

# Original Text of Interview in-depth

## Interview 1

Time: 31 July 2019

Site: Kunming

The basic situation of the interviewees: business managers, in his 40s, vegetarians

S: Hello, are you interested in modern biotechnology?

I: I am still very interested, and often read some of these aspects of information.

S: Do you usually come into contact with these products that use modern biotechnology?

I: I've been in touch with a lot of food like GM soy. Is there any harm to the genetically modified food that Cui Yongyuan made a lot of noise some time ago?

S: So what is your attitude towards genetically modified food?

I: I want to see if this is harmful to the human body. One of the simplest examples is cancer. The incidence of cancer is very high now.

S: Yes.

I: We used to live in trenches, and very few people have diseases such as cancer. When they moved to the city, more and more people had cancer, like some children with leukemia at a very young age.

S: Do you think there is a relationship between the current incidence of cancer and the use of these biotechnology? Or is it just caused by something else, such as environmental pollution?

I: I think environmental pollution is a very important cause, but I think biotechnology, especially genetically modified (GM) applications, has a lot to do with it. Because I don't think there's a way to determine if genetically modified food is safe right now, we may not be able to figure out some of its potential hazards until decades later.

S: Have you ever heard of gene editing?

I: Does the gene editor have anything to do with cloned sheep and cloned cattle?

S: They are different. Gene editing is a genetic modification of organisms, such as the gene editor baby that He Jiankui, from Guangdong province, did last year.

I: Ah, I heard about this. This matter is very famous,

S: What do you think of he Jiankui personally?

I: I don't think it's appropriate for him to experiment with people. If there is a problem simply from a medical point of view, such as being an organ, or if the child is born with a problem, with the consent of my parents, that is all right that I try it.

S: He Jiankui got the consent of the child's parents. His parents have AIDS, so if He don't edit, their children are also very likely to get AIDS.

I: But I think this still depends on whether the country has any legal provisions. If this is still not allowed in law, then it should still not be done. This is still based on the law.

S: But the law was not made for no reason.

I: I think if there is no legal prohibition, if the parents of his (baby) family agree, and if the risk of AIDS is high without editing him, he (He Jiankui) will not have a problem doing so. I think that's acceptable.

S: Do you think parents have the right to modify what they think is "defective" genes in their children?

I: it depends on what the genes are.

S: For example, if a child has some genes such as congenital diseases, do parents have the right to change these genes when their child is still an embryo?

I: I agree with this. I think it has the right. The simplest example is that abortion is allowed in China, that is to say, the baby is not yet an independent person, but I think it is unacceptable if parents want to make their children look better or smarter. However, if you know that this child is sick, if you do not cure him, he must not grow up, or congenital death. This happens around us, the child had muscle weakness, which is very scary. And after the age of 16, the child will not be able to grow up.

S: Even if he grows up, he may not be happy.

I: He is no longer happy, so I think this genetic modification, ah, should be allowed.

S: But once the technology is open source, it is likely to be difficult to regulate very carefully in the future, and some people may quietly use it as a baby enhancement.

I: So I just said that there must be a legal basis, not casually.

S: Do you think the use of this technology will make humans evolve and make the overall level of human beings stronger?

I: This is hard to say. Because if we don't aim at evolution, we aim at treating diseases, just to treat congenital diseases, such as color weakness and color blindness, I change a gene, and I change his life. The simplest example, like your biology major, it seems that people with color blindness are not admitted. In case there is a child with weak color, he is very interested in biology, through this technology can change his disease, then I think it should still be possible to try.

S: Even if he grows up, he may not be happy.

I: He is no longer happy, so I think this genetic modification, ah, should be allowed.

S: But once the technology is open source, it is likely to be difficult to regulate very carefully in the future, and some people may quietly use it as a baby enhancement.

I: So I just said that there must be a legal basis, not casually.

S: Do you think the use of this technology will make humans evolve and make the overall level of human beings stronger?

