The article analyzes the key sources of international legal regulation of the procedure for preimplantation genetic diagnosis (PGD). The authors substantiate the conclusion that the requirements and principles formulated in them can be successfully used for the development and improvement of the national legal regime of PGD, the main directions of such use are determined. First, as conditions for PGD, it is necessary to consider the presence of a genetic predisposition to a certain disease or chromosomal disorder (the presence of a medical purpose) and obtaining qualified advice from a geneticist about the mechanism and consequences of the diagnosis. Secondly, a separate normative legal regulation is required by the legal regime of genetic information obtained during PGD - defining this, the legislator should be guided by the fact that any intervention in the human genome aimed at its modification can be carried out only in preventive, diagnostic or therapeutic purposes. In this regard, it is important to establish a ban on PGD for social purposes (selection of an embryo for specific characteristics, establishing the compatibility of a potential donor, etc., not being limited only by a ban on the choice of the sex of an embryo, which is currently established by Russian legislation). Thirdly, the problem of informing the patient about the results of the study requires a separate normative legal regulation - in addition to the right to be informed about them, it is necessary to recognize the “right not to know” for the individual, which is especially relevant for prognostic genetic research.

Additive manufacturing and 3D printing, as well as bioprinting are technologies of the Fourth Industrial Revolution. Currently, in connection with the possibility of hacking the human genome, it is relevant to define the concept of legal regulation of relations in bioprinting , to create a regulatory framework for their legal regulation, which would make it possible to determine who should be responsible for marriage when printing a human organ (creator of a digital template, manufacturer of 3D- printer or the person who manages this printer),

what obligations arise about the template, who owns the rights to it, what contracts mediate the relationship between the creator of the template, the manufacturer of the printer, the manufacturer of the material, the person who controls the printer and the consumer? What are the limits of the principle of freedom of contract in the field of 3D printing, in particular, in the field of bioprinting ? When considering the issues of 3D printing of human organs, the question inevitably arises about the rights, duties, responsibilities of a medical organization, within which medical intervention will be carried out for the purpose of implantation, transplantation of printed organs, and the legal regime of printed organs. Obviously, before they are implanted into the human body, the regime of things can extend to them, while after implantation of the printed organ, it must lose the properties of things and the legal regime of intangible benefits must apply to them. In this connection, certain restrictions on the principle of freedom of contract in this area, the possibility of medical intervention only by certain subjects (medical organizations) that have the appropriate permission to carry out such operations will be justified.

The article is an attempt at scientific understanding of the legal nature of the embryo in vitro , undertaken on the basis of the normative provisions defining their legal regime, as well as the practice of their application and doctrinal research. Embryos in vitro , being human embryos, conceived and developing outside the mother's body, due to their autonomous existence, raise questions about their legal nature. Without defining such, it is impossible to resolve the issue of the fate of the embryos in the event of a divorce of persons who expressed the will to create them, in the event of the death of one of them or both (the so-called "orphan" embryos), in the event of refusal of one of them or both to continue reproductive care programs. The article examines the main points of view on the nature of the in vitro embryo that have developed in the doctrine, namely, whether

such is a subject of law, an object of law or is a special legal phenomenon, sui generis . The author comes to the conclusion that the embryo cannot be attributed to the category of things, as well as to a broader category of property due to the absence of a value equivalent and the inadmissibility of attempts to determine it, since otherwise contradicts the foundations of morality. The embryo does not have legal capacity in accordance with the provisions of the current civil legislation, and giving it such may entail problems and conflicts of interest defined in the article. The most optimal is the consideration of the embryo as a special legal phenomenon (sui generis) with the definition of its place in the system of elements of legal relations, or an independent object of civil rights with a special legal regime, the basis of which the author proposes to lay the principle of respect for human life at any stage of its development and the principle preserving human life.

3D printing technology poses serious challenges for the legal system, which lags behind scientific and technological progress in its development. The development of 3D printing technology leads to the " digitalization " of objects in the material world, the boundaries between the physical world and the digital space are blurring. If 3D Printing didzhitaliziruet objects of the material world, bioprinting didzhitaliziruet human body. A person begins to depend on the digital embodiment of his body or its individual organs in the corresponding electronic 3D models.

Bioprinting is aimed at forming a new medical paradigm that will allow to overcome the deficit of human organs and tissues in the field of transplantation. The discovery of the possibility of reprogramming differentiated cells and the production of induced pluropotent stem cells eliminates the ethical and legal problem associated with the use of embryonic stem cells. This should be

taken into account when developing a model for the legal regulation of relations associated with the creation of bioprint human organs.

