

Defining Genetic Privacy in the Context of Sports Genetic Testing in athletes

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Abstract

The safeguarding of genetic information is essential, particularly within the domain of sports genetics testing. This research delves into the nuanced definition of genetic privacy under the backdrop of genetic testing in sports. While many scholars regard genetic information as an inherent component of the right to privacy, it is crucial to recognize that not all genetic information falls squarely within the realm of privacy. Due to the distinctive nature of genetic data, only specific segments can be considered under the umbrella of privacy rights. Additionally, genetic information that pertains to family or group dynamics transcends the boundaries of individual privacy rights. In cases where genetic information is shared among multiple parties, the owners do not possess unilateral control over these shared genetic segments. As a novel facet of privacy rights, gene privacy introduces unique dimensions that differ from conventional privacy rights. It encompasses the fifth right—the right not to know specific genetic information. To establish a robust framework for judicial protection of genetic privacy, it is imperative to undertake comprehensive research on the right to genetic information privacy. Such research forms the bedrock upon which a scientifically informed path to judicial protection of genetic privacy in the sports context can be developed

Keywords: Gene information; Privacy right; Genetic privacy; Attribution research; Definition of content;

In the rapidly evolving landscape of sports, where performance enhancement and talent identification are paramount, genetic testing has emerged as a powerful tool. Athletes, coaches, and sports organizations are increasingly turning to genetic information to gain insights into an athlete's predisposition for certain traits or susceptibility to injuries. This utilization of genetic data offers tremendous potential for optimizing training regimens, injury prevention, and personalized athlete management.

However, amidst the promise of genetic insights in sports, the crucial issue of genetic privacy comes to the forefront. Genetic information, being inherently personal and unique, raises complex ethical and legal considerations in the sporting arena. How do we define genetic privacy in the context of sports genetics testing? What rights do athletes have over their genetic information, and how do these rights intersect with the broader interests of sports organizations and the public?

This exploration into genetic privacy within the realm of sports delves into these intricate questions. It seeks to provide clarity on the boundaries of genetic privacy, the rights of athletes concerning their genetic data, and the ethical and legal framework required to navigate the increasingly common use of genetic testing in sports. By addressing these challenges, we aim to contribute to a more informed and balanced approach to genetic privacy in the ever-evolving world of sports

1. Genetic information and privacy issues under the wide application of biomedical testing technology

The International Human Genome Project was launched in 1990 with the aim of global collaboration and data sharing. The goal of this costly project was to precisely sequence the human genome, to decipher it, to identify the proteins made by each gene, and thus to map the human genome ("See *Time v. Hill*, 385 U. S. 374, 388.,"). This allows people to truly know themselves, but at the same time genetic testing can have many negative consequences for the person being tested.

In 2010, a case of genetic infringement aroused public attention. Three civil service candidates were found to be "carrying the thalassemia gene" in the Foshan civil service examination and were denied employment by the Foshan Human Resources and Social Security Bureau. The court held that: the recruiter did not constitute an infringement of the genetic privacy of the appellant candidates. The reason was that the genetic information of the appellant candidates was not made public or disclosed to a third party, and the physician who examined the physical health of the recruitment candidates had the right to add tests as needed, therefore, the judgment dismissed the three candidates' claims (Pal & Kumar, 2021). The Court of Second Instance held that the recruitment agency did not infringe on the right of the candidate to be recruited, since

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the candidate's genetic information was known only to the recruiter and the candidate. If this does not constitute a violation of the candidate's right to privacy, does it violate other rights of the candidate? For example, the right not to be informed of genetic information. Genetic information is originally one of the determinants of trait performance of an organism, but it is not a complete determinant; the various expression forms of an organism are also influenced by the environment in which it is found. In addition, the genetic information has the possibility of variation in the general environment. In conclusion, the expression traits of an organism are determined only when multiple factors act together. This means that even if the person tested carries the gene for the disease, he or she does not necessarily have the disease, but is more likely to have it than others. In the absence of any abnormalities, will the knowledge of the gene affect the person's future life? Does genetic testing violate the rights of third parties other than the test taker? Genetic information, as Associational Privacy, is known to a certain extent when the candidate's own genetic information is known, as well as that of his or her family members (Andorno, 2004). Human diseases are not entirely controlled by genes. We differ from others in appearance and intelligence because each of us has genes that have evolved over tens of thousands of years through our own ancestors to become unique, and it is this genetic variability that gives human genes their diversity. «The International Declaration on Human Genetic Data clearly states that genetic information not only reveals the genetic characteristics of individuals, but also has an impact on families and populations, and that individual genetic information has a family genetic imprint (Beauchamp & Childress, 2001). And the recruiter did not allow the candidate, nor his or her family, to authorize consent when the candidate was genetically tested. Even if the candidate acquiesces to the reasonableness of the test, does the candidate have the right to be rightfully the agent of the rest of the family with respect to the genetic information? In order to clarify the above issues, it is necessary to have a more thorough understanding of the attributes and main contents of the right to privacy of genetic information. The study of the attributes of the right to privacy of genetic information is conducive to strengthening people's knowledge of the right to genetic privacy, and only with a more in-depth understanding of the right to genetic privacy can the law better protect the right to genetic privacy (Fernando et al., 2018).

