

International Bioethics Committee (IBC)

*Discussing the Ethical,
Scientific, and Societal
Implications of Human
Reproductive Cloning on
Humanity, Including its Impact
on Human Dignity,
International Bioethics
Standards, and the Regulation
of Emerging Genetic
Technologies.*

Moderator: Alexa Santoyo Rojas

Director: Ximena San Martín Calvillo

I. INTRODUCTION:

The International Bioethics Committee, the only global forum for discussions of bioethics, was created in 1993 and is currently located in Paris, France. The committee is made up of 36 members and is called upon at least once a year to attend and discuss issues of extreme relevance. Members are appointed by the Director-General of UNESCO, and members may be invited by the Director-General. In addition, members are expected to serve during four-year terms, taking geographical representation as well as qualifications in social and human sciences. Its overall purpose is to produce advice on bioethics and create conclusions and solutions to specific issues which are then submitted to the Director-General.

The IBC, part of UNESCO, does not hold either legislative or enforcing power, and serves mainly as an advisory body. One of the key functions of the IBC is to draft declarations and create international frameworks such as the Universal Declaration of Bioethics and Human Rights, which was adopted in 2005. “UNESCO has contributed to the formulation of basic principles in bioethics through in particular [...] the International Declaration on Human Genetic Data, adopted unanimously and by acclamation by the General Conference on 16 October 2003.” (*UNESCO, n.d.*). The IBC also formulates advice regarding various issues such as human cloning and access to healthcare. However, the IBC lacks the power to enforce laws, ban scientific practices, or establish sanctions, as it promotes dialogue and reflection, and its declarations are normally advisory and not legally binding. It also depends completely on governments and institutions, which limits the committee’s ability. In comparison to other UN agencies, the IBC has not only limited intervention, but also limited funding and public visibility.

The International Bioethics Committee has taken meaningful action in order to approach its major concerns with a goal-driven approach. The IBC has established globally relevant ethical frameworks that ensure the protection of human dignity while responding to the rapid evolution of science and technology. It has been a large agent of change, being present and establishing changes during moments of uncertainty and global concern. One of the outstanding reports conducted by the IBC is the: Mental Health and Well-Being of Children and Adolescents in the Digital Environment. “This report focuses on ethical dimensions to be considered to foster and protect the mental health and well-being of children and adolescents while navigating the digital world, highlighting growing concerns such as anxiety, depression, exposure to harmful content

online.” (UNESCO, 2025). This was reviewed alongside a milestone declaration which was produced in 1997, named the Universal Declaration on the Human Genome and Human Rights, which established that “UNESCO believes it should be protected and passed on to future generations and that advances in science need to be considered in the light of human rights” (UNESCO, 2025).

Human reproductive cloning first emerged as a speculation on the implications and possibilities of cloning a human being, even though there has never been a successful, verified human reproductive clone. In 1993, scientists successfully demonstrated artificial embryo splitting, or twinning human embryos. “The first human embryo splitting, reported in 1993, triggered fierce ethical debate on human embryo cloning.” (*Noli et al, 2017*). This process was strictly for research purposes, but it allowed scientists to successfully turn one single early-stage embryo into several identical embryos. However, the concept was rooted in the 19th century when German embryologists Hans Spemann and Hilde Mangold demonstrated nuclear transfer on salamanders. Several tests were applied on animals, which culminated in 1996 when researchers successfully cloned Dolly the sheep. “Dolly the sheep was the first cloned mammal ever to be created from an adult cell. [...] Dolly caused excitement and controversy among both scientists and the public.” (*National Museums Scotland, n.d.*).

The topic addressed is of extreme importance because it approaches not only scientific matters but also considers the ethical implications and the role it plays in relation to human dignity, safety, and identity. The topic considers the international community, including politicians, bioethicists, scientists, and society as a whole. It addresses the debate on whether human reproductive cloning should be permitted, its effects on humanity, and methods to approach rapid technological advancements.

This topic is being debated at PASMUN 2026 because there have been significant advancements regarding genetic engineering and cloning, which have created urgent ethical questions that the international community has not resolved yet. These technologies have started to become more accessible, and international organizations must determine how to balance scientific innovation with ethical standards while protecting human rights. This topic connects to the core themes of MUN as it requires cooperation, diplomacy, and partnership to address this global issue that affects all states. Within the International Bioethics Committee, delegates must

work toward common bioethical standards that protect human dignity, promote responsible scientific development, and encourage international cooperation

II. HISTORICAL CONTEXT:

According to Genome Research, during the 1860s, the molecule of life, now recognized as DNA, was first identified by a Swiss chemist called Johann Friedrich Miescher, who approached blood cells and identified DNA by adding acid to a solution of cells. However, his discovery was not promoted due to the lack of communication tools of the time, and for years scientists believed that proteins held genetic material. After DNA discoveries, scientists started focusing on understanding heredity and genetics more profoundly. An Austrian Monk named Gregor Mendel discovered the basic laws of inheritance between 1856 and 1863, and “did 10-year crossing and counting experiments using the humble garden pea, leading to the establishment of the principle of inheritance as explained in his seminal paper “Experiments on Plant Hybrids” in 1865 (Mendel, 1866)” (*Cheng, 2022*). Mendel tracked physical traits meticulously, which allowed him to discover that some traits, now known as genes, are passed down as distinct units. The development of cloning technologies was the result of decades of scientific discoveries and experiments related to reproductive science.

