

## Protection of genetic heritage in the era of cloning

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*Research on human beings has expanded greatly due to progress and the evolution of society as well as customs. Not only the unceasing development of research on human beings, but also interference in the beginning and end of life with homologous and heterogenous human reproduction, surrogate motherhood, cloning, gene therapies, eugenics, euthanasia, dysthanasia, orthothanasia, assisted suicide, genetic engineering, reassignment surgery in cases of transsexuality, the use of recombinant DNA technology and embryonic stem cells, transplantation of human organs and tissues, biotechnology and many other scientific advances. Scientific progress goes faster than the real needs of human beings, who are the final recipient of the entire evolutionary progress. Hence, there is the need to scrutinize whether new technologies are necessary, suitable and timely so that humanity can achieve its postulate of bene vivere. Human cloning, as an abrupt scientific fact, has presented itself to the world community as a procedure that can be performed with relative success and with little difficulty, since it achieved its objectives with the cloning of Dolly the sheep.*

*This issue became the topic of discussion not only in the scientific community but in the lay population, and it received from both, global disapproval. The conclusion is that the human being is unique, with a life cycle defined by the rules of nature. Reversal will cause a violation of the genetic heritage and, above all, will confront the constitutional principle of human dignity.*

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### Research with stem cells

Advances in biotechnology and biomedical engineering gain substance and are projected in many healthcare areas, especially in genetic engineering, which started after the deciphering of DNA. There is an uncontrollable fascination of researchers to overcome all barriers in their way and to find conceptive technologies that are safe and feasible, which provide complete control over the genetic patrimony. If, on one hand, this opens up new alternatives for infertility so that citizens can exercise the right of procreation, on the other, due to the blurred manners of research, there is a need to draw boundaries to protect mankind.

Man, by his own behavior and because of his intelligence, has an investigative nature, he is a researcher bent on knowing the mysteries that challenge and abound in his external world. He wants to penetrate the secrets of nature, dominate the seas, air, mountains, trees, animals and everything else, a real tug of war in which, what should prevail is man's conquest and superiority. But, not always man achieves his goals. Nothing can be done to stop an earthquake, a tsunami, a storm, a volcanic eruption, except, preventively, to guard against imminent danger. If man has gained benefits to improve and optimize his life, he has also accumulated losses, because he fails to restore and preserve nature that has its own immutable rules.

For more than a decade man has been intensifying studies involving adult stem cells, which have been tentatively directed to replace and repair tissue. Research moved forward and man started studying embryonic cells, which have the capacity to differentiate into any cell due to their totipotent, multipotent and pluripotent characteristics.

And with this the Brazilian Supreme Court was called upon to decide a Direct Action of Unconstitutionality brought by the General Attorney's Office regarding the use of human embryos for stem cell research and therapy purposes; the ruling was close but favorable (six votes to five) and thus brought a new ethical legal view in respect to the beginning of life.

The action, in brief, embraced the idea that the embryo, since its inception, is representative of life and, as such, enjoys the privilege and right to have its dignity preserved. Thus, the legislative liberality afforded in the article in the law on biosafety<sup>(1)</sup>, which allows the use of non-viable embryos for research purposes, would be a way to counter the legal order and violate the principle of human dignity, which is one of the basic foundations of a democratic state of law. With this decision, the Supreme Court indirectly defined the beginning of human life, as in the womb and not *in vitro*. The defining locus changed to intra-uterus, the protective shell that supplies a refuge for the embryo, providing it all the conditions necessary for its development. Extra-uterus conditions, such as with *in vitro* fertilization, there is no life but rather a set of procreative cells.

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A group of North American scientists, led by Craig Venter, discovered the first synthetic living cell. Scientists sequenced the DNA of a bacterium and saved its genetic information to, afterwards, inject it into the cell of another bacterium that had had its DNA removed. Subsequently, the 'hollow' Microbe was revived and went on to replicate, giving rise to the birth of synthetic cells. "The feat of Venter et al. seems to liquidate the argument that life requires a special force or power to exist. In my view, this makes it one of the most important scientific achievements in the history of mankind", said the bioethicist, Arthur Caplan of the University of Pennsylvania. He commented on the study for the journal *Nature*<sup>(2)</sup>.