As the only developing country participating in the Human Genome Project, the "gene chip" for "genetic testing" has been put into clinical use in China in recent years (Warren & Brandeis, 1890). We need to recognize our own

shortcomings and speed up the research on genetic privacy. Only by fully understanding genetic privacy can we comfortably deal with the various difficulties in the genetic era. Our Civil Code includes "e-mail" and "whereabouts information" of natural persons in the scope of personal information. Email address, personal whereabouts, etc. are less important for the disclosure of genetic information to privacy, and the inclusion of them in the Civil Code reflects the importance of personal information protection in China. Therefore, genetic information, which is highly private personal information, is more valuable and necessary to be studied. However, the current understanding of genetic privacy in China is not profound, which is mainly reflected in the unclear research on the attributes of genetic information privacy in China and the little research on the characteristics, contents, and relationship with other related rights of genetic privacy. Even, some scholars are not firm in their stance on the existence of genetic privacy rights, all of which will ultimately affect the legal protection of genetic privacy rights in our country. The lack of a clear definition of the attributes and contents of genetic privacy and the relationship with other related rights in the context of genetic testing is not conducive to the legal protection of genetic information, and only when the attributes of genetic information privacy and its characteristics and contents are clearly defined can the protection of genetic information be more systematic.

2. Definition of privacy attributes of genetic information

2.1 Whether genetic information falls within the scope of privacy

The right to privacy is a result of recent human civilization and the concept of privacy as a civil right was first introduced by American jurists Warren and Brandeis in 1890 in the Harvard Law Review (Chen & Song, 2021). However, with the change of time, especially with the advancement of communication, the Internet era and the genetic era have come. The right to privacy has gradually changed from traditional spatial privacy to personal information protection, freedom of communication protection, etc. It is no longer just the right to be alone. The right to privacy is more value-based and normative than the content of privacy. The right to privacy emphasizes the protection and remedy of one's privacy rights and interests after being violated, and is proactive. Privacy as an object of privacy is passive, with more emphasis on its defensive nature (Peng, 2021). The purpose of the author's emphasis

on the relationship between privacy and privacy is to prevent other scholars from generalizing the two concepts. Not all privacy is protected by law, and what the law protects is legal privacy, and it is generally illegal acts, acts not adjusted by law, and legal privacy acts that are the objects of privacy protection. The concept of privacy in China still varies, among which the more accepted definition is: "The right to privacy generally refers to private life and private information that is only related to the interests or person of a specific person and that the right holder does not want others to know" (Costello, 2022). The right to privacy is a natural person's resistance to the acquisition, knowledge, and dissemination of information from the outside world, and the protection of the right to privacy is mainly based on human dignity (Fang & Cao, 2019). Article 1032, paragraph 1 of the Civil Code expressly declares that "natural persons have the right to privacy" (Gao, 2019). At the same time, paragraph 2 of the article defines the meaning of "privacy" in parallel, that is, "the private life of a natural person's peace and quiet and private space, private activities, private information that do not want to be known to others". The third draft of the Civil Code stipulates that privacy is the private space, private activities and private information that a natural person does not want others to know. Some standing committee members, experts and scholars have suggested that maintaining the peace of private life and excluding illegal intrusion by others is an important element of the right to privacy and should be included in the definition of privacy. Privacy is defined in the Civil Code as the private life of a natural person and the private space, private activities and private information that he or she does not want others to know. The author believes that the connotation of private peace of mind in the concept of privacy is more helpful to solve the incidents of violating private peace of mind in real life.

Privacy generally has three forms: first, personal information (also known as personal data), second, personal private matters, and third, personal domain. Genetic information is a DNA fragment with genetic effect, and there is no doubt that it belongs to personal information in the form of privacy (Geng & Zhang, 2019). Privacy, as the object of privacy, is exceptionally rich in content, and privacy is characterized by objectivity, private beneficial and concealment. Objectivity means that privacy, as an objectively existing fact or state, constitutes an individual's living space or mental space. The private nature means that the owner of privacy is the right holder himself, and it generally relates only to personal interests and does not involve public interests. Privacy means that the right holder has the right to keep his or her privacy in

a state where it is not known in order to ensure that his or her personal life is not disturbed. Examining the legal attributes of genetic information according to the concept and characteristics of privacy, it is clear genetic information belongs to the category of privacy (Zhang, 2019).

In the post-genetic era, genetic rights have emerged as a quest for rights and a desire for order. Gene is a personal interest object with material and informational oneness, value and risk. The so-called genetic rights are a new bundle of comprehensive rights related to genes that arise on basis of genes. It originates from the development of genetic technology, from the demand of genetic interests, and aims to safeguard human dignity. In terms of its degree of influence and scope of demand, genetic rights should belong to the category of fundamental rights; the object of genetic rights is genetic information, and the subject is collective and individual. Some scholars believe that genetic rights can be derived from genetic equality rights, genetic property rights, genetic privacy rights, etc., but such rights are not covered by the traditional equality rights, property rights and privacy rights. As an important part of genetic rights, genetic privacy can be regarded as a subordinate right of genetic rights in a sense. From a macroscopic perspective, the highest value of genetic rights should be to maintain the stability of the natural order. This stability implies preventing the creation of new species or the artificial modification of the properties of the original species on basis of the original species, and maintaining the balance of the original species in nature. The gene rights today are not only directed to the human gene pool, but also to the plant and animal gene pools, which can be mixed into the human gene pool at any time and thus affect the purity of the human gene pool (Shi, 2019). From a microscopic point of view, the legislative concept of genetic rights should focus on the protection of the state of genetic "self", the state of "nature", rather than the artificial optimization of selection. "The survival of the fittest is a matter of choice. Nature will naturally eliminate the survival and development of species, and it is obvious that man-made optimal selection is against the law of nature. Therefore, in a human-driven society, the basic value of genetic rights should be the basic demand of human beings for genetic rights. The introduction of genetic rights has impacted on the anthropocentric view of genes, and the anthropocentric view of genes, which is the "spiritual head of mankind", should be abandoned at the right time. Along with the development of genetic technology, genetic information affects human employment, insurance, etc., which inevitably leads to the demand for new rights, and genetic rights are the result of the demand in such cases. We must abstract genetic rights into a specific bundle of

rights in order to make them secure. Clarifying the relationship between genetic rights and genetic privacy rights will facilitate subsequent research.