I: This is hard to say. Because if we don't aim at evolution, we aim at treating diseases, just to treat congenital diseases, such as color weakness and color blindness, I change a gene, and I change his life. The simplest example, like your biology major, it seems that people with color blindness are not admitted. In case there is a child with weak color, he is very interested in biology, through this technology can change his disease, then I think it should still be possible to try.

S: Some people may say that a person with a lower IQ, I can also feel that it is a disease or a defect, so I can make his IQ a little higher.

I: I personally think a little lower IQ is not that serious. It won't too serious an impact on a person. It's not a "defect."

S: Some people think they don't look good. I'll improve appearance.....

I: (interrupting) then I think there is a very problem. This is artificial interference. This is not appropriate. Unless it's a congenital defect, such as the hare lip, which can be modified.

S: But this yardstick is not easy to grasp. What belongs to the category of disease. What is he is not good-looking?

I: Foreigners have a point of view, that is, everyone is unique. Right?

S: Yes, there is such a view.

I: For a person, appearance is only a very small part, so many famous scientists, you cannot say

how good-looking they are.

S: I mean, for appearance, some of us think it a disease, such as the hare lip or the cracked lip. But some of us just think it's simply not good-looking. But sometimes it is difficult to draw a line between the two. Which are diseases and which are simply not good-looking?

I: I think this can be defined.

S: Some people, for example, his forehead is a little too long or his nose is a little crooked, which can be regarded as a disease, or it can be regarded as not looking good. So how to deal with this kind of thing?

I: To tell you the truth, my personal view is that if the hospital thinks that this is a disease, it needs treatment, and it affects his future life and his future development, it is regarded as a disease. If it doesn't affect anything, or if it doesn't have too much impact, I don't think that should be counted. As you just said, IQ is very important. But as a social person, EQ, as well as your social experience, your experience, these are all more important, but you can't achieve it through any genetic editing.

S: That is to say, you feel that in the future, the country should define a criterion to determine which is editable and which is not.

I: Yes. I think gene editing is indeed a boon for some congenital diseases.

S: Do you support an adult who volunteered to genetically edit his own somatic cells?

I: I don't necessarily support it. This depends on what purpose he is for.

S: Does that mean it depends on whether he wants to cure or strengthen?

I: Yes. That is, you, if I have cancer and I have this technology, I will certainly support, whether it is right. If I just want me to be stronger, it's not good.

S: What is your attitude toward gene editing that doesn't work in humans?

I: I'm going to see if it's edible. If it's not edible and just a scientific experiment, I think it's acceptable. But if it's what we're eating, for example, a pig, if you change a gene to make it grow fast, I don't think it's unacceptable. I don't know if it's safe.

S: For example, we modify the genes of other organisms through genetic editing and transfer their organs to the human body. Because at present, there are not enough donors for human organ transplantation.

I: This is acceptable to me. There is a shortage of organs for transplantation in China.

S: That is to say, although this is finally used in the human body, it is still acceptable.

I: Yes, I can accept it. And especially in China, I think we should make great efforts to develop these.

S: Would you agree that some people, because of certain beliefs or religions, think that modifying the genes of other creatures is an act that does not respect life and violates the laws of nature?

I: I'd like to see what the purpose of this modification is. I've raised a pig and killed it. What's that called? Do not respect the life of the pig? Man is the master of the world. And it's impossible for me to think about it from the point of view of a pig. Many organs, like the liver, the kidney, including the eye, are still very deficient in China. So I support the development of these. As far as I know, there's a kidney in the organ transplant. I don't know how many years, it's about 400,000. We've only died two days before. It's because of renal failure. If there's a kidney source, I can live for many years paying forty thousand. But there's no way to get a kidney source at all.

S: That is, you think that human beings have the right to transform the genes of other organisms for their own production and living and for their own purposes, right?

I: This depends, I think if it is beneficial to human beings, then I accept.

S: That is to say, in order to benefit mankind, we can modify the genes of other organisms?

I: I agree with that.

S: Some animal conservationists will think that life is equal. We can't transform other creatures. We don't have this right.