In 1885, artificial embryo twinning was demonstrated for the first time, and consequently the first successful nuclear transfer in 1952. Artificial nuclear transfers started to happen in bigger organisms than cells, until a sheep, the first mammal cloned from an adult somatic cell was born. Experiments on reproductive cloning continued to take place by utilizing other animals such as cows, monkeys, mice, and goats, cloning them by somatic cell nuclear transfer (SCNT), which is a “technique in which the nucleus of a somatic (body) cell is transferred to the cytoplasm of an enucleated egg (an egg that has had its own nucleus removed).” (*Stocum, n.d.*). This process basically made cloning possible, as well as a combination of breakthroughs in biology and embryology. After the discovery of nuclear transfer in 1952, biologist John Gurdon proved that the DNA of specialized cells contained enough information to create a whole new organism after cloning frogs using the nucleus from an adult, and as previously mentioned, in 1996 Ian Wilmut and Keith Campbell successfully cloned Dolly the sheep.

Although the cloning of Dolly the sheep revolutionized genetics, it also sparked international concerns and panic reactions across the world. The international response rapidly created demands for urgent regulations and bans regarding human cloning on a global scale. Governments worldwide started to act and set boundaries. In the United States, President Bill Clinton banned federal funding for human cloning. “Human cloning has occasionally been suggested as a way to improve the genetic endowment of mankind, by cloning individuals of great achievements” (Ayala, 2015). Human cloning has led to varied reactions, where some portray a more careful approach to cloning while some even wish to be cloned themselves. Ethics, social ideals, and religious values also play a crucial role in forming opinions on human cloning, where, due to the last three factors, most of the population disagrees.

In 2004, many countries started to take measures to regulate human cloning, creating legislation and even prohibiting human cloning. For instance, some countries that have banned human cloning are: Canada, France, Japan, Britain, and only 13 states in the United States. Furthermore, human cloning has taken a spin onto reproductive cloning, which is the process of creating a human embryo that is identical to its nuclear genes with that of the donor of the somatic cell. This specific type of reproduction has reciprocated mixed reactions as well, but there are more positive reactions than negative ones. “It has been suggested that reproductive cloning might be ethically acceptable to assist individuals or couples to reproduce and to create a compatible tissue donor.” (AMA Code of Medical Ethics, 2026). Still, it is mentioned how cloning in reproductive medicine also has its downsides, where humans are not yet aware of the long-term effects or how free of genetic anomalies the process is. Besides the medical concerns, it also raises concern for psychosocial harm because of violations of privacy, autonomy, and future pressure. “This may conflict with long-standing religious and societal values about human dignity, possibly infringing upon principles of individual freedom, identity and autonomy.” (NIH, 2020). Therefore, according to recent professional opinions, it is not recommended by medical professionals.

In response to the scandal, UNESCO and its International Bioethics Committee started analyzing the ethical implications of these cloning accomplishments, focusing on their impact on human dignity and human rights. UNESCO leads global efforts in order to establish ethical principles and aims to ensure that scientific advancements align with these values of respect

towards human identity. The International Bioethics Committee, created by UNESCO in 1993 to look closely at ethical issues related to emerging technologies, “follows progress in the life sciences and its applications to ensure respect for human dignity and freedom.” (*UNESCO, n.d.*). On November 11th, 1997, UNESCO adopted the Universal Declaration on the Human Genome and Human Rights, which is the first international instrument that combines scientific freedom with human rights and that prohibits practices that contradict human rights and dignity, such as reproductive human cloning, which is addressed in this committee. Both UNESCO and the International Bioethics Committee encourage cooperation and dialogue to address reproductive human cloning and other genetic technologies by simultaneously making use of diplomacy.

Cloning and genetic modifications are groundbreaking innovations in the field of research and medical development, where the two most outstanding procedures are: reproductive cloning and therapeutic cloning. Reproductive cloning is used to create a duplicate of an existing animal, while therapeutic cloning is used to understand what is happening in diseases like diabetes or Alzheimer’s. Ever since the cloning of Dolly the Sheep, genetic engineering has encountered various developments such as CRISPR-Cas9 and other gene-editing tools. CRISPR-Cas9 is a type of genome editing procedure, which is known as clustered regularly interspaced short palindromic repeats and CRISPR- associated protein 9; this has proven to be very successful because it has demonstrated a faster process, cheap and accurate. “CRISPR-Cas9 was adapted from a naturally occurring genome editing system that bacteria use as an immune defense.”(MedlinePlus, 2022). In addition, the TALE nucleases are another procedure for gene editing, which are bacterial effectors using TALE proteins, offering “First, no selection or directed evolution is necessary to engineer TALE arrays, dramatically reducing the amount of time and experience needed to assemble a functional nuclease. Second, TALENs have been reported to show improved specificity and reduced toxicity compared to some ZFNs” (Gaj. T, Sirk. S, Shui. S, Liu. J, 2016). Then, zing-finger nucleases are also highly recognized when it comes to gene-editing “which are fusions between a custom-designed Cys2-His2 zinc-finger protein and the cleavage domain of the FokI restriction endonuclease” (Gaj. T, Sirk. S, Shui. S, Liu. J, 2016). Both TALE and ZFNs are older technologies that paved the way for the exploration of newer and more advanced tools such as CRISPR-Cas9. Even though these developments have led to higher scientific research and discoveries, it has also resulted in ethical