Not many scholars have studied genetic privacy in China, and most of them focus on the legal protection of genetic privacy and lack research on the attributes of genetic information privacy (Qian, 2020). The author believes that genetic privacy, as a special kind of information in the context of the genetic era, should be fully grasped. Only when the basic characteristics of genetic information are grasped and its nature is fully judged can the protection of genetic information be integrated into the existing governance system. The existence of genetic privacy has been affirmed by existing studies, and some scholars believe that genetic privacy is one of the subrights that should be included in the genetic right as a fundamental right of citizens. Genetic privacy is a sub-right derived from genetic rights, which is based on people's pursuit of peace of private life in the post-genetic era and the need for the law to respond to reality. Genetic privacy should be included in the private information safeguarded by the right to the secrecy of personal life (Yang, 2020). Some scholars have mentioned three rights based on the rights of the subject of genetic information: ownership of genetic samples, access to genetic information, and the right to correct genetic information (Liu, 2018). However, for genetic information, the author believes that genetic information, as the code book of life, records almost vast majority of our information (Launis & Rääkkä, 2007). It has a significant impact on personal life. Therefore, in addition to the above three rights, the privacy of genetic information should be the important right of genetic information.

In summary, it can be seen scholars have not mentioned the privacy property of genetic information, although there are some studies on genetic privacy, and basically, the privacy property of genetic information is established directly by default. The analysis is carried out under the assumption that the property of privacy is established. Genetic information is different from other personal information, and genetic privacy is an emerging right in the context of the genetic era. Both based on protection strategies and path model selection require a fuller understanding of genetic information, which requires an analysis of the privacy properties of genetic information. The author believes that the study of the properties of genetic information is qualitative, and only when the properties are thorough and clear will it be convenient for scholars to choose the protection path and legislative model for genetic information in subsequent studies. Otherwise, the protection of genetic information is just a rootless weed, floating and unstable. The study of the

properties of genetic information should be the first condition for the formulation of legal protection of genetic information. To determine whether genetic information belongs to the category of privacy, we can analyze whether genetic information meets the definition and characteristics of privacy by comparing the characteristics and connotation of privacy.

Individual genetic information has the following important characteristics: first, objective existence. Genetic information is a DNA sequence containing genetic information, which is essentially a DNA composed of base pairs. Genetic information is a true reflection of human beings themselves. Genetic information is inherent and once the owner of genetic information is born, it cannot be changed in principle. Therefore, it is characterized by objective authenticity.

Second, the extreme privacy of individuals. The genetic information of an individual contains a lot of secrets that are not known to the public, such as the current health status of the genetic subject, the possible future health risks, the personality of the individual, the future job suitability, and so on. This information can be effectively predicted after genetic testing, and if some "bad" genetic information of an individual is labeled with a special view, it may have an impact on his or her life. This influence covers a wide range of areas, which may be work or life. In this way, genetic information is extremely personal and extremely private.

Third, private benefit. When genetic information is closely related to the private sphere, genetic information in the private sphere only concerns individuals, not the collective or the state, and the domination of genetic information does not require the consent of others, and does not infringe on the interests of other parties besides oneself, so it has the characteristics of private interests.

However, it is important to note that when an individual disposes of his or her genetic information, there is a risk of violating the shared genes of his or her family. The shared genetic component is linked privacy, and this is what makes genetic information different from traditional privacy. The existing legal framework and the research of scholars in China have not paid enough attention to the linkage privacy part of genetic information, but we have to pay attention to the protection of linkage genetic information. A breach of linkage privacy affects family-based group genetic information and may be more damaging than non-linkage genetic information. Individuals can only dispose of their own unique genetic segments when they dispose of genetic information, and the shared portion of a family's genes cannot be violated by individuals when they dispose of their own unique genetic segments. Or, the owner of the genetic information should

obtain the consent of the family members to dispose of the linked privacy. The provider of the gene does not have the right to act on behalf of his or her family group to dispose of their shared genetic information, and the disclosure of family genetic information can have a significant impact on both the individual and the collective family (Wang, 2021a). Individuals do not want to be branded as members of families with defective genes, and families do not want to be branded as families with defective genes. Moreover, the presence of a defective gene is not a scientific determinant of biological trait performance, but at this early stage of genetic culture development in modern society, being branded with a defective gene can be fatal for both the family and the individual in the family.

In the future, when genetic jurisprudence is highly developed, genetic information may not be compromised if there is a common understanding of genetic information, but in an era when genes are not yet universally known, genetic information should be treated with special caution.

2.2 Difference between genetic privacy and traditional privacy

Although genetic privacy belongs to the category of privacy, genetic privacy differs from traditional privacy in that it has special features. The infringement of genetic privacy brings more damage to the owner and is more harmful to society. In terms of the size and value of the information, genetic information covers a wealth of information, including the individual's body shape, appearance, personality, intelligence and other aspects of information; the leakage of genetic information can cause irreversible effects on the individual, genetic information is an extremely private privacy of the individual, it is about the dignity of personal survival, and its value to the right holder is higher than the general right to privacy. The distinction between the characteristics of genetic privacy and traditional privacy is conducive to better regulation of genetic privacy in the future, and to a certain extent can lay the jurisprudential foundation for the protection of genetic privacy as distinct from traditional privacy.