The international community became very perplex and even worried about the creation of a living cell with a synthetic genome. This opened a space that has not been discussed or even experienced by humanity; the manipulation of life. Bioethics, with its basic principles, is prepared to analyze whether scientific progress is appropriate and ethical. The dignity of human life, by the principle of beneficence, does not allow that such scientifically proven advances are considered ethical and ready to be utilized by man, thus providing the possibility of reproduction in series.

The great British scientific research of John b. Gurdon and of the Japanese, Shinya Yamanaka, winners of the Nobel Prize for medicine in 2012, must be mentioned here. These researchers separately studied cell reprogramming with results that allow the reversal of cells to their original condition, the creation of pluripotent stem cells that have the ability to turn into any cell of the body. This conquest had a highly positive impact for research involving stem cells to develop regenerative therapies that would otherwise only be obtained with the destruction of embryos. "As it is possible to obtain" announced a report by Veja, "cells from any part of the human body, Yamanaka's technique will eliminate the controversial need to sacrifice embryos. Until then, this was seen as an impossibility"<sup>(3)</sup>.

On the other hand, the use of embryonic stem cells was halted definitely, eliminating any religious, moral or ethical restrictions. In fact, adult stem cells will be used, without destroying any embryo.

## Research with humans and cloning

New technologies that seemed so distant are now knocking at the doors of the big medical centers and are ready for use in humans. Perplexity has overtaken the rays of curiosity and a new field has been born that focuses on medical ethics and bioethics, in order to direct solutions to new conflicts. Human beings stopped to be passive and definitely became the subject and exclusive recipient of research, which, under no circumstances, can counter their needs and convenience. The new science of bioethics set the boundaries of research in the paradigm of human dignity.

This new ethical guise is supported by principles set down by the *Comissão Nacional Para a Proteção dos Seres Humanos da Pesquisa Biomédica e Comportamental* and the classical work *Principles of Biomedical Ethics* by T. L. Beauchamp and J. E. Childress. In brief, these are the principles: beneficence or non-maleficence (*primum non nocere*), with the purpose of always seeking good for man, autonomy of the human will, so that, the patient is always respected and informed throughout

the procedure and distributive justice, in order to provide the researched and approved medical services to all people.

In this area of scientific achievements, human cloning is a new challenge. Originally from the Greek word κλών for bud, shoot, little branch, a replica or copy, clone means derivation from an originating life form. You could say that cloning is a form of asexual reproduction that does not involve male and female gametes to eventually produce a replica of the people who donated the procreative material. Houaiss, in a concise definition of clone, stated: "an individual genetically identical to another produced by genetic manipulation"<sup>(4)</sup>. A more technical definition is presented by the *Bioethics Dictionary* that states: Cloning, in itself, consists of taking an oocyte, removing its nucleus and replacing it with the nucleus of a somatic cell, that is, a cell belonging to any tissue of the body, and inducing embryonic multiplication and differentiation<sup>(5)</sup>.

In 1996, in Scotland, with the birth of the sheep Dolly, the first cloned adult mammal, created without the participation of the male gamete was produced by cloning. With this the scientific world started to worry about protecting the genetic patrimony so as not to allow the same to happen to humans. Thus, the genetic patrimony started to receive dual protection with respect to its ownership: on one hand, although the genes represent the parents, the genetic patrimony belongs exclusively to the individual and on the other hand, because of the equality of its genetic structure and of the continuity of the human race, it is the domain of humanity.

## Genetic patrimony

The genetic heritage is one that ensures the survival of the species and for this it is labeled genetic heritage of humanity. The Council of Europe, worried about unscrupulous procedures, recommended the intangibility of genetic inheritance taking into account artificial interventions. "The genetic heritage, as the name implies," says Oliveira junior, "is the sum of human achievements on the physical, psychological and cultural planes that accompanies him through his biological records, is part of his history and evolution, and as such, deserves legal protection. This is the story and the portrait of the human race, since the Neanderthal man. It is the subject to personal and state guardianship and any offense against it is disrespectful to humanity itself. Protection is transferred from the individuality of the already existent human being, with his own personality, to one that will be in the future, with legal personality"<sup>(6)</sup>. The deciphering of the genetic code is one of the greatest achievements of humanity. To know the function that each gene exerts within the DNA means to read the genetic information and discover the code of life. Man, however, is not just a result of genetic mapping, but he also has genetic potential which, in harmony with the environment where he lives, may differentiate him from the rest, thus creating a unique individual. Science is inclined to identify the genes responsible for certain diseases, such as Alzheimer's, Parkinson's and Down syndrome, and others, with the intention of changing the genetic code and definitively eradicating the disease.

