Institute of Human Origins

2021 Research Review

Dear Friend of the Institute of Human Origins,

As we greet the new year, we reflect on the past year as one of change and adjustment. **We are members of an adaptable species**—hence, in 2021 we were once again gathering in small groups and attending larger events, while acknowledging a "new normal" with the pandemic by adhering to continuously changing health and safety protocols.

This year, **IHO is going through its own period of change and adjustment.** I joined IHO as its new director on July 1, succeeding Bill Kimbel in his 13-year tenure as director, and in an odd way, following both Don Johanson and Bill Kimbel from the Cleveland Museum of Natural History, where I was Curator of Physical Anthropology for almost 20 years—the position that both also held in the past! I am joined by IHO Research Scientist Denise Su, who has taken a position as Associate Professor in the School of Human Evolution and Social Change and was previously Chief Academic Engagement Officer and Curator of Paleobotany and Paleoecology at the Cleveland Museum of Natural History.

In addition, as this publication reaches your hands, **IHO will be moving to its new building—Interdisciplinary Science and Technology Building 7 (ISTB7)—**funded generously by ASU resources. IHO's new home in this high-profile building reflects ASU's ongoing support of IHO's groundbreaking research and discoveries about the human story and its interdisciplinary approach to connecting the human past to our global future. I invite all of you to join us at a grand opening ceremony in April 2022 to tour our new home and **see what the support of people like you have helped build to expand and enhance IHO research.** We will be sending out more information about the grand opening soon.

More than ever though, **IHO relies on the generosity of donors whose passion for the study of human origins creates the strong "public/private partnership"** that it enjoys with the university. I am grateful to all of you who have supported IHO's research and public outreach programs this year. **I hope that you will continue to support IHO's mission to connect our evolutionary past to our shared global future.**

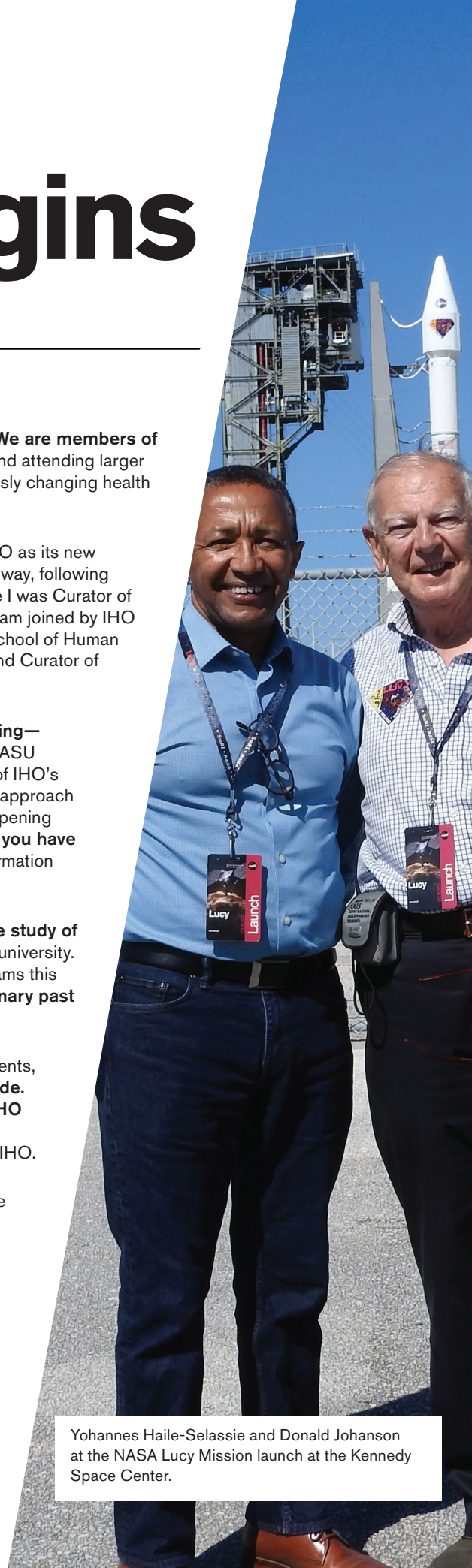
Please consider the opportunities for expanded public outreach, scholarships for students, and seed money for cutting-edge research **that your end-of-year investment will provide.** And then **join the quest for exploration and discovery of our origins by supporting IHO with your generous charitable gift.** Enclosed you will find the Gift/Pledge form for your convenience. Or you can go to IHO's secure giving website at https://asufoundation.org/IHO.

I thank you in advance for your support and look forward to hearing from you. Together we can advance understanding of our origins!

