed with an emphasis on life history trade-offs between maintenance and reproduction.

PST/Mexico

Cephalopelvic disproportion as primary diagnosis for cesarean section: Role of neonatal birthweight in relation to maternal height at a Hospital in Merida, Mexico.

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The height of women is proportional with the amplitude of the pelvis in non-pregnant women and thus to the extent of the inner diameter of pelvis and birth canal. Cephalopelvic disproportion (CPD) is a condition in which the head of the fetus is larger than the maternal pelvis through which the fetal head must pass during a vaginal delivery. The objective is to analyze the association between newborn, maternal characteristics and their risk for cesarean section (CS) due to CPD and non-CPD causes compared to vaginal deliveries (VD). We included records of infants born and their mothers between January 2016 and May 2017 at public hospital from Merida, Yucatan, Mexico. The present study contains a total of 3 453 newborns and their mothers comprising 2,124 (62%) vaginal deliveries, 1042 (30%) non-CPD and 287 (8%) to CS due to CPD. The mean maternal age, weight and height were 25 years, 65.58 kg and 151.43 cm, respectively. The mean neonatal weight and gestational age were 3 171 g and 39 weeks, respectively. The cases of CS due to CPD had the highest mean maternal age and weight (25.9 and 70.13 kg respectively), and the lowest mean maternal height (150. 40 cm). The index of neonatal birthweight/ maternal height increased the risk for CS due to CPD and and non-CPD.
As a result of our findings, CPD is significantly associated by the interrelation between maternal and fetal size, rather than the individual parameters.

PST/Mexico

Acoustic interpersonal coordination during conversations.

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During group activities like rituals, concerts or sporting events, participants adjust their behavior to others' actions and reactions not only at the behavioral but also at the physiological and the neuronal levels. The evidence suggests that this coordination promotes empathy and prosocial behaviors in the participants and may also facilitate the emergence of a collective rhythm. The question arises whether a similar phenomenon occurs during common daily activities involving highly coordinated exchanges, such as conversation. In this contribution we used a corpus of meeting recordings to investigate if we could capture acoustic interpersonal coordination among conversational partners. To do so, we measured acoustic coordination as the relative contribution of a participant's acoustic properties (e.g. pitch) to a target participant's acoustic properties. Specifically, we analyzed conversation time series using information theoretic measures to test whether the temporal properties of a target participant's speech are better predicted by considering someone else's previous speech rather than the properties observed during previous interventions of such target. We found different degrees of acoustic interpersonal coordination among participants and among groups of participants, contributing to our understanding of how collective rhythm emerges, and highlighting the utility of our method to capture acoustic interpersonal coordination.

PST 6

Metabolic adaptations in an indigenous Siberian population in relation to metabolic hormones.

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Abstract

Background: Previous research suggests that the indigenous population of Siberia display metabolic adaptations in response to the cold climate. However, additional research is needed

in order to understand what role our hormones play in relation to these metabolic adaptations to cold stress.

Objective: Explore the role of metabolic hormones in regulating metabolic adaptations to cold stress.

Design: Blood samples and anthropometric dimensions were taken from 71 Yakut participants (30 men; 41 women) in order to characterize the relationships between metabolic hormones and body composition. The hormones of interest, including leptin, thyroid hormones (triiodothyronine [t3] and thyroxine [t4]) and thyroid-stimulating hormone, were measured using enzyme-linked immuosorbent assays (ELISA). Brown adipose tissue (BAT) thermogenesis was assessed using infrared thermal imaging.

Results: Yakut women exhibit lower leptin levels compared to women in the United States despite similar body fat percentages. Leptin levels were not associated with percent body fat in Yakut men or women; however, there was a negative relationship between leptin levels and fat-free mass in men (p=0.025). Additionally, there was a significant negative association between t3 and leptin in both Yakut men and women (p=0.014; p=0.010). BAT thermogenesis was negatively associated with TSH in the overall sample (p=0.022).

Future research: Future research should investigate the relationship between metabolic hormones and nutritional or sociocultural aspects of life for the Yakut, such as dietary adequacy and composition. This would help either further explain the associations found in our results or reveal any confounding factors that may be influencing the measurements obtained.

PST 31

Coping strategies for water insecurity and their relation to dehydration, diarrhea, and injury.

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Water insecurity affects the health and well-being of humans globally. People use various coping strategies to meet their water needs, but these strategies may not necessarily reduce exposure to water-related disease and injury. This study examined how different coping strategies (borrowing, storing, buying, treating, or fetching water) were associated with three health risks of water insecurity: dehydration, diarrhea, and recent household water-related injury. We analyzed data collected in summer 2019 among Daasanach pastoralist adults (n=242 [136 households]) living in hot-arid, Northern Kenya. Using logistic regression with robust standard errors clustered at the household, we found that adults who borrowed water frequently in the past month had 71% (OR=0.29, 95% CI=0.09-0.90, p=0.03) lower odds of dehydration compared to those who rarely borrowed water. Higher spending on water in the past month ($OR_{per100KenyanShillings}=1.07$, 95%CI=0.04-1.10, p<0.001) was associated with higher odds of dehydration, while more water stored in the house ($OR_{per10liters}=0.87$, 95%CI=0.74-1.02, p=0.083) was marginally associated with lower odds of dehydration. There was no association between any coping strategy and diarrheal prevalence. Finally, greater time spent fetching water ($OR_{per10minutes}=1.11$, 95%CI=1.01-1.21, p=.038) was associated with higher odds of injury, while purchasing ($OR_{per100KenyanShillings}=0.95$, 95%CI=0.89-1.01, p=0.078) and storing water ($OR_{per10liters}=0.71$, 95%CI=0.49-1.03, p=0.075) were marginally associated with lower odds of injury. These findings suggest that while the

ability to borrow and store water reduced risk of dehydration and storing and purchasing water helped mitigate risk of injury caused by laborious water collection endeavors, not all water-related coping strategies consistently improve well-being in water insecure regions.

PODIUM D

Development of the infant gut microbiome and temperament across the first year of life.

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Background: Perturbations to the gut microbiome have been implicated in altered neurodevelopmental trajectories that may shape lifespan risk for emotion dysregulation and affective disorders. However, the critical periods during which the microbiome may influence neurodevelopment remain understudied. We aimed to investigate the relationship between composition of the gut microbiome in infancy and temperament at 12 months of age.
Methods: In 67 infants, we examined whether gut microbiome composition during the first year of life (assessed at 1-3 weeks, 2, 6, and 12 months) was associated with temperament at 1 year of age. Stool samples were sequenced using the 16S Illumina MiSeq platform and temperament was assessed by maternal report using the Infant Behavior Questionnaire-Revised (IBQ-R), which assesses three broad domains of temperament: Negative Affectivity, Surgency/Extraversion and Orienting/Self-Regulation. We performed multivariate PERMANOVA and multivariate negative binomial mixed models in DESeq2.
Results: Gut microbiome alpha and beta diversity increased with age. We found significant association between beta diversity at 1-3 weeks age and surgency/extraversion at 12 months. Surgency/extraversion showed positive associations with *Bifidobacterium* and *Lachnospiraceae* and negative associations with *Klebsiella* abundance at 1-3 weeks. We also found associations between 12-month negative affectivity and concurrent microbiome composition, including a positive association with *Ruminococcus_1* and a negative association with *Lactobacillus*.
Conclusions: Our findings support a relationship between gut microbiome composition and infant temperament. While exploratory because of the small sample size, these results support a role for early and late infancy as sensitive periods during which the gut microbiome may exert effects on neurodevelopment.

PODIUM A

Mitochondrial Haplogroup Involvement in Cervical Precancer Development.

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The influence of ancient adaptations on modern health has been a major area of interest within the field of human evolution and biology. As people spread out over the globe, they encountered new environments and physiological challenges. Selective pressures may have produced mitochondrial DNA (mtDNA) variants that conferred different phenotypic effects. Differences in the bioenergetic production of ATP and its byproduct, reactive oxygen species, may lead to differences in disease risk between mtDNA

lineages (haplogroups) that were adapted to different climates. Different maternal lineages may therefore have varying thresholds for developing diseases that are characterized by mitochondrial damage, such as cancer. This project collected cervical samples from human papilloma virus (HPV) positive women in Philadelphia through the Pathology Department at the Hospital of the University of Pennsylvania (HUP) with associated de-identified demographic and medical history. We characterized their mtDNA backgrounds and HPV types to investigate whether certain haplogroups conferred risk of developing cervical cancer precursors when infected with HPV. This study will also contribute to our understanding of how biological adaptation to climate as mediated by the mitochondria may affect modern disease states. It will further identify populations of women at greater risk of developing cervical cancer precursors, which can be used in health practices and interventions. This project was supported by funding from the National Science Foundation (BCS-573661), the University of Pennsylvania Department of Anthropology, and the UPenn School of Arts and Sciences.

PST 32

Limited evidence of a threshold effect for increasing adiposity on risk of symptoms at midlife.

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Obesity has been identified as a risk factor for many health-related concerns when compared with normal weight. Less clear is the role of increasing obesity in a population where a minority of women were normal weight (3.5%) or overweight (21.1%). In Qatar, 841 women aged 40-60 years (mean 49.3 years) had a mean BMI of 34.3 kg/m^2 (s.d., 6.0). Among these women, symptoms at midlife included aches and pains (71.6%), trouble sleeping (49.8%), urinary

incontinence (36.1%), shortness of breath (34.4%), and hot flashes (29.6%). We investigated the relationship between increasing BMI and each of these symptoms, using logistic regression and restricted cubic splines that allowed for linear or curved relationships. The risk of aches and pains appeared to increase until a BMI of about 38, and then the risk flattened or declined. The risks of shortness of breath and urinary incontinence appeared to increase in a linear pattern. For every 1 unit increase in BMI, the odds of urinary incontinence increased by 5%. The risks of trouble sleeping, and hot flashes did not increase with increasing BMI in the sample as a whole or among women categorized by menopausal status. Only aches and pains demonstrated a threshold effect in relation to BMI. Shortness of breath and urinary incontinence increased with BMI in a linear fashion, but hot flashes and trouble sleeping were not associated with adiposity in this sample.

PODIUM C

Food Insecurity is Associated with Depression and Diabetes among Sexual Minority Adults: A preliminary analysis of syndemic effects.

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ABSTRACT (250 words)

Epidemiological evidence demonstrates striking mental and physical health disparities between sexual minority (SM) people and their heterosexual peers. Despite a growing consensus about the concatenating nature of mental and

physical health, few studies have aimed to understand whether or how adverse mental health outcomes interact with precipitating structural inequities (e.g. food insecurity) to modify SM people's risk for metabolism-related chronic disease such as diabetes. We used data from the US National Health and Nutrition Examination Survey, 2005-2016 (Total N = 15,605) to test the syndemic hypothesis that psychosocial and socioeconomic conditions intersect with one another to modify in metabolism-related chronic disease risk and outcomes among Lesbian/Gay (n= 280), Bisexual (n= 474), Same-Sex Experienced (n=534), compared to Heterosexual (n= 14,317) adults. Multivariate regressions adjusting for age, income, education, race/ethnicity, and household size revealed that diabetes risk significantly with food insecurity (odds=1.34, p=0.0002) and with a composite indicator of depression (odds=1.02, p=0.0011). Furthermore, in adjusted models, likelihoods of experiencing food insecurity and of reporting indicators of depression are significantly elevated in SM people (respectively: odds=1.82, 1.37; p=0.0000, 0.0000). Together, these findings suggest that structural inequities and mental health challenges synergistically modify diabetes risk, with disproportionate effects among SM people. A history of resistance struggle and community-building represent key sources of resilience among diverse SM populations. To mitigate metabolic disease risk among SM people, we must tackle underlying structural inequities that drive high food and related insecurities in these populations, while drawing on inherent sources of resilience to promote mental and overall wellbeing.

PST 33

Atopic conditions, IgE levels, and inflammation among children from rural Mississippi.
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Immunoglobulin E (IgE) is critical in adaptive immune responses to macroparasites, yet also contributes to atopy (i.e., allergy/asthma). Limited immune stimulation during development may lead to dysregulated IgE activity and inflammation (e.g., high C-Reactive Protein [CRP] levels). However, this hypothesis remains poorly tested among low-income communities within wealthy nations, despite the fact that children in these settings likely face environmental exposures that vary substantially from nationally-representative samples. Here, we use preliminary data collected from 32 children (ages 3-15 years) in rural Mississippi to assess links between reported atopy and immune profiles. Concentrations of IgE and CRP were measured from dried blood spots using enzyme-linked immunosorbent assay analysis. Parent interviews indicated that 41% of children had an atopic condition. Bootstrap regression models assessed whether atopy was associated with IgE and CRP levels. No significant associations were observed. Participant IgE and CRP concentrations were compared to those of similarly aged children in the NHANES dataset (n = 2,364) using Wilcoxon rank-sum tests. A significant difference between the underlying distribution of IgE values was observed, with our sample displaying greater IgE levels (z = -6.73, p < 0.001). Although CRP values among our sample were comparatively low, the difference between the two samples was not significant (z = 1.92, p = 0.055). These findings suggest that children from low-income, rural U.S. communities exhibit immune profiles that may differ from nationally-representative samples. Additional work is needed using larger samples to determine whether variations in pathogen exposure, atopic disorders, or both drive this pattern.

PST 7

Stressed and growing? A systematized review of the relative effects of energetic and psychosocial factors determining human female pubertal timing.

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Childhood psychosocial stressors have been proposed to favor fast life history strategies promoting earlier puberty in human females. However, studies demonstrating this association often do not elucidate causal mechanisms, nor account for greater childhood energetic availability—also known to promote rapid growth and earlier puberty. To assess the extent to which such confounding has been considered, we conducted a systematized review to identify studies examining measures of both prepubertal growth (e.g. BMI, height) and psychosocial stressors (e.g. adversity, father absence) in relation to female pubertal timing. A total of 1069 studies were identified across five databases. Twenty-one studies met selection criteria for critical review following independent screening of titles, abstracts, and manuscripts. In the majority of studies reviewed (57%), earlier puberty was associated with greater prepubertal growth but not psychosocial stress. Only one study found an association between early puberty and higher psychosocial stress but no effect of growth. In 24% of studies, earlier puberty was associated with both greater prepubertal growth and increased psychosocial stress, while in another 24% it was associated with greater prepubertal growth but lower psychosocial stress. In summary, only two percent of studies identified through our systematized search examined effects of both energetic and psychosocial factors on pubertal timing; in these, earlier puberty was more consistently associated with greater prepubertal growth than psychosocial stress. We discuss future research directions to robustly investigate the impact of psychosocial stress on pubertal timing, including methodological approaches, consideration of mechanistic pathways, and contextualization of findings by socioecological environments.

PST/Mexico

Differences in Alzheimer's disease diagnosis seeking between the United States and Mexico.

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This project draws on interviews conducted in Puebla, Mexico and Springfield, Massachusetts to identify cross-cultural differences in how Alzheimer's disease (AD) diagnoses are sought out. In Mexico little is known about the diagnosis-seeking process for AD and what effect that experience may have on treatment.

Methods: Sixty-two caregivers of people diagnosed with AD were interviewed across two field sites over 24 months. The caregivers lived with a family member who had an AD diagnosis. The diagnosed person was also interviewed.

Interviews were open-ended and prompted caregivers to describe when they first noticed symptoms they associated with AD, what those first symptoms were, and how much time passed from onset of symptoms to seeking a diagnosis.

Results: Latency from first symptom appearance to AD diagnosis was longer in Mexico (4.1 years ± 3.1) than the US (2.2 years ± 1.2). Additionally, the impetus for diagnosis seeking varied between the two countries. In Mexico,

caregivers were more likely to visit a doctor because of behavioral symptoms (e.g. irritability, sleep disturbance) whereas in the US memory symptoms more often motivated a caregiver to seek a diagnosis.

Conclusion: These differences align with previous research distinguishing between an "anticipation diagnosis" and an "emergency diagnosis" of dementia. Further, the data illustrate how cultural interpretations of cognitive changes in the elderly can affect medical treatment, highlighting the need for initiatives and post-diagnosis counseling/advising that are adapted to local realities.

P/Mexico

Seasonal changes in body composition in children from Maya agriculturalists in Central Yucatan.
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We measured the Midupper arm circumference (MUAC) and triceps skinfold thickness (TSFT) of 208 Maya children under the age of ten to study how community economic development, availability of store foods, and agricultural transformation affected body composition. Arm muscle area (AMA), and arm fat area (AFA) z-scores were compared between seasons using a multivariate repeated measures analysis of variance. Total upper arm area (TUAA) was used independently to monitor nutritional status. AMA did not vary seasonally, and it was greater in small towns. AFA and TUAA had significant reductions during the scarcity season showing that fat loss is responsible for seasonal changes in nutritional status classification. Development and an increased dependence on cash has been unable to eliminate the nutritional stress responsible for a seasonal loss in fat amongst children. The latter have lower AMA in more developed towns. A synchronous food intake study suggests that households in larger communities substitute local macro and micronutrient sources for store bought carbohydrates. In general modernization has increased carbohydrate intake suggesting that seasonal loss of fat is an adaptation to changes in the quality of the diet and not on amount of food available or energy deficiency.

