

Pre-Summit Statement

2025 Cambridge Summit Organizing Committee

The 2025 International Summit convened by the Global Observatory for Genome Editing complements and carries forward the work of three prior International Summits on Human Genome Editing held in 2015 (Washington, DC), 2018 (Hong Kong), and 2023 (London). These were organized by the national academies of the US, China, and the UK. In keeping with the Observatory's mission, the 2025 Cambridge meeting's central objective is to broaden the range of human experience and perspectives that must have a voice in the governance of emerging biotechnologies such as human genome editing—and thereby help lay foundations for the institutionalization of broader deliberation.

The 50th anniversary of the Asilomar Conference on Recombinant DNA, which served as an important point of reference for the 2015 International Summit, offers an especially opportune moment to confront the challenges of ethical governance of biotechnologies in the 21st century. Biotechnologies have made enormous strides since a time in which the major concern was that new lab-created organisms might escape and wreak havoc on human health and the environment. The landscape for bioethics has also changed significantly since 1975 and deliberation over what science and technology should or should not do has a correspondingly different valence. The three prior International Summits laid important groundwork for accommodating bioethics to this altered landscape. The Cambridge Summit of 2025 builds on these previous efforts and a series of smaller convenings by the Global Observatory to carry forward the work of the preceding decade.

To this end, we hope the 2025 Summit will advance the following four key aims:

(1) Expand the range of questions relevant to deliberation on and governance of contemporary biotechnologies.

For fifty years, the 1975 Asilomar conference has been a touchstone for responsible governance of emerging technology. It was a point of reference for the 2015 summit and the initiative undertaken by the US National Academies and the UK Royal Society in response to the birth of genome-edited twins in China in 2018. Yet Asilomar is an inadequate model for the challenges of biotechnology governance in the 21st century.

Asilomar was a largely expert-led scientific meeting to avoid potential harms to public health that all agreed should be avoided. Primary concerns were raised by molecular biologists about pathogenicity and about the sufficiency of physical and biological constraints to contain risk and prevent escape. Biotechnology in the genome editing age has the potential not just to induce recognized and uncontroversial risks to health and safety but to redefine basic categories of bioethical thought. The “escape” of greatest concern today regards morally impermissible encroachments of biotechnology on human nature and on fundamental commitments to human dignity and integrity. Asilomar focused narrowly on the containment of laboratory-generated risks. When the space of potential scientific and technological overreach is not in the lab but in the globally shared preserve of being human, few existing institutional structures are expansive enough to generate convincing guardrails.

Limits on research developed at Asilomar in 1975 stemmed primarily from epistemic uncertainty, the rightful domain of science, not ethical uncertainty, the preserve of moral reflection. Scientists on their own could plausibly define appropriate limits on producing biological entities of an unknown and possibly hazardous kind. As a result, Asilomar established an approach to governance that focused on immediate biological possibilities, and associated knowledge uncertainties, setting terms for debate that sidelined more profound questions about the cultural and moral limits of modifying the human genome.

A half-century later, there has been at best a partial opening up of the Asilomar approach acknowledging the need for ethical and policy expertise. Yet, beneath the surface, concerns have changed significantly enough to raise questions about the continued relevance of scientific self-regulation as the appropriate governance model for biotechnology. We are on substantially different moral terrain when the limits to be considered concern how far to intervene on categories such as gender, kinship, ability, and humanness itself. A model of control based on mechanisms for addressing known health risks cannot address questions such as these. How, then, should we proceed?

In biotechnology's current age, important questions for moral reflection do not arise solely at the frontiers of science. It was relatively easy to agree that potentially carcinogenic *E. coli* should not be allowed to colonize the human gut. However, there is no similarly straightforward agreement about whether humans (and other species) should be re-engineered to need less sleep or feel less pain, or be immune to a specific disease or rendered less "neurodiverse." The contemporary debate on the entitlements of transgender persons points to sharp differences of opinion on how far we should go in changing what many people see as the basic order of things, such as biological distinctions between the sexes. Further, the longstanding distinction in bioethics between therapy and enhancement provides little space to consider whether human nature can be degraded as well as enhanced, though many would say that potential now exists as a more than theoretical possibility.

Where does a biological entity diverge so completely from being human that a discourse of humanness about it is no longer relevant? Where, by contrast, does genetic manipulation intrude on the human to such a degree that its moral implications have to be taken on board? And what about lab-created entities that straddle the line between human and non-human such that they demand focused bioethical consideration? Questions such as these demand wider moral perspectives than were present at Asilomar, or indeed in the three previous international genome editing summits.