In terms of the way of protection, genetic privacy is relatively passive. Genetic information can be leaked very easily, such as the physiological tissue or blood or hair of the right holder can leak genetic information, and the loss of human tissue and hair is beyond the control of the individual. Unlike traditional privacy rights holders who have strong control over it, genetic information disclosure is highly uncontrollable. Uncontrollability determines the vulnerability of genetic information to infringement. Specifically, in the case of traditional privacy, it is more difficult for an infringer to obtain traditional privacy, and

a rights holder can prevent his or her privacy from being learned by keeping it to himself or herself and not disclosing it to others. In the case of genetic information, it is possible for a hospital to know the genetic information of an individual through a simple blood test. Therefore, the protection of genetic information cannot be effectively and comprehensively protected only by individual power, and public remedy is the effective way out.

The object of genetic privacy Genetic privacy is linked privacy and has family interoperability. While traditional privacy rights are generally related to personal interests and do not involve public interests, genetic privacy rights are not only about personal matters, but also about the interests of families and groups. Genetic information is linked privacy, and when an individual's genetic information is leaked, the family's genetic information is leaked to a certain extent, and the individual has the right to control his or her own genetic information, but not the family's genetic information. When this group is raised to the national level, it will have an impact on the country. Our genetic information base contains the unique genetic code of the Chinese nation, and if this code is deciphered, it is likely to be used by other countries with ulterior motives to create genetic weapons against our nationals.

The object of genetic privacy is genetic information, and its control over biological traits is unknown. The privacy provided by genetic information is capped and unknown; traditional privacy is known and certain. Relatively speaking, there is uncertainty as to what specific damage the infringement of genetic information will cause to the person concerned.

Genetic information, the object of genetic privacy, is highly discriminatory and distinctly different. The genetic information of individuals and their parents is roughly the same, but there is a part of genetic information that is unique and irreplaceable, and the probability of error in the judgment of individual identity information through genetic information is minimal. That is why some scholars consider genetic information as a personal identity card. Genetic information is a special marker of an individual or a group, and without manipulating genetic information, genetic information will not be easily changed under normal circumstances (Wang, 2018). Traditional privacy information does not have this quality, and it is not possible to identify the object of the owner of the privacy information by the content of a privacy. There is also no significant differentiation between traditional privacy, and privacy belonging to others may also become its own typed privacy in future life.

Distinguishing the difference between genetic privacy and traditional privacy is conducive to rethinking traditional

rights under the emerging rights system and to strengthening people's understanding of emerging rights under emerging technologies. Genetic privacy is the protection of people's genetic privacy in the context of genetic testing, which is a higher demand for people not to be disturbed in their own lives; the distinction between genetic privacy and traditional privacy is also conducive to strengthening people's attention to genetic privacy and laying a certain theoretical foundation for legislative research on genetic privacy.

Genetic information that is unique to an individual has the property of privacy. Genetic privacy has characteristics and importance that traditional privacy rights do not have, and this is one of the value objectives that we will pursue in our future legislation for genetic privacy. In terms of the scope of protection of genetic information, the "public-private dichotomy" was introduced in the United States in the 1950s, with the typical case of *Time v. Hill*, where the right to privacy was established to distinguish and protect the private sphere (Zhu, 2021). However, there is a risk that the private sphere will enter the public sphere. Therefore, the judge applied the "public-private dichotomy" to distinguish the scope of protection in his decision. According to the "public-private dichotomy", "real information about an individual is protected by the right to privacy when it is closely related to the private sphere, but not when it is justified by public concern". Family genetic information clearly has the legitimacy of family concern. Expanding it to the national level, the genetic information of Chinese people represents the genetic characteristics of this group and belongs to the gene pool of the unique Chinese race. The state has the legitimacy of public concern, and this gene pool belongs to the state's treasure trove of genetic resources, which individuals have no right to dispose of.

3. Definition of the content of genetic privacy

The right to privacy is a microscopic representation in the genetic era. The right to genetic privacy is expressed in the individual as the right to maintain the personality of one's genetic information, and the owner of the gene has the right to disclose, keep confidential, and use his or her own genetic information, i.e., the right to make autonomous decisions about genetic information, and not to spy, disclose, publicize, or proclaim it without the permission of the owner of the gene (Guo, 2020). Privacy mainly includes the following basic rights: the right to conceal privacy, the right to use privacy, the right to maintain privacy, and the right to dominate privacy (Gan, 2019). The genetic privacy right, which has the property of privacy, should also have

the above elements. However, due to the impact of bad genetic information on individuals and the increasing health awareness and rights awareness of modern citizens, the right to be uninformed about genes has gradually come into the limelight. Scholars believe that the "right to be uninformed" is a kind of protection for the test subject, and therefore the "right to be uninformed" is included in the basic content of the right to genetic privacy, thus outlining the fifth content of the right to genetic privacy (Hu, 2018).