Bioprinted organs are synthetic organs, therefore, the relations associated with their creation and implantation require independent legal regulation. The current legislation on transplantation, with its prohibitions, does not take into account the peculiarities of creating organs through three-dimensional bioprinting . The commercialization of relations in the field of bioprinting , the possibility of making compensated transactions in this area, as well as the limited circulation of " bioprint " bodies, by extending the regime of civil law objects to them, seems acceptable .

The legislation on biomedical cell products is also unable to regulate the relationship associated with the creation and implantation of bioprinted human organs. There is a need for the adoption of a special legislative act aimed at regulating the attitude arising at all stages of the use of bioprinting technology .

In the presented article, the author notes that new technologies can significantly change both the life of each person and the development of human civilization as a whole. In this regard, it is necessary to note the fact that the importance of genetic information contained in human DNA is growing in various spheres of his life, and the need for legal science, given this fact, to effectively protect the rights of a citizen in order to prevent harm from the unlawful use of his genetic information.

Based on the analysis of the problems arising in connection with the use of genetic information about a person, the author comes to the conclusion that it is necessary to improve legislation in this area, including in order to prevent discrimination of citizens on the basis of the genome. By its legal nature, genetic information is an element of a citizen's personal, family secrets and is

included in the more voluminous concept of the secrets of a subject's private life, therefore, it must be protected by law as an intangible benefit (Article 150 of the Civil Code of the Russian Federation). However, the existing legal regulation is not able to take into account the peculiarities of genetic information and provide effective protection against its misappropriation and use, including from the commission of actions aimed at establishing restrictions on the basis of hereditary diseases and other characteristics when hiring, concluding insurance contracts, credit agreements, etc.

In the past few decades, both at the international level and at the level of individual countries, issues related to the legal regulation of genetic research and the legal regime of genetic information obtained on their basis have acquired particular relevance. However, Russia relatively recently came to the realization of the need for legislative regulation of the relevant relations. At the same time, a distinctive feature of such regulation is the emphasis on public law aspects; civil law aspects were left without due attention.

To determine the civil legal regime of genetic information, the distinction between genetic information and genetic data is of fundamental importance. Genetic information is personalized genetic (genomic) information (information), since it has an individual, personal character as referring directly or indirectly to a specific or identifiable person.

Genetic data is non-personalized (anonymized) genetic data that is characterized by a formalized form, is often contained in an information system and, therefore, is systematized.

Genetic information is an element of such an intangible good as the secret of private life, genetic data is, as a rule, an element of such a result of intellectual activity as a database. In addition, it was concluded that there is no doctrinal or

legislative basis for the recognition of genetic information as an independent object of civil rights.

The necessity of additional legislative regulation of the activity of biobanks carrying out storage of biomaterials, respectively, of genetic data is substantiated. The genetic information contained in such biobanks should be subject to the privacy legal regime.

Providing women with equal opportunities to participate in sports competitions, including those initially considered purely "male", is accompanied by the development of a discussion about the need for gender verification out of fear of participation in female competitions of athletes with genetic characteristics more inherent in men, which, according to some experts, gives them unreasonable starting advantages. All of this requires consideration of the legal, medical and ethical aspects of gender verification in high performance sports.

The article analyzes the main changes developed by the International Association of Athletics Federations (IAAF) of the Rules for the selection of female athletes with gender disabilities to participate in competitions. Taking into account the position of the UN Human Rights Council Special Rapporteur, a survey is being considered on their compliance with international principles and norms in the field of human rights protection in terms of ensuring non-discrimination, protection of honor and dignity, as well as personal integrity.

It is concluded that there is significant uncertainty regarding the admissibility of using testosterone levels as a universal criterion for gender verification, as well as the presence of a direct causal relationship between the corresponding hormonal characteristics and the achieved sports results. Attention is drawn to the ethical component of gender verification in sports, associated with the methods proposed by the IAAF for assessing a sufficient level of femininity

and the requirement to adjust it to artificially determined indicators, even in the context of the proclamation of the principle of confidentiality.

Modern science has achieved very significant results in various areas of activity. It is gratifying for an ordinary person that such advances help to treat complex diseases, and the technologies themselves currently reduce the cost of the treatment procedure, unlike most other factors affecting medicine. One of such areas of scientific knowledge is genetic engineering, which can change only individual parts of the human organism or affect the transformation of the human body as a whole. This raises questions of an ethical nature that give rise to a large number of controversies in society . To overcome them, a clear conceptual understanding of the problems associated with the diagnosis and editing of the human genome is necessary, on the basis of which an effective regulatory legal regulation should be developed that will satisfy the interests of all participants in these legal relations.

The article is devoted to the study of the problems of legal support for the environmental safety of the Arctic zone of the Russian Federation in the implementation of genomic technologies. Based on the results of the analysis of the basic documents of state strategic planning, regulatory legal acts, programs and plans defining strategic guidelines for the socio-economic development of the Arctic zone, as well as regulatory legal acts in the field of the use of genomic technologies, the main threats (risks) of ensuring the environmental safety of the region are identified, analyzed potential economic and ecological possibilities of applying certain genomic technologies in relation to the vulnerable ecosystem of the Arctic.