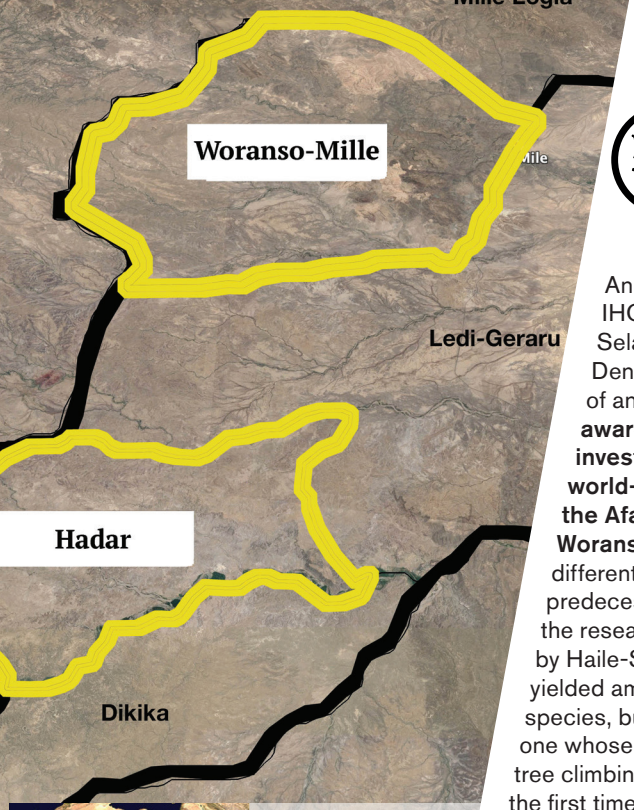
Best wishes for the New Year,

Yohanne Haile-Selassie PhD, Director and Professor

ASU Institute of Human Origins
Arizona State University



Yohannes Haile-Selassie and Donald Johanson at the NASA Lucy Mission launch at the Kennedy Space Center.



Map showing the close proximity of the two research areas. Inset (b) showing location of larger map. Google Earth image.

Below: DNH 7, the most complete skull of *Paranthropus robustus* ever discovered and a rare female specimen from Drimolen Main Quarry. Photographed at the University of the Witwatersrand. Andy Herries image.

Early fossil and archaeological records

An IHO research team including IHO's new director Yohannes Haile-Selassie, Kaye Reed, Chris Campisano, Denise Su, and David Feary are part of an **international collaboration awarded $1.2 million to support an investigation into why two adjacent, world-renowned fossil study areas in the Afar region of Ethiopia—Hadar and Woranso-Mille—**have revealed strikingly different records of our genus's early predecessors. Only 30 miles north of Hadar, the research project at Woranso-Mille led by Haile-Selassie began in 2005 and has yielded ample fossils from not only Lucy's species, but at least two others—including one whose foot appears to be adapted to tree climbing. This project is attempting, for the first time, to directly compare these two sites to examine the environmental pressures that might have driven human evolution. This research program was a result of the long-term collaboration in the African Rift Valley Research Consortium (ARVRC). Over the next three years, the team will gather samples and data from both areas to gain a more detailed understanding of the two sites as they existed more than three million years ago by examining the fossil record, habitat and paleoecology, geology, and paleoenvironmental conditions. Funding was provided by the W. M. Keck Foundation.

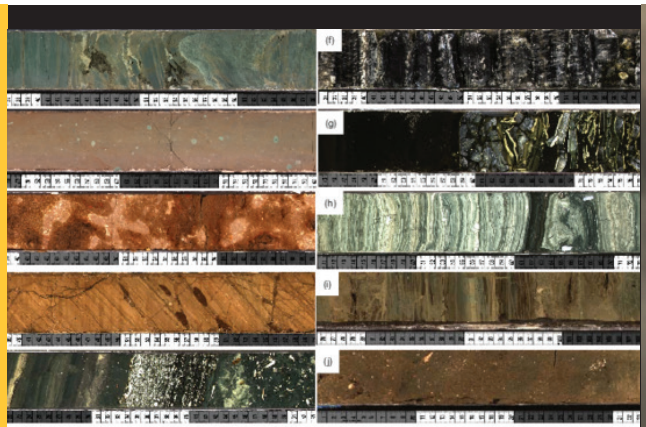
Six individuals from the Late Pleistocene and early Holocene in eastern Africa were excavated in 1956 at the Kisese II rockshelter in Tanzania, where Kathryn Ranhorn now directs a field site. There are relatively few human skeletal remains from this time period, which is associated with complex evolutionary and demographic processes that contributed to the population variability observed in the region today. Ranhorn collaborated with a group of researchers using standard biometric analyses for age, sex, stature, to look at eastern African cranial and dental variations to assess and compare dental size and measurements of individuals from early Holocene, early pastoralist, Pastoral Neolithic, and modern African individuals. This research has **contributed to a growing body of evidence that Late Pleistocene and early Holocene eastern Africans exhibited relatively high amounts of morphological (body size and shape) diversity.** However, the Kisese II individuals suggest morphological similarity at localized sites potentially supporting increased regionalization during the early Holocene.