Research started with preventive medicine based on the genome to ensure people's health. Commercially it is possible to perform an incomplete reading of the DNA but the search

for important information so that a person knows his genetic code is, mainly, to prevent the occurrence of diseases to which he has genetic predisposition. The statement “*nosce te ipsum*” (know thyself) from the thoughts of Socrates is true; the Greek philosopher preached the need of knowledge of yourself to rationally organize your life.

In a recently published article in the journal *Science Translational Medicine*, by the team led by the researchers Jay Shendure and Jacob Kitzman, it is possible, without any risk, to determine the entire genome of the human fetus for the first time from blood samples of the pregnant mother and from paternal saliva. So, if both parents have the same version of a gene, the fetus inherits this gene<sup>(7)</sup>.

The Food and Drug Administration (FDA), the drug regulatory agency of the United States, says that the DNA tests that will be placed on sale in pharmacies in the form of kits (Ancestry Kit and Health Kit), will bring more problems than benefits. The ‘reading’ of a saliva sample of the interested party, without any medical knowledge, may indicate genetic predisposition to certain diseases, which, in reality, does not extinguish, but promotes anguish and desperation in people in particular in the medicalization regime in which the world finds itself today.

The resolution No. 196/96 of the Brazilian National Health Council cannot be overlooked. This ruling sets standards and regulatory guidelines on research involving humans. This is a document that has a huge amount of bioethical thinking and keeps track of the universal declarations of human rights and protection of research subjects. Precisely as it is a standard document, it should be supplemented by others on specific areas.

It is important to mention that the principle of the untouchability of embryos is no longer applicable because of the scientific advances in the selection of embryos. It is still not permitted to select the gender or any other biological feature of the future child, but pre-implantation diagnostic examinations and genetic testing to check if the embryo has chromosomal or genetic changes is not questioned. If the assessment is positive, a corrective procedure is acceptable.

In relation to this, the Federal Council of Medicine has directed the procedure by resolution<sup>(8)</sup> and established that:

The human reproduction techniques can also be used in the identification and treatment of genetic or hereditary diseases, when perfectly indicated and with sufficient guarantees of diagnosis and therapy;

1 - Any *in vitro* intervention on embryos for diagnostic purposes, cannot have another purpose other than to evaluate its viability or to detect hereditary diseases, and only with the informed consent of the parents.

2 - All *in vitro* therapeutic interventions on embryos can have no other purpose than to treat a disease or prevent its transmission, with real guarantees of success and only with the informed consent of the parents.

On the same note the Convention on Human Rights and Dignity of Human Beings with regard to biological and medical applications clarifies about interventions of the human genome in its 13<sup>th</sup> article:

“An intervention that has the objective of modifying the human genome may not be undertaken except for therapeutic, diagnostic or preventive reasons and only if the introduction of a modification in the genome of the offspring is not intended”<sup>(9)</sup>.

And again on the same theme, the 2<sup>nd</sup> article of the Universal Declaration on the human genome and Human Rights of July 1997 establishes:

- a) Everyone has the right for their dignity and their human rights, regardless of their genetic characteristics.
- b) That dignity makes it imperative not to reduce individuals to their genetic characteristics and to respect their uniqueness and diversity.

But man, by his own investigative character and explorer spirit, fails to follow the rules of nature, which are constant, immutable and inflexible. Hence he finds it necessary to leave his cocoon and explore new techniques that challenge his knowledge. To this end, a single step is enough to get closer to and want to engage in human cloning.

Every man is an individual, irreplaceable in the strictly personal dimension of his life, whether in the choice of a partner, in his vocational option, or in social conduct. You cannot measure the human being in body, organic, biological, sociological, or rational terms. He is the synthesis of the representativeness of his life, which gives him the potential to realize his dreams. And much less can he be the mastermind of the nefarious venture as a builder of himself.