The development of legal regulation in the field of human genomics , covering both research in the field of the human genome and the implementation of their results in life, is now in its infancy and is strictly linked to the development of scientific progress in this area. In this regard, the analysis of judicial practice is an important indicator that makes it possible to establish problematic practical issues of the formation and development of legal regulation in the designated area. The world's best judicial practice in the field of the human genome is sporadic and embodies a variety of approaches to the legal regulation of these issues in various legal systems. While in the United States and Europe such a judicial practice began to develop from the end of the 20th century, in Russia the first genomic case was considered in the middle of the current decade, which generally corresponds to the catching-up dynamics of the development of Russian law in this area. This article is aimed at examining the world's best judicial practice in the field of genomic research and the implementation of its results, including the legal positions of the ECHR and the US courts, as well as the emerging practice of Russian courts. The publication covers judicial practice both in the field of genetic engineering and in the field of circulation of genomic information. The article examines specific cases in the field of human genomics , considered in the course of litigation on both sides of the Atlantic. This article also covers the issues of reflection of the sphere of genomic research in the practice of Russian courts, in particular, in the decision in the case “Prosecutor of Kemerovo v. IK-22”. In addition, an attempt is made on the basis of their analysis to determine the differences in approaches to legal regulation in various legal systems.

The article analyzes various points of view on human reproductive rights. The number of cases of using assisted reproductive technologies in Russia is increasing every year. The author draws attention to the lack of a common understanding of human reproductive rights, their protection and regulation in different countries of the world, to different legal responsibility for abuses in the field of artificial human reproduction, different definitions of crime in the field of human reproduction.

The article provides an overview of foreign legislation on the criminal law protection of human reproductive functions. The study of criminal and civil cases, research of scientific developments in this area forces the author to state the existence of abuse and crimes in the field of artificial human reproduction.

The article attempts to define the list of crimes against reproductive human rights and consider them as an object of forensic research.

... This article discusses the problem of finding a balance of interests in the light of the application of gene therapy. The rapid development of new medical technologies determines the need to solve bioethical problems associated with ensuring respect for human dignity. Gene therapy refers to specialized, including high-tech, medical care and is a combination of genetic engineering (biotechnological) and medical methods aimed at making changes in the genetic apparatus of human somatic cells in order to treat diseases. At the same time, the main directions of modern gene therapy include not only non-inherited genome modifications, namely, in situ (in vivo) genome editing and in vitro editing of the somatic cell genome with subsequent transplantation, but also inherited genome modifications, that is, editing the embryo genome.

Editing the genome of the embryo generates a serious debate due to the legal prohibition of interference with the human germ line. Despite this ban, the use of

the CRISPR / Cas9 method contributed to the creation of the world's first people with artificially altered genes, as a result of which the scientific community called for a moratorium on editing the human genome in clinical practice. The current situation is due to the need to find a fair balance of private and public interests in the field of gene therapy. According to the author, in the context of editing the genome of the embryo, public interest is manifested in the development of scientific research that allows the state not only to create conditions for ensuring the protection of public health, improve its living standards, but also to establish control over the individual, to obtain certain advantages in international relations with other sovereign states, etc. In view of this, ensuring a fair balance of private and public interests in the application of gene therapy should be based on the principle of priority protection of the rights and interests of an individual.

At the present stage of the formation of the rule of law and a developed civil society in the Russian Federation, the possibility of using and protecting genes, genomes and genomic technologies, which mainly relate to the sphere of private life, becomes especially relevant. The world has already formed a scientific direction aimed at gene editing. The practice of introducing such developments is aimed at realizing the genetic "improvement" of a person, his life and health. Society has existed for quite a long time in the era of genetic engineering.

Currently, a fairly large number of scientific studies are being carried out and many practical experiments are being implemented, both of a medical and socio-legal nature, aimed at involving genes and genetic structures in the legal framework, in civil circulation.

An especially large number of questions and practical problems arise when determining the possibility of including genes and genomes as objects of legal relations and their definition as objects of civil rights.

Discussion is the issue of the circulability of genes, genomes, genetic constructs and the possibility of making various civil transactions with them, the entry of subjects (participants) of genomic technologies into obligations and property relations with genes. The possibility of including genes and genomes in objects of intellectual property rights and providing them with patent protection, establishing legal protective procedures has been proved.

There is an objective need to qualify and determine the legal nature of genes and genomes as objects of civil rights and establish a special civil law regime for genes, genomes and genetic structures. This special civil law regime of genes is of a civil law nature. The author's definition of the special civil law regime of genes as objects of civil rights is proposed, the features and content of this regime are determined. The possibility of normative legal regulation of genomic research and the introduction of their results into medical practice has been proved.

