

Community partnerships are fundamental to ethical ancient DNA research

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Summary

The ethics of the scientific study of Ancestors has long been debated by archaeologists, bioanthropologists, and, more recently, ancient DNA (aDNA) researchers. This article responds to the article “Ethics of DNA research on human remains: five globally applicable guidelines” published in 2021 in *Nature* by a large group of aDNA researchers and collaborators. We argue that these guidelines do not sufficiently consider the interests of community stakeholders, including descendant communities and communities with potential, but yet unestablished, ties to Ancestors. We focus on three main areas of concern with the guidelines. First is the false separation of “scientific” and “community” concerns and the consistent privileging of researcher perspectives over those of community members. Second, the commitment of the guidelines’ authors to open data ignores the principles and practice of Indigenous Data Sovereignty. Further, the authors argue that involving community members in decisions about publication and data sharing is unethical. We argue that excluding community perspectives on “ethical” grounds is convenient for researchers, but it is not, in fact, ethical. Third, we stress the risks of *not* consulting communities that have established or potential ties to Ancestors, using two recent examples from the literature. Ancient DNA researchers cannot focus on the lowest common denominator of research practice, the bare minimum that is legally necessary. Instead, they should be leading multidisciplinary efforts to create processes to ensure communities from all regions of the globe are identified and engaged in research that affects them. This will often present challenges, but we see these challenges as *part of* the research, rather than a distraction from the scientific endeavor. If a research team does not have the capacity to meaningfully engage communities, questions must be asked about the value and benefit of their research.

For decades, scientists have debated ethical issues related to the acquisition, storage, use, and repatriation of human Ancestors within biological anthropology and archaeology,¹⁻³ fields which historically and contentiously engaged with Indigenous peoples.^{4,5} Even before advanced sequencing techniques were introduced to genetically map ancient migrations using DNA, global Indigenous nations opposed

the collectivization of their DNA into open-source databases as contributing to the exploitation and scientific objectification of their peoples.⁶⁻⁸ Thus, while the technology that now characterizes the scale and rapidity of ancient DNA (aDNA) research is still relatively new,⁴ it is important to note that discussions related to ethical DNA research practices are longstanding.

In 2021, Alpaslan-Roodenberg et al.,⁹ a group of “archaeologists, anthropologists, curators, and geneticists,” published a set of five globally applicable guidelines in response to a perceived bias in aDNA research guidelines developed in settler colonial countries (Canada, Australia, Aotearoa/New Zealand, and particularly the United States¹⁰). These guidelines can be paraphrased as follows: (1) follow research

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Table 1. A summary of the guidelines presented by Alpaslan-Roodenberg et al. and critiques and alternative considerations for each guideline

Guidelines in Alpaslan-Roodenberg et al.	Critiques	Alternative considerations
1. Follow research regulations	a bare minimum for all research, and national regulations may not sufficiently recognize the rights and interests of community partners	research should consider international, national, regional, local, and community-specific regulations, guidance, or preferences
2. Prepare a research plan before study	necessary for rigorous research	consult with community partners in designing research
3. Minimize destructive analyses on “human remains”	approach to destructive analysis should be determined in partnership with communities	a range of destructive and non-destructive techniques should be discussed with community partners from the design phase
4. Make genomic data openly available	limits Indigenous rights and sovereignty; ignores IDS; misaligned with UNDRIP	access to data should be negotiated with community partners following principles of IDS and UNDRIP
5. Consult with relevant stakeholders	descendant and Indigenous communities are distinct from other kinds of stakeholders; research should be conducted in partnership with communities, from start to finish	meaningfully engaging communities with established or potential ties to Ancestors is an integral part of aDNA research

regulations; (2) prepare a research plan before study; (3) minimize destructive analyses to “human remains” for future study; (4) make genomic data openly available to the scientific community; and (5) consult with relevant stakeholders, which they define as “including but not limited to local communities, archaeologists, anthropologists, geneticists or curators.” The publication of Alpaslan-Roodenberg et al. generated divisive commentary from other academic researchers in the *New York Times*, two *Nature* correspondence letters, and intense discussion on social media.¹¹⁻¹³

Our overriding concern is that Alpaslan-Roodenberg et al. do not sufficiently consider the interests of Indigenous communities. We are a group of Indigenous and non-Indigenous scholars from disciplines spanning the sciences, social sciences, and humanities. Below, we outline points of controversy raised by the publication of Alpaslan-Roodenberg et al. with the goal of constructively contributing to existing debates about aDNA research ethics. A summary of

the issues we raise is presented in [Table 1](#).