3.1 Right to conceal, use, maintain, and control genetic privacy

Genetic privacy is a specific personality right that is inseparable from the person. Therefore, it can only be enjoyed by natural persons. Legal persons and other organizations cannot be the subject of the right to genetic privacy. The rights of a natural person begin at birth and end at death, so the deceased does not have a right to genetic privacy. In the case of a fetus, as a potential natural person, if the fetus' genetic information is illegally violated, it will pose a threat to its survival after birth. Therefore, the genetic information of the fetus should be kept in a safe place. The traditional object of privacy protects private information that is not intended to be made public and known to others, by analogy, the object of genetic privacy should be the genetic information of natural persons. As a new type of privacy right whose specific content can be referred to the traditional privacy right, the genetic privacy right should have the following four basic rights: the right to conceal privacy, the right to use privacy, the right to maintain privacy, and the right to dominate privacy (Wang, 2019).

The right to genetic privacy concealment. The right to genetic privacy is the right of the right holder to keep his or her genetic information hidden, the right to keep it from outsiders. The right to conceal privacy protects against pernicious outside prying, such as when a doctor goes beyond the scope of treatment to find out genetic information about an athletic patient, and the athletic patient can take steps to conceal that information from the doctor. The right to genetic privacy is a positive right to keep privacy private and protected from disclosure.

Right of access to genetic privacy. The right of access to genetic privacy refers to the right of the right holder to use his or her genetic information to obtain moral or material needs. Genetic access rights place more emphasis on the process of gaining benefits from the use of privacy. Personal genetic information has the property of personality, and normally personality interests are not transferable; when genetic privacy information is commercially exploited, it becomes not only a type of personality right, but a transformable and materially beneficial personality information (Wang, 2021b).

The right to maintain genetic privacy. The right to maintain genetic privacy refers to the right of a right holder to keep his or her genetic information in a state of non-infringement and the right to seek judicial remedies in the event his or her genetic privacy is violated. The right to maintain genetic privacy refers to the maintenance and protection of genetic privacy in its current state, which is not necessarily a hidden state, but generally a state that is desired by the owner of the genetic information, or a state that is beneficial to him or her.

Genetic privacy dominance. Genetic privacy dominance is a positive right, which means that the right holder has the right to dominate his or her genetic information as he or she sees fit and to allow others to have access to some of his or her genetic private information. More emphasis is placed on the right to self-determination (Wiese, 1991).

3.2 The fifth element of genetic privacy - the right not to be informed of genetic information

However, because of the specificity of genetic information, genetic testing technology can predict the future physical condition of the test subject, and this "foreknowledge" may cause mental stress to the test subject to a certain extent, which is detrimental to the future life of the test subject. The implication of life is uncertainty, hence the construction of the right to be uninformed about genetic information has been proposed. The fifth right to genetic information can precisely provide an important complement to the above four rights. It is also fully consistent with the nature of genetic information. The right to genetic privacy shapes the development of genetic technology, and several rights under the right to genetic privacy and technology interpenetrate and influence each other. The right not to be informed of genetic information is an important right under the right to genetic privacy, and is an important element that distinguishes genetic privacy from traditional privacy rights. The right not to be informed of genetic information is a protection for the owner of genetic information in his or her life. At the same time, the right not to be informed of genetic information affects the quality of life of the owner of genetic information. If informed consent is the basis, the expression, of self-determination, then not knowing should also be the expression of self-determination. The jurisprudential basis for having the right to choose to know the thing itself and choosing not to know the thing itself should be the same. The basis of the right not to know genetic information lies in individual self-determination, and informed consent is the main manifestation of self-determination (Buddha Zhongfa Xingfuzi, 2010). In fact, from the perspective of historical development, both doctrine and legislation have first established the principle

of informed consent, and then gradually established the right not to be informed. The principle of informed consent has a deep foundation in China, and the regulations on informed consent are relatively sound. With the development of genetic testing technology, the right to uninformed consent has been provided with a good ground for research.

The right not to know genetic information is a negative right intended to protect the right to health and human dignity of the genetic owner. The Right not to know was introduced in Western academia in the 1980s, many years earlier than in China. The right not to know has also been endorsed by Wiese, Andorno and others in Western academia (Tian, 2021; Yao & Jiao, 2018). Article 10 of the 1997 European Convention on Human Rights and Biomedicine states that "Everyone has the right to know any information collected about his or her health status. However, the wishes of individuals who do not wish to be informed should be respected." Similarly, Article 7 of the 1995 World Medical Association's "Declaration of the Rights of the athletic Patient" states, "Athletic Patients have the right to expressly request not to be informed of medical information, except to protect the lives of others." The right to know and the right not to know go hand in hand, and Athletic patients may have a variety of reasons for not wanting to know their health status, and this right should be respected as well. Moreover, this right does not in itself constitute a nuisance to medical treatment, and an Athletic patient may well consent to a procedure without wishing to know its substantive nature (Wu, 2020). The Human Genetic Testing Act adopted in Germany specifies that only the consent of the person being tested can be given for genetic testing, and that prior consent is required for the extent to which the test results should be communicated to the person being tested.

