Homo sapiens remain atypical within the primate lineage due to their large brain to body size ratio and unique life history traits. Previous literature has suggested that an increasingly high-quality diet and bipedal movement around 2 MA provided the energy increase necessary for encephalization, but the archaeological record shows that encephalization, high-quality diet, and bipedalism do not coincide with one another. This suggests other factors were important in reorganizing or increasing the energy budgets of early *Homo,* such as the gut microbiome.

The gut microbiome has coevolved with their hominin hosts and contributes to host metabolism and energy supply, which is often overlooked in paleoanthropology and has not yet been codified into theories of hominin evolution. The metabolic contributions of the gut microbiome may have played an important role in producing the energy surplus needed to support encephalization in early *Homo*.

Here, I present results from a secondary statistical analysis of human fecal microbiome data from 2 KA in the U.S. midwest to clarify the structure of microbes and their function in the host's energy economy prior to the industrialization process of agriculture that significantly altered modern gut flora. Results show that the ancient samples were enriched with bacteria specialized for short-chain fatty acid production, an important metabolite that contributes to host energy supply. This finding indicates that ancient human microbiomes contributed to their host's energy economy differently than in contemporary times, allowing predictions to be made for how ancestral gut structure and function impacted hominin evolution.

Influence of substrate variation on limb joint kinematics in wild primates

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The arboreal environment places multiple challenges on primates when moving over narrow, compliant, angled, and disparate supports. Previous research has shown that captive primates often respond to narrower and steeper supports by flexing limb joints (thereby lowering the center of mass) and adopting a compliant gait, marked by increased proximal joint excursions and increased yield at distal joints (thereby flattening the center of mass trajectory). In this study we tested if these strategies are also adopted by wild primates – including four species of platyrrhines, three species of catarrhines and three species strepsirrhines – freely ranging over a variety of supports in their natural habitats. We used ImageJ to measure the angular kinematics of forelimb and hindlimb joints from high-speed videos of quadrupedal locomotion on a variety of arboreal supports. Pearson product-moment correlations were used to test for associations between joint posture and support diameter/inclination (measured using a forestry-grade rangefinder). Preliminary results confirm previous kinematic studies of captive primates and suggest that in *Papio anubis*, *Cercopithecus l'hoesti* as well in *Saimiri sciureus,* variation in support orientation as well as diameter influence quadrupedal gait kinematics when moving in their natural habitat. Substrate properties were not significantly related to kinematic variation in any of the other species. This suggests that there might be other locomotor adaptations in place to overcome the challenges of the precarious environment.

Supported by NSF BCS-1921135, BCS-1921314, BCS-1640552 and BCS-1640453.

Neolithic human remains from Ljubićeva pećina (Istria, Croatia)

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Excavations at Ljubićeva pećina (Istria, Croatia) site yielded archaeological material from various prehistoric periods (Paleolithic to Iron Age), including human skeletal remains. Here we report preliminary results of the bioarchaeological and stable isotope analysis of Neolithic human sample from the site.

Nine, and possibly 13 skeletal elements can securely be ascribed to the Neolithic. Based on the morphological characteristics, including the duplication of skeletal elements and age assessment, the MNI is 5. Three of the bones were directly dated to between 6938 and 6621 cal BP (1 σ), which corresponds to the Early Neolithic in the region. Random spatial distribution and fragmentary state of the remains, make it unclear if the remains were accumulated as a result of burial practices.

Stable isotope results (carbon and nitrogen) for the three individuals of different ages have been compared to the Early Neolithic data from eastern Adriatic sites (Kargadur, Vela Spilja on Lošinj, Crno Vrilo, and Vela Spila on Korčula). The adult from Ljubićeva pećina displays similar $d^{13}C$ and $d^{15}N$ values to the individuals from the comparative samples, suggesting a terrestrial based diet. The relatively high $d^{15}N$ levels displayed by the infant from Ljubićeva pećina are similar to those observed for the individual from Vela Spilja on Lošinj, and are consistent with breastfeeding. Conversely, the juvenile from Ljubićeva pećina displays the lowest $d^{15}N$ values of all the comparative specimens, suggesting a purely C_3 diet with either a very little intake of terrestrial protein or the consumption of very low trophic level foods.

This work was supported by the Croatian Science Foundation [grant number HRZZ IP-2019-04-7821]. Stable isotope analysis was done at Dr. Michael Richards' Stable Isotope Lab (Simon Fraser University, Burnaby, Canada)

Kin availability and mortality among older adults in nineteenth and early twentieth century Utah and North Orkney, Scotland

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Kin are important sources of support for older adults, and a rich literature focused on contemporary populations demonstrates that support is associated with improved health for this group. Less is known about whether these associations existed in the past, either before or during the demographic transition, when mortality and morbidity patterns were changing along with the size and structure of families. Few contemporary datasets include full genealogical information, limiting the measurement of kin networks. We examine kin availability and its association with mortality among older adults in historical Utah (N=90,582) and North Orkney, Scotland (N=3,339). These regions were predominantly agrarian, yet they provide contrasting contexts that may affect the role of kin support for older adults. Utah was a frontier region with high land availability, high nuptiality, and high fertility while Orkney was near demographic saturation with low land availability, lower nuptiality, and early fertility decline. Using discrete-time event history models of mortality, we find differences in relationships between counts of kin types and mortality within and between populations. Effects of kin are pronounced for closer kin, with effect sizes decreasing as genetic distance increases. In Utah, siblings were associated with lower mortality for most sociodemographic groups. In Orkney, siblings were associated with elevated mortality for some groups. These differences may reflect the social and economic challenges faced by