I: I don't think so. Although I don't eat meat myself, being a vegetarian. I haven't eaten meat in more than 40 years, but I never think there's anything wrong with meat eaters. Plants are creatures and you eat plants. Therefore, I do not agree with the words "equality of all living beings".

S: Do you think we need to continue to develop gene editing now?

I: I think these technologies, especially for the developing countries like China, it is impossible not to study them. To be honest, if you don't, the rest of the countries are doing it. From the point of view of national security, ah, I think it is very necessary to continue to study. Even if I set up the law to specify which are available and which are not available ; However, this technology must be mastered first.

S: So what do you think people should think of their place in nature when we have these technologies?

I: Human beings have always been dominant in nature. In particular, the more later the society develops, the faster it will develop, which is inevitable in the future. As far as I know, for example, energy research is developing faster and faster now. Nuclear energy is being miniaturized, and solar energy is being used. These are all major inventions that have changed mankind. Such as nuclear power plants, this absolutely reflects the dominance of human beings in nature.

S: Some people would say that because human technology is becoming more and more high-end, once there is a problem with technology, there are some places that human beings do not have a good grasp, the consequences will be even more unbearable.

I: Yes, so China must master this technology well while foreigners do. Of course, because I am Chinese, I am sure to look at it from the standpoint of my own country.

S: Yeah, that's right. But what they mean is that because the current technology is very developed, the consequences will be very serious once there is an accident, such as a nuclear leakage at a nuclear power plant, which will be very harmful and difficult to control, and then we will face a great risk of developing these technologies.

I: That can't be said like that. There's no accident in China like a nuclear power plant accident in Japan. So this depends on how well you master the technology, or depends on people. For example, I took a knife, but I mastered what I did with a knife. You can't say there's wrong with this knife. That is, tools, technology, these things are not wrong.

S: That is to say, technology is neutral, and the key is to see how people use it, right?

I: Yes. It's about people.

S: Finally, I would like to ask what do you think should be the most important thing to pay attention to when we develop gene editing technology now?

I: I think the most important thing about development is security.

S: Is that the security of its technology?

I: Yeah, you can't mess with it and do something you shouldn't.

S: It's as if it's ethical and regulatory, and it's not a simple technical safety issue.

I: Then I think we should consider ethical issues first. This problem is dealt with well, is the technical level of the problem. First of all, we should figure out what the purpose of using these technologies is. Such as the rich man relying on his property to transform a new life and then serve

him, this is to be firmly opposed. But if parents ask for modification because of their children's congenital illness, then I think it is OK.

S: But some people will say that we do have to use techniques such as gene editing to help us treat diseases in the future, but in the process of technological development, there will inevitably be clinical trials, and some people will be sacrificed as experiments.

I: This also exists now, ah, some people have some diseases, go to the hospital, and the hospital introduces a certain new drug, for example, for cure cancer, there is no other routine method, well, if he agrees to do some clinical trials of new drugs, this is acceptable.

S: That is, as long as he has informed consent, that is acceptable.

I: Yes, as long as he agrees. Because he can't cure the disease, there may still be a chance if try the new drug. There are quite a few of these things right now.

S: Yes. Thank you for your interview with us today.

## Interview II

Time: 2019.8.14

Site: Yueyang City, Hunan Province

Interviewees: 2 college students, about 20 years old

S: Hello, we are students from Shanghai Jiao Tong University. We are doing an interview today. Would you like to answer a few questions?

I: Yeah.

S: Oh, thank you, gentlemen. So today is the first question to ask, that is, do you have a certain understanding of gene editing technology?

I1&I2: A little bit.

S: Do you think the biggest impact of this technology on humans is good or bad?

I1: Good.

I2: Since it is technology, it should be good to develop.

S: So what do you think is the gene therapy that is currently used in medicine? Will you use these technologies in your own body?

I2: (depends on whether he is expensive or not, ha) I think if it becomes a universal, social welfare project, it will certainly be acceptable, but if you turn him into an elite, medical service such as going to a private hospital in the United States to treat cancer, it may not be acceptable to most people economically.