Our scholars have not paid enough attention to the right to be uninformed about genetic information, and only a few scholars in China have paid attention to it. Existing studies usually consider the right to genetic information as a basic principle, but with the advancement of genetic technology, the right to be uninformed about genetic information is a new right that was born with it (Jia, 2019). Based on the special nature of genetic information, the author believes that genetic information has a high possibility of causing a serious mental load on the person concerned. Therefore, in order not to impose a mental load on the person concerned, the person should be given the right to choose or not to accept the disclosure of genetic information by others. However, the right to remain uninformed is limited to genetic information only, and the creation of the right to remain uninformed for other information may easily lead

to the hollowing out of the right to remain uninformed. The original purpose of creating the right not to be informed of genetic information is to protect the peace of life of the right holder and to protect his or her human dignity from being violated. For the time being, other personal information does not reach a level where its disclosure can deeply affect the peace of mind of individuals, which is in line with the definition of privacy in the Civil Code. Only the consequences of the disclosure of genetic information are universal and serious. Given the highly predictive and relevant nature of genetic information, the right of relatives not to know should also be an important element of the study of the right to genetic unknowing, which is required for genetic information as linked privacy. Given that not many people have studied the right to be uninformed about genetic information, this study also becomes of academic interest. Based on the uncertainty of life, the unwillingness to know is also an exercise of rights. It places more emphasis on the self-determination to make itself rather than the outcome after it is made (Zhan, 2022). The right to be uninformed about genetic information is not a diminution of personal autonomy, but rather an enhancement of personal autonomy. The right to be uninformed about genetic information should be an enhancement of individual autonomy. The right to be uninformed of genetic information can, to a certain extent, be agreed in advance on the content of the uninformed, the conditions attached to the uninformed, the time frame of the uninformed, etc. The emphasis is on active, proactive defense of one's rights and interests, an advance proactive defense capability, not a passive, reactive waiting for the medical provider to articulate the scope of knowledge for oneself as in the traditional right to know. The right to be uninformed should be less likely to be violated than the right to be informed, because proactive defense can, to a certain extent, put both doctors and Athletic patients on an equal footing and accelerate the equalization of information asymmetry between them. In the doctor-patient relationship, the Athletic patient can negotiate the exercise of the right not to be informed with the doctor according to the actual needs, which is reflection of the increased awareness of the Athletic patient's rights. In this way, the right to be uninformed about genetic information has, to a certain extent, broken the original model of informed consent and created a new model of self-determination for the Athletic patient. The author believes that the nature of the right not to be informed of genetic information does not belong to the right to information self-determination, and that the right not to be informed of genetic information should belong to the category of genetic

privacy, and that it belongs to the special existence of genetic privacy. First, the right not to be informed of genetic information is a new right based on genetic information, which aims to protect the peace of mind of the owner of genetic information, which is the scope of protection of the right to privacy. Secondly, the essence of the right not to be informed of genetic information is the right not to be informed of one's own genetic information, and the fact that one's genetic information is not tested is only a symptom, but the essence is that one's personal information is not known to oneself and one's original state of life is maintained. We cannot regard the right to be uninformed about genetic information as a right to information self-determination just because it has the characteristics of an individual's right to self-determination. Genetic privacy inherently includes the right to self-dispose of one's genetic information, which is a manifestation of self-determination, but is still essentially a genetic privacy right. Some scholars have argued the justification basis of the right to be uninformed of genetic information, sorted out the regulations on the right to be uninformed of genetic information in Switzerland, France, Germany and other countries, and sorted out the current situation of the right to be uninformed of genetic information in China and the legislative reference. In order to effectively circumvent the employer or the insurance industry to require the insured to provide their genetic test profiles to avoid violating the privacy and health interests of the insured. However, few scholars have distinguished between the right to know genetic information and the right not to know genetic information, and this may lead to misunderstandings among readers. Does the violation of the rights of the owner of genetic information necessarily violate the rights of the family members of the owner of genetic information? In fact, the privacy of the genetic information of the family is not necessarily violated when the privacy of the owner of the genetic information is violated, but only when the privacy of the linkage is violated.

The right to be uninformed about genetic information emphasizes the autonomy of the person. The owner of a gene has the right to be in control of his or her genetic information and the right to make autonomous decisions about the direction of life. However, the right not to know genetic information is due to the specificity of genetic information, and sometimes not knowing is a way to protect the autonomy of the owner of the genetic information. Although genetic information is deciphering human codons, the translation of genetic information to proteins is not 100%. Many human traits, including diseases, are controlled by genes as well as by external

factors, and the organic combination of the two results in the expression of existing traits. And people have an inexplicable fear of defective genes, not knowing that even disease-causing genes do not necessarily have trait expression, and that, in addition to being related to the external environment, gene dominance and excessiveness have an impact on the expression of traits in organisms. The person with the defective gene does not necessarily have the defective expressive trait, but the gene can be inherited in his or her offspring. Instead, people look at carriers of defective genes with tinted glasses without knowing about the expression of the genetic trait. Due to the misinterpretation of the defective gene, this can seriously affect the integration of the owner of the defective genetic information into the collective life. At the same time, such disease-causing genes can somehow imply to the gene owner and can aggravate the psychological burden of the gene owner, which can trigger the expression of traits of the defective gene or cause other mental disorders, which is not in the best interest of the gene owner. Some citizens who are informed that they have a disease-causing gene may resort to various ways to prevent the disease from occurring, which, combined with the compulsion of certain commercial organizations, may well lead defective gene carriers to take early treatment or even over-treatment for diseases that have not yet occurred.

Early prevention of diseases is necessary, but is it necessary to over-prevent them? Biomedicine is constantly evolving, and just because a disease is medically incurable today does not mean it cannot be saved in the future. If irreversible excisional prevention of tissues and organs is carried out because a certain disease is detected in genetic testing, not to mention whether the genetically controlled disease will recur 100% of the time, and even if it does, but if medicine is fully capable of curing it at this time, is this excessive prevention a premature abandonment of the right to health? Or is it a violation of the right to health of carriers of defective genetic information by commercial organizations? This requires gene owners to weigh the pros and cons of such situations and strike a healthy balance between proper prevention and over-prevention. And while this weighing of the pros and cons requires a cool head on the part of the person concerned, this ability to think calmly may have been lost once he or she became aware of his or her genetic information. This is one of the factors that contribute to the existence of the right to be uninformed about genetic information.