concerns for how powerful they can become and how the rapid changes may impact future generations.

Genome editing and genetic mutation have led to the need to take action for regulation and even prohibition of further developments and applications. For example, in 2018, the World Health Organization “established a global, multidisciplinary expert advisory committee (the Expert Advisory Committee on Developing Global Standards for Governance and Oversight of Human Genome Editing, hereafter called the Committee)” (WHO, 2021). This committee was developed with the aim of discussing all of the implications and raising concerns related to human genome editing, such as the scientific, ethical, social, and even the legal ones. Countries around the globe have taken different measures in order to approach the rapid developments, where in 2012, 31 countries were reported to have conducted trials. Japan takes measures by considering the level of risk that the experiment possesses, categorizing them into high, medium, and low. The United States follows a similar measure to Japan but for drug regulation. “More generally, discourse in Latin America on human somatic cell genome editing has been informed by concerns about genetically modified plants and animals, biopiracy, biosecurity, and use of stem cells for clinical care” (*National Academies Press, 2017*).

III. CURRENT SITUATION:

Currently, human reproductive cloning remains prohibited, but it is not regulated globally. It is condemned by the scientific community and legally banned in several countries. “Approximately 46 countries have formally banned human cloning. While encouraging, this represents less than a quarter of all countries.” (*Center for Genetics and Society, n.d.*). Major nations and organizations that completely prohibit cloning include the European Union and some countries around the Americas, Asia, and Oceania. Some legislations completely prohibit all forms of human reproductive cloning while others allow therapeutic cloning. “Therapeutic cloning refers to the use of SCNT to reprogram somatic cells into undifferentiated cells (embryonic stem cells) for different therapeutic purposes, such as the treatment of degenerative diseases or traumatic injuries, or to correct genetically predisposed conditions.” (*Science Direct, n.d.*). Several countries such as the United Kingdom, South Korea, China, and Japan allow medical cloning for

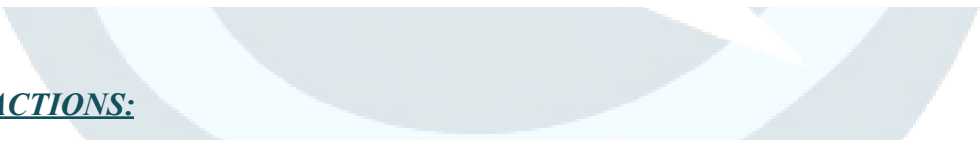
research purposes but completely ban human reproductive cloning. Some other rapid advances in technologies regarding gene editing and reproductive cloning, such as CRISPR-Cas9, which allows the modification of DNA, continue to raise ethical concerns around the world. People remain skeptical about human reproductive cloning and discuss whether human reproductive cloning undermines dignity and autonomy due to its biological risks, safety concerns, and controversy.

Genetic technologies have gone through various developmental stages throughout their existence; this has led to higher developments in the present where each discovery leads to another. Nowadays, human reproductive cloning has been tested and is possible; still, it is not permitted for practice. Until now, the genetic cloning technology has presented promising outcomes with practice in animals specially, somatic cell nuclear transfer also known as SCNT but some off-spring resulted in abnormalities where “the overall efficiency of creating normal viable offspring in animals by SCNT varies, ranging between 5% and 10%” (Gouveia. C, Huyser. C, Dieter. E, Pepper. M, 2020). International action regarding regulation of human reproductive cloning has taken place with a transnational meeting in 2005 where member states voted 84 in favour, 34 against, 37 abstaining, and 36 absent, after a decade of work on reproductive cloning by the International Bioethics Committee (IBC)) (UN, 2008). Although there have been meetings to recall and discuss the issue, no ultimate practice of further regulation has been taken by the international community. On the other hand, countries have taken national regulations into account to address human genetic reproductive cloning. Other phenomena such as cloning tourism, which refers to the imitation or replica of existing cultural locations, need to be addressed as a significant geopolitical issue.

