

**AMERICAN ASSOC FOR THE ADV OF SCIENCE**

**Moderator: Meagan Phelan**

**August 6, 2018**

**10:00 a.m. ET**

Operator: This is conference # 4047846

Operator: Good morning. My name is (Zutania) and I will be your conference operator today. At this time I would like to welcome everyone the AAAS Conference Call.

All lines have been placed on mute to prevent any background noise. After the speakers' remarks there will be a question and answer session. If you would like to ask a question during this time, simply press "star" then the number "one" on your telephone keypad. If you would like to withdraw your question, press the "pound" key.

Thank you. I would now like to turn the conference over to Ms. Meagan Phelan with AAAS. You may begin your conference.

Meagan Phelan: Thanks very much, (Zutania). Good day, everybody. My name is Meagan Phelan.

On behalf of AAAS, the nonprofit international science society that publishes a science family of journals, I would like to welcome you to today's teleconference. We are honored to be publishing the Science Advances' review, "Current Evidence Allows Multiple Models for the Peopling of the Americas."

This paper is embargoed by Science Advances until Wednesday, August 8 at 2:00 pm U.S. Eastern Time. The corresponding entry on the Science Advances press package, available now, features imagery related to the study.

Without further ado, it is my pleasure to introduce three authors on the paper. They are Ben Potter, professor of anthropology at the University of Alaska Fairbanks; Ripan Malhi, Romano professor in the Department of Anthropology at the Carl R. Woese Institute for Genomic Biology at the University of Illinois Urbana-Champaign and Bastien Llamas, future fellow of the Australian Research Council at the University of Adelaide.

Now we will hear from our authors, beginning with Dr. Potter.

Ben Potter: All right. Thank you. Good morning.

I'm going to summarize the significant points of our paper. We've seen a lot of conflicting narratives about the timing and the nature of the peopling of the Americas. And this includes possible mastodon butchery over 100,000 years ago to European Solutrean hunters traversing the North Atlantic. One narrative that has emerged recently is that we're confident that people migrated along the coast and that it happened very early, before 20,000 years ago.

What we wanted to do is to evaluate this claim and really provide a framework to discuss the peopling process -- not based on speculation but rather on a careful and critical review of the current evidence we have. Rather than confusion, there really is growing congruence of the archeological record, the paleoecological and the genetic records. And Ripan and Bastien are going to elaborate on the genetic side.

But in short, the data show that we've got these Native American ancestors splitting from East Asians quite a long time ago -- around 25,000 years ago -- with a period of isolation -- genetic isolation. And this corresponds with the last glacial maximum, a really intense -- period of intense cold aridity that really could facilitate this kind of a process.

One point that we wanted to make in our paper that often isn't out there in the press is that the standstill model really only requires that the Native Americans are not exchanging genes with their East Asian relatives at this time. It says nothing about where exactly that isolation occurred. And some people have said, well, maybe it's in Alaska. And I think all the available evidence now suggests that the standstill likely occurred somewhere in Northeast Asia, where we actually have evidence of people at that time.

After this, we see evidence of a population expansion, after 16,000 years ago and before 14,000 years ago when we see the earliest unequivocal sites in the Americas. It's really a congealing congruence between these different data sets that I find very positive; it helps provide a framework to evaluate claims about this process.

In terms of routes, our second main point was a review of the various routes that people have argued that was taken by these ancestral Native Americans. Now the interior ice recorder in recent years has been ignored or deemed, quote, impossible, end quote. In fact, the data are not consistent with this at all. We summarized many recent studies, reconstructing the timing of deglaciation of this ice-free corridor. The bottleneck -- the last deglaciated part was ice-free and glacial lake free by at least 15,000 years ago. So some recent studies have provided, say, minimum dates on viability based on lake core DNA or bison DNA analyses, and these are around 12,600 or 13,100.

But those are minimum dates. The dates from plant and animal (macrofossils) in the region go back, again, to around 15,000. And I want to emphasize these are minima. The viability of the corridor could be even older; these are just the first actual dates that we have. In any event, these data place the corridor back into contention as a hypothesis for a colonization route.

And then finally, we also raise counter issues with coastal migration ideas. And a number of these are really ignored in the literature. I'll go through these pretty quickly. Many areas of pre-Clovis age shorelines that are now above modern sea level, due to isostatic rebound -- so the glaciers melted and some areas rebounded. People have surveyed in some of these areas and the

oldest sites to date now are around 1,600 years later than the earliest interior sites.