S: The cost is too high, isn't it?

I1: Yes. Because I think it's a problem of cost. I think the current gene editing technology is not yet popular, so more may be an experimental thing. If one day you let me volunteer to do it, and you want me to pay, I may not be able to pay.

S: Do you have any knowledge of previous hot events about gene editing, such as the He Jiankui incident?

I1: What is it?

S: It's the event that edited baby genes.

I1: Yes, I think this thing may be too radical now, but I think this is actually the direction of development in the future. This man can't just keep it all the time. According to the present 100-year

life span, the body will certainly not be able to do great things. There must be a way to either fly mechanically or join evolution, which may be the only two ways. This is dramatic, but I think this is the case. When the machinery is developing, the human body should be more and more high-end. To realize modernization, add kinds of external machinery, ah, directly to mechanical limbs, or modify human genes, changing some genes that may not be suitable for modern society.

S: So what do your opinion?

I2: What I think is about the same.

S: Then you are more supportive of the development of gene therapy.

I1: I support it. If you don't support it, it will become very expensive. It might get cheaper if support it. (laughter)

S: Do you support gene editing of human adult somatic cells on a voluntary basis to treat diseases?

I1: In terms of technology, there may be certain risks, and there may be some problems in the social impact. If you really want to be completely liberalized like plastic surgery, there may be ghosts and snakes. This is not easy to judge. In fact, this is the genetic level of plastic surgery. If you can accept plastic surgery, you should be able to accept this thing. They're essentially the same. Plastic surgery can also be very strange, which I was stunned to see. But this is not the reason why we oppose the technology, plastic surgery technology still has its irreplaceable role, for example, sometimes a large area of burning, some people may also be a large area of genetic burning. You can not give up those who really need it just because some people become ghosts and snakes. It may be similar to plastic surgery. And at the beginning of society, the acceptability of society is not high, but slowly we will accept it and the legal provisions will be let go. I think it should be a similar process.

S1: It is assumed that some disease treatment can only rely on genetic modification. In this case, would you accept a compulsory treatment, similar to the congenital vaccine? What do you think of it?

I1: I accept all acquired compulsory vaccines.

S: Congenital means directly modifying genes.

I1: One of these is that if it is impossible to predict what the impact of the change will be, I will accept it, but as I said earlier, if it will be promoted as a broad social project, then it should be the same as the vaccine that children must be given at birth in society now. We can hear reports of vaccination accidents every year. Well, assuming that one day the congenital genetic modification will be forced, and you will certainly be able to hear the news of the accident. But I still have the point of view that we can't negate this technology because of this.

I2: That is to say, the present genetic modification is a future vaccine, is that what it means?

S: Yeah.

I2: Well, I quite agree with this view, that is to say, this kind of genetic modification may be a necessary way for technology and society in the future. But now I still take a neutral attitude, because I don't know much right now. I may not take the initiative to volunteer to participate.

S: Do you think there are still risks?

I2: Yeah, I still don't know much. I think most people think the same as me, not too agree and won't object, because it may be a new thing for most people.

I1: It might be the same as everyone's view of plastic surgery. You went to the street in 2008 to ask a 30-year-old uncle. You asked him if you accept your wife's change of face. I think the answer you get will be: shit, is there this kind of thing? But now you ask him again, that may have become the fact that happened around him, then you asked him if he supported it, he must have accepted it, even

if he may have said in his mouth, "how dare you hurt or destroy the skin of your body that received from your parents?" But in fact, most people accept it, and you see reports of accidents and opposition every year, There is nothing wrong with the technology itself. Even if something goes wrong, it is also a problem of that person. It does not belittle that person. It is just that the operation is wrong.

I2: Is that the kind of mistake that happens once in a while?

I1: This is something that no technology can avoid.

S: You can't kill a litter in one fell swoop. So what do you think about using this technology for non-human beings?