Within the International Bioethics Committee, delegates must consider several aspects of the topic in order to develop efficient solutions and approaches to this issue. For example, a balance between scientific innovation and responsibility needs to be reached. Delegates should discuss and consider possible regulations that should be established regarding emerging genetic and reproductive technologies. Furthermore, it should be decided whether reproductive cloning should be banned and strictly prohibited worldwide or each state should have the power of determining its own regulations. On the other hand, another significant approach is the one regarding human dignity. Human reproductive cloning raises questions about the process

undermining human autonomy and uniqueness, and rights and protections should be guaranteed to everyone. The implications of emerging technologies should also be considered, and delegates should decide how governments should regulate technologies such as gene editing. The committee also aims to prevent inequality and discrimination, and access to genetic technologies should be equitable.

Human reproductive cloning has left a space for discussion concerning the implications it holds and the positive and negative perks. First, some argue that reproductive cloning is beneficial and that it supports the idea of reproductive liberty, which by definition is “the idea that individuals should be free to make decisions about their own reproduction without interference” (Fiveable Content Team, 2026). The advocacy for reproductive cloning is also interconnected with infertility, where couples that aren’t able to reproduce recognize their right to reproduction, and they see human reproductive cloning as a possible alternative. By contrast, some take a less liberal stance where they defend a universal and binding ban. This position is mostly defended by bioethicists, who argue about the implications of the technology on ethics as well as religious groups and various member states. According to the AMA Code of Medical Ethics, human reproductive cloning promotes “practices that are incompatible with the ethical norms of medicine” (2026). The prohibitist stance places human dignity as its main value, while the liberal stance considers individualism.



IV. UN ACTIONS:

Furthermore, the World Health Organization (WHO) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) maintain that human reproductive cloning is unacceptable, and UNESCO continuously encourages countries to adopt sanctions against its practice to protect human identity and the uniqueness of each individual. In 2002, the Director-General and head of the UNESCO, Koïchiro Matsuura, declared the following: “This news, whether or not it is confirmed, brings home to us the urgent need to do everything possible, at both the national and international levels, to prohibit experiments that are not only scientifically risky but also ethically unacceptable, constituting as they do an intolerable violation of human dignity,” (Matsuura, K., 2002).

It has been known that the United Nations and the International Bioethics Committee maintain a very clear stance opposing human reproductive cloning, mainly via the United Nations Declaration on Human Cloning, which was passed in 2005 by the General Assembly. “The UN Declaration on Human Cloning calls for countries to prohibit all forms of human cloning since they are incompatible with human dignity and the protection of human life.”(Mayor, S., 2005). This resolution was adopted after a debate that lasted three years. One proposal suggested completely banning human reproductive and therapeutic cloning, while the second proposal aimed to ban only reproductive cloning but allow therapeutic cloning. However, it is a non-binding declaration, meaning that it only encourages countries to pass laws supporting its position. “The non-binding nature of the declaration also allows for reproductive cloning, however. Professor Gardner commented, ‘The voting of 71 to 35, with 43 abstentions, shows a divided UN and fails to send out a clear message to maverick scientists that reproductive cloning is unacceptable.’” (Mayor, S. 2005). This diplomatic divide highlights a fundamental definition hurdle that continues to shape international bio-law. While reproductive cloning seeks to implant a cloned embryo into a uterus to bring a cloned fetus to term, therapeutic cloning involves generating cloned embryos solely to harvest embryonic stem cells for research and regenerative medicine. The inability of the General Assembly to decouple these two tracks prevented the 2005 Declaration from achieving a unanimous, legally binding convention. The decision to adopt the resolution remains controversial on a global scale.

Later, the UNESCO IBC called a meeting in 2015 to develop a new report in order to target both human rights and human genome editing. This meeting surged after experts argued against the idea that genome editing is revolutionary and necessary. As revealed in the conclusion reached, which stated that ““Interventions on the human genome should be admitted only for preventive, diagnostic or therapeutic reasons and without enacting modifications for descendants,” the panel said. Unless such restrictions were applied, it could “jeopardize the inherent and therefore equal dignity of all human beings and renew eugenics” (Phys. Org, 2015). The implementation of the 2015 report showed large significance because the IBC was now taking strict regulations that had strong binding effects. On the other hand, the Declaration of Human Cloning in 2005 portrayed a non-binding perspective. Moreover, the 2015 report also played a significant role in the stance that the international community had; since then, most member states have resisted another meeting regarding the issue.

As of recently, the WHO Expert Advisory Committee on Human Genome Editing has taken a highly important framework that was established in 2018. This meeting established “a global, multidisciplinary expert advisory committee (the Expert Advisory Committee on Developing Global Standards for Governance and Oversight of Human Genome Editing, hereafter called the Committee).” (WHO, 2021). This measure was taken as a way to respond to what had happened with scientist He Jiankui, who announced the existence of genetically modified newborns. WHO decided to focus its newest committee to address “the scientific, ethical, social and legal challenges associated with human genome editing (somatic, germline and heritable)” (WHO, 2021). The 2021 WHO framework clarifies this regulatory landscape by establishing a vital frontier between somatic gene editing—which alters non-reproductive cells to treat a single living patient—and heritable germline editing, which permanently updates sperm, eggs, or embryos. Because heritable modifications affect all future descendants of an individual, they pose unique ethical challenges regarding human dignity, generational consent, and the risk of uncoordinated consumer eugenics. The meeting that was carried out in 2018 set footprints for further publications in 2021 by the same committee, which recommended international research and cooperation and effective oversight.