## Therapeutic and reproductive cloning

Cloning can be therapeutic, that is not with the aim of reproducing a human being but to create embryos to extract from them the so-called stem cells to combat degenerative diseases such as Alzheimer’s, Parkinson’s, diabetes and others. There are numerous lines of research on hematopoietic stem cells with encouraging results. However there is discussion concerning the use of embryonic stem cells, an issue that is related to the very concept of the beginning of human life, which for a long time was teetering between medical, religious, philosophical, scientific, legal and ethical beliefs, as has already been mentioned in this paper.

Reproductive is differentiated from therapeutic cloning with an abysmal distance between. It is to create a being identical to another existing being by genetic manipulation using an asexual reproduction procedure and keeping the same genetic code. The practice is universally condemned, both by ethical census and legislation.

Regarding the disapproval of this latter modality, the always witty Diniz states that “the human being has a right to be genetically single and unrepeatable; the cloned being would lose that right because he is the clone of a physical copy identical to the individual who donated the nuclear genetic information. Would not accepting the clone be denying the true person himself leading to the destruction of identity? The clone would have the same somatic features and the same susceptibility to certain DNA-related diseases. But it is once again necessary to mention that the genetic identity does not include behavioral characteristics, environmental influences and social conditioning of ideas in face of the facts that make up life and of the society that surrounds us, socializing us and culturing us”<sup>(10)</sup>.

The Czech novelist and playwright Tchépek, recounts a drama in that humanity is experienced because of the indiscriminate advance of science, in which a researcher managed to produce a human-looking robot, which carried out all the tasks and activities of man, however without any feelings. In a given dialogue, the director of the factory, when asked about the mass production of human beings, said to a buyer: "But old Rossum is intending to do this literally. You know, he wanted to depose God in a scientific way. He was a great materialist and for this reason he did everything. He wanted to simply prove that there was no need for a God. So he got it into his head to make a man, like us, piece by piece." And then he gave the last shot: "Imagine that he decided to manufacture everything up to the last gland, as in the human body; the appendix, tonsils, belly, things without need, even ... hum ... sexual glands"<sup>(11)</sup>.

"The most radical form of interfering in the genetic structure, states Chilean doctor and professor Kottow, is cloning, a technique that duplicates the gametes of a germ line so that all genes are alleles or replicas of themselves. "Reproduction like this is asexual in that, genetic material of two individuals is not used but of one of them is doubled"<sup>(12)</sup>.

Humanity takes the front line and launches its abhorrence against cloning. Its legitimacy is indisputable, because it is an asset that belongs to us all and affects all human beings on the planet. There is thus need for people to speak their minds in respect to the release or prohibition of asexual procreative procedures. The voices that have already been raised indicate total disapproval. The manifestation of the Bioethics Counsel of the United States is conclusive: "Beneath the current debate about human cloning lie major questions about the relation between science and technology and the larger society. Valuing freedom and innovation, our society allows scientists to inquire as they wish, to explore freely, and to develop techniques and technologies based on the knowledge they find, and on the whole we all benefit greatly as a result"<sup>(13)</sup>.

Unarguably the imagination takes account of thoughts, takes flight and will shelter in the advantages presented by the creator of Dolly. Apparently the procedure is not laden with complexity and, oddly enough, the creation of a human being is possible. The reproduced sheep is a demonstration that scientific research has a capability heretofore unimaginable. While man, with the necessary caution, still debates assisted human reproduction techniques that have reasonable success rates, the possibility of cloning a human being suddenly appears, like a tsunami. Even though the world is not yet prepared for an issue of this magnitude, as it continues to breathe the desolate experiences of the concentration camps, science leaped beyond not only the academic expectations but also the barriers of ethical sense.

Here and there, there has been news of human replication, but no scientist practices this for fear of being recriminated by the scientific community and by humanity itself, that is set against such a deed. But, one cannot help but imagine that the procedure is being illegally carried out somewhere out of sight. Although the specific purpose of the act is not known, it can be concluded that there are many interests involved.

It would be even hilarious, at least in our imagination, at the beginning of this century, to come face to face with a copy and to

mix with it in such a way that it is not known which the original is and which was created. The human personality is unique, exclusive and does not extend beyond the person. "So," states Venoza, "the powers conferred to humans that appear in legal relationships are called personality. Capacity is the element of this concept; it sets the limits of personality"<sup>(14)</sup>. And the protection extended to the right of personality is evidenced when the civil law prescribes: "With the exception of the cases provided for by law, the rights of personality are not transferable and cannot be renounced or their exercise suffer voluntarily limitation"<sup>(15)</sup>. This concept stresses that the holder of the set of rights that form the human personality, cannot give them up or transfer them and their exercise may not suffer any limitation either on the part of the holder or anyone else. It would be a legal deference "*intuitu personae*". Thus, the right of personality is born with the man, it stays for his lifetime and then with him it fades.