Bill Kimbel has welcomed an increased research agenda with turning over administrative duties of the IHO directorship to Yohannes Haile-Selassie mid-year 2021. Early in the year, working with his long-time collaborator Yoel Rak and others, Kimbel was **coauthor of a detailed comparative description of the DNH7 *Australopithecus robustus* adult cranium from the Drimolen site in South Africa.** Kimbel also coauthored papers this year on the comparative biomechanics of chimpanzee and macaque mandibles during mastication, part of a larger NSF-supported collaborative study on early hominin jaw evolution; a study of hominin mandibular molars; and, with former IHO postdoctoral scholar Julie Lawrence, an investigation of how changes in the human and great ape canine region are correlated with other evolutionary shifts in the lower jaw.

Emergence of modern humans in Africa

A study led by Curtis Marean and ASU doctoral graduate Emily Hallett details more than 60 tools made of bone and one tool made from the tooth of a cetacean, which includes whales, dolphins and porpoises. These finds, first unearthed from Contrebandiers Cave, Morocco, in 2011, provides **strong evidence for the manufacture of clothing as far back as 120,000 years ago** and documents the earliest bone tool

Results from the **Hominin Sites and Paleolakes Drilling Project (HSPDP)**—an international consortium of scientists trying to understand the environmental context of human origins in Africa using drill cores collected from six sites in Kenya and Ethiopia—are emerging from the painstaking work of analyzing miles of earth cores. Chris Campisano is a coauthor of several studies this year, including a million-year history of vegetation and paleoenvironmental records from Lake Magadi Basin in the Kenya Rift Valley. The Lake Magadi sediments indicate a **general trend from the last 740,000 years from wetter conditions to a generally drier environment** with forests expanding and contracting many times. An intense period of drying around 528,000 to 392,000 years ago coincided with the extinction of many large-bodied mammals and may have helped drive a change from the use of Acheulean hand axes to the production of Middle Stone Age tools by 320,000 years ago.



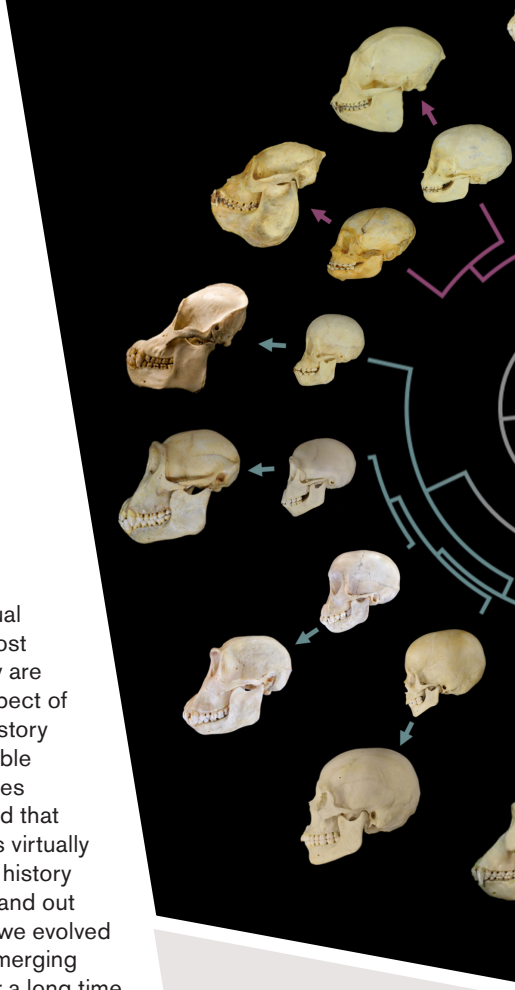
Representative lithologies from the drilled cores. HSPDP image.

technology. In addition, given the age of the find, this represents the earliest documented use of a marine mammal tooth by humans and the only verified marine mammal remain from the Pleistocene of North Africa. The invention of clothing, and the development of the tools needed to create it, are milestones in the story of humanity. As furs and other organic materials used to make clothing are unlikely to be preserved in the archaeological record, the origin of clothing is still poorly understood. Not only are they indicative of strides in cultural and cognitive evolution, archaeologists also believe they were essential in enabling early humans to expand their niche from Pleistocene Africa into new environments with new ecological challenges. The researchers believe that this versatility appears to be at the root of our species and not a characteristic that emerged after expansions into Eurasia.