V. POSSIBLE SOLUTIONS

As previously discussed, human reproductive cloning carries various implications and directly compromises human integrity on a global scale; therefore, it must be addressed and controlled immediately. Due to the lack of attention given to this issue, especially by political leaders and institutions, the international community is still concerned about the risks of human reproductive cloning and considers it a global threat. To limit or completely ban human reproductive cloning, the International Bioethics Committee encourages international cooperation and proposes the following solutions:

- I. *Develop an international framework that restricts human reproductive cloning:* Establish common international standards through UNESCO to regulate and restrict human reproductive cloning on a global scale. UNESCO’s role would extend to ensuring the equitable application of said measures.

- a) This would include guidelines for research involving cloning-related technologies and restrictions or the prohibition of therapeutic cloning.

II. Promote public education and campaigns regarding emerging cloning technologies:

- a) The latter will have the purpose of encouraging dialogue between scientists, political leaders, religious groups and civil societies aiming to increase understanding regarding cloning technologies and their implications.
- b) Develop online platforms and accessible information regarding human reproductive cloning and other gene editing technologies.

III. Institute systems that monitor the development of human reproductive cloning technologies across the globe:

to spot illegal cloning operations. Create a UN interconnected system that inspects research facilities to prevent unauthorized development of cloning technologies.

- a) Ensure that the system has the capacity to identify illegal action and possesses the authorization from the international community to perform said inspections.

IV. Encourage scientific and technological bodies:

to restrict cloning-specific materials to prevent further development on human reproductive cloning, aiming to ensure that laboratories with cloning capabilities are limited and overseen.

- a) Establish a registry that involves all member states to spot illegal exports and imports to biomedical research laboratories which could be linked to human reproductive cloning.

VI. COUNTRIES INVOLVED

- 1. Ehsan Shamsi Gooshki — Islamic Republic of Iran*
(Biomedical ethics and WHO bioethics governance)

Ehsan Shamsi Gooshki is an internationally recognized bioethicist and physician from Iran. Currently, Dr. Shamsi serves as a consultant and lead writer of WHO clinical ethics guidance and holds the esteemed position of Vice-chair of the WHO Ethics Review Committee (ERC), of which he has been a member since 2021. During the recent COVID-19 pandemic, he has been actively engaged at both national and international levels.” (*Monash University, n.d.*) He has played a crucial role in developing national bioethics systems and research ethics frameworks, particularly in Iran. His research is specialized in global health ethics, bioethics governance and implementation and justification of ethical standards, research ethics, clinical ethics and public health ethics. His role is essential in shaping international ethical standards and policies.

2. *Monika Betzler — Swiss Confederation*
(Human dignity and applied ethics)

Monika Betzler is a practical philosopher born in Munich, Germany. Her research is specialized in moral psychology, normative ethics, and theories of practical reason. “Monika Betzler is Professor of Philosophy at the University of Berne in Switzerland. Professor Betzler earned a Master in Public Administration from Harvard University’s Kennedy School and earned her doctorate from Ludwig Maximilian University in Germany (*The Murphy Institute, n.d.*).” She has written a book titled “Practical Conflicts”, published forty academic articles, and edited six volumes which focus mainly on practical philosophy and the ethics of personal relationships. Her work addresses important questions on human reproductive cloning, such as human dignity, autonomy, identity, moral responsibilities, and limits upon biomedical technologies.

3. *Eng Hin Lee — Republic of Singapore*
(Human genome editing, embryo and chimera research)

Professor Eng Hin Lee is a recognized pediatric orthopaedic surgeon, medical researcher, and bioethicist from Singapore. Professor Eng Hin Lee “completed his medical degree at the University of Western Ontario, London, Canada in 1973 and did his residency training in Orthopaedic Surgery at the University of Toronto Teaching Hospitals. [...] Prof Lee is currently

Emeritus Professor of Orthopaedic Surgery at NUS and an Emeritus Consultant in the Division of Paediatric Orthopaedics at NUH (*National University Hospital, n.d.*).” His research is specialized in care, rehabilitation and surgical treatment of “musculoskeletal problems occurring in infants and children, such as hip dysplasia and dislocation, foot deformities, spinal deformities, limb length discrepancies and neuromuscular disorders in children (*National University Hospital, n.d.*),” and is the representation of the medical side of bioethics within the committee.