I1: I think this is very unfair to cats, cats and dogs? (laughter)I have no problem with the transformation of people, and of course I have no problem with the transformation of animals. But you do have to pay attention to what if your modified genes outflow, which may cause damage to the ecosystem. For example, now there are some, ornamental animals and plants, ah, which may be changed to look a little prettier than others.

S: They're hybrid now.

I1: It's similar. For example, if I transform a pig to let it have a little more muscle, then it has the advantage of fighting, so assuming it spreads into the wild population, will the wild boar be better than it used to be? Well, the wild boar could not beat the tiger, but now that it can, then is it easy for the tiger to starve to death? Because the ecosystem itself is complex, you don't know what the impact of what's out there will be. But all you have to do is control it. You should promise this. Things do not cross with things outside, or only change the outside, do not change the genetic cells.

I2: It's like plastic surgery.

I1: Yes, I don't think it makes any difference.

S: The cost may be.

I1: Yes, the cost may be different. Isn't that about genetically modified crops? Now the biggest objection is that it may have an impact on the ecosystem, but now there are many ways to keep them from flowing out, such as just a second generation or something.

I2: The main thing is to put an end to genetic risks.

I1: There may be genetic pollution, because people usually add IMBA. If you have used this kind of project, you should not only make up a little pig, but also grow a bigger pig.

I2: It grows faster and fatter.

I1: In case this outflow, your mouse may one day become a giant mouse, which may be a little scary. This is not usually the case, but there is still a little worry, after all, this is also the classic opening of science fiction eschatological movies. There are any green people in the future, and superpowers. You have to watch Marvel's movies. Each one of them have a bit genetic edition. But it doesn't seem to flow out.

S:So what do you think is the prospect of using it entirely as a non-human, non-animal product, such as for storage?

I1:The future depends on whether you make money, or the reaction of the market. I can even accept your operate on human. I'm sure I'll be fine with your operation on animal appearance.

S: That is to use it as a product.

I1: You asked me if I was going to buy it, right?

S: Yes.

I1: Well, it depends on whether you have a substitute for the same function, or whether it's a pure

market behavior. I won't buy it just because it's gene-edited, and I don't think it's bad just because it's gene-edited.

I2: It's mainly about the product.

I1: Yes, it is about whether it's cost-effective. Just like some agricultural products, the effect is exactly the same, you say non-genetically modified, that.....

S: Well, some of the chemicals produced through gene editing technology, or life-related things, would you use them if they exist?

I1: Supposing I have diabetes, I must use bacteriological insulin. I think it is certain, supposing your product is popular and the best, do not need white.

S: Anyway, as long as there is no harm to use it.

I1: There is no psychological disorder anyway. It's not a vegetarian or something. There won't be any primordial genetic protection associations in the future.

I2: I think there will be.

I1: I don't care, just like the dog protection society, I don't care.

S: What do you think we should pay most attention to in the development of modern biotechnology?

I1: Like other (technologies): I'm mainly concerned about two points, one that whether it can make my life better. For example, hybrid rice, it not only lets the food price fall down, but also solve some of the food problems. Another aspect may be that no matter what technology comes to the cutting edge, it can be used in war or deterrence.

S: Being used to transform human beings.....

I1: Yeah, in case you really do. Although I think it stays in the stage of modifying several disease genes and treating cancer now.

I2: Yes, is there legal regulation now, is the law permissible?

I1: Yes, once it comes to weapons, the government has to keep it under strict control. I don't want to see a biological and chemical crisis yet. We may have to pay more attention to these.

I2: But it's like all the technology ends up.....

I1: Yes, you study drugs, you can make poison, you study physics, you can make hydrogen bombs, you do chemistry, you may be able to kill 10,000 people? A thousand? Tens of thousands of them. It should be worth paying attention to what you study and use weapons in the end, but on the other hand, these can also be solved.

I2: Good use can solve problems, but bad ones.

I1: Pay attention to the two extremes. In fact, I do not want to pay attention to the middle ones, now some people are studying the human cloning. There is a game called Detroit human change. There may be real problems in the future. For example, in case they and we are not the same species after genetic editing in the future, there may be some problems. But I think we should actually let it go.