Humans developed complex hunting weapons by combining **sharp stone flakes, called a point, with a shaft. These points are rare in the caves and rock-shelters at archaeological sites from around 500,000 to 40,000 years ago** where archaeologists have eagerly searched in excavations to better understand when humans became the world's dominant predator and how those projectiles evolved over time. But Curtis Marean questioned why the number of projectile points is often low in archaeological sites. Computer modeling research, led by postdoctoral researcher Claudine Gravel-Miguel and graduate student John K. Murray, indicates that most projectile weapons, as by the nature of their use, were likely lost across the landscape and only a few were discarded at the habitation camps that are most commonly excavated. The earliest documented instance of a projectile weapon dates to around 500,000 years ago from the site of Kathu Pan in South Africa. While to date, it is the only instance of such technology we have for that time, the results of the model suggests that the rare Kathu Pan projectiles might indicate that projectile weapons were already used somewhat regularly at that time. The use of projectile technology is associated with foresight, planning, improved hunting success, and an expanded ecological niche. These findings suggests that, as early as a half million years ago, our ancestors may have evolved some important modern traits.

Life history and adaptation

A key aspect of our biology is our unique "life history," or the overall pace of life, including how fast we grow, how long we are dependent on mothers for nutritional support, how long it takes us to reach sexual maturity, and how long we live. Clues to most of these components of our human biology are connected with our teeth. One specific aspect of dental biology that is tightly linked to life history is when molars emerge and become available to use for chewing. In fact, for many decades evolutionary anthropologists have leveraged that very tight relationship—which exists across virtually all primate species—to reconstruct the life history of extinct species. What makes humans stand out from our primate cousins, however, is that we evolved a growth schedule that results in molars emerging into the mouth at later ages, and in fact, for a long time now paleoanthropologists have pondered why those ages are so delayed compared to living apes. A study by ASU doctoral graduate Halzska Glowacka and IHO scientist Gary Schwartz provides the first clear answer—it is the **coordination between facial growth and the mechanics of the chewing muscles that determines when adult molars emerge** with molars coming in only when enough of a "biomechanically safe" space is created. Across all living primates, this 'safe space' is a product of how fast the face (which houses the teeth) grows forward, away from the jaw joint. Modern humans, who grow up incredibly slowly, with a long and protracted life history, emerge their adult molars very late in life because we have short jaws that do grow very slowly, likely due to our slow life history. This delays when the mechanical "sweet spot" can appear, resulting in molars that emerge later than in any other living or extinct primate.

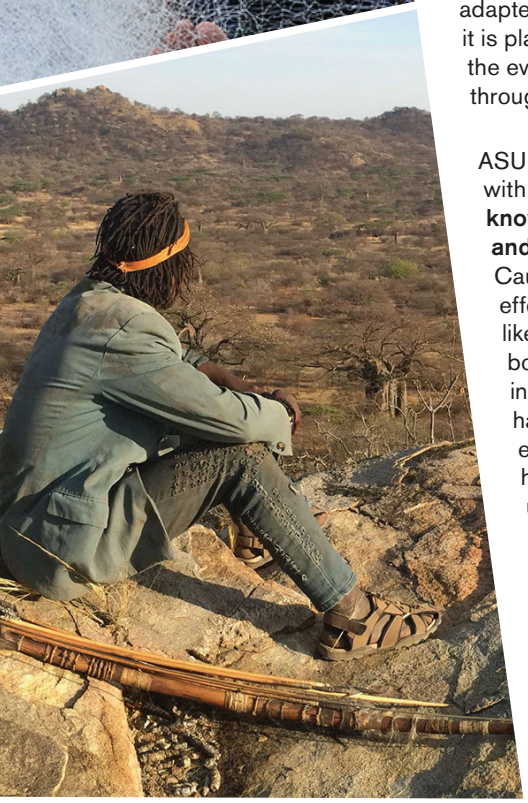


Above: A circular evolutionary tree displays skull growth and associated changes in the chewing apparatus in skulls of juvenile (inner ring) and adult (outer ring) primates. The study includes species of apes, including humans (blue arrows), Central and South American monkeys (pink arrows), Asian and African monkeys and lemurs and lorises (not shown). Image courtesy of H. Glowacka and G.T. Schwartz

With funding from a grant to Curtis Marean, Chris Campisano, and colleagues at University of Nevada, Las Vegas, a cryptotephra preparation lab has been established at ASU to process samples from archaeological sites in search of tephra, or glass shards, from the Mt. Toba super-eruption and other eruptions. IHO's move to ISTB7 will enhance the team's ability to dramatically expand the operation.

Left: Stone tools used as projectile weapons were discarded in the landscape. Curtis Marean image

Below: Stone and bone tools were used to create the earliest clothing. Jacopo Niccolò Cerasoni image.