4. *Ames Dhai — Republic of South Africa*
(Health law, human dignity, global bioethics)

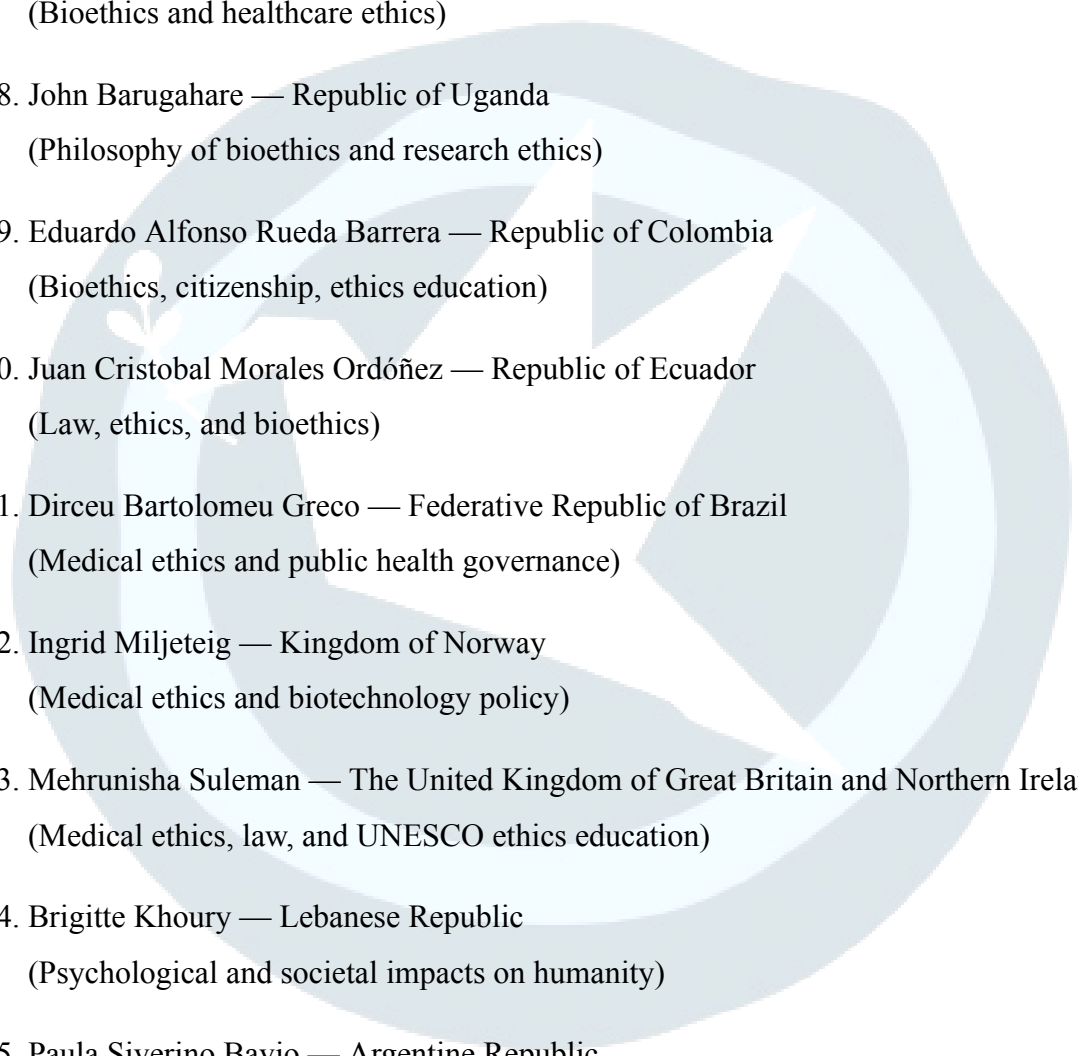
Professor Dhai is often recognized because of her strong emphasis on human dignity and human rights, and is highly involved in health law. “Professor Dhai is a leading authority in Bioethics both internationally and locally, and can be credited with entrenching bioethics and human rights as an integral aspect of health sciences in SA(SAMRC, n.d).” She has played a crucial role in the international community where she has worked as a consultant and contributor for the World Health Organization, UNESCO and the World Medical Association. Professor Dhai is the Editor-in-Chief of the South African Journal of Bioethics and Law. She has also been involved at the Wits School of Clinical Medicine where she served as a visiting professor. Furthermore, she is the Vice Chairperson of the International Bioethics Committee of UNESCO, placing her as an influential person within this committee. “Using an academic platform, Professor Dhai has taken a lead in health advocacy and activism. She has published extensively in this field (SAMRC, n.d).”

5. *Gang Pei — People’s Republic of China*
(Cell biology, science and technology ethics)

Professor Gan Pei is described as one of China’s top life scientists by various critics. Most of his research focuses on: “Neurogenesis and neuroplasticity mechanisms, Alzheimer’s disease research and treatments, Pluripotent Stem Cells Research, Liver Disease, Diagnosis and

Treatment, Liver physiology and pathology, Liver Disease and Transplantation, GDF15 and Related Biomarkers (Research.Com, n.d).” Gang Pei is a Professor at Tongji University and one of the Principal Investigators at the Chinese Academy of Sciences. He is the Honorary President of the Chinese Society for Cell Biology as well as the Former President of the Asian-Pacific Organization for Cell Biology. In addition, he has shown clear expertise in cloning, where he has collaborated on research projects based on producing piglets from induced pluripotent stem cells.