I2: The problem appears gradually and then we solve them gradually. Anyway, it is the problem of the second generation.

I1: That's not why we're worried about this technology. We don't develop robots if we're worried about robots?

I2: Worry about artificial intelligence and don't develop artificial intelligence?

I1: Isn't that half of the college students in China unemployed on the spot?

## Interview III

Time: 2019.7.30

Interviewees: business staff, in his 40s

Site: Lianyungang City, Jiangsu Province

S: Do you have any interest in the current development of biology?

I: Not much.

S: What are the products that you are exposed to in life in general?

I: Genetically modified corn, wheat or something.

S: It's basically information from the news, isn't it?

I: Right. There are also biopharmaceuticals, biological agents, and so on, and some of the antiviral herbicides used to improve rice, which should also be relevant.

S: What do you think of gene editing technology?

I: I've seen the transformation of babies before. I don't have any attitude. I think it's acceptable if scientific experiments are carried out within a controllable range. But if it is uncontrollable, endangering ethics or social morality, it is not very good. Within the scope of monitoring, it is possible to have complete legal provisions.

S: That is, it has to be socially acceptable before it can be carried out, right?

I: Right.

S: Do you think some medical aspects of genetic modification of fetuses, or improvements are acceptable?

I: In fact, this is unfair. Rich people will transform their children into being more and more powerful, interfering with the law of natural selection. Artificial screening of people interferes with the natural evolution process, which may make class differences more obvious.

S: What if it's personal, it's not fetal.

I: It's the same truth. But like exercise, it's a kind of freedom, so my attitude is not very clear. In fact, I think that the technology itself is not right or wrong. The criterion of judgment is how to use it. The atomic bomb is not right for war, but it's good for nuclear power plants.

S: What do you think of an application that cannot be inherited, such as modifying somatic cells or using genetic editing to modify pig genes?

I: This is acceptable and can be used to treat diseases. And it is acceptable that it does not involve social and ethical issues at all.

S: So if using this technology to make biotechnology products, would you support them, such as biochips?

I: Yes, this is also a kind of scientific and technological progress.

S: Now there are already biological storage products on the market. The storage density of biological storage is much higher than that of physical storage, but at the same time, the cost will also be high. If it were you, how would you choose it?

I: It depends on the value for money of your product. For users only care about the use of experience, as for how it is achieved, that is the work of R & D personnel. But it's also the first time I've heard that DNA can do storage.

S: What do you think of the status of man in nature?

I: Man has the ability to choose in nature. Biotechnology is mostly used to make the human population develop. But it would not be desirable to selectively create some humans in this way, or to destroy some, like Hitler. However, it is acceptable to use this technique to prevent or relieve diseases similar to heart disease in the elderly or other diseases caused by old age.

S: The point is to consider the purpose of use, right?

I: Yes, there must be regulations to restrain them. Ethics must be balanced by the legal system and morality, and there must be security when there is ethics. It is very beneficial to human beings to solve the problem of security on the basis of first, and then to standardize ethics.

S: Safety is important.

I: What's the value of a technology that first achieves its purpose if it makes things worse because it's not safe enough. This technology is safe to achieve our goal reliably and efficiently.

S: Is that you think you need to walk steadily and then walk beautifully?

I: Right. If there is no ethical problem, then efforts should be made to solve this security problem.

S: What do you think should be paid the most attention to in biological development now?

I: How to let nature and human beings develop harmoniously in the limited natural resources. Can not let human development affect nature too much. Use biotechnology to regulate the way some resources are used.

S: Is to achieve a better balance, right?

I: Right.

S: Thank you for your cooperation.

## **Interview IV**

Date: 20190815

Interviewees: female college students, about 20 years old

Site: Chengdu, Sichuan Province

S: Are you usually interested in modern biology, have you been injected with biotechnology or come into contact with some related scientific and technological products?

I: Is it very professional?

S: About the application of some biotech products related to life.

I: I've been watching a little.

S: What do you pay attention to? can you say it briefly?

I: Enzymes, genetic engineering, and then nutrition.