PST 8

Factors driving changes in breastfeeding practices among Bangladeshi migrant women in the UK.
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Breastfeeding is evolutionarily the optimal source of nutrition for infants, with six months recommended as exclusive, and up to two years with supplementation according to the WHO. Optimal feeding practices support growth and development with advantages for long-term infant and maternal health; however, rates of breastfeeding vary considerably across populations. We sought to investigate how breastfeeding practices change among five groups of women some of whom migrated to the UK from Bangladesh. They comprised: Bangladeshi sedentees, women who migrated either as children or adults to the UK, second-generation British-Bangladeshi women, and UK-born white women. Previous research among these groups showed that infants born in Bangladesh were more likely to be breastfed and for longer durations than infants born in the UK, while adult migrants who gave birth in both countries were less likely to breastfeed their UK-born than the Bangladesh-born infants. The latter were breastfed, on average, twice as long (18 vs. 8 months, $p < 0.05$). To investigate the drivers of these differences in breastfeeding

practices, a subsample of women (n=57) was invited to participate in focus groups. Five main qualitative themes emerged from these discussions: lack of support/help, issues of privacy, work commitments, lack of time, and cultural expectations surrounding breastfeeding. The results suggest areas that, if addressed adequately, could improve breastfeeding duration among migrant Bangladeshis and subsequent maternal and infant health.

PST 9

Changes in birth and perinatal care practices among Hadza mothers in a transitioning food economy.
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Recent efforts to reduce death rates among women have been one of the least successful of the WHO 2018 global health initiatives, making childbearing one of the most dangerous and sustained health risks for women, particularly in low and middle-income nations. Throughout Tanzania, recent maternal health initiatives have been introduced to begin to address this lack of care – they have been designed, however, with urban populations in mind. The current maternal health situation for rural residing Indigenous hunter-gatherer mothers in Tanzania and how changing policy initiatives are impacting these communities in demographic and nutritional transition have not been explored. Here, we report on data extracted from 80 semi-structured interviews of Hadza mothers (ages 10-75) residing in both village and bush camps – with variable access to biomedical interventions and models of healthcare. We report basic demographic data on parity, location of birth, mode of delivery, and birth attendants. We discuss temporal changes over the last 60 years in birth and perinatal practices. The majority of the births were at home (97%) with traditional birth attendants, however, 3% of all births in the last 20 years occurred in the hospital, with 58% of these transfers resulting in unplanned cesarean sections. We further discuss the influence of nurses and doctors from outside of

the community on suboptimal breastfeeding patterns, such as the prevention of colostrum administration to infants or length of breastfeeding. This is the first study reporting birth experiences and breastfeeding patterns, past and present, of Hadza mothers.

PST/Mexico

Has all-cause mortality in Mexico increased in times of covid-19 pandemic?
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Introduction. Emerging infectious diseases are associated to human deaths all over the world and even when medical technology has reduced mortality from communicable diseases, emerging infections pose unprecedented challenges due to their novelty and the susceptibility of human hosts. The epidemiological history of pandemics such as influenza highlights that an excess of mortality can occur due to a single new infectious disease. The aim of our study is to estimate the excess of mortality (all-cause mortality) in Mexico between March and August 2020 that may serve as comparator with excess of mortality in other countries and from other infectious diseases. **Material and methods.** This observational retrospective study is based on information from the Mexican Board of health and the Department of Health Information. Deaths occurred in 2020 between March and August, coinciding with peak transmission of Sars-Cov2, were compared to those occurred the previous year obtaining (a)expected deaths, (b)observed deaths, (c)excess number of deaths and (d)percentage of excess of mortality. **Results.** A total of 207,450 deaths were expected for 2020 in the studied period, but 330,050 were observed, meaning an excess of 122,765 deaths (59.1% increase). **Discussion.** All-cause mortality in Mexico increased during the peak transmission of Covid-19, but as in other low-middle income countries, increased mortality may not only

result from infection per se, but as a collateral effect of the restrictions in healthcare and oversaturation during the peak transmission. Future studies may analyze the primary and basic causes of mortality and provide a comparison between countries.

PST 34

A scoping review stable isotope analysis in human biology.

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Stable isotope analysis (SIA) is a well-established method utilized by bioarchaeologists and paleoanthropologists to explore diet and mobility among past hominins. The purpose of this research was to conduct a scoping review of the literature to determine to what extent and how human biologists utilize SIA. A comprehensive search of academic articles published in peer-reviewed journals in the last decade was carried out through AnthroSource, seven biological anthropology or human biology journals, and two interdisciplinary journals. Of 1,937 articles yielded in initial searches, 17 met the inclusion criteria. Eleven articles analyzed hair (65%), four analyzed nails (24%), three analyzed blood (18%), and one analyzed breath (6%). Fifteen articles analyzed nitrogen (88%), 12 analyzed carbon (71%), four analyzed sulfur (24%), and one analyzed oxygen (6%), hydrogen (6%), iron (6%), or copper (6%) stable isotope ratios. Fourteen focused on diet (82%), one on drinking water (6%), one on life history (6%), and one on physiological status (6%). Of the studies that focused on diet, 11 (79%) made comparisons between different socioeconomic statuses, ethnicities, ages, sexes, countries, and/or urban versus rural in the context of nutrition transitions. This review demonstrates that human biologists utilize SIA relatively infrequently, with most studies comparing diets within or between populations by analyzing stable nitrogen and carbon isotope ratios in hair or nails. This underutilized methodology can provide human biologists with a longitudinal record of diet, physiological status (e.g., starvation or disease), or mobility among living humans, while circumventing errors associated with participant recall or self-reporting.

PST 71

A biocultural approach to predictors of hair cortisol concentration among immigrant women in rural New York.

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Psychosocial stress contributes to health disparities in the United States in ways that can be intergenerational. The embodiment and intergenerational transmission of stress requires a biocultural approach to identify political-economic factors in stress distribution and which stressors become embodied in biologically meaningful ways. This study models a biocultural, mixed-methods approach to identifying and describing political-economic factors patterning stress exposure, self-identified stressors, and their effects on hair cortisol concentration among immigrant mothers of young children living in a rural region of Upstate New York. Using ethnographic data, surveys, and in-depth interviews of 22 women, I found that commonly measured stressors such as perceived stress and acculturative stress were not predictors of hair cortisol concentration in linear multiple regression models controlling for participant age. However, increased social support (β=-0.07 for family and partner subscales, β=-0.09 for friends subscales) and more depressive symptoms (β=-0.09) significantly predicted lower cortisol concentration, and more adverse childhood experiences (β=-0.15) were strongly, but not significantly, associated with lower cortisol concentration. Women in the upper 50% of cortisol concentration described an interlocking network of structural stressors as well, including

lack of childcare, discrimination, English language challenges, and transportation. Ethnographic research with local community organizations described how many of these interlocking stressors were created and exacerbated by local political-economic decisions and policies. These results demonstrate that stress, indexed by hair cortisol concentration, is a function of both early life experiences and current structural factors, and a biocultural approach is ideal for assessing life-course and multilevel sociocultural phenomena like psychosocial stress.

PLENARY SESSION

One size does not fit all. How universal standards for normal height can hide deprivation and create false paradoxes.
DJ Hruschka, School of Human Evolution and Social Change, Arizona State University, Tempe, AZ

Public health researchers and social scientists frequently compare height against universal models of normal human growth to assess well-being, deprivation, and disease risk. However, underlying population differences in height can make some populations appear well-nourished by such universal standards, even though they live in severe states of deprivation. In this talk, I describe the worldwide extent of these population differences and illustrate how using a universal yardstick to compare population height can create puzzling disparities (e.g., between South Asia and sub-Saharan Africa) and underestimate childhood stunting in specific world regions (e.g. West Africa and the Caribbean). I conclude by discussing potential challenges of developing and implementing population-sensitive standards for assessing normal development.

Untangling vector-borne disease risk in urban settings with a human ecology approach.
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Abstract

Worldwide, vector-borne diseases are responsible for more than 700 000 deaths annually. In tropical areas, mosquitoes transmit several viruses: Dengue, Chikungunya, and Zika, while the kissing bugs transmit the parasite *Trypanosoma cruzi*, the aetiological agent for Chagas Disease. All these diseases are hard to treat clinically and mostly affect people in socioeconomically deprived areas. Disease risk depends upon both the presence of infected vectors and the people exposition to these vectors. Here, we present a human ecology approach to analyze how ecological factors that determine vectors' presence interact with socio-cultural factors that modulate people's exposition. We used this approach in Merida city (capital of Yucatan State) to study two different disease systems, Chagas disease, and arboviruses. For Chagas disease, we assessed whether inhabitants that migrate from rural areas into Merida city had differential vector presence probability and exposition compared to native inhabitants by analyzing if living conditions and mobility patterns affected vector dispersal. For arboviruses, we evaluate if city heat, heat perception, and dengue spatial epidemiology could predict bed nets usage patterns. Bed nets and window insect screens are effective in impeding vector contact but can increase the perceived temperature, therefore discouraging its use. The human ecology approach we used results in a very rich and necessary way to understand people living in their environment. It

could open the road to explore ways to solve the problems with the people.

PST 35

Perceived social isolation, mental health, and nail cortisol: A study of refugees in Serbia.
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The beneficial role of social support and social relationships on mental and physical health has been well documented. Forced migration often brings interruptions into refugees' home-country social relationships and their sources of social support. At the extremes, these dynamics may lead to refugees' social isolation (i.e., loneliness), which may be further exacerbated by challenges in cultivating social support in host countries. Perceived social isolation has been associated with altered neuroendocrine responses and is linked to increased activity of the HPA axis; yet, we know little how individual differences in these domains relate to refugees' mental health and physiology. Here, we draw on data from mental health-related surveys and cortisol assayed from fingernails collected from refugees (n = 76) in an Asylum Center in Serbia. We found that refugees experiencing social isolation reported heightened distress related to trauma as well as poorer mental and physical health (p's<0.05), but variation in social isolation was not meaningful linked to refugees' cortisol. We also found that refugees who reported higher levels of recent perceived stress had higher cortisol (p<0.05). The duration of time refugees spent in Serbia did not significantly predict their mental health profiles or cortisol. Our results align with previous findings concerning social isolation/loneliness and its association with adverse health outcomes. Although correlative, our findings are consistent with the idea that higher incidence of perceived social isolation may result from displacement-related trauma/experiences, disrupted social relationships, and lack of the relevant (apt) social resources available to refugees upon their arrival in the safe third country.

PST 36

Formative assessment demonstrates effect of inquiry-based labs on student understanding of evolution and the scientific method in introductory biological anthropology.
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While inquiry-based curricula have been shown to improve learning of science concepts, including evolution, among college students, such instructional approaches have not been widely adopted in biological anthropology laboratory instruction to date. Between fall 2013 and spring 2016, eleven new student-centered, inquiry-based laboratory modules were developed and taught in an introductory biological anthropology course at West Chester University. Clicker questions and statements were used beginning in 2014 to assess student learning over each lab session, providing immediate feedback to students and faculty and affording an opportunity to reinforce correct concepts. The clicker items included content specific to each lab and also one or more evolution misconceptions; items characterizing the scientific method were included for several modules. Student responses at the beginning and end of each lab module were analyzed by comparing % items answered correctly using paired-sample t-tests. Data presented here are from the final year of the project (2015-2016). Student performance increased significantly from pre- to post-lab across all clicker items and lab modules (p < .001), as well as for items specifically assessing understanding of evolution concepts (p < .001). This improvement was greatest in the early portion of the semester when labs focused on evolutionary theory, genetics, and classification. Performance on items assessing student understanding of

scientific method also increased significantly over all items and relevant modules (p < .05). We discuss examples of the inquiry-based labs and their ongoing implementation to foster student understanding of evolution and the scientific process in this introductory biological anthropology course.

PST 72

Nutritional status, dietary diversity and motor development in Maya and non-Maya children and adolescents.

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Malnutrition, poor living conditions, chronic illness and psychological stress are associated with childhood growth impairments and increased risk for overweight/obesity (OW/OB) in adulthood. This study aims: i) to describe and analyze the prevalence for stunting, and OW/OB, and ii) to ascertain the impact of sex, ethnicity, age, and parental education on nutritional status, motor development and dietary diversity among Maya and non-Maya youth in Yucatan. A sample of 1722 juveniles and adolescents was selected and divided into three groups: Non-Maya (NM/NM), mixed-heritage (NM/M), and Maya (M/M). Anthropometric measurements were taken, and nutritional status indicators calculated (WHO references). Motor development tests focused on flexibility, static strength, explosive strength and reaction-time. Individual dietary diversity (IDD) was calculated based on a recall 7-day food frequency questionnaire. Higher parental education positively associated with z-scores for height (HAZ), and body mass index (BMIZ), as well as greater dietary diversity. No significant differences in HAZ were found between boys and girls. When HAZ was coded into stunted/non-stunted, girls showed higher

prevalence of stunting than boys. Stunting was higher among the Maya (39.1%) followed by mixed-Maya (30.5%) and non-Maya (11.9%), (p< 0.001). NM/NM children had less subcutaneous fat than M/M. Maya children scored lower than non-Maya in all motor development tests except explosive jump where no differences were found. Finally, the Maya scored the lowest in terms of IDD. This study indicates that Maya individuals have higher prevalence of stunting and rank lower in dietary diversity, and motor development abilities when compared to mixed and non-Maya children.

PST 37

Sex differences in sleep patterns among mobile foragers: An intra-community comparison of village and forest sleep of BaYaka foragers of the Congo Basin.

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Sleep research conducted in post-industrialized societies has found sex-based differences in sleep patterns, with women reporting longer sleep durations, higher efficiency, and earlier bedtimes. Many factors can influence sex-based sleep differences, including divisions in work and leisure. Little is known, however, whether these gendered sleep differences are found in foraging societies. This study presents a sleep report from a BaYaka community in the Republic of Congo. We compared sleep patterns between two settlement locations to assess influence of socio-ecological and subsistence

activities on sleep. Over two field seasons, participants were recruited from a village location and a forest camp. Motion8watch actigraphy devices were worn for ~7 days each season (village n= 226 nights; forest n = 136). Sleep data was scored on MotionWare software and analyzed using two-sample T-tests and F-tests. In the village, we found no significant differences in sleep variables between the sexes. However, in the forest, women had longer sleep durations as compared to men (W: 6.53 hrs, M: 5.65 hrs; $t(116) = 3.81$, $p <.001$), and higher sleep efficiency (W: 71.4%, M: 65.6%, $t(112) = 3.65$, $p < .001$). Additionally, in the forest, the variance in men's time of sleep onset (mean = 21:18; 0:09) was larger than the variance of women's sleep onset (mean = 20:47; 0:05) ($F_{69,65} = 0.52$, $p <0.01$). Our findings indicate that men and women differed in sleep patterns only in the forest camp. This is potentially due to gender roles associated with local socio-ecologies and activity contexts.

PST 38

Evaluating the Mental Health Impacts of the COVID-19 Pandemic: Adult Depressive Impacts of Perceived Risk of COVID-19 Infection is Associated with Childhood Trauma in Urban South Africa.

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Background

South Africa's national lockdown introduced serious threats to public mental health in a society where one in three individuals develops a psychiatric disorder during their life. We aimed to evaluate the mental health impacts of the COVID-19 pandemic using a mixed-methods design.

Methods

This longitudinal study drew from a preexisting sample of 957 adults living in Soweto, a major township near Johannesburg. Psychological assessments were administered across two waves between August 2019 and March 2020 and during the first 6 weeks of the lockdown (late March–early May 2020). Interviews on COVID-19 experiences were administered in the second wave. Multiple regression models examined relationships between perceived COVID-19 risk and depression.

Results

Full data on perceived COVID-19 risk, depression, and covariates were available in 221 adults. In total, 14.5% of adults were at risk for depression. Higher perceived COVID-19 risk predicted greater depressive symptoms ($p < 0.001$), particularly among adults with histories of childhood trauma, though this effect was marginally significant ($p = 0.063$). Adults were about two times more likely to experience significant depressive symptoms for every one unit increase in perceived COVID-19 risk ($p = 0.021$; 95% CI 1.10–3.39). Qualitative data identified potent experiences of anxiety, financial insecurity, fear of infection, and rumination.

Conclusions

Higher perceived risk of COVID-19 infection is associated with greater depressive symptoms during the first 6 weeks of quarantine. High rates of severe mental illness and low availability of mental healthcare amidst COVID-19 emphasize the need for immediate and accessible psychological resources.