Throughout most of the hypothetical coastal route, from the Aleutians to Yakutat Bay in Southeast Alaska, the earliest occupations post date 8,000 years ago -- more than 6,000 years after the earliest interior occupations. And this is long after shoreline stabilized. And these guys were using technology clearly derived from earlier interior traditions.

We lack data on any (refugee) in the northern part of the proposed coastal route. And there's other complications like pack ice, drift ice, recurrent volcanism, potential reduction in kelp richness and abundance in paraglacial environments. In short, we haven't fully evaluated human ecology for this region and a lot more work needs to be done and we've highlighted some of the work that should happen.

Finally, all antecedent cultures in Siberia and far Northeast Asia, like (Joodkai) are clearly terrestrial in focus. They're not coastal, they're not maritime; they were hunting mammoth and bison and horse. The earliest Beringians were doing the same. The earliest widespread paleo-Indian group, Clovis, were also doing the same. There is no evidence for coastal or maritime economies anywhere in the Kuril Islands, Kamchatka, Chukotka or the Okhotsk Sea until after the middle Holocene, about 8,000 years after the first interior sites. And so there's a number of other points we raise in the paper.

But in sum, I think we're in a very exciting time where we can't exclude either coastal or interior route. Both could be used, actually; I suspect both probably were used. But again, that's speculation. And we highlight that really geologically informed surveys and paleoecological work needs to take place in both regions. And we shouldn't be as firm as some have been that we know the answers now.

That's my spiel and I'll pass it on to Ripan.

Ripan Malhi: Great. Thanks, Ben.

I have four points that I like to make, mainly on the genetic and genomic data in North America pertaining to the peopling of the Americas. The first point is that we're just at the very beginning of learning about what we can use genomic data for to infer information about the peopling.

Overall for genomic data, there is very little data at present for current present day indigenous communities as well as their ancestors through the analysis of ancient DNA. Really, we have very limited genomic data in North America that represents the genome or all 3 billion nucleotides in different communities for the peopling. This is in contrast to previous data, like mitochondrial DNA data, which just (spans or just traces one) maternal line, your mother's mother's mother's mother, where we have a lot more data in North America from indigenous communities and their ancestors.

But for genomic data, which is much more powerful, we're still at the very beginning of this. What we have learned from genomic data is that European contact and colonization has had a strong influence on indigenous genetic diversity. There has been a lot of non-indigenous (and mixture) as well as population collapses and losses of genetic diversity due to infectious disease like small pox, probably as well as other genocidal activities of colonists.

When we look at the genetic diversity of present day indigenous communities, we have this huge filter or screen which prevents us from learning about times prior to European contacts, more ancient in time.

And so analyzing ancestors or ancient individuals in the Americas using genomic techniques is going to be really important for learning about the peopling of the Americas.

And in order to do this, researchers must work with linked present day communities, because the analysis of these ancestors through ancient DNA or paleogenomics can have effects or can influence present day communities that are linked to those ancestors.

And the final point that I'd like to make is that indigenous communities in the Americas and specifically North America, they're not anti-science, and in my

experience many of these community members are interested in using genomics as a tool to learn about their history.

And so we need to partner and work with these communities in a more community based approach where we not only address questions that research -- non-indigenous researchers are interested in, but questions that indigenous researchers are interested in as well and involved in -- more completely in the -- in the research process.

And with that, I'll pass it onto Bastien.

Bastien Llamas: Thank you very much, Ripan.

I'll be really brief myself. What I wanted to say was that indigenous South Americans are the very likely decedents -- indirect line of the first wave of migrants in the Americas, which makes them a very good proxy to actually study the peopling of the continent. This is why I focus my research on these particular populations. Very similarly to North America, like Ripan says, there has been a (post-contact) population collapse after Europeans' arrival.

And it is -- that's very important to analyze the pre-contact individuals using ancient DNA. There is definitely a lack of genomic studies but for modern populations and for ancient populations. But we certainly do work on that and there's more and more papers coming out now.

For example, there is a very recent paper published in June about (Peruvian) populations -- (extant) populations, so the data is coming definitely. Mitochondrial DNA is actually a relatively good marker for (deep time) studies, especially in the case of the Americas where we have a very structured population and a relatively low genetic diversity. But of course, it is a limited marker in terms of amount of information. It will not inform about anything related to adaptation to environment or adaptation to pathogens and things like this.