Cooperation and cognition

In analysis on large-scale cooperation in small-scale foraging societies, Robert Boyd and his collaborator Peter Richerson present evidence that **people in small-scale, mobile hunter-gatherer societies cooperated in large numbers to produce collective goods and participated in communal efforts like warfare and trade.** This evidence suggests that large-scale cooperation occurred in the Pleistocene societies—from 2.5 million to around 12,000 years ago—which encompasses most of human evolutionary history. Therefore, it is unlikely that large-scale cooperation in Holocene era food producing societies (from around 12,000 years ago) results from an evolved psychology shaped only in small group interactions. In humans, changing and developing language and increased cognitive ability makes possible more complex planning, and cumulative cultural evolution allows the gradual evolution of complex norms regulating human action that are adapted to particular environments. They posit that it is plausible that these differences may support the evolution of large-scale cooperation supported through mechanisms not available to other animals.

ASU doctoral graduate Jacob Harris, working with Robert Boyd, studies **the role of causal knowledge in the manufacture, transmission, and, ultimately, the evolution of technology.** Causal knowledge is the ability to predict the effect of an intentional modification of a system, like the design and manufacture of traditional bow-and-arrow technology—the focus of their investigation. Human evolutionary success has been facilitated by a heavy reliance on an ever-advancing technology. Understanding how human technology evolves is crucial to understanding why humans have enjoyed such unprecedented evolutionary success. Working with Hadza, Tanzanian bowyers, Harris found that the study participants are able to manufacture and transmit bow-making technology with only partial causal knowledge and suggests that the human proclivity to rely upon cumulative culture rather than individual expertise likely has deep evolutionary roots.

Humans are unusual because they cooperate with each other in ways that other animals do not. But, cooperation can be messy with many strategies in play because individuals are prone to self-serving actions. Humans seem better able to solve problems, but it is not certain why. Sarah Mathew and Robert Boyd have put forth a new explanation for **why reciprocity plays a prominent role in human cooperation and why it is so rare in other animals.** They conclude that adjudication by third-party observers helps to resolve errors in perception—disagreements between social partners about what transpired. In human life, it is not just the fact that someone has been wronged, but potentially, the fact that the person feels like they have been wronged, even though they have not. These cooperative strategies use judgments that allow reciprocity to evolve and persist even when errors are common and judgments are inaccurate, giving rise to qualitatively novel—and distinctly human—kinds of social behavior. Human reciprocity differs from that of other species because people live in societies regulated by shared, culturally transmitted moral norms. Cultural evolution is much faster than genetic evolution and allows human populations to evolve solutions to local environments.

Many scientists have sleepless nights worrying about being "scooped"—fearing that their work won't be considered "novel" enough for the highest-impact scientific journals because a different group working on the same topic manages to publish first. Thomas Morgan, along with graduate student Minhua Yan and ASU doctoral graduate Leo Tiokhin, drew on **evolutionary theory to develop a computer model to better understand the challenges facing the scientific process and how we can make it better.** They focused on the "priority rule": the tendency for the first scientist to document a finding to be disproportionately rewarded with prestige, prizes, and career opportunities while those in second place get little to no recognition. The computer model simulates how a group of scientists investigate or abandon research questions, depending on their own results and the behavior of other scientists they compete against.

Above left: The Mindanao, Philipinnes, fisherman mends a net. The community cooperates as hunter-gatherer in a small-scale society. Kim Hill images.

Left center: Hadza hunter with bow. Image courtesy of Jacob Harris.

Left: Matthew Zefferman observes an interview with a Turkana warrior. Image courtesy Matthew Zefferman.

Right: The scientific process is often rewarded by the "first to publish." Image provided by the Anthro Illustrated project **(https://anthroillustrated.com)**.

The benefit of an evolutionary simulation is that they did not need to specify in advance how scientists behave, as the scientists will culturally evolve towards whatever strategies maximize their career success. The model shows that a combination of scoop protection and making data collection cheap relative to the cost of setting up a new study favors good scientific practice. While, unexpectedly, encouraging the publication of negative results favors low powered studies of little value.

A collaboration between Kim Hill and Robert Boyd is not unexpected but reflects **how IHO research in the practical and theoretical combine to create new ideas.** Hill has spent most of the last 30 years in the jungles of South and Central America, South Africa, and the Philippines, living and working with Indigenous hunter-gatherer communities to understand the unique aspects of our own species. Boyd is a forerunner in the field of cultural evolution, focusing on the evolutionary psychology of the mechanisms that give rise to—and influence—human culture, and how these mechanisms interact to shape human cultural variation. Commenting together, Hill and Boyd support an analysis of 339 hunter-gatherer societies that shows that not only are hunter-gatherers behaviorally similar in similar ecologies, but even mammals and birds in those ecologies tend to exhibit the same behavioral regularities as do human populations, validating the evolutionary perspective called "human behavioral ecology." Hill and Boyd hope that recent studies, their observations, and new research currently being done will help elucidate the complex nature of human behavior and why explanations of human behavioral patterns will not simply be extensions of animal behavior models.