PST 39

Accuracy of anthropometry-based equations versus air-displacement plethysmography for the estimation of fat mass in rural Gambian infants.

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Infant adiposity is used to estimate nutritional status and morbidity/mortality risk. Anthropometry-based estimation equations of overall fat mass (FM) often include at least one measure of skinfold thickness (ST). Air displacement plethysmography (ADP) offers precise and direct measurement of FM and fat-free mass, though unavailable in many field-based contexts. We undertook an analysis in a cohort of rural Gambian infants to compare estimates of FM based on anthropometry-based FM estimation equations versus ADP. Data were collected at 3 (91 female, 104 male) and 6 (75 female, 56 male) months of age as part of the HERO-G infant growth study. We used six published equations to estimate FM for each individual, and Bland-Altman plots to compare mean differences (MD) and 95% limits of agreement (LOA) in estimated FM between ADP and anthropometry-based equations. One equation - excluding ST measurements - produced FM values comparable to ADP-based FM, at 3 and 6 months in male infants, and at 6 months only in females (respectively: MD 0.04kg, 95%CI -0.45·1.15, 95%LOA -0.44·0.53kg; MD -0.01kg, 95%CI -1.18·1.64, 95%LOA -0.68·0.67kg; MD -0.03kg, 95%CI -1.8·0.5, 95%LOA -0.66·0.59kg). Of the five equations that incorporate ST, only one calculated FM that was comparable to ADP, but only for males at 6 months, and with wider 95%LOA compared to the SF-free equation (MD 0.05kg, 95%CI -0.79·2.5, 95%LOA -0.75·1.85kg). We conclude that the majority of published equations using ST cannot accurately estimate ADP-derived FM in these infants and should be used with caution as markers of infant adiposity.

PODIUM A

Sex and age differences in the association between quarantine and sleep quality during COVID-19 pandemic in Brazil.
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Due to the COVID-19 pandemic, many governments established "stay-at-home" or quarantine orders, which had profound effects on economies and people's lives. We were interested in examining whether quarantine had an impact on sleep quality or insomnia symptoms among residents of Baependi, Brazil. In this town, quarantine was recommended but not mandatory. We interviewed participants from the Baependi Heart Study, an ongoing family-based study, and asked whether they were practicing quarantine (yes/no). We also administered a validated sleep quality instrument (Pittsburgh Sleep Quality Index, PSQI); higher scores indicate worse sleep quality and a score >5 indicates poor sleep quality. We compared sleep quality between residents who were and were not practicing quarantine adjusting for family structure. We also stratified analyses by gender and by age group (younger <50, older ≥50 years). There were 872 participants and 585 (73%) participants indicated they quarantined. Women and older adults were more likely to quarantine. In the full sample (n=872), those who quarantined had worse sleep quality (p=.0001) adjusted for family structure. Approximately 50% of those who quarantined had a PSQI score>5 while only 34% of those who did not quarantine had a score PSQI >5. In addition, the association between quarantine and worse sleep quality was observed in women (p=.002) but not in men (p=.39) and this association was observed in older adults (p=.02) but not younger adults (p=.33). These results suggest an association between worse sleep

quality and choosing to quarantine during the COVID pandemic, particularly for women and older adults.

PST 41

C-peptide varies across the menstrual cycle in a sample of healthy adult women.

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Urinary C-peptide has been used in field-based settings as a measure of energetic condition. We measured urinary C-peptide in healthy, regularly-menstruating women (age 18-46) from rural Poland and from Illinois. 117 women provided daily first-morning void urine samples for most of a menstrual cycle. 105 of those cycles were ovulatory (using mid-cycle drop in estradiol method) and used to assess if C-peptide varied across the menstrual cycle (Poland n=83; Illinois n=22). Concentrations were adjusted using specific gravity and then log-transformed. Cycles were aligned for ovulation (day 0) and categorized as follicular (days -10 to 0), periovulatory (days -3 to +3), and luteal (days 0 to 10). We found that differences in log-transformed urinary C-peptide were associated with cycle phase using two different methods. First, averaging log-transformed concentration data for each participant in each cycle phase, we used ANOVA and found significant differences between cycle phases (p=0.019). Post-hoc Tukey tests showed significant differences between the luteal and follicular phases (adjusted p=0.027). We additionally performed analysis using random-slope and random-intercept mixed effect modeling using individual as the random effect. Using daily values from day -10 to day +10, we still find that C-peptide is significantly lower in the follicular phase than in periovulatory phase (p<0.001) and luteal phase (p<0.001). Thus, using both methods, we found that log-transformed C-peptide is significantly lower in the follicular phase than in the luteal phase. We thus suggest that caution is used when interpreting this biomarker as a measure of energy condition.

PST 10

Serum Levels of C-Reactive Protein and Anti-Müllerian Hormone, Follicular-Stimulating Hormone, and Inhibin-B in Women Attempting Pregnancy.

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Reproductive function and variability, as viewed through a life history perspective, remain a vibrant area of interest within human biology research. Emerging data on the biomarkers of ovarian reserve, defined as the capacity of the ovary to produce viable oocytes, allow for a better understanding of female fecundability across the reproductive life span and may shed light on the competing energetic demands of reproduction and immune function. Limitations exist in current knowledge of the biological interaction between chronic inflammation and ovarian reserve. To test the effect of chronic inflammation on ovarian reserve, we employ multivariate regression analysis using secondary

data from 843 nonpregnant, cycling women between the ages of 30 and 44 participating in the Time to Conceive Study, a prospective observational cohort study of women attempting pregnancy in central North Carolina. We use three biomarkers of ovarian reserve, FSH, inhibin B, and AMH, a biomarker of chronic inflammation, CRP, and survey data to test the association between chronic inflammation and ovarian reserve, controlling for body mass index, smoking, and age. Based on a life history framework, we hypothesized that higher levels of chronic inflammation are associated with lower ovarian reserve due to the disruption of reproductive function and oocyte regulation due to the inflammatory response. Our results suggest that further research is needed to explore how the energetic relationship between ovarian reserve and chronic inflammation may be altered by the socio-ecological environment.

PST 11

Testing the Hygiene Hypothesis Among Older Adults Residing in the United States.

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Intestinal inflammation is an indicator of serious health conditions, like inflammatory bowel disease and gastrointestinal cancers. As part of the innate immune system, the inflammatory response is sensitive to environmental and demographic factors. The Hygiene Hypothesis posits that reduced exposure to immune-priming pathogens is responsible for increased prevalence of inflammatory disorders. Here, we test relationships between childhood environment and adult intestinal inflammation among 85 older adults (58 females, 27 males; ages 51-88 years). While all participants lived in Colorado Springs, CO at the time of this study, almost all lived in other locations throughout their childhoods. Stool samples and interview data were collected to measure fecal calprotectin (FC; a biomarker of intestinal inflammation) and assess childhood environment (e.g., urban vs. rural residence; domesticated animal exposure;

socioeconomic status [SES]). Results indicate that women who lived in suburban areas between the ages of 0 and 5 have significantly higher FC compared to those who were raised in urban environments ($p = 0.043$). Women who lived in suburban areas from ages 5 to 10 also have higher FC than those who lived in rural ($p = 0.006$) and urban ($p = 0.027$) environments. Surprisingly, these relationships were reversed in men. Further, clinically elevated FC (> 50 ug/g) was associated with higher SES during childhood ($p = 0.045$) among women. We find mixed, sex-specific support for the hygiene hypothesis that suggests that childhood SES may be associated with reduced adult intestinal inflammation, possibly due to altered environmental exposure associated with sanitation/hygiene in suburban areas.

PST/Mexico

Infant skin bacterial communities vary by body site and household environments in Mexico and the U.S.A.

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The microbiome mediates human-environment interactions, and directly influences our physiology, development, and health. More specifically, the skin microbiome sits at the primary interface between the body and the surrounding environment, and helps regulate the immune system and defend against pathogens. Despite these important connections, we have only a nascent understanding of how the skin microbiome is first established in early life, or which aspects of the physical and social environment contribute to its development. To this end, this study compared the skin bacterial communities of infants (N=47 infants; 119 samples) living in four populations in Mexico and the United States that span the

socioeconomic gradient. We predicted that variation in physical and social environments, including factors like household composition and caregiving practices, would influence the infant skin microbiome. Results of *16S rRNA* bacterial gene sequencing of armpit, hand, and forehead samples show that infant skin bacterial community composition (PERMANOVA on weighted UniFrac distances) is associated with population-level factors that likely shape infants' microbial exposures, including household size and number of alloparents. Further, differences in skin bacterial taxonomic diversity across the populations vary by body site (ANOVA on Faith's PD), with armpits harboring consistently less diverse bacterial communities. These findings suggest that differences in microbial exposures stemming from the physical and social environment of infancy can impact the establishment of the skin microbiome across body sites. These results lay the groundwork for future studies to explore the intersection of variation in early life microbial exposures and health and developmental disparities.

PST/Mexico

Gut Microbiome in children from indigenous and urban communities in Mexico: Different subsistence models different microbiomes.
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The Human Gut Microbiome has proven to be an important health-defining component for the host. Its composition is dependent on factors including host's diet, environment, sex, and age, among others. Childhood being one of the most crucial periods for the establishment and development of the bacterial Gut-Microbiome (GM). We have evaluated the differences in fecal microbiome in children from two Mexican communities with contrasting lifestyles: "westernized" (Mexico City) and "non westernized" (Me´phaa indigenous group, with pre columbian lifestyle) following a high throughput sequencing approach. The main differences between these two communities were present in bacteria associated with different types of diet (high animal protein and refined sugars vs high fiber food, respectively). In addition, the gut microbiome of Me´phaa children showed higher total diversity and the presence of exclusive phyla, such as Deinococcus-Thermus, Chloroflexi, Elusimicrobia, Acidobacteria and Fibrobacteres. In contrast, Mexico City children had less diversity and the exclusive presence of Saccharibacteria phylum which is associated with the metabolism of sugar compounds. This comparison allows further exploration of the selective pressures affecting gut microbiome ecosystemic composition over the course of human evolution and the potential consequences of pathophysiological states correlated with westernized lifestyles.

PST 42

Secular trends in adult female height and weight in Nuñoa, Peru 1964-2018.
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Nuñoa, a high-altitude district in Southern Peru, has been the site of numerous anthropological research studies over the past fifty years. Several studies included anthropometric measurements and dietary intake of residents in the region, providing a comprehensive record throughout a period of major political, economic, and social change. In this study, the authors evaluate secular trends in female adult height, weight, and body mass index (BMI) for evidence of a nutritional transition resulting from increasingly

delocalized food systems and changing dietary patterns in the district. Anthropometric data from adults collected by anthropologists in the 1960s (n=142), 1980s (n=176), and 2010s (n=172) are evaluated. In order to account for ongoing growth in young adults and loss of height in older adults, the data is divided into the following age categories: 19-24 years, 25-64 years, and greater than 65 years. Preliminary analysis of variance (ANOVA) reveals that mean height (p=0.000) and BMI (p=0.000) of females in all age categories in Nuñoa has increased over the past fifty years, with the largest increases occurring between the 1980s and 2010s. Despite these secular trends, Nuñoa continues to exhibit significant poverty. TNuñoa continues to exhibit significant poverty. To better contextualize these findings, we sought to compare the data from Nuñoa to data from Peru, Bolivia, and Ecuador provided by a DHS dataset using ANOVA and Student's t-test. We found that women in Nuñoa across these periods showed delayed increases in secular trends when compared to other populations, suggesting that improvements in Nuñoa are slightly behind those of Peru generally.

PST 12

From slavery times to Jim Crow days (1820-1907): reassessing skeletal stress indicators and their implications for population health in the Freedman's Cemetery population, Dallas, TX.

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Inferring quality of life from burial contexts is common in archaeological and historical research. Whether there is a reliance upon a single variable, or a suite of skeletal stress indicators, the interpretations resulting from such studies, are not always statistically validated, often due to small sample size. In this study we examine five standard skeletal measures of nutritional stress (stature, linear enamel hypoplasia (LEH), cribra orbitalia, porotic hyperostosis, and bone infections) to infer changing population health among African American individuals buried within the Freedman's Cemetery in Dallas, Texas between 1869 and 1907 (N=1157 individuals). The sample is divided by birth cohort (not estimated year of death) into three periods – Antebellum (1820-1859), War and Reconstruction (1860-1879), and Post-Reconstruction (1880-1907) — to statistically analyze stress within a period of great social change. Our results show that only LEH and infections varied significantly across periods; LEH decreased over time and infections increased over time. LEH was more common in males and adults, while infections were more common in children. Cribra orbitalia and porotic hyperostosis were significantly associated with the Post Reconstruction period only. Where these measures differ, we offer etiological explanations based on historical and archaeological data to provide a more holistic view of changing health during the transition from slavery times to Jim Crow America. This research demonstrates that these indicators require a more nuanced approach to equating pathological conditions to overall quality of life.

PST 43

Sexual orientation and immune function: exploring the protective role of sleep on Epstein-Barr Virus antibody levels among young American adults.

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Sufficient sleep is critical for maintaining healthy immune function, yet can be compromised by elevated psychosocial stress. Sexual minority (SM) people are more likely to report significant disparities in sleep quantity and quality compared to heterosexual individuals. These deficiencies in sleep are in large part the result of heightened levels of psychosocial stress from stigma and

discrimination, yet the impact of these psychosocial factors on sleep are rarely considered when understanding sexual orientation-based differences in immune function. Epstein-Barr virus (EBV) antibody levels are an indicator of immune function, with higher levels associated with both acute and chronic stress. What role does sleep play in immune response of SM individuals in particular? Using data from Wave IV of the National Longitudinal Study of Adolescent to Adult Health (N = 3,188), we analyzed the relationship between sexual orientation, average sleep duration, and psychosocial factors on EBV as a biological measure of immune function. Regression models suggest that while lesbian/gay participants have on average higher EBV levels (mean=198.13, SD=102.97) compared to heterosexual individuals (mean=149.79, SD=99.30), longer sleep duration among lesbian/gay participants predicted significantly lower EBV levels compared to bisexual participants (β= -0.259, CI= -0.511- -0.007), and approaching significantly lower EBV levels relative to heterosexual participants (β= -0.177, CI= -0.383 - 0.029). Our findings provide evidence that the protective effects of sleep on immune function may be especially important for SM people, who face increased risk of chronically elevated EBV levels due to stigma and structural inequities.

PST 44

Where does the newborn baby sleep? Prevalence and predictors of postpartum cosleeping practices after midwife-led births in the United States.
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Infant sleep location is heavily debated among medical practitioners, public health agencies, and anthropologists. While solitary infant sleep is recommended by US medical institutions, little is known about the demographics of cosleeping in the US. Cosleeping is operationalized as a mother sharing a bed or mattress (including a sleeping platform on the mattress) with an infant for some or most of the night. Data were collected from 2017-2019 as part of the Midwives Alliance of North America (MANA) Statistics Project. This study of 24,915 mother-infant dyads up to six weeks postpartum following midwife-led births includes demographic, health record, and survey data. We identify predictors of cosleeping behaviors up to six weeks postpartum among breastfeeding mothers (>98% of the sample). Median maternal age at birth was 31 years. 84.5% of the sample was White, 31.1% were primiparous, and 87.2% gave birth in a community setting. Our data suggest that 63.1% of infants cosleep for at least some of the night. Odds ratios indicate that for each additional five years of maternal age, women are 1.16 times as likely to always cosleep. Black women are 1.37 times and Latina women are 1.49 times as likely to always cosleep compared to White women. Overweight and obese women are less likely to cosleep than women with "normal" pre-gravid BMI. Women who birthed in hospitals or birthing centers are less likely to cosleep than those who birthed at home. These data increase our understanding of who engages in maternal-infant cosleeping postpartum and to what extent.

PST/Mexico

Obesity and comorbidities among hospitalized patients who died due to Covid-19 in México.
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Introduction: COVID-19 affected worldwide causing to date, around 500,000 deaths. In Mexico, by April 29, the general case fatality was 6.52% with 11.1% confirmed case mortality and hospital recovery rate around 72%. By October 2020, Mexico ranked first among the countries with highest lethality due to covid-19; authorities claim that obesity epidemic is the underlying factor related to covid-19 deaths. The objective of the study is to analyze the underlying conditions of patients hospitalized for COVID-19 in Mexico concerning four severity outcomes.