Although Alpaslan-Roodenberg et al. use the term “human remains”, we follow Wagner et al.¹⁰ in using the term Ancestors and avoiding terms that may be perceived as objectifying and disrespectful such as “materials”, “specimens”, or “remains”. While we reference Alpaslan-Roodenberg et al.’s use of the term “stakeholders” in this piece, we acknowledge that the term is problematic.¹⁴ It can erroneously imply equal power dynamics and agency where, in fact, descendant communities with established ties to Ancestors used in aDNA research may be disempowered in the research process and bear disproportionate risks. We distinguish descendant communities as a subset of a wider category of community stakeholders that includes communities with potential, but yet unestablished, ties and people who may or may not identify as “Indigenous” depending on their political context.¹⁵ Importantly, our usages of “Ancestor” and “descendant” are not contingent upon genealogical

and/or genetic links between community members and Ancestral individuals, as typically recognized by scientists or non-Indigenous governments, and they can also include people with genealogical and/or cultural ties to land where the Ancestors were buried. The use of the term “stakeholders” also posits a divide between aDNA scientists and non-scientists, implying non-scientists can only be stakeholders and not a core part of the research team.

Community partnerships should guide aDNA research

Communities should be equal partners with scientists in the research process. It is true that identifying which communities should be recognized as research partners can be challenging, even in countries such as the United States where there is long-standing recognition of hundreds of tribes. Conflicting and competing claims on a particular Ancestor by more than one Indigenous group are always possible. However, these challenges are not a reason to exclude groups that may have rights and interests in aDNA research.

Alpaslan-Roodenberg et al. problematically construct “Indigenous-centred ethical framework[s]” as a straw man by essentializing Indigenous-centered ethics as a “mandat[e] that each ancient individual be associated with a contemporary group.” The equation “one ancient individual = one contemporary group” is a convenient oversimplification, implying that any equation more complex is too difficult. This falsely sets up the inclusion of communities in research as being in opposition to the progress of scientific knowledge, thus providing justification to exclude a community from the research. The solution they propose is for researchers to decide what rights and interests descendant communities might have (“for them” as opposed to “with them”) and whether those communities should be recognized as “stakeholders” in the research.

This “researcher decides” ethos reflects a fundamental assumption of Alpaslan-Roodenberg et al. that

“scientific issues” are separate from “community issues.” In the section introducing Alpaslan-Roodenberg et al., the authors explain that they will first deal with “issues of scientific ethics [referring to Guidelines 1-4] and then return to the topic of ensuring sensitivity of research to perspectives of communities, including Indigenous groups [referring to Guideline 5].” In our view, “scientific ethical issues” cannot and should not be seen as separate from engaging with descendant communities, nor should community engagement be framed as a secondary concern. At times, Alpaslan-Roodenberg et al. express sentiments that recognize this. For example, in the discussion of Guideline 5, “Stakeholders—ideally including groups from the place of origin of the human remains being studied—should be actively involved in discussions about study design, research questions and whether a scientific project should proceed.”

However, such passages are contradicted by many other parts of Alpaslan-Roodenberg et al. that explicitly privilege researcher concerns over potential community concerns. For example, the discussion of minimizing damage to Ancestors (Guideline 3) is solely concerned with preservation to maximize scientific utility as opposed to Ancestor stewardship and care. The role of descendant communities in informing how—or whether—genomic data should be extracted (e.g., use of destructive or minimally destructive methods and how results are disseminated) is noticeably absent. The need to preserve Ancestors to allow the future identification of descendant communities (if that is not presently possible) is similarly not mentioned. Allowing descendant communities to guide aDNA research is critical because most risks and benefits resulting from research on their Ancestors are realized by descendant communities, not researchers. Without this guidance from descendant communities, aDNA research can be an extractive and exploitative science that propagates the consequences of colonial practices.