In summary, I believe that the right to be uninformed about genetic information should be given sufficient attention in the post-genetic era. Although academics currently believe that there is a theoretical barrier to this right. Because the

right to be uninformed about genetic information is a negative right, the subject of the right can have a dilemma in enforcing the right. When a physician actively asks a Athletic patient if he or she does not want to know about his or her condition, this in itself is an implication, which usually indicates a less than positive situation. However, this does not affect the existence of the right not to be informed of genetic information, and some preventive non-disclosure of genetic information is necessary in cases where the physician has fully met his or her therapeutic duty to inform. While it is important to exercise the right itself, it is also important to exercise the obligation that goes along with that right. The right to be uninformed about genetic information should correspond to the obligation of others to respect that right, and to remain "ignorant" is an essential attribute of life. A large part of the reason why life is so exciting depends on its uncertainty. Uncertainty gives people the right to pursue the future and gives them the benefit of expectation for a better life in the future.

Since the owner of genetic information has the right to remain uninformed, and genetic information is linked privacy. Therefore, the relevant family members should also have the right to be uninformed about the genetic information. The subject of the right not to be informed of genetic information is the owner of the genetic information, and the object is certain specific genetic fragments that, if known, would affect the owner of the genetic information. The ultimate goal of the right not to be informed of genetic information is to safeguard the right to health of the owner of the genetic information. Of course, for the time being, a physician's failure to voluntarily comply with the duty to inform a Athletic patient of genetic information is not yet legally actionable in this country as a violation of the rights of the genetic owner, unless the Athletic patient has made a prior declaration of non-information. It is expected that the legislative lag will gradually be improved.

4. The conflict between genetic privacy and the right to genetic information

The conflict between genetic privacy rights and other rights can be analogous to the conflict between traditional privacy rights and other rights, so this chapter will not dwell much on the conflict between genetic privacy rights and other general rights. This chapter focuses on the conflict between genetic privacy and the right to know and the conflict between the fifth right of genetic privacy, the right not to know genetic information, and the right to be informed about genes.

In the doctor-patient relationship, there is a conflict between the Athletic patient's right to privacy and concealment of his or her genetic information and the medical institution's need to know the patient's genetic information in order to make accurate judgments. When there is a possibility of reconciliation between the two, the physician should weigh the boundaries of his or her right to know while protecting the genetic privacy of the Athletic patient as much as possible. This requires harmonious and effective communication between the doctor and the Athletic patient and, of course, a certain amount of industry protocols to be followed. The medical party should not ask too much information about unrelated medical practices, and safeguard the patient's right to human dignity while fully respecting the Athletic patient's personal privacy. At the same time, both doctors and patients should comply with their confidentiality agreements. When the doctor and patient are unable to coordinate, then a professional evaluation agency is required to assess which is more important. In terms of legal status, the patient's right to life should take precedence over his or her right to privacy. The right to life is the basis for the existence of individual rights, and without the guarantee of the right to life, the other rights of the individual will be null and void. The right to know is the right to life of the Athletic patient, and the balance of the law should be tilted toward the right to know.

Conflicts between genetic privacy and the right to know are relatively common, and genetic privacy is treated differently than the traditional right to privacy and the right to know because it includes the right not to know. Based on the special nature of genetic information, the owner of genetic information has the right to be uninformed about his or her own genetic information, while the doctor has the right to be informed. How to properly fulfill the doctor's duty to inform and protect the Athletic patient's right to be uninformed? The author believes there are two paths to take. One is to define a contract between the doctor and the patient before the genetic test occurs, which defines the scope of notification and the circumstances of non-information in fine detail. The right not to know is itself a form of autonomy, reflecting the right of the affected party to remain ignorant of genetic information that he or she does not wish to know. The contract is also a manifestation of the autonomy of the parties, and the patient's right to be informed of his or her genetic information can be considered as impliedly waived by the new agreement reached between the parties, and this waiver does not infringe on the Athletic patient's rights. This waiver does not violate the Athletic patient's rights. The medical party's obligation to inform disappears

with the new agreement between the parties. One might wonder if the assumption that the mutual obligation to inform and the right to be informed by the doctor and the Athletic patient disappears because of the new agreement breaks the old model of informed consent between the doctor and the Athletic patient. However, the author believes that the essence of the right to informed consent is to ensure that both doctors and patients, who are in a position of information asymmetry, can talk on an equal footing and fully guarantee the Athletic patient's right to autonomy. The formation of the agreement itself is a manifestation of the autonomy of both parties, so the previous model of informed consent can be abolished. However, it is not known whether this model will result in a disguised violation of the patient's rights in practice. For example, the medical practitioner uses a pre-prepared form contract with the Athletic patient, and the contract does not require the medical practitioner to fulfill the necessary notification obligations in terms of content. Such behavior is a disguised violation of the Athletic patient's right to informed consent. If the law sets certain mandatory provisions in this mode of autonomy, and sets a reasonable scope on the medical party's obligation to inform, it can protect the rights and interests of the patient and satisfy the autonomy of both parties. The implementation of such an agreement can prevent the medical practitioner from using such an agreement to infringe the Athletic patient's right to know in disguise. Second, if there is no prior contract between the doctor and the Athletic patient, the doctor should promptly and fully comply with the obligation to inform the Athletic patient of the test results for diseases that require urgent treatment. This obligation to fully inform does not violate the patient's right not to be informed of genetic information. The essence of genetic information unawareness is the fifth right of genetic privacy, the purpose of which is to preserve the tranquility of the private life of the genetic testers and to guarantee their right to live a normal life and to feel safe. The basis for the existence of this right is the duration of the right to life, or the possession of a high quality of life. The right to life is the foundation of all rights and should be ranked higher than other rights. For diseases that have not yet occurred but need to be prevented in advance, doctors should use their communication skills to kindly remind patients of the precautions they should take in their daily lives. In order to maintain the normal living conditions of the patient without disturbing the potential disease, the doctor may not inform the patient of the true situation. There is no doubt that the medical practitioner, as the initiator of genetic information, has some discretion in the duty to inform, but this discretion has a legitimate basis in the face