- 
6. Batoul Baz — Kingdom of Saudi Arabia
(Molecular genetics, biosafety, AI for health)
 7. Misao Fujita — State of Japan
(iPS cells, stem cell ethics, human biology)
 8. Marileen Dogterom — Kingdom of the Netherlands
(Bionanoscience and biomedical innovation)
 9. Ariel Lindner — State of Israel
(Bioconvergence and synthetic biology)
 10. Emily Cross — United States of America
(Human enhancement, neuroscience, robotics ethics)
 11. Bettina Schöne-Seifert — Federal Republic of Germany
(Medical ethics and philosophy)
 12. Joanna Rozynska — Republic of Poland
(Biolaw, transplantation ethics, bioethics regulation)
 13. Paula Martinho da Silva — Portuguese Republic
(Ethics in science and new technologies)
 14. Asta Cekanauskaite — Republic of Lithuania
(Biomedicine and human rights regulation)

- 
15. Hakan S. Orer — Republic of Türkiye
(Clinical trials ethics and biomedical research)
 16. Mylène Deschenes — Dominion of Canada
(Genomics governance and research ethics)
 17. Nijmeh Al-Atiyyat — Hashemite Kingdom of Jordan
(Bioethics and healthcare ethics)
 18. John Barugahare — Republic of Uganda
(Philosophy of bioethics and research ethics)
 19. Eduardo Alfonso Rueda Barrera — Republic of Colombia
(Bioethics, citizenship, ethics education)
 20. Juan Cristobal Morales Ordóñez — Republic of Ecuador
(Law, ethics, and bioethics)
 21. Dirceu Bartolomeu Greco — Federative Republic of Brazil
(Medical ethics and public health governance)
 22. Ingrid Miljeteig — Kingdom of Norway
(Medical ethics and biotechnology policy)
 23. Mehrunisha Suleman — The United Kingdom of Great Britain and Northern Ireland
(Medical ethics, law, and UNESCO ethics education)
 24. Brigitte Khoury — Lebanese Republic
(Psychological and societal impacts on humanity)
 25. Paula Siverino Bavio — Argentine Republic
(Human rights law and bioethics)

VII. BIBLIOGRAPHY:

- Andorno, R. (2009). *Human Dignity and Human Rights as a Common Ground for a Global Bioethics*. *Journal of Medicine and Philosophy*, 34(3), 223–240.
<https://doi.org/10.1093/jmp/jhp023>
- Ayala, F. J. (2015). Cloning humans? Biological, ethical, and Social Considerations. *Proceedings of the National Academy of Sciences*, 112(29). <https://doi.org/10.1073/pnas.1501798112>
- Cheng, S. (2022). *Gregor Mendel: The father of genetics who opened a biological world full of wonders*. *Molecular Plant*, 15(11), 1641–1645.
<https://doi.org/10.1016/j.molp.2022.10.013>
- Cloning for Reproduction | ama-coe. (n.d.). Code-Medical-Ethics.ama-Assn.org.
<https://code-medical-ethics.ama-assn.org/ethics-opinions/cloning-reproduction>
- Cloning Fact Sheet. (2020). National Human Genome Research Institute.
<https://www.genome.gov/about-genomics/fact-sheets/Cloning-Fact-Sheet>
- Ehsan Shamsi gooshki. (n.d.). Monash University.
<https://research.monash.edu/en/persons/ehsan-shamsi-gooshki/>
- Fiveable. (2018). Reproductive Ethics and Genetic Engineering. Fiveable.
<https://fiveable.me/ethics/unit-8/reproductive-ethics-genetic-engineering/study-guide/VUpPpoUjSJB7QJRo>
- Gwon, L. W., Badon, I. W., Lee, Y., Kim, H.-J., & Lee, S. H. (2025). Advances in large-scale DNA engineering with the CRISPR system. *Experimental & Molecular Medicine*.
<https://doi.org/10.1038/s12276-025-01530->
- Gaj, T., Sirk, S. J., Shui, S., & Liu, J. (2016). Genome-Editing Technologies: Principles and Applications. *Cold Spring Harbor Perspectives in Biology*, 8(12), a023754.
<https://doi.org/10.1101/cshperspect.a023754>

General Assembly ban on all human cloning to be reconsidered by UN ethics panel. (2008, October 13). UN News. <https://news.un.org/en/story/2008/10/277762>

Human cloning policies. (n.d.). Center for Genetics and Society. <https://www.geneticsandsociety.org/internal-content/human-cloning-policies>

IBC —. (n.d.). CAHSMUN Horizons. <https://horizons.cahsmun.org/ibc>

Leading global voices in bioethics, technology, and science governance. (2026). Unesco.org. <https://www.unesco.org/en/articles/leading-global-voices-bioethics-technology-and-science-governance-come-together-unesco-explore>

Leading global voices in bioethics, technology, and science governance come together at UNESCO to explore the ethics of converging sciences. (2025, October 6). Unesco.org. <https://www.unesco.org/en/articles/leading-global-voices-bioethics-technology-and-science-governance-come-together-unesco-explore>