Open data, publication, and Indigenous Data Sovereignty

Alpaslan-Roodenberg et al.’s artificial division between “scientific ethical issues” and “community issues” also influences their discussion of open data (Guideline 4). They advocate making data freely available to allow other scientists to validate research findings. The rationale provided is that this will increase the quality of aDNA science and reduce destructive analyses, as researchers could freely use existing data rather than creating new data. Leaving aside some skepticism that more data sharing will lead to less destructive sampling (as re-sampling of populations is often practiced to apply new methodologies or increase dataset size), key principles of Indigenous Data Sovereignty may directly conflict with the principles of open data.^{16,17}

Indigenous Data Sovereignty (IDS, also known as Indigenous Data Governance) is an international movement among Indigenous scholars, Indigenous activists, and their allies that has flourished particularly since the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) was adopted in 2007.^{18,19} Article 31 of the UNDRIP underlies this movement. It states: “Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources.” The recognized rights of Indigenous peoples to “maintain, control, protect and develop” both their resources and their intellectual property over those resources has led Indigenous people in the United States, Canada, Australia, New Zealand, as well as countries in Africa, Europe, and Latin America, to develop principles and guidelines for the management of data stemming from research that involves them.^{16,19-26} These principles may include Indigenous stewardship of data, controlling who has access to the data, and/or collaborating as co-researchers on projects and as co-authors on publications that use the

data. Such rights have been further recognized internationally in the General Comment No. 25 on science and economic, social, and cultural rights related to article 15 of the International Covenant on Economic, Social and Cultural Rights.²⁷ It should be noted that while international recognition of these rights is important and welcomed, it does not alter the intrinsic nature of these rights to Indigenous communities, independent of and pre-existing any recognition by non-Indigenous bodies.

While the authors of Alpaslan-Roodenberg et al. appear to be aware of IDS and include a few relevant citations,^{5,16,28,29} they do not mention it directly. Where features of IDS are discussed, this is primarily done in offering arguments as to why they are inappropriate or irrelevant. For example, they concede that they “can envision scenarios in which it would be ethical to limit the ways in which ancient DNA data can be reused, such as when reporting results from some types of analyses could harm stakeholders, which could outweigh the benefits of fully open data.” The authors then follow the statement with a proposed solution to such situations: to limit access to data to *bona fide* researchers who agree to only use the data to reproduce study findings. This solution does not address the issue but rather works to serve the researcher and is, thereby, ethically lacking. Instead, those stakeholders who are at risk of harm (i.e., descendant communities) should decide how the data should be managed, including identifying whether “reporting results from some types of analyses could harm stakeholders.” Together, researchers and communities should identify all potential risks, and communities should decide for themselves how these risks should be managed. Researchers who stand to benefit from underestimating harms to descendant communities should not be solely empowered to make these data decisions: to do so should be considered a conflict of interest.¹²

Alpaslan-Roodenberg et al. argue for limited community involvement during data sharing and writing

publications. Regarding data sharing, they state “it is not consistent with professional ethics for researchers to participate in a study where those with a stake in the research findings can deny the sharing of data to qualified researchers who wish to critically reappraise results.” Regarding publications, they state that “the suggestion that there should be a requirement for manuscripts to be approved by stakeholder groups who are not members of the research team before publication is not feasible, as researchers cannot ethically participate in a study in which this is mandated.”

We find it absurd to claim that the involvement of communities in decisions about sharing data and publications is unethical because communities have “stake[s] in the research findings.” Communities certainly have a stake in research that involves them, but so too do researchers.⁸ Furthermore, principles of IDS and various guidelines for research with Indigenous peoples all recommend that Indigenous community members should be part of the research team. It is true that engaging a range of stakeholders in a research team raises ethical issues, but this is equally true of scientific stakeholders. Researchers have clear and significant interest in all research that they conduct, as research can lead to monetary benefit (i.e., further grant funding) and career advancement. All the members of a research team—whether Indigenous or not—have interests that need to be balanced and managed to ensure the research process is ethical.

Excluding community perspectives on “ethical” grounds is convenient for researchers, but it is not, in fact, ethical. When the interests of the scientists are taken into account, excluding community perspectives may potentially be unethical.