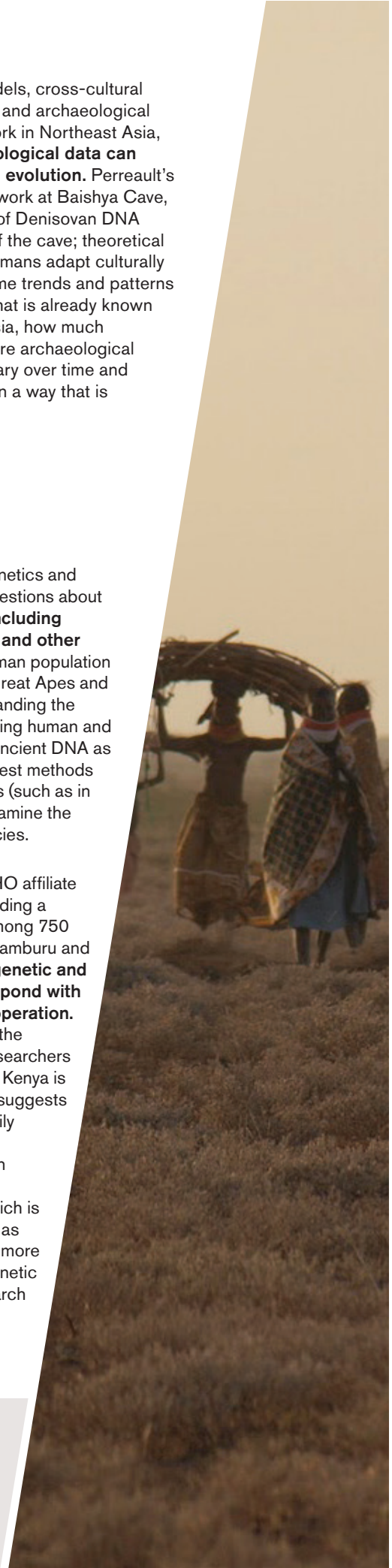
The roots of post-traumatic stress disorder (PTSD) are controversial. Some think that PTSD is largely a syndrome of military service members of industrialized societies who do not have social support systems typical in small-scale societies. Research by Sarah Mathew and former ASU postdoctoral researcher Matthew Zefferman shows that **Turkana pastoralist warriors from Kenya also experience PTSD symptoms, even though their lifestyles and combat experiences are markedly different from that of Western soldiers.** Mathew has been working with the Turkana community for many years to understand how warfare affects a community as a whole. Zefferman, a U.S. Airforce veteran, added this new level of understanding to provide an evolutionarily and cross-culturally informed framework to further probe the origins and causes of moral injury and its connection to combat-related PTSD.

Charles Perreault studies how culture has transformed humans into one of the most successful species on earth. Using analytical models, cross-cultural comparative analyses of ethnographic and archaeological databases, and archaeological fieldwork in Northeast Asia, he seeks **to understand how archaeological data can make novel contributions to cultural evolution.** Perreault's research includes archaeological fieldwork at Baishya Cave, Tibet, China, where the first evidence of Denisovan DNA was recovered in sedimentary layers of the cave; theoretical models of cultural evolution for how humans adapt culturally to their local environment; and deep time trends and patterns in the archaeological record—given what is already known about lithic processes at sites in Eurasia, how much information is gained by excavating more archaeological sites looking at how lithic processes vary over time and space versus describing the patterns in a way that is quantitative and universal.

Genetic inquiry

Anne Stone studies anthropological genetics and evolutionary biology, with a focus on questions about **population history and adaptation (including adaptation to pathogens) in humans and other primates.** Her research focuses on human population history, the evolutionary history of the Great Apes and other nonhuman primates, and understanding the evolutionary history of pathogens affecting human and other animals. Additional projects use ancient DNA as a tool to address questions about the best methods for recovery of DNA in forensic contexts (such as in degraded and burned bones) and to examine the evolutionary history of Pleistocene species.

In collaboration with Anne Stone and IHO affiliate Melissa Wilson, Sarah Mathew is extending a study on the patterns of cooperation among 750 individuals from the Rendille, Borana, Samburu and Turkana communities to examine **how genetic and cultural population structures correspond with each other and influence human cooperation.** Based on DNA samples gathered with the cooperation of these individuals, the researchers found that genetic structure in northern Kenya is shaped by geography not culture. This suggests that genes and culture do not necessarily travel together, which has implications for understanding prehistoric population movements, and contributes to a better picture of genetic diversity in Africa, which is useful for understanding human origins as well as for making biomedical research more inclusive of diverse populations. The genetic data from this project is providing research opportunities for two ASU graduate students.



For links to research articles from IHO researchers, go to https://iho.asu.edu/publications/articles

Right: Turkana women bringing wood from the field. Sarah Mathew image.