S: Have you ever heard of gene editing?

I: Of course, I've heard of it.

S: Did you know that there was a he Jiankui incident last year?

I: Gene editing the baby, right?

S: Yes. Do you have any views on this matter?

I: He went a little too far on the matter.

S: Can you tell me more about it? why do you think he went a little too far?

I: I heard that AIDS will attack a lot of sites, he modified the gene can only protect one of them. And after he modified this, he could not guarantee that nothing else would go wrong. And it is a modification made on people, so this is also a debatable thing.

S: OK, are you in favor of gene editing of human embryonic cells?

I: Well, I don't approve of it. If it goes on like this, it's either Superman or monster. What human beings will become?

S: If it's for some known potentially pathogenic genes, do you think parents have the right to modify their children's defective genes? For example, some congenital diseases.

I: Then they can choose not to have a baby. Now the law stipulate that if there is a problem with the embryo, you can choose not to have children?

S: There are some potentially pathogenic genes. Do you accept gene editing like vaccinations?

I: Like recessive genes?

S: It all includes.

I: Well, besides some recessive ones, what else are potential? It means that there may be some problems when you grow up in the future, right?

S: Right.

I: I still don't agree with it very much. Although it is similar to vaccination, this technology is not as mature as vaccine technology, is it? It doesn't necessarily work, and the price is bound to be very expensive. And after doing so, it may lead to new problems.

S: Do you think there is an essential difference between gene editing and plastic surgery?

I: I think there is a big difference between them. Plastic surgery does not involve genes, and it is non-renewable, that is, non-inherited, so the most cosmetic change is a person. Genes may affect the next generation, the spouse, and a lot of things. Because it can be inherited, it must be different.

S: Do you think the development of this technology will enhance or evolve humans?

I: It is also possible. Can you explain the definition of evolution? Does it mean to be better?

S: Yes, there are some enhancements to certain aspects of ability or characteristics.

I: Well, I don't think so. What if it becomes a monster.

S: In addition to gene editing of human embryos, do you support gene editing therapy?

I: I think we should discuss it separately. If he/she is sure that he/she will not pass this on to others, I think it is OK. For example, he/she already has children and does not intend to regenerate in the future.

S: Do you think a person has the right to voluntarily modify his or her genes?

I: I don't think he should be given this right.

S: Do you support gene editing of adult somatic cells on a voluntary basis to treat diseases?

I: I think it's okay.

S: Do you think the biggest problem with gene editing technology is technical security or ethics?

I: I think there both are problem. Do you have to pick one?

S: Choose what you think is more important.

I: Then I think ethical issues are more important. Because the technology always lies in the progress, the present problem will always find the solution. But ethical questions will always be difficult to find an exact answer.

S: Would you like to receive gene therapy if it's safe in the future?

I: I don't seem to have any genetic problems. Then suppose I have, if I have selfish ideas, I will wait until I get married and have children to give gene therapy to my somatic cells.

S: Do you support gene editing in non-human bodies? For example, for other animal and plant microbes.

I: I think this can be studied in the laboratory as a technology. But if you catch one on the road and let it go, I still don't agree.

S: Well, do you think humans have the right to modify the genes of other species for their own development?

I: I don't think so. This is too human-centered. Man is only a small member of nature, and it seems a little too much for his own development to harm the interests of other species.

S: Would you like to use gene editing products that have nothing to do with the human body, such as genetically edited chemicals, edited biological memory, and so on. Because there is now some storage through DNA storage or cell storage. The base of that DNA can be encoded, so it can be synthesized and edited.

I: Oh, then I should be willing, because it doesn't affect me. But the production process must be safe.

S: Generally speaking, do you think we should continue to develop gene editing technology?

I: I think any technology should be sustainable.

S: Do you think this is a violation of the laws of nature?

I: This depends on what genes to edit. I think it's okay if it's irrelevant.

S: What do you think should be paid the most attention to in the development of modern biotechnology? For example, technical security issues, ethical issues, economic costs and so on.