Langlois, A. (2017). *The global governance of human cloning: the case of UNESCO*. Palgrave Communications, 3(17019), 17019. <https://doi.org/10.1057/palcomms.2017.19>

Mayor, S. (2004). UK body calls on UN to allow therapeutic cloning. *BMJ (Clinical Research Ed.)*, 329(7472), 938. <https://doi.org/10.1136/bmj.329.7472.938>

Mayor, S. (2005). UN committee approves declaration on human cloning. *BMJ (Clinical Research Ed.)*, 330(7490), 496. <https://doi.org/10.1136/bmj.330.7490.496-b>

Masci, D. (2017). *20 years after Dolly the sheep's debut, Americans remain skeptical of cloning.* Pew Research Center. <https://www.pewresearch.org/short-reads/2017/02/22/20-years-after-dolly-the-sheeps-debut-americans-remain-skeptical-of-cloning/>

Noli, L., Ogilvie, C., Khalaf, Y., & Ilic, D. (2017). *Potential of human twin embryos generated by embryo splitting in assisted reproduction and research.* Human Reproduction Update, 23(2), 156–165. <https://doi.org/10.1093/humupd/dmw041>

(N.d.-a). *Unesco.org.*
<https://www.unesco.org/en/ethics-science-technology/bioethics-and-human-rights>

(N.d.-b). *Unesco.org.* <https://www.unesco.org/en/ethics-science-technology/ibc>

UNESCO. (2023). *International Bioethics Committee (IBC).* *Unesco.org.*
<https://www.unesco.org/en/ethics-science-technology/ibc>

(N.d.-b). *Britannica.com.* <https://www.britannica.com/science/cloning/Reproductive-cloning>

(N.d.-c). *Sciencedirect.com.*
<https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/somatic-cell-nuclear-transfer>

(N.d.-a). *Britannica.com.* <https://www.britannica.com/science/somatic-cell-nuclear-transfer>

(N.d.-b). *Unesco.org.* <https://www.unesco.org/en/ethics-science-technology/ibc>

New England Biolabs. (2016). *Neb.com.*
https://www.neb.com/en-us/tools-and-resources/feature-articles/foundations-of-molecular-cloning-past-present-and-future?srsId=AfmBOooUT-B5_Zhx3ywxn1QOyzVu8pkXY336baAriAPZKpUGMZI-4c0M

(N.d.). *Sciencedirect.com.* *Therapeutic cloning.*
<https://www.sciencedirect.com/topics/engineering/therapeutic-cloning>

UNESCO chief condemns human cloning activities.(n.d.). *News.un.org.*
<https://news.un.org/en/story/2002/12/55392>

Prof Ames Dhai | SAMRC. (2022). *Samrc.ac.za.*
<https://www.samrc.ac.za/biosketch/prof-ames-dhai>

People Archive. (n.d.). *Monika Betzler. Tulane.edu.*
<https://murphy.tulane.edu/people/monika-betzler>

Prof Lee Eng hin. (n.d.). NUH.

https://www.nuh.com.sg/care-at-nuh/find-a-doctor/doctor-details/Lee_Eng_Hin

Short read. (2024). *The story of Dolly the sheep*. National Museums Scotland.

<https://www.nms.ac.uk/discover-catalogue/the-story-of-dolly-the-sheep>

Segal, N. L. (2025). Human Reproductive Cloning: Possible Psychological Consequences.

Review of General Psychology. <https://doi.org/10.1177/10892680251347543>

The history of cloning. (n.d.). Utah.edu.

<https://learn.genetics.utah.edu/content/cloning/clonezone/>

2026 Gang Pei: Molecular Biology Researcher – H-Index, Publications & Awards |

Research.com. (2026, May 25). Research.com. <https://research.com/u/gang-pei-1>

Universal Declaration on the Human Genome and Human Rights. (2023). Unesco.org.

<https://www.unesco.org/en/ethics-science-technology/human-genome-and-human-rights>

Unesco.org (2019). *Human cloning: ethical issue.*

<https://unesdoc.unesco.org/ark:/48223/pf0000135928>

UNESCO experts call for ban on genetic “editing.” (2015). Phys.org.

<https://phys.org/news/2015-10-unesco-experts-genetic.html>

What is cloning, and what does it have to do with stem cell research? (2020). EuroGCT.

<https://www.eurogct.org/what-cloning-and-what-does-it-have-do-stem-cell-research>

What are genome editing and CRISPR-Cas9? (n.d.). Medlineplus.gov.

<https://medlineplus.gov/genetics/understanding/genomicresearch/genomeediting/>

World Health Organization. (2021). Human genome editing: a framework for governance.

Www.who.int. <https://www.who.int/publications/i/item/9789240030060>

YourGenome. (n.d.). *The discovery of DNA: the first building blocks*. Wellcome Connecting Science.

<https://www.yourgenome.org/theme/the-discovery-of-dna-the-first-building-blocks/>