The article deals with the problems of developing professional and ethical requirements in the field of informing about the progress and results of genetic research. The author substantiates the conclusion about the need to adopt such requirements at the level of self-regulatory organizations of geneticists with the inclusion in their content of provisions on additional information, provision of information about secondary and accidental test results in specific cases, when the potential benefit for the patient is significant, and the additional burden on the specialist is not too much. noticeable. Requirements should include a list of specific genetic abnormalities and diseases related to random and secondary research results and reported regardless of the patient's will, as well as the procedure and the role of all involved parties (specialists and patients) in the process of disclosing information about the research results.

Genomic research currently occupies a very significant place in the development of medicine. To carry out this kind of activity, it is necessary not only to generate new genetic objects, but also to accumulate samples in the form of various biomaterials. In recent years, such collections have been the pride of large biobanks, which spend the maximum amount of effort to save samples for further research or practical application. At the same time, the functioning of biobanks has the other side of the coin - the accumulation of certain information entails an increased level of responsibility for the collected data. In modern Russian conditions, the issues of information leakage from such institutions that take place in foreign countries are still irrelevant. In many ways, the reason for this is the just beginning normative legal regulation of the relevant social relations, which are just beginning to appear on the territory of our state. On this basis, there is every reason to believe that such problems will arise and need to be addressed. Some suggestions for this kind of activity are outlined in this article.

Genetic technologies are currently developing rapidly, which cannot be said about the normative consolidation of scientific achievements and capabilities. Science, being aimed at improving the quality of life of people, is already able to prevent the transmission of many diseases by inheritance by removing the "wrong" gene from the DNA of the embryo. Editing the human genome is no longer a technology of the future, but of the present.

It is assumed that the legalization of editing the human genome for preventive or therapeutic purposes is more than possible. This article analyzes the issues of the right to go to court in potentially possible legal relations arising from editing the human embryo genome during the in vitro fertilization (IVF) procedure

and, accordingly, with the subsequent possibility of the birth of a “ genetically modified ” child.

Due to the lack of detailed legal regulation of both the the now familiar procedure of IVF and research on human embryos, in fact as well as the technology of editing of the genome, the authors do not exclude cases like the successful conduct of such studies and implemented correctly. In the latter case, it is possible to influence the "healthy" DNA regions instead of or together with the "sick" ones, which endangers the life and health of not only the potential person himself, but also his offspring.

Considering that the current legislation does not enshrine the status of the human embryo, it establishes the moment of birth as the moment when legal capacity arises, and the civil procedural legal capacity (which is one of the prerequisites for the right to go to court) of an individual coincides with the legal capacity of a civil one, future human life is deprived of legal protection. For the same reason , other persons cannot go to court in the interests of an unborn child. The article attempts to find a way out of this situation by analyzing Russian and international legislation, as well as the practice of the ECHR.

The article considers the author's draft of Chapter 15 of the Criminal Code of the Russian Federation with a short commentary prepared by Professor G.V. Nazarenko and published in the journal as part of the correspondence round table "New Criminal Code of Russia: Conceptual Foundations and Theoretical Model". The proposed new title for chapter 15, which is proposed in the draft, is discussed, in which, as in its current title, there is no indication that the content of the measures under consideration is psychiatric. The authors themselves distinguish two types of such measures: “coercive” in the strict sense of the word,

applied to subjects with severe mental disorders, excluding sanity or making it impossible to prescribe or execute punishment, and “compulsory”, applied to convicts with mental disorders within the limits of sanity. In this regard, it is proposed to name Chapter 15 “Coercive and compulsory psychiatric measures”. The reasons and purposes of the use of compulsory psychiatric measures are also considered. According to the authors, the criminal law should disclose the content of the "danger criterion" and define it as a real possibility (high degree of probability) of committing new acts by this person, provided for by the Articles of the Special Part of the Criminal Code. Analyzing the proposed by G.V. Nazarenko, the definition of the goals of the use of coercive psychiatric measures, the authors believe that it is hardly true to declare their goal to be such a “change” in the mental state of a person with a mental disorder, “in which his social danger is eliminated”. Coercive psychiatric measures should be aimed exclusively at improving the patient's mental state, while the elimination of the danger may in some cases be the result not of an improvement, but of a worsening of his morbid state or the influence of other medically unfavorable factors. It is concluded that, despite the divergence of scientific positions on a number of issues, the author's draft of Chapter 15 of the Criminal Code of the Russian Federation, prepared by G.V. Nazarenko, is a significant contribution to the theoretical understanding of the current criminal law regulating compulsory medical measures, and outlines, in general, the correct directions for its improvement.