Materials and Methods: Retrospective study based on registries of all laboratory-confirmed patients with COVID-19 and required hospitalization in Mexico. Independent variables were comorbidities and clinical manifestations. Dependent variables were four possible severity outcomes: (a) pneumonia, (b) mechanical ventilation (c) intensive care unit, and (d) death; all of them were coded as binary

Results: We included 69,334 hospitalizations of laboratory-confirmed and hospitalized patients to June 30, 2020. Patients were 55.29 years and 62.61% were male. Hospital mortality among patients aged<15 was 9.11%, 51.99% of those aged >65 died. Male gender and increasing age predicted every severity outcome. Diabetes and hypertension predicted every severity outcome significantly. Obesity did not predict mortality, but CKD, respiratory diseases, cardiopathies were significant predictors.

Conclusion: Obesity increased the risk for pneumonia, mechanical ventilation, and intensive care admittance, but obesity was not a predictor of in-hospital death. Patients with respiratory diseases were not more prone to develop pneumonia, to receive mechanical ventilation and intensive care unit assistance, but they were at higher risk of in-hospital death.

PST 45

Disparities in Respiratory Health Among Sexual Minorities NHANES 2007-2012.

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ABSTRACT

Respiratory illness arises from a complex interaction of behavioral and environmental factors. However, susceptibility to respiratory illness is disproportionately concentrated among vulnerable populations experiencing a range of intersecting structural, political, and economic inequities. Understanding heterogeneity in population level vulnerability to adverse health outcomes requires a clear understanding of pre-existing disparities in respiratory health among vulnerable communities. For example, despite experiencing elevated rates for several risk factors (e.g., smoking), sexual minority (SM) people risk for adverse pulmonary health outcomes is relatively unknown. We used data from the US National Health and Nutrition Examination Survey, 2007-2012 (N =7,052) in order to evaluate SM people's risk of adverse respiratory health outcomes (asthma, respiratory infection, and chronic obstructive pulmonary disease). After controlling for socioeconomic, behavioural and demographic factors, regression models revealed significant differences in asthma prevalence among bisexual (t = 39.099, p<0.0001, lesbian/gay (t= 31.78, p<0.0001 and same-sex experienced respondents (t= 26.3, p< 0.0001). For the index of respiratory infection, there were no significant differences for bisexual (t = -1.38, p = 0.176), or for lesbian/gay respondents (t=-0.954, p=0.9247, but significant differences were found for those with same-sex experience (t=-2.166, p = 0.0386). Our results demonstrate the importance for understanding how various biocultural, behaviour and sociodemographic factors interest to modify within and between population vulnerability of respiratory illness.

PODIUM C

Iron deficiency, depressive symptoms, and embodiment: a hidden racial disparity in the United States.

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While attempts to attribute genetic causes to racial differences in hemoglobin levels have largely subsided, these embodied disparities persist among women in the United States. Black women are more likely to have iron deficiency and/or be anemic than other groups. There is a growing body of evidence that links anemia, with or without iron deficiency, to depression; however, none have examined this relationship in the context of U.S. racial health disparities. We studied the relationship between iron deficiency (total body iron) and depressive symptoms (PHQ-9) in reproductive-aged women in the U.S. NHANES 2005-2010. Using path analysis (PROC CALIS), we reconstructed the causal pathways linking race/ethnicity, iron deficiency, PHQ-9, and other covariates. First, a weighted correlation matrix was created using the %SURVEYCORRCOV macro for SAS 9.4. Using this matrix, a full path model was tested and refined using indices of fit. The final model showed that both iron deficiency and BMI were positively associated with PHQ-9 and were significant mediators between predictor variables and PHQ-9. Black women were significantly more likely to have depressive symptoms, with both a direct effect, and indirect effects via iron deficiency and BMI. Women in the Hispanic and "other" groups did not have significantly higher PHQ-9, but did have significant indirect relationships mediated through iron deficiency and BMI. C-reactive protein, current pregnancy, and age also had varying effects on iron deficiency and PHQ-9. Iron deficiency significantly affects depressive symptomology, particularly in Black women, and represents a possible embodied pathway to mental health disparities.

PLENARY SESSION

Investigating the normalization and normative views of gestational weight gain: balancing recommendations with the promotion and support of healthy pregnancy diets.

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Objectives: Gestational Weight Gain (GWG) has become increasingly monitored in the US and Canada over past decades, due to newer understandings of short- and long-term maternal-child health risks associated with GWG outside of "normal" ranges. While promoting healthy GWG offers benefits, there may be costs with over-monitoring GWG. We aim to explore these costs/benefits.
Methods: Quantitative data from 350 pregnant survey respondents and qualitative focus group data from 43 pregnant/post-partum and care-provider participants were collected in the Mothers to Babies (M2B) study in Hamilton, Canada. We report report on GWG trajectories, advice, knowledge, perceptions, and diet in relation to pregnancy norms and sociodemographic parameters. We present statistical analyses and models to assess relationships between GWG monitoring/normalization and worry, knowledge, health, and diet quality, contextualized with focus group data.
Results: Most survey respondents reported GWG outside recommended ("normal") ranges, did not subscribe to the norm of "eating for two", and many worried about gaining excessively. A majority had received some advice about GWG; yet half of respondents were unable to identify the GWG range recommended

for their prepregnancy BMI. Pregnancy diet quality was influenced by maternal age, number of dependents and household income and not correlated with receiving any GWG guidance. Care-providers encouraged normalized GWG for clients, but also worried that pathologizing "abnormal" GWG might provoke anxiety. Conclusions: Translation of GWG recommendations should be done with a critical understanding of GWG bionormalcy. Overemphasis on GWG surveillance may divert attention from the development of socio-economic and clinical supports for pregnancy health promotion.

PST 46

Influence of eosinophil counts on metabolic markers of disease among Amazonian people residing in Yurimagus Peru – a pilot study.

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Lack of parasitic infections are hypothesized to affect the genesis of chronic metabolic disorders such as cardiovascular and non-insulin dependent type 2 diabetes (NIDDM) amongst developing populations. This proposes a host/parasite competition for nutritional resources and protection, diverting energy stores in infected individuals. The elevated blood levels of WBC eosinophils which attack invading parasites, are established clinical markers of parasitic infection. Here, we test the hypothesis that total eosinophils counts will be negatively associated metabolic markers of heath among Amazonian peoples. In February 2020, we collected blood samples and metabolic biomarkers, anthropometric measures and demographic/health data from 168 Amazonian males and females. Partial Kendall Tau correlations assessed the relationship between absolute eosinophil count and BMI, A1c, triglyceride, total cholesterol, HDL and LDL. Fixed effect models tested linear associations between absolute eosinophils counts and binnary categorical variables: high blood triglycerides (> 200mg/dL), high A1c levels (> 6.5), age adjusted. Fisher exact tests were used to test if the expected proportion of individuals with and without eosinophilia (> 500 cells/mcL) significantly differ amongst BMI categories, high blood triglycerides, and high A1c level. We found no statistical evidence metabolic markers of health were associated with absolute eosinophil counts. Additionally, there was no difference between BMI categories and eosinophil status. These finding do not support the hypothesis that metabolic disorders are driven from a lack of host/parasite infections. We find that high eosinophils can occur regardless of a person's BMI, A1c and triglyceride status and suggest more evidence is needed to support this hypothesis.

PST/Mexico

Preliminary report of the physical activity among adults from Mexico City with and without of Type II diabetes.

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Prevalence of Type II diabetes has increased consistently in Mexico, from 7.2 in 2006 to 10.3 in 2018 according to the National Nutrition Surveys. It becomes a matter of public health concern that needs to be addressed not only from the clinical perspective, but also from the context of living conditions.

The current report focused on the role of physical activity, considered as the general description on daily activities and time distribution, to get useful information each participant and to the health care personal at clinical setting to improve the care during the follow up of patients.

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1 Profesor Escuela Nacional de Antropología e Historia, CdMx.

Data collection was done from late 2019 to the beginning of 2020. People participated voluntarily by answering the questionnaire. The instrument was adjusted, and at the time of suspension of regular activities due to COVID-19 pandemic, a total of 45 participants were surveyed (26.7% males and 73.3% females). Only 15.6% were already diagnosed with type II diabetes and 20% with hypertension. Other data includes age and gender, marital status, medical history, type of work, and time in the job. Description of the time every participant spends on daily activities performed throughout the day. Preliminary result shows a rather sedentary daily routine based on the description for the 24 hours description. It is important to recognized that the descriptive nature of the instrument to collect the initial data not necessarily reflects a complete pattern of physical activity. In addition, a larger number of participants with Type II Diabetes diagnostic will be needed.

PST/Mexico

Variation in body proportions and body composition in a group of Mexican individuals with achondroplasia.

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Abstract:

Growth and development assessments are of substantial public health interest; for that purpose, it is necessary to have appropriate reference data to describe growth status in specific groups. However, some populations such as those with genetic conditions that affect growth, have been sparsely studied. Achondroplasia is the most common form of disproportionate short stature caused by a genetic disorder. Although severe short stature among individuals with achondroplasia usually has a monogenic background, final adult height and other characteristics such as body proportions and body composition show important variability, which can be explained by external environmental factors in addition to, or in interaction with genetic variation; these interactions have been rarely explored. Data collected include height, weight, head circumference, adiposity, lengths and widths for a group of children and adults (n=48) with achondroplasia from different regions in Mexico. The aim of the study is (1) to offer data to improve the knowledge on growth variation among population with achondroplasia for different regions in Mexico and compare the results with previous studies conducted in Argentina, USA and Europe; and (2) to evaluate body proportions and body composition to ultimately develop weight for age, height for age and BMI references for individuals with achondroplasia specific for Mexico. Preliminary results indicate some variation on final height, weight and BMI compared to other studies for populations with achondroplasia. We discuss our results within a life history framework and put forward hypotheses about the role of living conditions and energy availability on the plasticity observed.

PST 48

Comparison of methods for isolating extracellular vesicles from human breast milk for analyzing miRNA variation.

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Breastfeeding can transmit maternal signals of psychosocial stress across generations, and epigenetic mechanisms may play a role in this transmission process. Breast milk is rich in microRNAs (miRNAs), which are short non-coding RNA sequences that serve as post-transcriptional regulators of gene expression.

Maternal exposures to chronic stress and other environmental factors have been associated with altered miRNAs expression in blood and brain, but has yet to be examined in milk. MicroRNAs that are found within extracellular vesicles (EVs), including exosomes (50-150nm), are protected from digestion and thus could influence developmental programming of the infant. No consensus exists on the best technique for isolating EVs in breast milk. Our aim was to compare three techniques for isolating EVs from human milk: 1) polymer-based precipitation with Exoquick, 2) ultra-centrifugation, and 3) size exclusion chromatography. Presence of EVs was confirmed using transmission electron microscopy (TEM), nanoparticle tracking analysis (NanoSight), and western blot. TEM indicated successful isolation but low apparent concentration of EVs across methods. Preliminary NanoSight results indicated a higher concentration and smaller average particle size (<200 nm) from ultracentrifugation versus Exoquick. Western blot confirmed the presence of CD81, a surface marker of exosomes, following SEC isolation. miRNA will be sequenced from the EVs isolated using all three techniques and miRNA complexity, reproducibility, and expression profiles will be compared. The results of this study will help guide human biology researchers interested in studying variation in miRNA expression across populations and disease states.

PODIUM A

Community food environments, enrollment in WIC, and household availability of fresh fruits and vegetables among African-American mother-infant pairs in North Carolina.

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Poor household and community food environments have been individually associated with child obesity, but less is known about the associations between them. We test this association using data from the baseline visit of the *Mothers & Others* study, an early life obesity prevention trial among 430 African-American mothers in central North Carolina. Exploratory factor analysis with oblique rotations consolidated 45 variables of food availability, variety and quantity into household food environment factors. Geocoded data of all food outlets in the study area were used to characterize community food environments. Linear regressions tested the association between household food environment factor scores, community food environments, and interactions with nutrition assistance program enrollment. Four household food environment factors were retained: Factor 1 contained fresh fruits/vegetables (F/V), Factor 2 contained canned F/V and some sweets and salty snacks, Factor 3 contained frozen F/V, candy, and sweetened drinks, and Factor 4 contained candy, sweets, and (diet) soda. Each additional dollar store within 1-mile of households was associated with a reduction in Factor 1 scores with an increased effect size for dollar stores within 0.25 miles. Among households not enrolled versus enrolled in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), each additional supermarket within 1-mile was associated with a -0.35 decrease (CI: -0.52, -0.19) and 0.32 increase (CI: 0.14, 0.50) in Factor 1 scores, respectively. Among African-American households in central NC, household food environments are partially determined by surrounding food outlets. However, enrollment in WIC strongly modifies this relationship.

PST 49

Seasonal acclimatization of BAT activity through increased metabolic efficiency and glucose utilization in the winter.

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Brown adipose tissue (BAT), a heat generating organ activated under mild cold exposure in cold and temperate climate populations, may play a role in human adaptation to cold. Previous work has demonstrated the effects of BAT activity on glucose disposal in rodents and on metabolic rate in relatively small and mostly male human samples. Our study examined the seasonal patterns of BAT activation in a temperate climate group (N=75, female n=46, ages: 18-63) in Albany, NY. BAT activity was inferred by comparing metabolic rate (MR), supraclavicular skin temperature, and respiratory quotient (RQ) at room temperature and mild cold exposure in the summer and winter. RQ measurements were used to determine the rate of carbohydrate versus fat oxidation after cooling. Our results show a significant increase in RQ in the winter compared to summer (+5.2%, $P < 0.05$), suggesting a preference for carbohydrate consumption over fats during colder months. Additionally, while supraclavicular skin temperature increased significantly between seasons (+4.0%, $P < 0.05$), MR did not (+4.0%, $P=0.87$), suggesting an increase in efficiency in BAT activity after prolonged cold exposure. Possible increases in glucose consumption and reduced BAT-associated metabolic rate indicate seasonal acclimatization of BAT activity. We propose that, given BAT's muscle-like cellular origin, its prolonged activation during colder months results in augmented glucose storage capacities, not dissimilar to the mechanisms observed in endurance trained skeletal muscles. Such acclimatization over a period of a few months may be indicative of a seasonal, cost-effective role of BAT in human adaptation to extreme environments.

PLENARY SESSION

The color of normal: how a focus on lighter skin masks pigmentation diversity.
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Skin, hair, and iris pigmentation are highly variable and highly visible phenotypic traits in humans. However, until recently much of our understanding of this variation, its underlying genetic architecture, and its evolutionary history has been derived from studies that focus primarily on lighter skin, particularly in European populations. In this talk I demonstrate how this narrow focus on lighter skin has shaped knowledge and tools in multiple disciplines. First, I review the ways the normalization of light skin has impacted dermatological education and training as well as commonly used tools to assess photosensitivity and skin cancer risk. Second, I demonstrate the ways that Eurocentric biases in pigmentation genetic studies have shaped our understanding of the genetic architecture of pigmentary traits and the evolutionary processes that have led to modern patterns of human pigmentation diversity. I then discuss the ways that these biases, in combination with phenotyping systems that privilege describing skin, hair, and iris pigmentation in European populations, have impacted the development of phenotypic prediction tools in forensic science. Finally, I briefly review how changes to clinical and basic research in pigmentation may reduce existing health disparities and improve our understanding of the evolution and genetic architecture of pigmentation variation.

PODIUM B

Maternal perception of insufficient breastmilk supply: predictors and potential pathways.
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Maternal perception of insufficient breastmilk supply (PIMS) is commonly cited as a reason for breastfeeding cessation. Current literature suggests PIMS may be shaped by psychosocial

maternal characteristics versus biological. This study identified predictors of PIMS among 428 women enrolled in 'Mothers & Others,' a home-based randomized controlled trial to prevent obesity. Infant feeding intentions and attitudes and breastfeeding self-efficacy were measured at 28-weeks' gestation (baseline) and 1 month postpartum, respectively. Maternal breastfeeding status was assessed at 1 and 3 months postpartum. Bivariate and multivariate logistic regression models were used to determine predictors of PIMS at 1 and 3 months postpartum. Twenty-two percent of mothers at 1 month and 35% of mothers at 3 months reported PIMS. After adjustment, factors associated with PIMS at 1 month included maternal age and formula use in the hospital after delivery; while factors associated with PIMS at 3 months included maternal age, positive infant feeding intentions, and presence of maternal depressive symptoms. Among mothers who showed more positive intentions towards breastfeeding, those with depressive symptoms were more likely to report PIMS at 3 months. Our analysis suggests early report of PIMS is associated with hospital practices after delivery, while later cessation of breastfeeding due to PIMS is associated with maternal mental health and breastfeeding intentions. More research is needed to assess the pathway between maternal depressive symptoms and cessation of breastfeeding due to PIMS.

PST 50

Biocultural strategies among reindeer herders for coping with a cold, rapidly changing Arctic.