Not even Aldous Huxley, in his book<sup>(16)</sup> published in 1932, which chronicles the hypothetical future where people are biologically pre-conditioned, came to imagine the use of human organs to achieve the perfection of his characters. An advanced reproductive genetic engineering was envisioned at that time, where the genes of a third person are implanted in a fertilized egg or embryo. Using these measures, the child could bear the genes of the father, the mother and a third person exceptionally gifted in order to "improve" the human race.

Birth gives humans all the necessary protection to live peacefully in the community. When you say legally that "all are equal before the law", this also means that we all are equal "biologically". Man, if he does not have his life abruptly ended, develops his natural cycle: birth, childhood, puberty, maturity and old age. This gives the idea that we evolve towards death, which is the end point of existence. Thus, after fulfilling the vital cycle, no one, absolutely no one will be spared by immortality. This reminds us of the work of Simone de Beauvoir, 'All men are mortals', in which she creates a fictional immortal and, jokingly, concludes that immortality is death.

Thus, at the end of the biological period of each, perpetuity does not exist, the same human being is not renewed. Death takes the physical life, or as the Romans said, *mors omnia solvit*, but leaves the person's story to be told as an example or affection for those who live. It would be a contradiction for someone to be copied and return to society to those with whom he had shared his previous life. The first question is whether this is the same person really and the second is that nothing is known about the life of the previous owner of the so-called human body. The easily reached conclusion is that the cloned person has nothing of the psychic, volitional and cognitive entity of the first occupant of the body. And it is even an abuse to the dignity of human beings to look at a being that has the undisputable physical identity of another, but is not the other and, worse of all, the body is not his. The family ties and affections will suffer an immeasurable shock, because the clone, although having indisputable similarities, does not correspond to the true expression of reality. Love and affection devoted to a person is personal and cannot be transferred. This is not a question of acquiring *prêt-à-porter*, with home delivery. It is years of coexistence, mutual knowledge up to the point at which one begins to anticipate the wishes of the other.

## Body and mind in cloning

Body and mind, although linked, are two different worlds. The explanation given by philosophy of dualism of substance, led by Descartes, is that the body is physical matter, composed of cells, tissues and organs, an instrument ambulatory, with an intimate relationship with the mind. So much so that we can see, touch and feel an object. The mind, in turn, is the place where feelings of pain, pleasure, love, forgiveness, knowledge of man and the universe are held, with the possibility of perfecting everything that is related to the registered information.

Hence the mind becomes the specific attribute of the delimitation of man. “The mind exists, Damasio convincingly explains, because there is a body that gives it its basic contents. On the other hand, the mind plays a variety of tasks that are useful to the body – the control of automatic responses to a given order, prediction and the planning of new responses, the creation of very varied circumstances and objects whose presence is beneficial to the survival of the body. The images that flow into the mind are the reflection of the interaction between the organism and the environment, reflection of how reactions of the brain to the environment affect the body, the reflection of how the physiological corrections of the body happen”<sup>(17)</sup>.

Hence, the mind is the reference for man himself, which is symbolized by his body. Every action involves mental participation. If some object comes into contact with the body, it is identified and assessed by pre-existing sensory data. “Most of the information about the environment where we live, explains the astute Nicoletis, and the body we inhabit reaches the brain as a result of exploratory behavior started by the brain. Perception is an active process, which begins within the mind and not the periphery of the body of flesh and bone that constantly is in intimate contact with the universe. With a series of exploratory behaviors, the brain continuously tests its own point of view on the flow of new information that it receives”<sup>(18)</sup>. Cloning, following this line of thought, is nothing more than a repetition of an existing person. It does not affect the mental core, that zone that the Greeks called *nous*, meaning mental activity, including knowledge, reason, pain, happiness, in contrast to the senses. There is no point in repeating physical appearance if the core of the *nous* is not present. It is rather an unwelcome guest occupying a space which it does not belong to.