Nonhuman primates

If you're a male chimp, it pays to make friends. A multi-institution collaborative study including IHO researcher Ian Gilby found that **male chimpanzees that build strong bonds with many other males, and in particular with the alpha male, are more successful at siring offspring.** Biologists have long asked why animals cooperate when it would seem more beneficial to compete. Researchers would expect to see these social bonds only if they provide some sort of reproductive benefit to the individuals involved. To examine the link between sociality and paternity success, the researchers examined behavioral and genetic data from a population of chimpanzees living in western Tanzania—part of the ongoing study of chimpanzees in Gombe National Park, begun by Jane Goodall in 1960. The researchers showed that males that form stronger ties are also more likely to form coalitions, and the researchers hypothesize that this larger alliance network helps males gain mating opportunities. They also found that forming these many strong bonds leads to chimps' improvement in rank within the group; those that made it to the alpha position were also more likely to sire offspring. A clearer idea of the benefits of social relationships in chimpanzees provides clues about the evolution of friendship in humans.

The challenges of pandemic-interrupted fieldwork were documented in the journal *Science,* including the additional precautions taken at Kibale National Park, Uganda, by primatologist Kevin Langergraber and his team. In July 2021, when many field researchers were sitting in their homes in the U.S., Langergraber was headed back to his field site. Receiving special permission from ASU to continue this essential field work, which also protects chimpanzees from poaching and hunting, he and colleagues set up a quarantine camp, two kilometers away from the main camp. New researchers would spend one week there before starting fieldwork to reduce the risk of transmitting disease to the chimpanzees. Even before the covid pandemic, chimpanzee researchers like Langergraber and Ian Gilby, who work at Gombe National Park in Tanzania, wore masks when in close proximity to wild chimpanzees so that other common human diseases would not be passed on to the animals. In addition to returning to fieldwork, Langergraber was coauthor on eight scientific papers for research on wild chimpanzees and behavior in males of the species.

Over the last two years, Joan Silk has continued to pursue a long-standing interest in the **behavioral strategies of nonhuman primates, focusing mainly on baboons, and to consider similarities and differences between the behavior of humans and other primates.** From 2013 to 2018, she studied a population of wild olive baboons in the Laikipia plateau of central Kenya, with the focus on the form and function of male-female relationships. This year, she had three papers published out of this work—two of which she collaborated with IHO doctoral graduate Sam Patterson and others on the research. First, although baboon males compete vigorously over access to females, they also form close ties to particular pregnant and lactating females. Their research analyses confirm results that show that males are likely to be the sires of their partner's current infants and suggest that these relationships are a form of joint parental care. A second study looked at how resource competition shapes female-female aggression in olive baboons. Their findings suggest that competition over food plays a more important role than competition over mates for female olive baboons and suggests that evolution has finely tuned female baboons' responses to the competitive pressures that they face in their local environments. Finally, she looked at the effects of early life adversity on maternal effort and glucocorticoids—hormones that fight inflammation and work with the body's immune system—in wild olive baboons. Adverse experiences during early life exert important effects on development, health, reproduction, and social bonds, with consequences often persisting across generations. Those early life experiences can have lasting consequences on maternal effort and physiology, which may function as proximate mechanisms for intergenerational effects of maternal experience.

ASU PITCHFUNDER CAMPAIGN

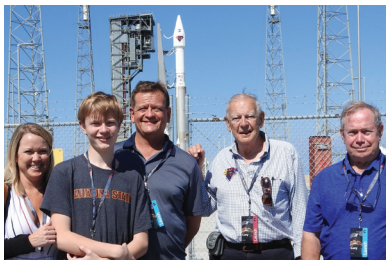
IHO will soon house the physical materials of the **Jane Goodall Institute Gombe Research Archive**—over 60 years of handwritten observations of wild chimpanzees in Gombe National Park. For the continued protection of these irreplaceable, priceless materials, we seek funds to establish a world-class secure space to include fire- and water-proof filing cabinets fitted with acid-free, archival quality folders. The physical archive—initiated by Dr. Jane Goodall, founder of the Jane Goodall Institute and UN Messenger of Peace—will find a new home at ASU's newest, state-of-the-art research building—Interdisciplinary Science and Technology Building 7 (ISTB7). The research transformed our understanding of our closest living relatives, and in turn, our own place in the world. **Please join IHO in conserving this priceless collection by contributing to the ASU Pitchfunder at https://pitchfunder.asufoundation.org/project/ASU-JGI.**

Gombe baboons with a baby. Samantha Russak image.

Successful Launch!