of the Athletic patient's right to life and health. It is difficult for medical practitioners to change their inherent thinking under the original informed consent model. Medical practitioners in the rapidly developing context of the high-tech era should implement and protect the patient's right to be uninformed about genetic information.

The medical provider able to prevent the conflict between the Athletic patient's right to be uninformed and the right to know genetic information to a certain extent based on prior agreement and selective information afterwards. Genetic information is linked to privacy. If the medical practitioner has a right to know within the boundaries of the genetic information owner's right to privacy, and it happens that this right to know involves linkage privacy, the linkage privacy component can trigger the right to health of the genetic owner's family (assuming failure to inform would delay treatment of the genetic owner's family's illness). Should the medical practitioner be obliged to inform the family of the owner of the genetic information? And how to ensure that the right to information of the family of the owner of the genetic information is guaranteed without violating the right to remain uninformed in the genetic family's right to privacy? First of all, as a medical institution and not a government department, the information that a medical practitioner has about a patient is usually limited to the direct athletic patient who comes to the hospital for treatment. The family of the owner of the genetic information is an indirect patient due to the privacy of the connection, and there is no legal way to obtain the personal information of the family of the owner of the genetic information. Second, it will increase the burden of the medical provider. As a provider of medical services, the medical party is responsible for the national public health service function and needs to provide treatment services for athletic patients. Requiring medical providers to bear the burden of informing the family of the owner of the genetic information would undoubtedly increase the burden on the hospital and create new obligations for the hospital. However, it may be twice as effective to provide services to the owner of the genetic information and at the same time inform the family of the athletic patient of the right to health. To make it easier and more reasonable for the owner of genetic information to communicate with his or her family. The conflict between the right to be informed and the right to be informed of the family of the owner of the genetic information is essentially the same as the conflict faced by the owner of the genetic information. Therefore, it can be dealt with according to the paradigm of the right to know and the right not to know of the owner of genetic information.

Genetic privacy and the right to know need to be reconciled with each other. Genetic information is important for personal life, but we cannot emphasize the absolute priority of genetic privacy, and we cannot use one legitimate interest to negate other legitimate interests. The reconciliation and application of the principle of proportionality has an irreplaceable role in the development of the law. The balance of interests in the law of conflict resolution between rights is an effective way, but of course it needs to be combined with the reality of social development so that a healthy space for development can be created. The law does not protect any right without end, and the protection of genetic information is no exception. When the protection of personal genetic information may harm national or collective interests, individual interests should give way to national interests. If the criminal investigation department needs to force DNA identification of a suspect to determine whether he or she is related to the crime, the suspect's genetic privacy should give way to the public authority. In the event of a conflict between genetic privacy and the right to know, rights holders should consciously restrain the boundaries of the exercise of their rights by adhering to the principle of minimal harm, and establish an optimal balance between protecting personal interests and safeguarding public power.

5. Conclusion

The 'case of three public examiners v. Foshan Human Resources Bureau,' as previously discussed, underscored the challenges surrounding genetic privacy in an era where genetic testing is increasingly prevalent, especially in the field of sports. At the time, the decision by the Foshan Intermediate People's Court was deemed reasonable, considering the nascent state of genetic privacy research in China. However, as researchers delve deeper into the complexities of genetic information, and as legal frameworks continue to mature, it is imperative that we reconsider the individual's right not to be informed about their genetic data.

When an employer conducts genetic testing on a candidate during a medical examination, it compels the candidate to become aware of their genetic status. However, individuals possess the fundamental right not to know their genetic information, and this extends to the rights of their family members. Thus, whether the recruiter discloses the candidate's genetic information becomes a potential infringement on the candidate's and their family's genetic privacy. Additionally, the recruitment agency's failure to explicitly obtain the candidate's consent for genetic testing

violates the candidate's right to informed consent, along with the rights of their family.

Genetic privacy is a unique and evolving facet of privacy rights, closely intertwined with the advancements in genetic technology. Genetic information is inherently familial and interlinked, distinguishing it from traditional privacy rights. Genes carry intensely personal data and are exceptionally private. The emergence of genetic privacy as a distinct field of thought is a logical response to the growth of genetic technology.

To effectively address the new challenges arising from life sciences advancements, such as genetic testing in sports, it is essential that we clarify the nature of genetic information within genetic testing, differentiate the right to genetic privacy from traditional privacy rights, and navigate

potential conflicts with related rights. Only through a comprehensive understanding of the fundamental principles of genetic privacy can we develop scientifically sound and reasonable legal standards to navigate the complexities of the genetic era, protect individual genetic privacy, and prevent the unauthorized dissemination of genetic information

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