What I would like to add as well is a more technical issue related to how we use genetic information to actually infer dates. Definitely genetic dating depends on a very accurate calibration of what we call the molecular clock.

The amount of change in the genetic sequence (that occur over) time, because the problem with this clock is that it's not necessarily a very constant clock and so it is not trivial to actually estimate imitation rates and to follow that mutation (rate over time).

And finally, we (lack) numbers and we (like) to have one date for a particular agent. Unfortunately, genetic dating is not that precise, and so what we advocate in the paper is really the importance to report the confidence interval and not only the median or the mean estimates, because we do need to take into the relative -- very relative, actually, precision of genetic dates if you want to combine genetic data with other types of evidence.

And I think I'm done.

Meagan Phelan: Great, thank you very much, Bastien, and thank you to our speakers.

We will now take questions from reporters. Operator?

Operator: At this time, I would like to remind everyone in order to ask a question, press "star" then the number "one" on your telephone keypad. Again, that's "star," "one." We'll pause for just a moment to compile the Q&A roster.

Again ...

Meagan Phelan: ... while we wait for our first question -- sorry (Zutania) -- I was thinking that while we wait for the first question, it might be interesting for reporters on the line to hear a little bit more from Ripan about something he'd mentioned in his opening remarks -- the questions that indigenous researchers are interested in that genetics can inform.

What are those questions and what are the ways that the scientific community can involve indigenous communities and indigenous researchers more completely in the research process?

Ripan Malhi: ... right.

Ben Potter: ... so -- his is Ben, I can address a little bit from my experience working with indigenous peoples, but I'd let -- I'd like to let Ripan answer first because he directly works on the genetic side with these individuals.

Ripan Malhi: Yes, so just to mention one thing and make a little bit of a plug, I help organize a program called the Summer internship for Indigenous peoples in Genomics where we have indigenous scientists and students and we now have over 100 indigenous scientists and students and community members that have gone through the program.

And they do have a direct interest in using genomics as a tool to help -- to help them learn about their history and just about past relationships, ties with other communities that maybe speak similar languages in the Americas. And the relationships to the environment in the past through adaptation and things like that.

And so, I think just a way to start the conversation is to, if you're working with ancestors or ancient DNA or ancient individuals to identify who the linked community would be, and that can either be through traditional NAGPRA or through geographic (abundance) and then start a conversation with the appropriate body whether that's the tribal council or the tribal historic preservation officer or someone else in the community.

Bastien Llamas: If I may add something about that. It's Bastien speaking. In South America, the situation could be relatively different given that some governments are actually the custodians of any historical or heritage material.

So the relationship with the communities and the tribes or the clans is relatively different. So depending on where you work, the (inbound or) community could be relatively different, but I do believe that we -- as we (said to yours) addressing the question in a country and an ancestry that is not ours, we have the duty to train local people, students, and to work with the accurate data that people will have the knowledge about the question and not run away with data.

Meagan Phelan: Ben, did you want to add anything also?

Ben Potter: Sure. So I am not a geneticist. As an archeologist, one of the things that I really have been proud of our team is that we've worked in a very closer manner with local indigenous people on problems that interest them. And both Ripan and Bastien are right. I mean, it's that honesty and openness and collaborative aspect.

What -- for our -- for example, some of the people are really interested in (subsistence). Economies and the emergence of traditional life ways like salmon fishing, caribou hunting, and how that -- how deep antiquity that is and the nature of the relationships of humans and the environment.

And so, we've had a very holistic sort of approach with our research where we're trying to address those through geochemical means now. We actually have the -- in our region the earliest evidence of salmon exploitation in the western hemisphere, so we're very excited about pushing that very traditional kind of life way into the (deep past).

And so, training indigenous scholars is a key aspect as Ripan and Bastien mentioned, and we're -- again, we're happy with the very close consultation and collaborative approach that we've developed up here.

Operator: Again, if you would like to ask a question at this time, please press "star," "one" on your telephone keypad. Again, that's "star," "one" if you would like to ask a question.

Meagan Phelan: I think another question related (inaudible), so you all have mentioned training and indigenous researching from scholars in to be part of this process, and I think what -- in which directions would you recommend for young scientists more broadly you want to come along as -- shed light on the peopling of the Americas (slept)? Where are they most needed? In genomics or some other aspect of this research?