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The Arctic has felt the dramatic effects of climate change sooner and more acutely than other parts of the world, making it an ideal location for studying both cold climate and climate change resilience. We conducted physiological and ethnographic research among reindeer herders in northern Finland in October 2018 and January 2019. The herders (20-64 years, N=20, 5 females, 15 males) in this study exhibited increased resting metabolic rates, high levels of total energy expenditure, and increased brown adipose activity – well documented physiological cold adaptations. Qualitative assessment revealed that herders use a combination of traditional and modern knowledge and technology to mitigate cold stress. For example, traditional clothing is preferred over modern clothing in particular weather conditions. Herders also indicated that their traditional and local knowledge of the landscape in combination with global positioning technology was critical to their safety. Recent work also demonstrated that herders are well aware of the impact of climate change has on the environment and their livelihood. Herders have adopted several resilience strategies to cope with environmental perturbations such as increased supplemental winter feeding; however, these efforts could exacerbate the effects of climate change. Understanding how herders bioculturally cope with and respond to a cold, changing Arctic could illuminate a path forward for developing a more resilient and sustainable relationship with a changing environment. Furthermore, these findings are crucial for improving health and well-being as human migration across the globe continues to increase for cultural, humanitarian, and environmental reasons.

PST 51

Seeking support for displacement-related stress is associated with variation in non-communicable disease risk indicators in a South Pacific island population displaced by a natural disaster.

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Disaster displacement is increasing globally and small island nations, such as those in the South Pacific, face elevated risk due to climate change. Additionally, disaster displacement contributes to higher non-communicable chronic disease (NCD) burdens, both mental and physical. More models are needed to understand factors that buffer individuals from elevated NCD risk due to disaster displacement, especially in hazard-prone low- and middle-income countries (LMICs) with insufficient health infrastructure. This study examines associations between types of stress support received and indicators of NCD risk in a displaced population from Vanuatu, an LMIC in the South Pacific. In October 2017, the entire population of Ambae, a rural island in Vanuatu, were evacuated to neighboring islands due to volcanic activity. By mid-2019, approximately half of the population had returned to Ambae, while a large proportion remained on nearby Santo island. Analyzed here are data collected from adults during a 2019 follow-up on Ambae (n=274) and Santo (n=221). Participants underwent an NCD screening and answered questions on their experiences during displacement. Compared to Ambae, distress scores and waist circumference measurements were elevated on Santo, while diastolic blood pressure was reduced (p<0.05). Seeking support from a health professional was associated with lower weight, BMI, percent visceral fat, and waist circumference measurements (p<0.05). Seeking support from a pastor and from family was associated with lower distress scores (p<0.05). These results suggest that source of support plays a role shaping NCD risk factors during displacement. Further analysis will examine variation in these relationships by gender, age, and island of current residence.

PST 52

Examining the relationship between school closures and mortality rates during the 1918 influenza pandemic in Missouri.

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Public health workers worldwide are dealing with the COVID-19 pandemic and over the past 6 months governments have tried various strategies to counter the pandemic. The United States, which leads the world in total number of cases faces policy decisions on how to best implement protective measures while considering impacts to economic and educational life. Because of the unprecedented nature of this pandemic, many have looked to the last great pandemic for lessons on how to successfully intervene. Here, we present an example from an ongoing project examining the impact of the 1918 influenza pandemic in Missouri. This poster examines the efficacy of school-closures during the pandemic in selected Missouri counties. Utilizing the "Chronicling America" collection of digitized newspapers made available by the Library of Congress and the "Missouri Digital Newspaper Project" made available by the State Historical Society of Missouri, announcements of school cancellations and duration of closures were recorded to form an NPI school-closure timeline organized by county. The timeline of closures was then compared with county-level data on influenza deaths collected from the Missouri Death Certificate Database (part of the Missouri Digital Heritage project) to determine any

possible correlation. Initial findings indicate that schools were often closed just before the biggest peaks in deaths, so they did not necessarily prevent initial waves of illness and deaths but declines in numbers of deaths post-closure indicate the importance of closures as a public health tool.

PST/Mexico

Cause of death disparities among children and juvenile Mayas and Afro-descendants of Corozal, Belize, 1894-1934: micro-evolutional and socioeconomic explains.

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The goal is analyze the death probabilities of the five main cause of death of individuals of both sexes from birth until 14 years of Mayan Indians and black population of Corozal, Belize, border city with Mexico. The comparison between these two ethnical groups allow evaluating micro-evolutional histories of these, and establishing some explains of socioeconomic factors, which allow the human adaptation. Multiple Decrement Life Tables was performed to calculate death probabilities, with 2,168 deaths from 1894-1921 and 1922-1934. Principal results showed that digestive and infectious-epidemic and parasitic deaths have a similar pattern in age group of 1-4 years. Malnutrition and food poising have the higher death probabilities in both sexes and ethnical groups at birth. Black children have lower probabilities to death in digestive and malnutrition causes, but black girls have the higher probabilities to death in almost all causes. In spite of a long micro-evolutional history of the Mayan Indian population in the region, they have higher probabilities to death by infectious-epidemic and parasitic causes than black children. Socioeconomic explains under colonial rule of British Empire are the responses of these disparities.

PST/Mexico

Vulnerability of Mayan adolescents to cardiocascularrisk and its possible health impacts.

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Cardiovascular disease is a serious health problem today that affects not only adults, but also the young population. Unfortunately, the prevalence of cardiovascular risk factors has increased in indigenous adolescent populations, so it is important to identify them early. Due to this situation, we proposed to identify cardiovascular risk factors through biochemical, clinical and anthropometric indicators. A quantitative and cross-sectional study was conducted that included 134 adolescents between the ages of 11 and 15 from the Sor Juana Inés de la Cruz secondary school in the municipality of Chacsinkin, Yucatán, Mexico. The anthropometric variables considered were EMI (kg/m2), waist/height index (WAI) and percentage of body fat, the clinical variables were: systolic blood pressure (SBP) and diastolic (DBP) (mmHg) and the biochemical variables: glucose (mg/dL) and triglycerides (mg/dL). The analysis reported higher prevalence of risk factors in women, mainly in the percentage of fat (61. 19%), high triglycerides (43. 9%), ICT at risk (52. 23%), but obesity predominated in men (7. 46%). However, the only variable with significant association by sex was the percentage of fat. It was concluded that at least one-third of Chacsinkin's adolescents have a cardiovascular risk factor, mainly woman, in which high percentage body fat levels were more prevalent, associated with high triglyceride levels and predictable with increased ICT.

PST 53

Chronic Wasting Disease and Human Health: Fifteen Year Follow-Up Study in an Upstate New York Population.

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Prion diseases are a group of neurodegenerative disorders caused by the misfolding of prion proteins. They are characterized by long incubation periods and rapid cognitive decline. Some prions are able to cross the species barrier and transmit from non-human species to humans, most notably from cow to human, causing variant Creutzfeldt-Jakob disease. Chronic Wasting Disease (CWD) is a prion disorder that affects cervids such as deer, moose, and elk. Thus far, the disease has reached 26 U.S. states, three Canadian provinces, and Scandinavia. In 2005, attendees at a sportsman's dinner in Oneida County consumed a deer that tested positive for CWD, making it the first known point-source exposure. Due to widespread hunting and consumption of cervids in the U.S., people exposed at the dinner continue to be monitored to determine whether the disease is transmissible to humans. Eighty-one participants from the dinner were recruited and administered an initial exposure questionnaire with yearly follow-up health evaluations since 2005. Preliminary results from a 15-year follow-up show that remaining participants (n= 32) report no associated symptoms, excluding conditions significantly associated with age, supporting the notion that cross-species transmission from deer to humans is likely to be low risk. However, incubation periods can be longer than 50 years in cases of human kuru and 50% of participants report they still consume venison. With increasing rates of CWD in cervids and the fact that prions can be viable in soil for years, continued monitoring of participants' health outcomes is crucial to evaluating its zoonotic potential.

PODIUM A

Preliminary exploration of possible links between chronic inflammation and reproductive maturation in adolescent girls.
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According to Life History Theory, when metabolic energy availability is limited, trade-offs ensue amongst growth, maintenance, development, and reproductive tasks. Thus, as chronic inflammation represents an energetic challenge, we should expect it to slow down the pace of reproductive maturation. In adolescent girls, menarche (the onset of ovarian cyclicity) represents an energetically demanding process. As such, its onset may be influenced by metabolic energy availability. Here we test the following predictions: *i)* chronic inflammation should be associated with later age at menarche; and *ii)* chronic inflammation should be associated with a slower pace of reproductive maturation post-menarche (i.e., a longer period of ovarian irregularities). Using data from a group of 20 Mayan Guatemalan girls in 2013 (before menarche; age range: 10-11) and in 2017 (after menarche; age range: 14-15), we assessed girls' inflammation status by quantifying C-reactive protein and interleukin-1β in salivary specimens, and reproductive status by quantifying follicle-stimulating hormone, estrogen, and progesterone in daily first morning urinary specimens. Consistent with our prediction, girls with chronic inflammation showed a 15-months delay average (95% confidence interval [5.8, 24.1]) age at menarche compared to girls with no inflammation. We found no association between chronic inflammation and cycle length or ovulation frequency post menarche. Further research will be needed to replicate our findings in terms of the link between low-grade immunological challenges and age at menarche.

PST 40

Pathogens, not altitude impact milk composition among high altitude living ethnic Tibetans.
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Human milk contains a unique combination of nutritional and immunological constituents including glycoproteins, hormones, immunoglobulins, granulocytes, leukocytes, and lymphocytes. The presence of the immune factors is contributes to the reduced rates of infectious disease. In this study, we investigated two aspects of the mammary immune system: Secretory immunoglobulin-A (sIgA) and CD14+ cells. Both sIgA and sCD14+ have immunological capacity against gastroenteritis, diarrheal diseases, and respiratory infections. We tested the following predictions: 1) Are there associations between the altitude of maternal residence and the immunological composition of milk; and 2) do other factors, such as parity, body fat, infant age or concurrent infection, predict the concentration of immune factors in milk?

Human milk samples were collected from 67 mothers living in 6 villages in the Nubri Valley, Nepal. Anthropometric data and health recalls were also collected on all mother-infant dyads. Milk samples were analyzed for sIgA and sCD14+ using previously published EIA protocols. Multivariate ANOVA was used to test for between group differences after adjustment for maternal and infant level predictors such as maternal percent body fat, parity, infant age and current illness of the mother and/or infant. There were no significant associations between sIgA and altitude ($p<.37$) or CD14+ cells and altitude ($p<.13$) within this population. Infant age, maternal body fat, parity, and milk volume were all significantly associated with sIgA. CD14+ concentrations were not significantly associated with infant age, parity, or maternal body fat. Pathogenicity of the environment was significantly associated with CD14+ concentrations.

PST 54

The 1918 influenza pandemic and COVID-19 in Missouri: assessing rural and urban differences in impact.
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Socioeconomic and demographic factors within communities strongly influence infectious disease patterns. We focus here on how such factors influenced the spread of the 1918 influenza and current COVID-19 pandemics in the state of Missouri, emphasizing the identification of attributes that may have differentially affected rural vs. urban populations. During the century that separated the pandemics, Missouri experienced no major county-level geographic alterations, making the state an excellent test case that can use known impacts from a past pandemic to better prepare for future outbreaks.

Data from the 1910 U.S. Census provide context for the spread of the 1918 flu; 2019 estimates from the U.S. Census Bureau and the Missouri Department of Health and Senior Services (DHSS) are primary sources for similar data relevant to COVID-19. Analyses focus on variables available for both time periods, including, e.g., age and sex distribution, number of hospitals in a county, or land use patterns. Disease data come from the Missouri Digital Heritage database (1918 influenza) and the Missouri DHSS (COVID-19). County-level social data were analyzed to determine county clusters to use in comparing social attributes and disease data during the two pandemics. Analyses determined which social characteristics best explained observed patterns of disease and the degree of overlap between those sets of characteristics during the two time periods. Results suggest that epidemic patterns resulted from a combination of the unique age-specific mortality profiles of the two diseases and socioeconomic factors like dominant livelihood and population size of an area.

PST/Mexico

The Feeling-thinking body (EL CUERPO SENTIPENSANTE) as a paradigm in Anthropology.

J Ramírez Velázquez, Postgraduate in Physical Anthropology ENAH-INAH Mexico

The purpose of this participation is to show the theoretical, conceptual and methodological route that within physical anthropology in Mexico we have studied the body from a new horizon of understanding -that makes it visible as a subject, agent and from experience-. The notion of the *"feeling-thinking body" cuerpo sentipensante* breaks the naturalistic dream of our discipline and is configured as a new paradigm that goes beyond the biosocial and biocultural paradigms, giving way to other concerns that, providing a new path of reflection, show that bodies cannot be understood adequately if they continue to be studied as ahistorical, precultural or just as natural objects; human bodies are not only inscribed, marked, engraved, by social and cultural pressures external to them, but they are the products, the direct effects, of a sociocultural construction of nature itself. This theoretical assumption that enunciates the body as a sociocultural construction is the founding element of a powerful reflection that is fertile on condition of incorporating explanations that define the body-subjects as producers of meaning that respond in a cognitive, affective, discursive and actantial way; consequently body-subjects must be approached from the hermeneutical circuit 'think-feel-say-perform' considered as human acts involved in the production of meaning. With these guidelines I will present the theoretical horizon that bases the feeling body as a paradigm, and I will give some ethnographic examples that support it.

PST 13

Evolution of cranial macromorphoscopic trait variation in modern humans.
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Cranial macromorphoscopic traits are non-metric, morphological markers routinely used to estimate ancestry as a result of their differential expression across modern human populations. A suite of statistical approaches have previously been applied to quantitative data of macromorphoscopic traits scores, highlighting their utility in forensic investigations; however, little is known with regard to the etiology and evolution of macromorphoscopic traits. Here, we quantify the association between morphological variation at N=10 cranial macromorphoscopic traits and genomic variation at N=645 microsatellite loci for seven worldwide human populations in order to investigate the evolutionary mechanisms that produce cranial morphological variation. First, we conduct a Mantel test summarizing the variation between our sampled populations for all anatomical and genomic loci. Next, we test the utility of each macromorphoscopic trait, and combinations thereof, for inferring neutral genomic variation using an approach that accounts for stochasticity inherent to an evolutionary model. Results show a statistically significant relationship between macromorphoscopic trait variation and neutral genomic variation ($r = 0.64$, $p = 0.009$, following 1000 permutations), similar to previous studies on cranial metric data. In addition, we found that macromorphoscopic traits expressed in the zygomatic region had the highest association with neutral genomic variation. Nevertheless, we also find a positive relationship between the number of traits used in quantifying variation between populations and their correlation with genomic variation. Our results provide support for the utility of macromorphoscopic traits in reflecting human population history and further isolate those that have evolved under neutrality.

PST 55

Diabetes self-management and glycemic control: identifying the disconnects between patient beliefs, adherence, and improved health outcomes.
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Identifying disconnects between patient disease beliefs, self-management practices, and prescribed treatment programs is useful for addressing obstacles to patient adherence, establishing more effective patient-centered treatment protocols, and understanding how beliefs and behaviors impact disease progression. We examined associations between glycemic control (based on glycated hemoglobin [HbA1c]), diabetes self-management, and engagement in diabetes care in adult Samoans (n=49, 61.2% female) living with diabetes using questionnaires (i.e. Diabetes Self-Management Questionnaire and the Diabetes Appraisal Scale). Participants had a mean age of 57.2 ± 8.1 years, mean HbA1c of 10.4% ± 2.5%, and 65.9% were in poor glycemic control (HbA1c ≥ 9.0%). A greater proportion of individuals between 45-65 years were in poor glycemic control than younger and older participants (X^2= 17.9, p=0.006). While 91.4% of participants reported engagement in diabetes self-management, 65.1% had HbA1c ≥ 9.0%, and healthcare use was not associated with HbA1C (r=-0.02, p=0.92). Women held a more positive outlook on their disease status than men (t=2.2; p=0.03), but these self-assessments were not associated with improved glycemic control. Additionally, 30- 45.0% of participants reported seeing their doctor two times or fewer in the last year, missing medications when feeling better or worse, and/or missing their diabetes medications two or more times in the previous two weeks. Further biocultural research exploring how disease beliefs inform adherence to treatment protocols, and how health care systems can better influence and translate those beliefs into improved health status is needed in order to stem the disconnects between individuals' diabetes self-management and glycemic control.

P/Mexico

Factors associated to selection and consumption of food during pregnancy.
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Objective. To analyze the association between socioeconomic factors and the diet in a sample of 83 pregnant women from Merida, Yucatan, Mexico.
Methods. We applied a socioeconomic survey and three 24-hour dietary recalls to 83 pregnant women living in the county of Merida, Mexico from September to December 2019. The diet quality was assessed through intake percentages of energy and macronutrients (carbohydrates, proteins and lipids) and consumption patterns of recommended and non-recommended foods. Linear regression models were fitted to analyze the association between energy and, macronutrients percentages with women's marital and working status, as well as levels of education and income.
Results. Broadly, women's diet was characterized by a low consumption of fruits, vegetables, beans, eggs, chicken meat, milk and yogurt and a high consumption of sweetened beverages, cookies, chocolates, candies and fast food. Higher levels of education, income and a paid job was associated with lower percentages of energy and macronutrients intake. However, working women, without a partner, with higher levels of education and income reported a healthier dietary pattern.
Conclusions. In this sample, women of better socioeconomic conditions show heathier dietary patterns during pregnancy.