## Punitive legislation on cloning

Concern with the disapproval of cloning knocked on the door of the legislative assembly, the organ that was in charge of preparing the law on biosafety. The use of human embryos produced by IVF for research purposes was raised to the category of crime, unless considered unviable, if they had been frozen for three years or more and always with the consent of the parents. Consent is required both for the harvesting of reproductive material and its later use in research and therapy. It is interesting to note that the law uses the term parents, referring to the parents who gave the material for purposes of procreation only, to illustrate the permissive legal. The practice of genetic engineering on human germ cells, human zygotes or human embryos is also a criminal offence. It is also unlawful to perform human cloning.

Citing article 26 of this law:

“To perform human cloning: Sentence - imprisonment for two to five years and a fine”.

From the birth of Dolly, up to completion of the human genome project, at the beginning of this century, medicine gave significant steps towards regenerative research and its use in humans. It started with all the potential in the area of genetic engineering to create new cells, or even whole organs to replace those that have deteriorated due to disease, accidents or aging and continued with the possible replacement of a man by another that is more efficient, drawn in his own image. Out of curiosity, *Man-machine* by Max Barry is worth reading. In this book, the character Charles Neumann had his leg amputated by accident and purposely loses the other, loses a hand, receives artificial limbs in the laboratory and concludes that, due to the fragility of human beings, the best solution is reconstruction in the laboratory.

The type of crime described is incisive and objective. The core of the action is the verb carry out with the intention of creating, producing, employing all scientific and technical means to design a human being identical to another existing one, regardless of the ends. The simple action of breaking the rule of procreation and reversing its procedure to artificially clone is a demonstrative conduct of intense deceit, as it is socially and legally reprehensible.

It is interesting to note that anyone can be the active subject of the crime, because the legislature does not require that the act is performed by a health professional. It may have the participation of a doctor or a person from another area of knowledge. Legal protection is the dimension of the human being in his individualized nature, as well as the protection of the genetic patrimony of humanity.

This norm was included in the law in order to protect the genetic heritage and the human genome. The practice of choosing embryos by professionals in human reproduction must not be separated from the principle of *malum non facere* that governs bioethics in science and of *neminem laedere*, embodied in the Justinian institutions based on the just cause of procreation. Any invasion of protective barriers can cause serious damage to the human species, injuring its integrity and even disfiguring the genetic patrimony of humanity. After all, the interest and welfare of the human being should prevail over the sole interest of society or science as stated in article 2 of the Convention on Human Rights and Biomedicine<sup>(19)</sup>.

One gets the impression that by creating a trivialization of a theme of such importance, turns it into a ‘thing’. The development of research in embryology has to be viewed with caution, always with respect for human dignity so as not to run the risk of carrying out artificial procreation disconnected from all the human values of the couple who wish to procreate. While techniques are aimed at solving problems of infertility, it has popular acceptance and approval. When the procedure becomes distant from the goals chosen by society, as, for example, the choice of only male offspring with previously selected features and cloning, rejection is total.

The social group knows the permissive rules for coexistence in harmonic acceptance. Here Montesquieu’s masterpiece “The Spirit of the Laws” comes to mind, when he designed the spontaneous fulfillment of the law, in the sense that if every person had their

share of social commitment and their ethical reading was in tune, the law is obeyed without attracting attention. Antiphon, the Greek sophist, whose work was partially lost, introduced the concept of "consent of the governed" to express that only laws made by men require approval, the others, originating from the people's own ethics, do not require evaluation as they carry the binding spirit.

International law rejects the cloning technique because it is believed to be a procedure without ethics that affronts the principles of human nature itself. It is well known with experiments on animals that many attempts are needed with the destruction of numerous embryos to achieve the objective as the procedure is not efficient but is related to repeated miscarriages of malformed fetuses and early death. Scott, in objective calculus, announced that: "According to one source, of 17,500 attempts at reproductive cloning using at least five mammalian species, 99.2% of the implanted embryos died *in utero*. Of those mammals that were born, many died soon after"<sup>(20)</sup>.

This is not to mention the difficulty of establishing the genetic and hereditary vocation, to know who is the father and who the son, and so on. Accepted scientific interventions to control or even to definitely eliminate diseases so that man can enjoy his existence with more dignity is one thing, but to give him the power to replicate a human being alive or dead, is far from the consent of mankind. It is even inhuman.