(2) Extend the disciplinary foundations for addressing moral concerns, setting aside a science-and-technology first approach.

Previous International Summits centered ethical questions around what is technically possible. This "science-and-technology first" approach systematically obscured questions about human identity, purpose, and obligation. The 2025 Cambridge Summit hopes to depart from this linear model which holds that matters of expert-certified fact must be taken as starting points for raising and addressing anticipated ethical consequences. Despite a profusion of talk about ethics,

linear approaches tend to privilege scientific self-regulation, market mechanisms, and ethics-as-engineering to address questions of biotechnological permissibility and impermissibility. For example, in therapeutic somatic cell gene editing, recurrent debates on the attainability of effecting on-target genomic changes and averting off-target effects, or about what constitutes genuine promise versus speculative hype, exemplify how technical framings co-opt issues of ethical concern.

The Cambridge Summit will mark a reorientation away from the linear model. Our aim is to foreground the moral values embedded in technical visions, and draw on a wider repertoire of moral imagination from law, organized religion, and human rights. For example, religious traditions tend to reverse the science-and-technology first model. Diverse faith traditions have asked what questions of fundamental moral concern are raised when science and technology affect the meaning and value of life. The Summit will explore how such religious and spiritual framings might be put in conversation with scientific approaches to addressing the same moral questions.

Perspectives from the disability community—whether rooted in religious or non-religious traditions—also notably refuse the science-and-technology first paradigm. They begin with the valuing of all lives, challenging ableist framings, and then and only then proceed to consider what technical configurations will impinge on or promote human rights and dignity. Many in the affected communities do not identify with pathological framings of their lives and reject the premise that variants in genes responsible for deafness, blindness, or cognition always demand editing. Communal conceptions of what constitutes a good life may urgently require biotechnological intervention in some cases, such as life-threatening disease. In other cases, communities may demand more nuanced consideration of the value of the lives to be influenced by technology. Such consideration requires attending to life’s meaning before inquiring into the permissibility of technological applications.

How can framing issues of moral concern accommodate perspectives that approach normative questions from starting points other than science or technology? Equally, how can removing the artificial divide between science and society allow scientists’ own concerns coming from religion, disability, and other standpoints to be included in deliberative processes? Starting with what science and technology seek to enable has led to projects that arouse intense public resistance, from Golden Rice and other GM crops to CRISPR babies. To counter such pushback, the Cambridge summit will seek to foster an ethic of cosmopolitanism which requires more inclusive deliberation about visions that should or should not be advanced through science and technology.

(3) Situate the distribution of innovation’s benefits and risks within a global social compact.

The just distribution of the benefits of science and technology is typically regarded as a problem for society to solve after the moment of scientific discovery—a problem of equity rather than a problem for science. In this model, governments make laws and establish public health programs to contain risks, and properly functioning markets distribute benefits. But science and technology are conducted from the start in a variable, dynamic, and global world in which benefits and

burdens are already unequally divided. A research-first, regulation-next framing discounts the disparate reward structures leading to differential accumulation of the benefits and risks of innovation worldwide. Again, a less linear approach is needed to ensure that innovation is transparent about its value commitments and their distributive consequences in order to serve the widest public good.

In today's dynamic, global innovation ecosystem, scientific research and development may reflect different conceptions of how innovation serves the public good, with consequences for how it is incentivized differently around the world. Science and technology in the Global North tends to celebrate and reward individual innovation with prestigious prizes (e.g., Nobel, Kavli, Lasker, Breakthrough) and intellectual property (IP) rights. Even though social impact and benefit figure prominently in innovation discourse, distributive effects tend to be treated as separate or "downstream" from innovation. By contrast, in the Global South, scale-up through industrialization is often also celebrated as a crucial public good.

Investments in basic science are higher in the Global North and justified through the logic of return on investment, as discoveries are protected through strong IP regimes that create valuable markets for biotech products. A single groundbreaking study by an individual scientist is proclaimed as the "moment" of discovery by prize committees, distilled from longer, collective processes of collaboration between scientists, lab technicians, patients, and others. Prize winners rewarded for key insights disproportionately live in the Global North. In contrast, the Global South invests in building public health capacity and creating affordable access: to support additional technology development and manufacturing required to implement discoveries at the scale of a nation-state. From the North, such implementation work tends to be seen as less prestigious than discovery and innovation. Such work is often off-shored to the Global South, where labor, land, clinical trials, and other required resources cost less. But by the lives it actually reaches, developing means of production that allow wide access is no less essential to realizing the benefits of innovation.