Ben Potter: This is Ben. I think all aspects. In Alaska, many indigenous peoples, again, they're not on reservations. We don't really have reservations, so they're in villages on the landscape where their ancestors were at throughout most of Alaska.

And what I've seen is a lot of interest in ecology and interest in the medicine. I mean, there's all sorts of angles that could be brought together, brought to bear on the question of population history through time, migration, diffusion, exchange.

So really, I think, connecting with indigenous peoples, particularly at primary school age and working with organizations and programs, like Ripan already mentioned, that are out there, communicating that to these populations that can identify opportunities for advanced training, opportunities to develop curriculum, things like that.

Bastien Llamas: And this is Bastien. The (treating) of the Americas is a (three multidisciplinary) kind of research, so definitely a wide range of disciplines involved, and so like Ben said, it can be from ecology to genetics and anything in between.

So (whilst betting into archeology call fit work) or sitting in front of computer and analyzing genetic data or even once the (datas) are there, making sure that the results are communicated properly, displayed in museums or the kind of initiatives like this.

It would be great if actually the core communities, indigenous communities would take charge of that and make sure the message is transmitted wide and correctly.

Ripan Malhi: This is Ripan, and just to add to that, I think agreeing with Ben and Bastien, that's -- yes, in all areas I think indigenous community members could provide a unique perspective that probably hasn't been provided before on the peopling of the Americas. That's more an indigenous perspective relating to environment and the land that they're on.

Operator: Again, if you would like to ask a question at this time, please press "star" then the number "one" on your telephone keypad. Again, that's "star," "one" to ask a question.

Meagan Phelan: I think another question that I would like to pose, there have been hypotheses in the past about European migrations into the Americas based on (clue to be

in culture). Could you all elaborate a little bit on that and how that contrast relates the views that are the focus of European (burr and science advances?)

Ben Potter: Yes, this is Ben. I can -- I certainly would want to past the genetic aspect to Ripan, but first it raises an issue where the public sees the scientific press and the media as an interface between scientists and the public.

And so, often times certain ideas will get out there and it will be well-published in the popular press. And people maybe have a misunderstanding about how much support that might actually have within the scientific community. And I think the Solutrean hypothesis is one of those. The idea is that perhaps Native Americans -- the first Native Americans came over from Europe, and particularly Spain and France where they might have traversed the Southern Ice Edge and then entering Northeast North America.

Now, as a hypothesis, that's fine. A few scholars have talked about this, proposed it, and I think the consensus is pretty clear. It's been tested and refuted on a number of grounds, not the least of which is the wide variety of technological disconnects that we see. But probably the most damning critique has been on the genetics side where we really don't find any connection from European Paleolithic foragers and Native American.

And I think Ripan and/or Bastien can comment as well.

Ripan Malhi: Sure so I would just point to the analysis of the Anzick child in Montana, which was a population representative of the Clovis culture. And I think according to the Solutrean hypothesis Clovis is supposed to be a descendent cultural of the Solutrean culture in Europe.

And when you -- when the Anzick child was analyzed genomically the closest relationship was to present day Native Americans and not to Europeans. And so I think that pretty much closed the door on the Solutrean hypothesis. There have been some critiques that oh maybe if you look at Clovis culture in other areas those might be more close related to European.

But that seems unlikely. And so I think that's no longer for me a viable hypothesis.

Operator: Again if you would like to ask a question at this time please press "star," "one" on your telephone keypad. And reporters, please be sure to mute your lines while you are typing.

Your first question comes from the line of Eva Botkin-Kowacki with "The Christian Science."

Eva Botkin-Kowacki: Hi, thanks for taking my call.

This is probably more of question for Ben Potter, but for anyone. Why do you think there has been kind of one story of the peopling of Americas that has dominated over recent years? What's at play among scientists to make is so that we've kind of leaned one way or the other?

Ben Potter: Sure. So this is Ben. I think there's a number of factors in that. One factor has been an idea from the literature that we actually survey in this article. Where the idea was the ice recorder may have been coalesced. In other words the two ice sheets were kind of one ice sheet. And the idea was then there could be no passage over it.