PST 56

Thirst perception is associated with ambient temperature and season of birth, but not

hydration status: Data from two small-scale societies in extreme thermal environments.

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Thirst is an evolved central homeostatic feedback system that helps regulate body water to ensure survival. Little research has examined how early development and exposure to extreme environments and water availability affect thirst perception. Therefore, in 2019 we measured perceived thirst (thirst level) and anticipatory thirst (desire to drink water) using visual analog categorical scales (1-10) among Tsimane' forager-horticulturalists in the hot-humid Bolivian Amazon and Daasanach agro-pastoralists in hot-arid Northern Kenya. We examined how these self-reported measures of thirst were associated with objective hydration status (urine concentration), ambient temperatures, birth season (wet vs dry), adjusting for physiological characteristics for 618 adults aged 18+ using multi-level mixed-effect regressions. Cross-culturally, current hydration status was unrelated to either perceived or anticipatory thirst, while ambient temperature was associated with higher anticipatory thirst ($B_{10°F}$=0.41, SE=0.19, p=0.029). Further, we found a significant interaction (p=0.018) between birth season and temperature on anticipatory thirst in Kenya, but not Bolivia. Daasanach born in the wet season (i.e., in utero during the preceding dry season) reported lower desire to drink water when the temperature exceeded 90°F than those born in the dry season (in utero during greater water availability), translating to 1-2 point lower thirst ratings at 95-105°F. Our findings suggest current hydration status is not a reliable predictor of thirst perceptions in extreme-hot environments. Rather, thirst may be more strongly driven by the current ambient environment and water availability in utero, which may affect sensitivity to heat and water feedback mechanisms throughout the lifecourse, particularly in arid environments.

PST 57

The effect of stress axis activity and sleep patterns on metabolic energy in a group of Mayan adolescent girls – A preliminary, longitudinal analysis.

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Organisms face continuous energetic trade-offs between growth, maintenance, and reproduction. Responding to social and physical challenges demands energy, which is often derived from postponable physiological tasks such as reproduction and development. The role of sleep as a mediator of those energetic trade-offs is still unclear. To explore it, we analyzed data from 21 Mayan adolescent girls (12 to 15 years; avg = 13.5 years) from Guatemala, collected over a 19-day period in 2017. Indicators: sleep quotas (total sleep time, TST), biomarkers of stress (first morning urinary (FMU) cortisol), and energy (FMU c-peptide, a biomarker of insulin). Statistical approach: mixed effects model of c-peptide with a girl-specific random effect and

fixed effects of sleep and cortisol. **Results:** TST among and within girls ranged from 235-548 minutes. Cortisol levels ranged from 3.8-633 ng/ml. C-peptide ranged from 0.12-102.50 ng/ml. Cortisol was associated with c-peptide (estimated effect = 0.078; 95%CI [0.027, 0.13]), suggesting that increases in cortisol are associated with increases in energy availability. A general exploratory analysis showed that c-peptide mean was higher in ovulating compared to non-ovulating girls. These positive associations may suggest that girls are entering an insulin-resistance state, an energy pattern typical in adolescent girls. These findings reflect the energetic needs of girls gearing up towards somatic growth and reproductive maturation. We found no association between sleep and energy (95%CI [-0.028, 0.11]). Next we will explore possible mediators or interactions among variables in the model, to better understand the role of sleep and energy mobilization during the reproductive adolescent transition.

PST 47

Predictors of seroprevalence of SARS-CoV-2 antibodies in American college students.
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The virus that causes the deadly Coronavirus disease 2019 (COVID-19), severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), can be transmitted from person-to-person and has caused devastating societal impacts. Though COVID-19 was often portrayed as an "older-person disease" early in the pandemic, young people and those who do not have underlying health conditions may still get very sick. Further, young adults who are not aware they are infected or who do not experience severe symptoms can still spread the virus to more at-risk populations. Since levels of antibodies remain elevated long after infection, serological IgG testing can be used to identify cases after the fact, potentially detecting previous infection in individuals who did not display symptoms and who would have not otherwise been aware of their seropositive status. This project utilizes home-based serological testing to measure the presence of anti-SARS-CoV-2 IgG antibodies in dried blood spot samples that have been collected from 150 American college students (aged 18-24) across most US states and dozens of colleges and universities. We also depict associations between seroprevalence and survey data on students' exposure to the virus and experience of symptoms, as well as data on demographic factors, health experiences, and academic engagement. Community-based serological testing represents a valuable epidemiological surveillance tool that can elucidate the prevalence of the virus within a community, particularly among young people, complementing tests of naso-pharyngeal swabs and saliva. This research also highlights the contextual, interpersonal, and individual factors that contribute to exposure and seropositivity in this population.

PST

Impact of the covid-19 pandemic on Maternal Mortality in Mexico.
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ABSTRAC
Maternal Mortality is a worrying event since in most cases it can be prevented. Infection with COVID-19 has become a new cause of death in

pregnant women. Preventive measures of confinement and reduction of social interaction have hindered access to health services for pregnant women and have accentuated of weaknesses of the health system to care for patients in Mexico. This is an observational study was done using open access public health records to analyze maternal mortality reports and covid-19 cases, and their outcomes among pregnant women. 21% of maternal deaths in Mexico occurred due to covid-19, being 9.3% the maternal mortality rate due to Covid-19.Overall maternal mortality increased 35% in Mexico compared to 2019. The Main causes of direct maternal death in patients with covid-19 were dyspnea and pneumonia. The predictors of dyspnea found were smoking and cardiovascular diseases. On the other hand, hypertension and diabetes are associated with the presence of pneumonia. Asthma was related to increased risk of death, even when not associated with increased dyspnea or pneumonia. The results obtained show the need to improve the quality of medical care throughout pregnancy and the puerperium with the aim of reducing maternal mortality, which has increased as a result of the coronavirus distant effects in Mexico.

PST 59

Social support, perceived stress, resilience and cortisol response when acclimating to novel and challenging environments.

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In high altitude or cold environments, ecological and psychological stressors impose intensive demands on human psychobiological functioning. The hypothalamic-pituitary-adrenal (HPA) axis is key in responding to these demands. Its output, cortisol, plays an important metabolic role in energy allocation and is also highly sensitive to social dynamics and perceived experience. However, less is known about the relationship between cortisol, social support, perceived stress, and resilience in an individual to an energetically intensive environment. Here, we worked with National Outdoor Leadership School students (n=71) enrolled in ~90 day expeditions in the American West. We measured longitudinal, within-individual patterns of cortisol, self-reported physical and emotional support from the group, and reports of perceived stress and resilience at multiple time points during the expedition. We found that though both greater physical and emotional social support predicted greater inclusion and friendship in the group (p < 0.05), neither predicted perceived stress nor reported resilience, suggesting that an individual's experience of stress and resilience are not necessarily linked to the quantity of individuals that provided physical or emotional support. Further, using linear mixed models, we found that both lower perceived stress and higher resilience predicted dampened baseline CORT throughout the course of the expedition (all p < 0.05). These results suggest that in an energetically demanding, yet highly controlled closed-group expedition-like setting, the perception of individual stress and resilience have physiological consequences and may supersede any ameliorative effects of social support buffering derived from a greater number of social support providers.

PST 60

Signaling sickness: how sickness behavior and psychosocial factors shape communication style.

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Active infection results in several outward signs in humans, including visible symptoms, changes in behavior, and possible alterations in skin color and gait. A potential adaptive function of these indicators is to signal distress and elicit care from close others. Sickness behavior, a suite of stereotypical changes in mood and behavior, may also serve to communicate health status to others. However, both sickness behavior and outward signals/cues of health status can be expected to vary based on context and sociocultural norms. For instance, sickness signaling may be seen as incompatible with stoicism or socially proscribed masculine attitudes. We explored sickness behavior, communication style, demographics, and theoretically relevant cultural factors in a large national US sample (n = 1,259) using bivariate statistics and multinomial probit regressions. In accordance with predictions, relatively few participants were willing to talk or complain about sickness to strangers. Self-reported, recalled sickness behavior was generally associated with a more open communication style. Stoicism, individualism, active coping, traditional machismo, and gender role self-identification were each associated with different sickness communication styles, as were age and sex in some cases. These preliminary, self-reported data lend support to the signaling hypothesis, though experimental or observational support is needed. The role of cultural norms and demographics in shaping how such signals are transmitted and received also deserve further attention as they may have important implications for disease transmission.

PST 14
Estimating brown adipose tissue activity for a study of hot flashes.

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This presentation compares methods of estimating brown adipose tissue (BAT). As part of an ongoing study of BAT activity in relation to hot flashes, we asked women aged 45-55 to place their hand in cool (17^oC) water. We took a thermal image of each woman (Flir camera) before and after the cooling of her hand. To estimate BAT activity, we compared the change in temperature in the supraclavicular area with a control area. Initially, we used a point on the mid-sternum as the control. Because we were concerned that there may be BAT tissue along the sternum, we also tried a control region on the mid-right arm. We used two equations to estimate BAT activity. The first computed the difference in maximum supraclavicular temperature (SCT) minus the difference in the control temperature [(PostMaxSupraclavicular – PreMaxSupraclavicular) - (PostControlMean - PreControlMean)]. Mean BAT estimated from the maximum SCT and arm temperature was higher (0.80, s.d. 0.51, range 0 to 2.10) than from the maximum SCT and sternal temperature (0.63, s.d. 0.45, range 0 to 1.70). There was no relationship between biceps skinfold and arm temperature, or between other anthropometric measures (summed skinfolds, BMI, percent body fat) and estimates of BAT. The sample size is, to date, too small to draw conclusions (n=36), but as the reported severity of hot flashes increased ("none," "a little," "somewhat," "a lot") the mean BAT estimated with the sternal control also increased (0.49, 0.65, 0.68, 0.74). This was not true when the arm was used as the control.

PODIUM C

Structural Racism and the Impacts of the Covid-19 Syndemic among Quilombola Populations of Brazil.

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Quilombos are groups composed mostly of descendants of runaway slaves from farms and plantations which formed centers of power, production, and social organization throughout Brazil starting in the 17th Century. They are present in all regions, especially in rural areas, and still maintain some degree of geographic isolation, leading to high levels of poverty, chronic, infectious diseases, and limited access to health services. The structural racism rampant in the Brazilian society has led to a history of violence, mistreatment, suppression of rights, and racial discrimination against the Black population, resulting in worse overall health outcomes when compared to the Whites. Among the Quilombola, racism results in reduced quality of life, contributing to higher rates of hypertension, diabetes, intestinal parasites, respiratory illnesses, wasting, and stunting. With the arrival of Covid-19 these diseases enhanced the impact of the virus leading to a rate of mortality up to four times higher than that observed among the general population in some regions. The compound effects of the new virus plus the existing diseases, and the social conditions, demonstrate a clear syndemic relation. Even though most of the Quilombola communities are still not officially recognized, more than 50% of the population in Brazil self-declares as Black and Brown, and as result of the syndemic these suffered most of the casualties. Data show that the combined effects of disease, structural racism and an emerging infection have increased the health, and social disparities in the country, and will bring long terms consequences for the afro-Brazilians.

PST 61

Sickle Cell Disease in the State of Pará: Genetic Ancestrality and Biosocial Factors Associated with Clinical Manifestations in the Amazon.

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Abstract
Sickle Cell Disease (SCD) in the State of Pará, in the Amazon Region, is a serious public health problem due to the late universalization of the Foot Test, the absence of counseling and new genetic research, the diversity of serious clinical symptoms associated with poverty and institutional racism experienced by individuals with the syndrome. We investigated 60 people with SCD in the Regional Blood Center of Pará (Belém) analyzing data of genomic ancestry (autosomal DNA), clinical manifestations, SES, Social Determinants of Health, self-declaration of color and racism/discrimination with interviews, semi-structured form and analysis of 62 Autosomal Ancestry Markers (AIM's). Our assumptions point out that the aDNA shows that the percentage of ancestry of people with SCD in the State of Pará is at odds with the self-declaration of color and that the epidemiology of SCD and biosocial conditions are related. High underreporting makes access to the blood center difficult, lack of counseling and genetic studies affect health coverage, 65% of the group lives in poverty, women have more severe symptoms, 41% have mostly European aDNA and have more symptoms, 90% claim to be black or brown and 72% suffer institutional racism/discrimination. The Brazilian State needs to implement public health and social inclusion policies with SCD researches to understand genetic and biossocial factors associated with the severity and diversity of clinical manifestations in order to improve quality of life, more effective access to tests and

new genetic therapies for the Amazonian's group studied.

PST/Mexico

Is there an adolescent phase shift in sleeping patterns in non-WEIRD societies?

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Studies undertaken in WEIRD societies claim that adolescents experience a phase shift in sleep representing a "biological/natural" circadian cycle where teenagers sleep later at night and wake up later next morning. Here, we reexamined the hypothesis that this phase shift is associated with sexual maturation among teenagers (aged 11-16 years, $\bar{x}$=13.7, SD ± 1.21) from a: 1) Maya agriculturalists (n=44), 2) Totonac agriculturalists (n=51), and 3) urbanites in Mexico City (n=50), while also examining environmental influences on adolescent sleep behaviour, such as school and work demands, access to mobile devices, exposure to sunlight, and social sleep practices. From February-November, 2019, we collected sleep data using actigraphy, sleep diaries, semi-structured interviews, and ethnographic observations, comprising a total of 1405 sleep observations. Using nightly sleep-midpoint and data from the Pubertal Development Scale, we compared adolescent sleep between groups controlling for gender, school nights, and non-school nights. Results show that adolescents from Mexico City had the most sleep-midpoint variation ($\bar{x}$=3:12:33, min=00:44:00, max=8:23:00). Changes in sleep timing were positively related to pubertal developmental stage for Mexico City and Totonac agriculturalists, but not for the Maya (slope=-0.047). Furthermore, using linear regression, pubertal development significantly predicted sleep-midpoint only among Totonac agriculturalist teenagers, particularly during non-school nights (F=8.011, 95% CIs, p<.01). These findings challenge current ideas concerning the adolescent phase shift, which claim to rely on consistent reports of a delayed sleep–wake cycle, and instead provide evidence of adolescent sleep variation in non-industrial societies not subject to the same cultural influences as WEIRD societies.

PST 15

Don't sweat it: The biocultural relationship between stress and smell.

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Stress is a mental phenomenon, but it has physical manifestations that others can discern. When someone is stressed, they might shake, stumble over their words, look tense, or sweat profusely. However, these are visual and auditory clues. We investigated if people can pick up on the olfactory signals of stress in the form of sweat. There are two types of sweat the body produces. The main variety is secreted all over the body to lower body temperature. It is composed mostly of water and ions and thus has no smell. The other variety is only secreted in certain areas, like the armpits, in response to adrenaline, a stress hormone. It has an opaque, oily secretion which, after bacterial degradation, produces body odor. We focused on emotional sweat, investigating whether sweat produced by individuals who report higher stress is perceived differently than those who report lower levels of stress. To test this, we used the "stinky t-shirt" model, which involves one set of participants wearing t-shirts overnight (n=19) and another set of participants smelling the t-shirts (n=18) and rating the odors on disgust, intensity, and pleasantness. We found that individuals who reported higher perceived stress, negative affect, and poorer sleep quality had higher disgust ratings by the t-shirt smellers. Likewise, if the t-shirt wearers had higher positive affect scores, their shirts tended to be rated higher on pleasantness. These results suggest a biocultural relationship between stress and smell where olfactory cues of stress are detectable by others and are perceived negatively.

PODIUM A

Paternal care and growth rates in Shodagor children.

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Biparental care is a hallmark of human social organization, though investment varies between and within societies. The facultative nature of paternal care in humans suggests males should invest when their care improves child survival and/or quality, but cross-cultural evidence is inconclusive due to the difficulties of empirically isolating paternal effects from those of mothers and others. Here, we examine the effects of paternal care on child growth among Shodagor fisher-traders, where fathers often adopt the primary caregiver role for at least part of the year, and where small nuclear families limit the alternatives for alloparental care. We modeled seasonal z-scores and velocities for height, weight, and body mass index (BMI) outcomes using linear mixed models. Our evidence indicates that, relative to other cultural contexts, fathers in most Shodagor households provide very high levels of direct care, both as primary and substitute caregivers. As predicted, when receiving care from both parents, children grew faster when their fathers contributed more care and seasonal patterns of growth were impacted by changes in caregiving, though these effects were complex. Our evidence also tentatively supports the conclusion that maternal and paternal caregiving roles are complementary but not directly substitutable, producing different physiological effects for children.