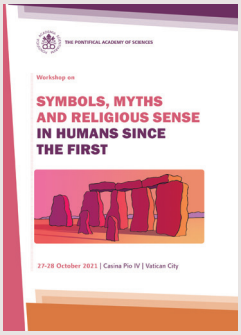
The NASA Lucy Mission to the Jupiter Trojan asteroids launched on a clear early October morning from the Kennedy Space Center in Florida. The mission was named by a Southwest Research Institute (SWRI) team in honor of "Lucy"—the 3.2-million-year-old human ancestor fossil discovered by IHO Founding Director Don Johanson. The 12-year mission is the first space mission to explore a group of small asteroids that orbit the sun in the same path as Jupiter and provide a unique, never-before-explored sample of the remnants of our early solar system. **Just as the Lucy fossil provided unique insights into humanity's evolution, the Lucy Mission promises to revolutionize our knowledge of planetary origins and the formation of the solar system.**

The first place winners of the **Lucy in Space contest** are Sarah Tran (image below left with her father Hung Tran and Don Johanson at the launch site)—high school level from Hamilton High School in Chandler, Arizona, and Tim Topping (image below right with his family and Don Johanson)—middle school level from St. Mary Catholic School, Littleton, Colorado. The two students attended the launch, along with their families, and Mark Jordan, a teacher from Hamilton High School in Chandler, Arizona. See all the winning entries at **AskAnAnthropologist.asu.edu/Lucy-in-Space.**

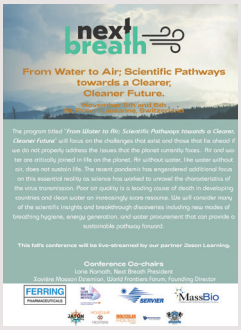


Science Outreach

IHO's (Out of this) World Ambassador



Nearly 1,000 people gathered at the Kennedy Space Center Visitor Center auditorium to hear a **Prelaunch Briefing from Donald Johanson,** who signed autographs and took photos with the scientists and families who came to see the NASA Lucy Mission launch on October 16, 2021. Johanson deftly linked the human drive for exploration and discovery of our origins to the mission's goal of understanding the origins of our solar system. The mission's first target is the 52246Donaldjohanson asteroid, named by Lucy Mission scientists in honor of Johanson. (Above: IHO's group photo at the NASA Lucy Mission launch site.)



Leaving from Florida, Johanson traveled to the **Vatican in Italy where he joined a conference on Symbols, Myths, and Religious Sense in Humans Since the First,** to give a talk on "How and why did human brains grow big?" He then traveled to Lausane, Switzerland to give a talk at the **"Next Breath" conference about a clearer, cleaner future, with a talk on "Our place in time."**

A Vision Realized: IHO's New Home in ISTB7

On January 10, 2022, IHO administration, faculty, staff, and graduate students will be moved into its new facility on the second floor of the Interdisciplinary Science and Technology Building 7 (ISTB7). The building is the newest premier research facility on ASU's Tempe Campus and the gateway to the most innovative university in the country. IHO's new home features thirteen IHO research labs, a new teaching lab, and a large research collections lab.

IHO is pleased to announce that the following research and administrative spaces are designated to recognize generous donors:

David H. Koch Laboratory for Human Origins Research

IHO Founders Teaching Collection and Lab— This naming is in honor of Donald Johanson, William Kimbel, Tom Hill, and Bruce Schnitzer and supported by a donation from **David Deniger and Mara Batlin.**

Joan D. and Arnold M. Travis Entry Hall

Thomas P. and Elisabeth M. Jones Research Library for Human Origins

Roskind Faculty Collaboratoration Space

Elaine O. Leventhal Executive Conference Room

Susie Marston Human Origins Education Gallery

Geoffrey S. Clark Ancient Technology Lab

Janet and Ed Sands Director's Conference Room

Travel and Learn

with the Institute of Human Origins

Travel is on the horizon! We are all ready to explore the world again. IHO is planning several trips for the next few years.

- Grand Canyon Colorado River Rafting is on again for the end of May 2023. Confirm your place on this popular trip early, as it fills up quickly!
- A South Africa "Ancient Lives and Landscapes" tour includes beautiful scenery, complicated history, and discovery sites of early modern humans
- A luxury safari to Tanzania, Kenya, and Olduvai Gorge
- An exclusive January 2024 tour to launch the 50th anniversary of the discovery of "Lucy" at the National Museum of Ethiopia in Addis Ababa, with excursions to see the colorful Timkat Festival at Lalibela and more!

If any of these trips sound inviting, email Julie Russ at jruss@asu.edu to get on the waiting list and hear more details about dates and pricing.

During the past year, these IHO-affiliated students received their PhDs

Joel Bray
Advised by Ian Gilby
Dissertation: Social relationships in male chimpanzees: Form, function, and development

E. Susanne Daly
Advised by Gary Schwartz
Dissertation: Premolar molarization in Haplorrhine primates

Ellis Locke
Advised by Kaye Reed
Dissertation: Molar shape, function, and tooth wear in the evolution of Cercopithecoid bilophodonty

Sam K. Patterson
Advised by Joan Silk
Dissertation: Effects of early life experiences on development and adult outcomes in wild olive baboons

Irene Smail
Advised by Kaye Reed
Dissertation: Environmental correlates of community structure in living and fossil Cercopithecid primates

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