Rather than merely seeking harmonization, it is important to recognize the diversity of social compacts currently supporting biotech innovation. For select situations, aligning IP rights in bilateral or small multilateral agreements could improve access to gene editing drugs, but global harmonization is unlikely, given differing priorities and incentives for innovation in different national contexts. Vaccine diplomacy, GM crops, and biosimilars manufacturing all provide insights into the complexity of managing IP across the globe, as well as the challenges of harmonization. A fully open science approach has yet to take hold, as scientists who hold IP rights are rewarded with licensing revenues. Vaccine shortages during the Covid-19 pandemic exposed complexities in the "access" question that those in the biotech and innovation policy fields had tended to neglect. How can reward structures be rethought to alter the present imbalance between discovery and equity? How can international, interdisciplinary, and cross-sectoral deliberation de-center the political economy of North-based innovation and better integrate the distributive dimensions of innovation?

(4) Diversify the notion of *limits* without demanding a broad societal consensus.

Fifty years of science and technology governance have followed Asilomar's lead: achieve consensus by reframing problems in technical terms such that they can be resolved by a limited cadre of like-minded experts. Narrowing the task in this way increases the chances of achieving consensus, boosting both the conduct of research and the apparent legitimacy of solutions. Limits on scientific and technological practice established by scientific consensus appear to speak with greater authority because they are grounded not merely in political agreement but on universally accepted facts. However, valorizing consensus among scientists has the effect of oversimplifying problems and solutions by excluding issues and perspectives that seem difficult to resolve, thereby privileging well-understood physical risks and expert-driven governance.

“Stress-testing” through democratic scrutiny and moral questioning rarely features in governance approaches built on universalist scientific expertise. Limits established through such approaches may be adequate to contain technically knowable risks, but they leave moral threats, such as the potential for degradation of human integrity, unexamined and therefore unaddressed. The Cambridge Summit hopes to diversify the notion of limits by welcoming differences in perspectives without aiming for full societal consensus.

Any presumption that a scientific discovery or technology will better the human condition requires wide democratic scrutiny and affirmation. Thus, airing disagreement is essential for good governance of science and technology even if it makes consensus less likely. Excluding forms of disagreement in the name of advancing consensus often breeds resistance in the longer term, transforming reasoned disagreement into alienation, political fracture, and division. Instead, fostering diverse forms of thought can reveal dimensions that may otherwise have gone unrecognized. Convergence can be achieved on process rather than outcome by inviting diverse perspectives on the purpose and meaning for human life. This can lead to important forms of intermediate consensus, such as on questions that must be asked. Such approaches may enrich societal capacity for collective moral imagination even as they engender humility. Yet deliberation that affirms diversity of thought and is not oriented towards consensus-based governance is the exception rather than the norm. How can deliberation grounded in a cosmopolitan ethic be fostered and sustained? How can it effectively inform efforts more directly oriented toward finding policy solutions? What institutional pathways can render conversations between unlikely conversation partners more productive and more sustained?

Subsidiarity offers one model for affirming more local (and, therefore, potentially divergent) forms of governance, even as it encourages mutual engagement and recognition. Whereas consensus valorizes universality, subsidiarity stands for a cosmopolitan ethic: affirmation of diversity, aspiration to mutual understanding, commitment to deep, sustained, inclusive engagement with matters of collective moral concern, and a posture of humility. And whereas consensus-centrism valorizes process against agreed outcomes, subsidiarity allows for divergences in preferences, reasoning, and judgment. It does not treat disparities in governance as a failure of reason or enlightened politics, but as a legitimate expression of human diversity. Yet neither does it abandon the aspiration to an eventual convergence in thought and protection of basic human rights.

These four aims will guide the 2025 Cambridge Summit on Human Genome Editing. We will address advances in science and technology, including CRISPR-based prime and epigenomic editors, human embryo models, in-utero approaches, and AI-assisted efforts. We will also include diverse institutional and political perspectives, including those from organized religion, the disability community, and the Global South. We intend to foster engagement between “unlikely conversation partners” and directly address themes that remained tacit or underexplored in prior summits: democracy and the public good, genetic diversity, ambitions to engineer or re-engineer human nature, property and the power of capital, comparative analysis of international and local deliberative efforts; asymmetries between Global North and Global South, asymmetries between researchers and patients, and in scientific agendas; and moral boundaries and sources of authorization. Finally, we hope to build a robust deliberative capacity for a cosmopolitan future by exploring convergences and divergences in thinking about limits to biotechnological innovation.

To see the latest updates on the 2025 Cambridge Summit, please visit <https://global-observatory.org/>.