PST 18

Sex, energy, well-being and low testosterone: an exploratory survey of U.S. men's experiences on prescription testosterone.

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Abstract:
Prescription testosterone sales in the United States have skyrocketed in the last two decades due to an aging population, direct-to-consumer advertising, and prescriber views of the benefits and risks to testosterone, among other factors. However, few studies have attempted to directly examine patient experiences on prescription testosterone therapy. The present exploratory study involved an online self-report survey of U.S. testosterone patients who were at least 21 years of age. The primary focus was on patient perspectives concerning motivations leading to the initiation of testosterone therapy and the perceived effects of treatment. Responses to open-ended questions drew upon a coding scheme incorporating both inductive and deductive approaches, influenced by the clinical, male life history theory, and behavioral endocrinology literature. Results indicated that the most frequent reasons men gave for taking prescription testosterone were low testosterone (37.1%), well-being (35.2%), energy (28.7%), libido (21.9%), and social energy (19.4%); older men claimed libido as a motivation for testosterone initiation more frequently than younger men (p < 0.001). Men most frequently claimed testosterone improved their energy (52.3%), libido (41.9%), and muscle (28.5%). Results are interpreted in the context of medical, life history theoretical and behavioral endocrinology approaches, including an emphasis on sex and energy.

NOT FOUND IN PROGRAM

Displacement, work, and long-term health in communities on the Thailand-Burma border.

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In western Thailand, many people living in villages on the border with Burma have experienced one or more events of forced

displacement and migration. People of Karen and other non-Thai ethnicities often experience social and economic marginalization in Thailand as well as legal precarity. On the Thailand-Burma border, the psychosocial impacts of these layered displacements and continued marginalization on border residents are well-documented; however, the implications for chronic health conditions are less explored in this population. This presentation draws on semi-structured interviews (n=23) with non-Thai residents of two border districts and with Thai healthcare providers working in the border area to discuss community members' health priorities. While health initiatives in the border area often focus on the prevention and control of infectious diseases, these interviews indicate community members' increasing concern with chronic health conditions, in particular hypertension. This discussion therefore uses the interview data to examine structural factors that shape vulnerability to chronic ailments and constitute barriers to their effective management in the border context. Exploring these factors – which include changes in land use and diet, employment in agricultural wage labor, the experience of forced displacement, and non-Thai legal identity – highlights avenues for future research.

PST 62

Hygiene practice impact on microbiome acquisition in highland Peru.

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Gut microbiomes are acquired both vertically, from parents to children and horizontally, from environments/lifestyles. This research from highland Nuñoa, Peru offers a rare opportunity to investigate microbiome acquisition at a single site, as many hygiene practices hypothesized to affect microbiome composition, such as water storage and treatment, bathroom type and location, and proximity to animals differ between households. This study used microbiome data collected from adults (n=54) and infant-mother dyads (n=19) to examine how participants differed in microbiome composition based on hygiene measures (horizontal acquisition) and how similar solely breastfed infants were to mothers as compared to dyads that practiced formula and/or water supplementation (vertical acquisition). Beta diversity was assessed with unweighted Unifrac distances (UUF) in QIIME. Differences in microbial composition based on specific measures and a combining category of "overall hygiene" were evaluated using permutational analysis of variance (PERMANOVAs) in R. We compared hygiene practice, infant vs. adult groups, and nursing vs. formula fed infant groups, controlling for age, antibiotic use, and infectious symptoms. We found no significant differences in Nuñoan microbiome composition based on any hygiene measure (e.g. overall hygiene: $R2= 0.14$, $P= 0.65$). Pairwise PERMANOVAs stratified by breastfeeding vs supplementation revealed dyads were not significantly more similar based on vertical or horizontal acquisition route. Breastfeeding vs formula/water supplementation were also not significant overall (formula: $R2= 0.35$, $P= 0.77$; water: $R2= 0.34$, $P= 0.85$). Results suggest that hygiene practices do not significantly impact microbiome acquisition in Nuñoa, especially compared to the impacts of age ($R2= 0.56$, $P= 0.02*$).

PST 16

Sedentarization of semi-nomadic pastoralists: The association between movement strategy and indicators of cardiometabolic health and market integration.

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Sedentarization, or the transition from a previously mobile lifestyle to a settled one, is a phenomenon increasingly affecting East African pastoralist communities as they experience climate change, encroaching markets, and governmental pressure. Understanding the potential health and nutritional consequences of lifestyle change is critical to human biology. Here we investigate the associations between movement strategy, as determined by number of household moves in the past year, and indicators of health and market integration for Daasanach pastoralists (n=242; age=18-79) living in northern Kenya. Using generalized linear models to control for age and sex, individuals living a settled lifestyle had significantly higher diastolic blood pressure than semi-nomadic and nomadic individuals (β=3.17, p=0.033, SE=1.48). Prevalence of hypertension was also lower among semi-nomadic and nomadic individuals (19.7%) than settled individuals (33.3%). Likewise, measures of sums of skinfolds and total cholesterol were negatively correlated with the number of times an individual had moved in the past year (sum of skinfolds: β=-1.66, p=0.047, SE=0.83 | total cholesterol: β=-8.85, p=0.014, SE=3.50). Number of household moves was not associated with measures of individual income, household income, or household size for men and women. Interestingly, those who moved more frequently reported significantly higher food and water insecurity than more settled individuals (food insecurity: β=0.87, p<0.001, SE=0.23 | water insecurity: β=2.53, p<0.001, SE=0.39), but described themselves as having significantly higher socioeconomic status (β=0.41, p<0.001, SE=0.10). These results suggest that lifestyle changes, specifically deviation from traditional movement strategies, are associated with dietary,

activity, and/or environmental differences that affect cardiometabolic health.

PST 63

Breastfeeding during breakout: Findings from the COVID-19 and Reproductive Effects (CARE) study.

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Breastfeeding is an important mechanism in establishing foundational infant health and immunity; the COVID-19 pandemic, however, may interfere with breastfeeding plans. Using postpartum data from the COVID-19 and Reproductive Effects (CARE) Study, we explore COVID-19-related decision-making for how long to breastfeed infants among a convenience sample of women living in the U.S. (N = 954). Ninety percent of participants reported neither their plan to breastfeed nor intended duration of breastfeeding were affected by the pandemic. The remaining 98 participants indicated the pandemic had altered their feeding plan, either to extend their breastfeeding longer than they had initially intended (8.5%) or to curtail it (1.8%). Among the 81women who chose to extend their time breastfeeding, the majority (76.4%) stated their decision was prompted by a desire to enhance their baby's health by providing a boost in immunity and antibodies, often with specific reference to protecting their infants from the SARS-CoV-2 virus. Other participants explained their decision to extend breastfeeding was due to increased time at home (19.4%) and concerns about formula shortages (4.2%). The 17 women who shortened their intended time breastfeeding described a lack of lactation support and help at home (53%). Fear of viral exposure and pandemic-related stress (47%) were also listed as reasons for modifying their feeding plans. In sum, we found that 10% of participant breastfeeding plans were impacted by the pandemic. Subsequent work in this sample is needed to understand the potential

impacts of COVID-19-associated changes to breastfeeding behavior on offspring biology and health.

PST 64

COVID-19 perceptions and behaviors in NMSU students: Is there a gendered response? H Taylor, KM Olszowy, MA Scott. Department of Anthropology, New Mexico State University

Coronavirus disease 2019 (COVID-19) emerged in late 2019 and by March was declared a global pandemic by the World Health Organization. Studies conducted in previous pandemics have shown significant differences in behaviors and perceptions in response to novel pathogens among genders. For example, research has shown women are 50% more likely to participate in non-pharmaceutical preventative behaviors than men. Additionally, some researchers suggest this trend may relate to women having an increased perception of the pathogen's severity on their communities, families, and lives than men do. College students are a sub-population of interest due to the unique, multi-faceted impact COVID-19 has had on their lives and health , and more studies are needed to understand gendered variation in adherence to preventative guidelines to limit the spread of COVID-19 infection, as well as determine what variables influence these differences. The purpose of this study is to examine gendered differences in the relationship between behaviors and perceptions of COVID-19 in New Mexico State University students. Study participants (currently n=147) were given an online survey containing questions of their perceptions, knowledge, and behaviors regarding COVID-19 and their self-reported gender. Data collection is ongoing. Significant differences were found in 6 out of 20 behaviors between men and women, indicating women are more likely to wear PPE (cloth masks), social distance, and try to prevent viral surface transmission (p<0.05). Further analysis will investigate biocultural differences that contribute to these differences, as well as

examine the gendered impact of the COVID-19 pandemic on perceived academic success.

PST 65

Fear of childbirth and birth outcomes during the COVID-19 pandemic among a sample of pregnant women in the US.
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Fear of childbirth can be an important stressor in pregnancy. While previous research has suggested that birth outcomes are affected by prenatal stress experience, limited work has evaluated associations between fear of childbirth and birth outcomes. Here we use data from a prospective convenience sample of pregnant women living in the United States surveyed during the COVID-19 pandemic (mid-April 2020, N = 1821) to evaluate pandemic-related factors that predict fear of childbirth, as well as associations between fear of childbirth and subsequently measured birth outcomes (birth weight and gestation length). Using multivariate regression models adjusting for participant income and ethnicity, we find that planning to give birth in a hospital, being worried about passing COVID-19 infection to the developing fetus, and fear of the long-term impacts of COVID-19 infection on child health were associated with higher fear of childbirth (all p < 0.001). Greater fear of childbirth measured in pregnancy was significantly associated with shorter gestation length (p = 0.04), but was not significantly associated with birth weight (p = 0.07). Our findings demonstrate that COVID-19-associated worries were associated with fear of childbirth, likely compounding pre-existing fears. Fear of childbirth was also associated with shorter gestation length, which could reflect physiological responses to stress and/or shorter gestation due to increased intervention (cesarean

section). Additional research is needed to understand whether fear of childbirth, which appears to have been exacerbated during the COVID-19 pandemic, has lasting impacts on other aspects of maternal and child biology, including stress physiology functioning.

PODIUM C

Pathways linking maternal mental health and child health in a dual burden context.

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Research in low income countries links maternal depression to child undernutrition; conversely, maternal depression is a risk factor for child overweight in higher income settings. Less is known about impacts of maternal mental health in dual burden contexts or the environmental and behavioral pathways linking maternal mental health to child health outcomes. Consequently, we examine the association between maternal mental health and the dual burden of undernutrition/infectious disease and overweight/obesity in children and test whether household environments and caregiving behaviors mediate this association. Data come from 115 mothers and their 204 children, aged 2 weeks to 14 years, participating in the Healthy Families Study in Galapagos, Ecuador, with mental health, anthropometry, diet and household environmental measures. Path analyses were used to test for direct and indirect effects of maternal mental health (anxiety and depression symptoms, stress, and a composite measure of distress) on the likelihood children experiencing the dual burden. We found that maternal distress is directly associated with a greater risk of having a child in the household with the dual burden (OR:2.72, 95% CI:1.11-6.63) with significant indirect paths through household cleanliness, emotional climate of the household, and child diet quality. Children of mothers with distress were also more likely to be sick and to have low hemoglobin than children of mothers without mental health symptoms. Together, our results indicate that maternal mental health shapes the risk for child dual burden through a number of related pathways, including increased pathogenic exposures, less healthy diets and poorer household function. This research is funded by NIH/FIC (1R21TW010832; PI: Thompson).

PODIUM D

Prior childhood infections and 1918 influenza pandemic: A syndemic potential.

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The current pandemic caused by SARS-CoV-2, has led many to observe that there is a great variation in disease severity. The question, 'why some locations are hard hit, yet others are barely touched by the disease?,' are familiar to scholars studying, 'the Last Great Pandemic.' Factors such as urban/rural differences; variation in socio-economic status, population density, age/sex composition, and previous exposure to influenza pandemics and other respiratory diseases have been proposed as explaining disease heterogeneity.

We examine the relationship of two childhood respiratory diseases (measles and whooping cough) with influenza mortality in the Maltese settlement with the highest death rate during the second wave of 1918 influenza. There was a significant difference between the higher death rate of suburban communities with the lower rural and urban influenza deaths rates (x^2=32.32, p<0.01). In the central suburban community of Birchicara, the influenza death rate was 5.3 per 1000, double the overall rate of the island (2.59 per 1000). Further, nearly 20% of influenza deaths in that location were in children under 10 years. We posit that the elevated rates were

'seeded' by previous epidemics in a syndemic fashion. Whooping cough which preceded the influenza pandemic, by a few months, may explain the elevated influenza death rates in the children in the community. Whooping cough was highest in Birchicara at a rate of 535.7 per 1000 children under age ten versus 127.35 per 1000 on the rest of the island. Factors, such as SES, and population density did not play a role.

PST/Mexico

Nutrition and infection: a key to interpreting the living conditions in the heterarchical society of the Maya of Tulum, Mexico.

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ABSTRACT

Malnutrition and infection are strongly connected: all infections hurt nutritional status, and malnutrition increases the frequency, severity, and duration of infections. The synergy between nutrition and infection can be a key to interpreting the health conditions of present and past populations. Intending to define the adaptive response of the Maya of Tulum (Quintana Roo, Mexico, 1200-1521 AD) to a coastal environment rich in natural resources and prosperous, we studied the association between nutrition and infections, taking into account social stratification, and environmental, socio-political and economic conditions. We draw the relationships among porotic hyperostosis, periostitis, hypoplasia of enamel, tartar, caries and stature analysed in a human sample found in 7 burials and 20 ossuaries in the walled city of Tulum. All the variables were studied about the type of structure from which the remains came, palace and domestic, intending to identify a possible correspondence between health status and social status. Despite the economically prosperous context, the health conditions of the Maya of Tulum were severe. While population pressure and war restricted food intake, the hot-humid environment and the introduction of pathogens through commercial networks increased exposure to parasites. Malnutrition and nutrient malabsorption, parasitic infections and diarrheal diseases have caused nutritional deficiencies that increased susceptibility to infections, which in turn worsened nutritional status. Consistent with the Mayan heterarchical model, as far as health conditions are concerned, there are no notable differences among Mayan inhabitants by social stratus inside the walled enclosure.

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The impact of market integration on school-age children's gut microbiota and metabolism: links to diet, pathogen exposure, and linear growth among the Amazonian Shuar.

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Market integration-related changes in gut microbial composition are thought to contribute meaningfully to the obesity epidemic in low- and middle-income countries (LMICs). Yet, the underlying factors linking market integration to altered microbiota and energy homeostasis remain unclear. No research has directly

investigated potential dietary and pathogen exposure pathways among school-age children, the age group for which lifetime metabolic patterns typically emerge. We characterized the fecal microbiome of "rural"-living ($N = 26$) and peri-"urban"-living ($N = 37$) Indigenous Shuar children of Amazonian Ecuador (age 4-12 years) using 16S rRNA gene sequencing. Urban-rural differences were found in the abundance of multiple genera of *Proteobacteria* and *Firmicutes* (pFDR<0.05). As predicted, more sensitive analyses of factors relating to diet and pathogen exposure showed significant associations with children's microbiota. Children living in households eating fewer traditional garden foods and more purchased market foods had lower abundance of several known fiber fermenters and butyrate producers, including *Desulfovibrio*, *Ruminobacter*, and *Treponema* (pFDR<0.05). Children living in households with improved floors (i.e., non-dirt) had reduced abundance of *Akkermansia muciniphila* (pFDR<0.05), a known mucin-degrader that is protective against obesity and chronic inflammation. Children who were stunted had greater abundance of genera that included *Ruminobacter* and *Campylobacter* (pFDR<0.05), the latter widely implicated in environmental enteric dysfunction and the dual burden of growth faltering and later life obesity. Together, these findings indicate multiple pathways through which market integration alters children's gut microbial composition and metabolism. This work informs biocultural and evolutionary understandings of childhood energetics and the accelerating obesity epidemic in LMICs.