Even socially there are no benefits with the replication of human beings. On the contrary, all technological procedures must provide dividends for the health and life of man. The principle of social justice proclaimed by bioethics has the same recommendation. As Maienschein observed: "Others raised important issues of social justice, many of which had been raised about genomics. If we invest so much public funding in a scientific project, how will it serve the public? What else should we be doing with that money instead? This is one argument against funding such research, but not against the research in itself. Others noted that once we have developed technologies and medical procedures that are very expensive and must necessarily be limited to only a few, there will be unequal access to those "goods"<sup>(21)</sup>.

## Conclusions

Man is a being that has been biologically programmed to complete a series of steps in life. Man is born, matures and dies. Thus, even in the face of a simplistic view, each one carries within him a routine that gives the character of continuity and ensures the perpetuation of humankind. These delimiting obstacles make man invest into finding longevity. This excess of ambition is projected into the unknown in an incessant search to create techniques in order to reduce the time necessary for human reproduction and to create new individuals according to the scientist's own interests, through cloning. In other words, man intends to be his own creator.

Thus, science has discovered new technologies that can change human life. Increasingly the scientific investigative spirit penetrates into the unexplored prohibitive regions of the human body and from there acquires rich information that allows a line of new research.

Such deep hidden corners, however, shelter the so-called genetic material and many voices have risen to stop the curiosity going beyond the line demarcated by nature. It is true that man

has the right to search his genotype, to know how it is structured through medical genetics and to become aware of diseases that he carries in his genes which may have a cure.

Then studies involving stem cells were started and today, experimentally, it is possible to perform cell reprogramming, to cause cells to revert to their original condition of pluripotent stem cells that can be applied in regenerative therapies so that embryonic cells are not sacrificed.

The cloning of Dolly the sheep had a great impact on the scientific community and prepared the argument against such experiments involving human beings. This was the starting point of the great ethical, medical, scientific and religious debate that mankind had been avoiding.

The procreation of a human, not by a combination of reproduction materials from a man and a woman, but by the union of an egg and a somatic cell, without even knowing the true identity of phenotype, is totally against the laws laid down by nature and the common sense of the average man. The life cycle of man is prearranged so that he can live in a dignified manner through all its phases, in their individuality and uniqueness. With death, the human cycle ends and nothing else, except what he produced during his lifetime, will be remembered and taken advantage of.

Cloning brings several types of consequences and, obligatorily, will shock the natural structure of mankind. But man does not carry only physical aspects, but also features of the soul, as Aristotle cautions in *Nicomachean Ethics*. Cloning can reproduce the original person, not with the desired perfection, and in no way it reproduces the intellectual, volitional part, where the central controls of the entire human are located. It is precisely this space that delimits the person, makes him known for his virtues. The physical body is nothing more than the instrument ambulatory to carry the information passed by the intellect. And, as is well known, human knowledge has no way to identify and reproduce all the volitions that compose the man. Why replicate it, if the new being that inhabits the body has nothing of the original?

The Universal Declaration on the Human Genome and Human Rights of July 1997, in particular article 11, emphasizes:

"Practices which are contrary to human dignity, such as reproductive cloning of human beings, shall not be permitted. States and competent international organizations are invited to co-operate in identifying such practices and in taking, at national or international level, the measures necessary to ensure that the principles set out in this declaration are respected."

Similarly the United Nations Organization in 2005, issued a document calling for governments to adopt measures to curb all forms of human cloning, because it is contrary to human dignity, just as it is incompatible with the protection of life. Bioethicists from different lines repudiated the idea of cloning and remain united in respect to this ban, aiming to preserve the intangibility of genetic heritage. The Brazilian law, on adopting the international trend, not only defends the national genetic patrimony of humanity itself but prohibits the procedure that seeks human cloning by applying prison sentences to those who contravene this determination.

It is interesting to note that science does not see itself free to act according to its convenience but the evolution of research must consider the end user, the human being. The solutions that conflict with the ethical and moral opinions will be discarded,

and common sense, dictated by the interests of the majority, will prevail. Man becomes the epicenter of attention of man himself rather than his guinea pig or wolf. Man will not blindly transform the human body into an assembly line but seek valuable mechanisms to improve health, wellbeing, balance and happiness.

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