We anticipate that Alpaslan-Roodenberg et al. may respond to this discussion of IDS by arguing that it is not relevant outside a limited number of countries. However, UNDRIP—the international instrument upon which IDS relies—has been endorsed by 182 countries (144 when it was initially adopted in 2007, and

subsequently, 38 additional countries), including Kazakhstan, Turkey, Ukraine, Afghanistan, Mongolia, India, Pakistan, Sri Lanka, China, Japan, South Korea, Vietnam, Malaysia, the Philippines, Indonesia, Samoa, and the Federated States of Micronesia, all countries in regions where Alpaslan-Roodenberg et al. claim the concept of Indigenous people is not relevant. These countries, and many others, still have much work to do to recognize Indigenous peoples within their borders. However, endorsing UNDRIP is an important step toward data equity and justice. In addition, any statements by Alpaslan-Roodenberg et al. that posit the concept of Indigeneity is not pertinent to non-settler colonial states appear to discount an important body of social science research.³⁰⁻³⁴

The risks of not consulting

Identifying and engaging with Indigenous communities can be tremendously challenging for researchers. It is true, as Alpaslan-Roodenberg et al. state, that in some cases when aDNA scientists seek to conduct research “there are few (if any) material or oral links to present-day groups, or where promoting the idea that some groups have more ownership of cultural heritage than others can contribute to social conflict.” Alpaslan-Roodenberg et al. clearly express that the solution to such complexities is to *not* consult with local groups that might have rights and interests in the research. Recent notable examples of aDNA research in the Americas demonstrate why *not* consulting descendant communities embodies attendant risk.

In 2011, a conference presentation at the International Congress of Human Genetics by Byrnes and colleagues entitled “Genomic Reconstruction of an Extinct Population from Next-Generation Sequence Data” announced that the authors had “reconstructed” parts of the Taíno genome from aDNA.³⁵ This was covered by *Nature* in a piece entitled “Breathing Life into an Extinct Identity.” The reader comments on the *Nature* article included many angry Taíno people who objected to being publicly called “extinct” by scientists:

in fact, the *Caribbean Organization of Indigenous Peoples (COIP)* was formed in 1987 and the *United Confederation of Taíno People (UCTP)* was formed in 1998. In response to the backlash, *Nature* renamed the article “Rebuilding the Genome of a Hidden Ethnicity.”³⁶ While Taíno identity is complex and genetic research can and has positively contributed to the Taíno community,³⁷ the characterization of the Taíno as “extinct” was highly offensive and could have been prevented through wider consultation.³⁸

In another example of controversial aDNA research, the American Museum of Natural History considered how to classify ancestral remains found in Chaco Canyon, New Mexico, under the 1990 *Native American Graves Protection and Repatriation Act (NAGPRA)*.³⁹ Two different groups wished to be consulted about Ancestors found in that area. The curator in charge of the remains “struggled to decide to whom the ancestral remains should be affiliated and repatriated. The curator did not want to create a dispute among tribes or insert the museum into a dispute over affiliation.”³⁹ The museum decided to classify the remains as “unaffiliated,” thereby avoiding a consultation process that could be difficult. This classification meant that the Ancestors could legally be used for genetic research without community consultation, and the results of destructive aDNA research on nine Ancestral Puebloan people were published in 2017.⁴⁰ The ensuing controversy demonstrated how these decisions greatly harmed relations between Native American communities, museums, and aDNA researchers.³⁹

The stated perspective of Alpaslan-Roodenberg et al. is that, in cases where the identity of the descendant community is not immediately clear, the burdens of consulting with communities outweigh the risks of not consulting. They state that “centering indigeneity as a principle for permitting ancient DNA analysis would likely be harmful” and that “using Indigenous identity to determine who can permit ancient DNA research can be harmful as it can contribute to conflict among groups

and to discrimination.” While we acknowledge that consultation may sometimes contribute to a pre-existing conflict, we disagree with the notion that *not* consulting is the solution. The two examples we outlined above illustrate that although *not* consulting with Indigenous communities might seem like the easiest solution, it presents significant short- and long-term risks to aDNA science. Two further examples from Australia illustrate the benefits of consultation with communities:

1. Wright et al. at Griffith University conducted a study in collaboration with a variety of community members in Queensland. The study aimed to test the efficacy of aDNA analysis to identify the geographical origin of Ancestors. Samples were taken from Ancestors of known origin and compared with samples from community members. The study showed that mitochondrial genome sequence data was not accurate for determining the geographical origin of Ancestors, but full genome sequence data was accurate. The study, co-authored by 11 Indigenous community members, established the potential for aDNA analysis of unprovenanced Ancestors to establish their provenance.⁴¹
2. The National Center for Indigenous Genomics, based at the Australian National University (ANU), is another example of community partnerships in research. The center was developed to provide Indigenous-led governance of over 7,000 blood samples collected for genetic research from Indigenous communities from the 1960s to the 1990s and stored in freezers at the university. ANU researchers have consulted with over 2,000 community members, and 90% have given consent for either the DNA of their deceased relative's sample to be extracted or to provide a sample of their own DNA. As part of these consultations in

one community, blood samples from deceased relatives were returned in a series of ceremonies in 2019. The community remains supportive of genomic research and allowed DNA to be extracted before the samples were returned.⁴²

These examples illustrate that research partnerships with community members can produce outcomes with both scientific and social benefits.

Conclusions

In cases where consultation may be complex, the message of Alpaslan-Roodenberg et al. is to avoid consultation. This preference toward *not* consulting with communities is explicable when we consider the interests of researchers. Researchers have an interest in *not* consulting (particularly if the consultation process may be complex) so that their research more quickly and easily proceeds to publication. In a field where the high level of scientific and public interest mean that publications often appear in top international journals, quicker and easier publication is of benefit to researchers, at least in the short term. The very structure of Alpaslan-Roodenberg et al.'s arguments conveys a bias against consulting with community stakeholders: Guidelines 1 through 4 are depicted as the central “scientific ethical issues,” with Guideline 5—engaging with stakeholders—appearing as a secondary priority. Engaging with community stakeholders should be the first principle at the center of aDNA research practice.

We recognize that identifying and involving descendant communities in aDNA research can be challenging, particularly given the time depth and breadth of potential descendants. An ethics committee with jurisdiction in the Ancestor's home may be able to provide advice on whether particular descendant communities should be consulted. Of course, this is not an uncomplicated suggestion. Ethics committees do not exist in all countries,

might not view aDNA research within their remit, nor recognize complex issues surrounding Indigeneity or the rights of descendant communities. Where Indigenous or other descendant communities have representative organizations, a special ethics committee could be formed. Institutional approval (whether through a national government, university ethics committee, or authority such as NAGPRA) would still not preclude the need to consult with Indigenous communities before, during, and after the research process.

If descendant communities cannot be identified or conflicts exist, the ethical course of action is to not proceed with the research until these issues are addressed.

The recognition of the rights of descendant communities poses a major challenge to aDNA researchers. This much we can agree on. However, the answer to those challenges is not to downplay the claims of Indigenous people, nor to argue that the concept of Indigeneity is not relevant. While the concept of Indigeneity has different meanings in different places, it can allow for alliances and collective action against colonial power structures globally, including those upheld in science. Scientists should support efforts to create a more accountable and just science. While we acknowledge addressing these challenges requires specific skills and additional time and resources (e.g., to consult with communities), the field of aDNA research as a whole should normalize access to these skills, time, and resources. Funding bodies, professional societies, and journal editors could each play a role in this shift.

Ancient DNA researchers cannot focus on the lowest common denominator of research practice: the bare minimum that is legally necessary. Instead, they should be leading multidisciplinary efforts to create processes to ensure communities from all regions of the globe are identified and engaged in research that affects them, a task recently recognized by the American Society of Human Genetics as central to genomics more widely.⁴³ More often than not, this

will be a challenging task for aDNA researchers. The key difference between our approach and that of Alpaslan-Roodenberg et al. is that we see these challenges as *part of* the research, rather than a distraction from the scientific endeavor. If a research team does not have the capacity to meaningfully engage descendant communities, questions must be asked about the value and benefit of their research.

Data and code availability

This study did not generate or analyze datasets.

Declaration of interests

J.W. is an associate editor of HGGA.

Web resources

Global Indigenous Data Alliance, <https://www.gida-global.org>.

World Archaeological Congress. *Code of Ethics*, <https://worldarch.org/code-of-ethics> (2022).

Australian Institute for Aboriginal and Torres Strait Islander Studies. *Code of Ethics for Aboriginal and Torres Strait Islander Research*, <https://aiatsis.gov.au/sites/default/files/2020-10/aiatsis-code-ethics.pdf> (2020).

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