PODIUM A

Biocultural determinants of post-1918 influenza pandemic tuberculosis mortality in Newfoundland.
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The selective mortality hypothesis suggests that acute exposure or pre-existing infection with tuberculosis (TB) increased the probability of pneumonia and influenza mortality (P&I) during the 1918 influenza pandemic, leading to a hastened decline of TB mortality in post-pandemic years. This study describes cultural determinants of the post-pandemic TB mortality patterns in Newfoundland and evaluates whether there is support for the selective mortality hypothesis. Death records and census data of the Provincial Archives if Newfoundland & Labrador were used to calculate age-standardized island-wide and sex-based TB mortality, as well as region-level TB mortality, for 1900-1939. The Joinpoint Regression Program (4.8.0.1) was used to estimate statistically significant changes in mortality rates throughout the study period. Regression analyses of mortality rates for the 40-year study period did not provide strong support for the selective mortality hypothesis, meaning there was no predicted significant decline of TB mortality for any subpopulation on the island that could be confidently associated with 1918 influenza pandemic mortality. Instead, the historical context of TB disease on the island suggests that the disease burden was notoriously high for decades prior to the pandemic and was primarily driven by malnutrition and cultural behaviors surrounding the import and distribution of tuberculous animal products. Cultural and behavioral determinants, therefore, overshadowed infectious determinants of health and mortality during the 1918 influenza pandemic and for long afterwards, until at least the late 1940s, preventing significant decline of TB mortality that has been observed in other Western populations.

Communication challenges and sociocultural experiences in bilingual context: health outcomes' (mis) perceptions in a rural Maya community in Mexico.
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The Maya are the largest indigenous group in Yucatan, lagging behind in sociodemographic and health-related indicators. Their life trajectories are different to non-indigenous groups due to systemic trauma, poverty and unequal access to healthcare and education. Over 20% of Yucatec children are stunted or short-height-for-age, have iron-deficiency anaemia, and 50% are overweight. About 30% of the population speaks Yucatec-Mayan, and 62% self-identify as indigenous. Language, in the Maya case, is a reliable proxy of negative health outcomes, but is not routinely included in Human Biology-based projects. We aim to identify challenges and experiences in the bilingual context, associated with health messages and outcomes. We draw data from focus-groups and in depth-interviews conducted with a rural community. Twenty-four parents of 6-10-year-old children, seven primary school teachers and four healthcare providers participated. Most parents self-identify as bilingual, seeing bilingualism as an important tool to navigate the health system, which is run by health carers who do not speak/understand Mayan. Health carers misperceived teachers' languages competences by assuming all teachers in the school speak/understand Mayan, which is not the case. Over 90% of parents wished that health carers and teachers understood Mayan because they realise bilingualism enables important lines of communication. Parents expressed concerns regarding the termination of anaemia tests by the health centre but did not feel they could communicate this to the healthcare providers. We conclude that there is an urgent need to equip healthcare professionals and teachers with the language skills necessary to better work with the communities they serve. Funding: Royal Academy of Engineering. Grant ref: FoDSF\1920\2\100002

PST/Mexico

Maternal social capital and maternal and child health: Do grandmothers help?

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Evolutionary life history theory assumes that the resources available to an organism in any environment are finite and that each organism has been selected to allocate those resources in ways that maximize reproductive fitness. In humans, high levels of parental investment are required to raise offspring. The costs borne by each individual mother may be mitigated by obtaining social support from other family members. Maternal grandmothers could be a particularly reliable source of support because of high degree of genetic relatedness and since they represent a valuable source of knowledge and resources and can release mothers from some 'energetic demands' of childcare. We assessed anthropometry, body composition and perceived stress in mothers and infant temperament. We tested the hypothesis that women with grandmother's support would have more favourable physiological and psychological characteristics that, in turn, would be associated with their children's body composition. Maternal social relationships were also documented. A cohort of 90 mother-infant dyads (52 with support) was recruited in Merida, Mexico. No differences were found between groups in perceived stress/temperament and anthropometry of either mothers or children. Notably, mothers without support benefitted from higher levels of support from other female relatives. However, results from maternal body composition (BIA) showed that women with support had significantly higher fat-mass and fat-free mass, suggesting that grandmothers may help mothers to build resources that might benefit future children. To improve understanding of this finding, more accurate data on maternal body composition (deuterium dilution) is being analysed.

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Birthing Practices and Child Survivorship in rural Peru.

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Latin American indigenous populations experience negative health outcomes due to post-colonial policies, globalization, racism, and impoverished socioeconomic conditions. Poor child health outcomes persist in many communities despite efforts to improve health care access, increase epidemiologic surveillance of pregnancy and birth, and implement widespread transitions from traditional indigenous midwifery and homebirths to hospital births using biomedical obstetric practices. To determine how these changes in birthing practices are associated with child survivorship, we launched a new study of maternal-child health outcomes in a rural Quechua community in the department of Huánuco, Perú, in 2019. The community consists of mainly subsistence farmers who also practice animal husbandry and sporadic wage labor. The sampled women ranged from 20-84 years of age (mean=39.49, SD=13.28, n=91). The women were short-statured (mean height=148.16, SD=4.71, range=138.0-159.0), with mean BMI=27.75 (SD=4.48, range=18.6-38.4), mean=3.37 (SD=1.9, range=1-9) live births, and mean=3.21 (SD=1.85, range=1-8) surviving children. Child survivorship was strongly associated with accessing prenatal care, which has become available at community health posts over the past 20 years. Still many mothers practice medical plurality, utilizing biomedical health care resources in conjunction with traditional midwives. Biomedical prenatal care utilization was a positive predictor of child survivorship even in cases where mothers chose to birth at home with a midwife, instead of in the clinic or hospital. These results will be situated in the context of a larger maternal-child health study, in which rural and urban indigenous Peruvian communities are compared.

PLENARY SESSION

Menstrual myths: ethno-biocentrism and scientific sterility.

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Despite more than a century of research demonstrating otherwise, virtually every depiction of the human ovarian cycle in medical textbooks and posted on websites shares an idealized vision of the ebb and flow of "female" hormones over a 28-day span. Ovulation is invariably at the midpoint, neatly halving a 4-week cycle. It's a pretty picture−symmetrical, rhythmic, predictable−and rare. Fertile women around the world have widely diverse functionally equivalent ovarian cycle patterns, yet deviations from the normative ideal (based on statistical norms in wealthy countries) are often deemed pathologies. This contrary response to data suggests that factors other than empirical evidence contribute to maintaining idealized norms. This paper explores several potential contributors to the persistence of these menstrual myths. It's particularly intriguing to contrast the relatively recent shifts in Western biomedicine regarding the normalcy of cycle length variability with the currently widespread belief in some biological and behavioral disciplines that the range of "normal" hormone levels is fairly narrow. Much research as well as conjecture relies on inferring endogenous hormone levels based on normative notions of hormonal variation during the ovarian cycle. In fact, average hormone concentrations vary up to four-fold among healthy women within a population, and up to two-fold across populations. This variability is not associated with comparable variation in either current fecundity or lifetime reproductive success. Persistent misperceptions of women's

reproductive functioning can have wide-ranging impacts on women's health care and on our understanding of the proximate and evolutionary causes of variation in human fertility.

PST 68

Sociopolitical stressors and maternal mental health in the first trimester among a pregnant Latina population.

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There is growing evidence that severe sociopolitical stressors contribute to health disparities. Anti-immigrant policies and anti-Latino rhetoric advanced in the wake of the 2016 election have been proposed to be severe stressors that likely negatively influenced the health and wellbeing of Latino Americans. We investigated associations between political concerns related to the Trump administration and maternal mental health in the first trimester of pregnancy using data from a study of pregnant Latina women (n=106) residing in Southern California collected from 2016-2018. We examined how maternal concerns about the Trump presidency were associated with maternal depressive (Edinburgh Postnatal Depression Scale), stress (Perceived Stress Scale), and anxiety symptoms (Spielberger State-Trait Anxiety Inventory). We assessed sociopolitical concerns using a set of eight original questions (fear of deportation, attitudes towards women's rights, and racism, etc). Using multiple regression, we investigated associations between sociopolitical concerns about the Trump administration and symptom scores after controlling for demographic covariates, including socioeconomic status, education, country of birth, and parity. Results suggest that specific and total number of concerns were related to worse maternal mental health. The total number of concerns was associated with more depressive symptoms. Concerns about Trump's attitudes towards women's rights and his racism / support of racists were associated with more depressive symptoms. Concerns about access to social programs, such as WIC, and fear of risk of separation from children were associated with greater perceived stress. Our findings suggest that sociopolitical stressors can impact the health of ethnic minority populations and potentially widen health disparities.

PLENARY SESSION

Biological Normalcy: A new way forward for biocultural analysis of human population variation.

Wiley AS (Indiana U, Bloomington)

Biological normalcy is a new analytical framework for understanding human biological variation that considers the bi-directional relationships between the biology of populations and cultural norms. Specifically, it evaluates the relationships between normative social views of, and statistical norms for, human biological variation. Populations are characterized by statistical distributions - i.e. measures of central tendency and variance – for biological traits, which co-exist in societies with ideas about what constitutes "normal" human bodies, i.e. normative views about what bodies "should" be like. While statistical norms may carry no explicit evaluative weight, the question is how they are related to judgements about what is "normal" or "abnormal." In a 1947 paper, Margaret Mead recognzed their potential relationship: "normal…may refer to the statistically usual in the culture – usually without any recognition that this is culturally relative – so that the statistically usual is identified with the basically human…." Despite her observations over 70 years ago, little has been done on this topic, yet such work promises

new insights into the relationship between culture and biology, here described at the population level, rather than as individual genetic characteristics. Using examples of sex/gender, race/ethnicity, age, and my work on human variation in the ability to drink milk, I outline the ways in which statistical norms may: influence individuals' perceptions of what is "normal" (Mead's "basically human"), lead to normative judgements about what human biology "should" be ("ethno-biocentrism"), which are reinforced by biases in discourse about human variation, and potentially feed back to mold the biological characteristics of a population.

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Socio-demographic determinants of child malnutrition in Haiti: a constant challenge.

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Undernutrition in Haiti is a multidimensional public health problem influenced by a variety of factors, often leading to increased morbidity and mortality in under-5y children (U5s). Sociodemographic factors impact children's nutritional status, however, the true extent of these associations within Haiti is unknown. This study aimed to explore associations between sociodemographic factors and key undernutrition indicators (stunting, wasting, underweight and haemoglobin level), in U5s in Haiti. A sample of 5,456 U5s from the 2016/17 Haiti Demographic Health Survey was used in this study. Chi-square analysis and independent sample t- tests identified differences in the undernutrition indicators by sex, and by household characteristics. Multivariate regression analysis determined associations between these characteristics and each undernutrition indicator. We found that 21.2% of U5s were stunted, 3.5% wasted, 8.4% underweight and 66.4% anaemic. Boys showed higher prevalence of stunting, (males=23.8%, females=18.5%, $p=<0.001$), wasting (males=4.0%, females=2.9%, $p=<0.019$) and underweight (males=9.4%, females=7.4%, $p=0.007$) than girls, but no significant differences were found in anaemia levels. Child's age was the strongest predictor of height-for-age z-scores (B=0.168, $p=<0.001$) and haemoglobin levels (B=0.266, $p=<0.001$). Maternal BMI was the strongest predictor of weight-for age-z-score (B=0.176, $p=<0.001$) and weight-for-height z-score (B=0.135, $p=<0.001$). Child's age, maternal age, maternal BMI, wealth index, cooking fuel and place of residence were the strongest predictors of undernutrition in U5s in Haiti. Interventions target low-BMI mothers and young children are important. Household factors including wealth index, cooking fuel and place of residence should also be considered.

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Individual effects, not cycle day effects, drive variation of urinary C-reactive protein across the menstrual cycle in a sample of Polish American women.

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C-reactive protein (CRP) is a biomarker of general inflammation and is commonly used in biological anthropology research. It is important to better understand daily variation of CRP and any possible cyclical variation associated with menstruation so that future studies can account for this cyclical variation. We collected daily urine samples for one full cycle from 24 healthy, Polish-American women (age=18-45), living in urban regions of the United States. Participants were instructed to collect first morning void daily urine, starting the first day of menstruation until the start of their next period. Only ovulatory cycles were used in this analysis, resulting in a total of 22 individuals and 603 daily samples (some days of cycle missing). Cycles were aligned by ovulation and day of ovulation was determined using mid cycle

estradiol drop. We tested generalized linear models and determined the model of best fit by AIC. An ANOVA was then performed and D^2 values calculated to better understand significant effects. The GLM that included cycle day, individual, and cycle day*individual interaction effects was most appropriate. We did not show any significant effect from day of cycle (p=.999), however there was a significant effect from individual (p<.001) and the interaction between individual and day (p<.001). This model accounted for 35.6% of the variation, however day of cycle only accounted for .2%, whereas individual accounted for 25.7%. This analysis suggests that individual, and not day of cycle drives c-reactive protein variation.

Effect of the Covid-19 quarantine on first-time, postpartum mothers in Coatepec, Veracruz, Mexico.

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Abstract:

Cross-culturally, the immediate postpartum is considered a special time when new mothers observe diet and activity pre- and proscriptions and receive additional social support—all intended to enhance maternal-child health. In Coatepec, Mexico, this period is called *la cuarentena* (the quarantine). This study examined how a higher-level state-imposed quarantine aimed at containing Covid-19, which instructed people to socially isolate, affected women's postpartum experiences. Given Covid-19 restrictions on social interactions, we predicted they would result in distress for postpartum mothers. Data were collected via semi-structured interviews with 30 first-time mothers and covered knowledge/perceived threat of Covid-19, effects on decision-making, and impact on maternal mood. Most mothers (90%) had an accurate understanding of how Covid-19 spreads. However, only 50% consistently implemented preventive measures. Women perceived infants as being more susceptible to the virus than themselves (t_{29}=-1.07, p<0.001), and expressed greater fear of infant than personal infection (t_{29}=-4.78, p<0.001). Fear of infection prevented 33% of mothers from taking infants for vaccines/checkups, and 67% from taking newborns to visit friends/family—limiting participation in *la cuarentena* prescribed social interactions. 47% of women reported a negative impact on mood. As predicted, pandemic restrictions created fear and distress in the postpartum sample—albeit not for all. While the Covid-19 scientific literature has primarily focused on prevention and containment efforts, this study lends an additional perspective focused on postpartum experiences which can help to identify potential harmful effects for both the infant and mother— either directly through postponing infant medical care or indirectly through mother's altered mood state.

Is there a differential impact of COVID-19 infection by age group among children under five years of age?

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Epidemiological data from the ministry of health sources reports 743,216 total cases, and 77, 646 deaths from COVID-19 by September 30. Analysis of distribution by region, and gender have focused on adult population and still limited information on trends and implication for children's health at specific ages. Estimates for children at ages 0 to 4 years were 1324 hospitalized, 583 females (518 alive and 65 deaths) and 741 males (668 alive and 73 deaths).
It might be expected to see a differential response to infection of children 0 to 4 years of age compared to older children given the nature of rapid rate of growth that characterized that period. We hypothesized that growth status and level of maturation at different systems, involved in the critical response for infection may compromise resources required for growth and maturation under normal conditions to fight the disease. The aim of the study is to explore the condition of children who were diagnosed positive for COVID at various institutions that provide attention to population infected and to analyze specific

time for the disease from the diagnostic to the final outcome, outpatients, hospitalized and deaths. Some of the questions to address from the available data, is a differential response by sex, given differences in susceptibility related to maturation? Is there a difference from onset to final outcome at every age that may suggest that maturation at critical systems like respiratory and immune may influence probability of death or only partial recovery that still represent a critical result for young children?

PST/MEXICO

Stature, body mass index and blood pressure in Mexican adults from communities of high socioeconomic vulnerability. H Azcorra Centro de Investigaciones Silvio Zavala, Universidad Modelo

"Objective To document the prevalence of short stature (SS), overweight/obesity (OW/OB) and the combination of SS and OW/OB and to test for associations between combinations of somatic phenotype and blood pressure in a sample of Mexican adults (20-59 years) from socioeconomically vulnerable communities.
Methods The data analysis is based on the Nutrition and Health National Survey from communities less than 100,000 inhabitants (ENSANUT 2018-100K). Participants (n=6,047) were classified in normal and SS (<150cm for women, <160cm for men) and normal BMI and OW/OB (BMI >24.9 kg/m2), and then grouped into four categories: 1) normal stature-normal BMI, 2) SS-normal BMI, 3) normal stature-OW/OB and 4) SS-OW/OB. Multiple linear regression models were fitted to analyze the association between combinations of somatic phenotype and systolic (SBP) and diastolic (DBP) blood pressure. Models were adjusted for individuals' sex and age and place of residence.
Results Fourteen percent of individuals were in the category of normal stature-normal BMI, eleven percent in SS-normal BMI, 42% in normal stature-OW/OB and 33% in SS-OW/OB. Compared to participants with normal stature and BMI, individuals classified as normal stature-OW/OB and SS-OW/OB were 6.75 mm Hg and 5.28 mm Hg higher in SBP and 6.24 mm Hg and 6.02 mm Hg higher in DBP, respectively. Individuals with SS-normal BMI and normal stature-normal BMI were similar in SBP and DBP.
Conclusion SBP and DBP increased as OW/OB is present in individuals. The presence of SS in OW/OB individuals do not exacerbate the levels of blood pressure in this sample of Mexican adults.