And because -- so for example I mentioned the lake DNA which a number of the authors on our paper were actually co-authors on that paper, which indicated that that the first plants that were dated in these two lake era's ended up at being like 12,600 years old. And it's as taken as a maximum. In other words there was no viability earlier than that. Well that wouldn't. That would be to late to be responsible for Clovis for instance.

There was another study on Bison coalescence of mtDNA where northern clades and southern clades of bison on either side of the ice free corridor. Really were beginning to travel north and south through the entire corridor at round 13 one -- 13,100. But again that's a minimum age estimate. In other words it happened no later than that.

It doesn't say what happened earlier. And of course it doesn't matter if other prey were on the menu per se. And so there was I guess a growing consensus. Maybe 10 years ago or so that well it seems like its not -- it seems like it's not

open early enough. And so therefore the only other alternative, because we've already excluded the Solutrean European connection, I guess there's even more outlandish ideas about voyaging across the pacific.

I should at least mention that because that has been out there. There's absolutely no evidence for that, and lots of counter evidence against that. We understand how Polynesia was populated. And that was much, much later by different groups of people. But in any event it left the coast as the primary sort of idea.

Other aspects are a few sites like Monte Verde which isn't really a coastal site but it's near the coast. And there are some technological differences with some of the remains that were found there that are different than Clovis. And it's a little bit older. It's around 14,800 years ago or so and so there's little tidbits that then coalesce around those kind of disparate data points.

For instance there's evidence on the Channel Islands in California that there's early post Clovis or Clovis age materials on these islands. But again when you kind of look at it from a broader perspective, looking at all of the evidence, I think it's a potential hypothesis that can't be refuted at this point. So it's a viable hypothesis.

But what concerns I guess us on the archeology side is that that misses the broader point, which is regardless of that -- for instance all of these points could be explained by other hypotheses. So the Channel Islands, well that could easily be Clovis populations expanding to the coast.

The earliest Clovis we have, are of course interior. And as Bastien mentioned Anzick -- it's a clearly very much an interior phenomenon, is found in Montana. And as we demonstrate I guess the key review points that we demonstrate for the ice free corridor is that in fact it wasn't -- it doesn't appear to be a late opening. It appears to be an early opening and how early we can't say.

The dating we have are again minimum dates. So we have plants and animals. Certainly indicating vegetative conditions pushing 15,000 years ago. It could be older; we don't know. So what we encourage rather than switching and

being dogmatic about the corridor we would rather be intellectually honest and say both hypotheses should be on the table/ more research should be done on both.

Eva Botkin-Kowacki: And so can I ask a follow up question?

Ben Potter: Sure.

Eva Botkin-Kowacki: Do you think it says something about how science is done that we're trying to fit these narratives to the data? Or is there -- do you think there's something about how we relate to the science -- trying to figure out how to phrase this -- of how we have these data points that don't necessarily give a clear narrative but we want a narrative?

Ben Potter: I think that's a good question.

My -- going back to my philosophy days, I think the issue of I don't know is for many people not a good answer. And so an answer that might be incomplete or conflicting could be preferred over an answer of I don't know. As scientists I think all three of us here are very happy with I don't know because it pushes us forward to address the questions with new data and new analyses.

Yes, I think part of it is that. Part of it also could be the spectacular nature of some of the potential discoveries. So if you have a paper, wow, more data showing what we -- you know the primary evidence that we have for instance, and I'll raise it here. It's not just the negative evidence of we don't have unequivocal sites linked with archeology over 16,000 or 15,000 years ago.

That's not so much of an issue as we have a wealth of data. Lots of data, lots of sites, and lots of robust patterns of expansion of people in Northeast Asia, from 17,000 to 14,000 years ago we have clear northward expansion of these (juptide) populations hunting megafauna using certain kinds of technology that are linked with each other, so we can clearly see it's the same population moving northward. That fits the genetics so far.

The earliest sites we have in (Brenjia) are deep interior and they're over 14,000 years old, prior to Clovis, as we would expect. And that links directly with the Asian material. When we see the first early Paleo Indian groups, the Clovis, this is the first wide spread manifestation of what clearly looks like a colonizing population.

Now what about sites earlier than that? Well, the model that we describe is just a framework, it's just at some point after 16 is when we would expect the earliest peoples. It could be 14.5, it could be 14.8, it could be 15.1, it could be -- it could encompass a range of alternatives. Those could be explained by a plosive of migrations through the quarter.

These are interesting questions from an anthropological perspective, but I think we need to keep a, I guess, a restraint on the speculation as firm, right? As firm as it's appeared in the press sometimes, and I think sometimes the media, not to blame any of the reporters that are here, but sometimes the media can take a, this may the case, to this is certainly what we know now.

Eva Botkin-Kowacki: Thank you.

Operator: Your next question comes from the line of Alex Kirby with AAAS.

Alex Kirby: Hi, thanks for taking my question.

I'm wondering, how do archeologist and geneticist, who disagree, find common ground?

Ben Potter: I know Ripan and Bastien could comment as well.

I'll just make my comments brief. I think the collaborations that I've had with Genesis over the years, it's varied and I think what works the best is when there's a mutual respect for each other's fields, what the strengths of the fields are and what the weaknesses of the fields are. I'm very aware, as an archeologist, the limitations of my field.

We don't know the languages that the people that these stone tools and sites spoke. The genetics -- who exactly the people are affiliated with. These are

very strong points that genetics can bring to the table. What we do have control of is geography space and also time, with respect to much more secured dating techniques.

And I think it's working with geneticists, my colleagues have been the most successful when we, again, keep these in mind and try to find where the data coalesce and I think that makes stronger inferences because they're multiple independent lines of evidence. And for something like a paleo study of something that occurred 10,000, 20,000 years ago, that's really required.

Ripan Malhi: And -- this I Ripan, I'll just follow-up to Ben -- it seems to me in my experience that disagreements between archeologists and geneticists can come from miscommunication.

And so, really talking to one another and the disagreement could come because a difference in thinking about scale, whether we're thinking about continental versus regional and if those types of things are cleared up, then I agree with Ben, that where you can have multiple lines of evidence and create a hypothesis based on these multiple lines of evidence. The models you get to address those hypotheses are much more interesting and advance the field.

I think Bastien wanted to say something as well?

Bastien Llamas: Yes.

I would like to add something actually, because I do agree entirely. Communication is key, because there's definitely a different vocabulary and different concepts. Sometimes we can talk about the very same thing, but using completely different words and so we don't understand each other.

So, and the literature can be relatively hard to find somewhere out -- sometimes as well. As a geneticist I can struggle to read the literature inaccurately and most of the time I won't understand the technical details. And (I won't) have the expertise to judge (if a particular date), for example, is accurate or reliable or something like this. It will (take definitely) communicating with my colleagues, (archeologists), and then ask the right questions.

If I can add like a fun fact, I actually attended a Society for American Archeology meeting, not even two weeks after my paper was published two years ago and I was there in the room, in a symposium that was organized all about the Clovis hypothesis and the peopling of the Americas after the genome sequencing of Anzick boy.

And it was all very interesting. I mean, for me it was like a completely new world opening to my eyes, a lot of different hypotheses, working hypotheses being laid out in front of me and I was thinking hard about what I could do and what data I could generate to answer those questions.

And then suddenly my paper came on screen and then started to be shared by people in the room and I literally had to stand up and say, look, I am the first author of this paper and I can understand that you may disagree with some of the conclusions. I actually disagree with some of my own conclusions, but given the data that I had and the access to the information that I had, these are the (interpretations) I made, but I'm more than happy to actually discuss that and to sit down and communicate with you guys.

And it ended up being like a very well -- very good experience and we published some papers. And no, it was overall a very good, interesting experience, but definitely it's really hard to criticize -- it's really easy, sorry -- to criticize. It's harder to sit down and talk to each other and manage to work jointly on a particular question, which is the peopling the Americas.

Alex Kirby: Thank you.

Operator: Again, if you would like to ask a question at this time, please press "star" then the number "one" on your telephone keypad. That's "star," "one" if you would like to ask a question.

Meagan Phelan: OK, I don't think we have any other questions in the queue.

I would like to thank all of our participants today. We appreciate all of your terrific insights and your time from different geographies. And I also thank the media for joining us.

Audio files and a transcript of this briefing will be posted (to the press package) within several hours this afternoon. A reminder that that paper is embargoed until Wednesday, the 8th of August, at 2:00 pm Eastern time. If you have any further question please don't hesitate to reach out to our office at ([advancetalk@aaas.org](mailto:advancetalk@aaas.org)).

I now conclude this press conference but, authors, you can stay on the line.

Operator: This concludes today's conference call. You may now disconnect.

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