I: I think technical and ethical issues are really the most important issues. Then economic costs may have an impact, but they can be regulated, right? Macro-control or something.

## **Interview V**

Date: 20190818

Site: Mianyang City, Sichuan Province

Interviewee: forty years old, housewife, freelancer.

S: Are you interested in modern biology?

I: I'm a little interested.

S: Have you paid attention to some related content of biotechnology in peacetime, or come into contact with some biotech products in daily life?

I: I've been concerned about something, but I don't seem to have come into contact with some biotechnology products so far.

S: Have you ever heard of gene editing?

I: I have heard of, for example, the he Jiankui incident, which became popular some time ago.

S: Are you in favor of gene editing of human embryonic cells?

I: If it's good for people, I'm in favor of it.

S: Do you have any views on the he Jiankui incident last year?

I: He Jiankui, after editing the child's genes, he will have antibodies to AIDS and will not be infected. This is still good for the human body. But if a large area of editing, complete genetic change, this is still not very good for humans.

S: Do you think humans have the right to voluntarily modify their genes?

I: I don't think I have the right to modify my genes without authorization. It is still necessary to apply for approval, step by step. If everyone can modify it, how do you want to change it, isn't it a mess?

S: Do you support gene editing of adult somatic cells to treat diseases on a voluntary basis?

I: If you treat the disease, I think it's okay.

S: So do you think the biggest problem with gene editing technology is technical security or ethics?

I: There must be both.

S: What do you think is the biggest problem?

I: It's still an ethical issue. I'm afraid of chaos.

S: So if the technology is safe, are you willing to receive gene therapy?

I: Under safe circumstances, I think I am still willing to receive gene therapy.

S: In addition to the human body, do you accept genetic editing of non-human bodies? For example, for microbes, animals and plants.

I: I think it is acceptable for non-human genetic editing when it is beneficial to the human body.

S: Do you think humans have the right to modify the genes of other species for their own development?

I: I think it's acceptable.

S: Do you think gene editing is an act that violates the laws of nature?

I: It is still a bit of a violation of the laws of nature, but for the better development of human beings, we still have to consider it comprehensively.

S: What do you think people should think of their position in society in the era of modern science and technology?

I: I think the position of human beings in nature should be in a favorable direction.

S: Can you elaborate on it?

I: For example, cancer occurs frequently now, and then many diseases do a lot of harm to humans. If I can, I think we can use editing to improve it and have the ability to be uninfected.

S: Would you like to use gene editing products that are not human, such as chemicals produced by genetically edited organisms, or genetically modified biological memory?

I: What I know at present is not very comprehensive, as far as I am concerned, I can accept it.

S: So what problems do you think should be paid attention to most in the process of the development of modern biotechnology?

I: The concern is that after the editing, ah, close relatives of ethics, ah, I do not know much about these relationships.

## **Interview VI**

Date: 20190819

Site: Mianyang City, Sichuan Province

Interviewees: female, bus driver, in her 20s

S: Are you interested in modern biology?

I: Yes.

S: Do you usually pay attention to biotechnology or come into contact with some biotechnology products?

I: yes, but not much.

S: Have you studied modern biological science and technology before?

I: It can be said that I have not learned fine knowledge or cutting-edge technology, the level of knowledge may be limited to the level of junior and high school, and a lot of things have been

forgotten.

S: It doesn't matter. Have you ever heard of gene editing?

I: I've heard a little bit about it.

S: OK, have you ever learned about any hot events related to gene editing, such as the He Jiankui Gene Editing Baby incident last year?

I: I don't know much about it.

S: the He Jiankui incident is roughly to achieve the goal that babies will not suffer from AIDS when they grow up, because it may be possible to successfully realize that HIV does not work by attacking the baby's genes. So are you in favor of gene editing for human embryonic cells?

I: Maybe....No.

S: What do you think of He Jiankui's incident?

I: I think he's experimenting with uncertain techniques physically for his own benefit and ignoring national laws.

S: Do you think parents have the right to modify their children's "defective" genes?

I: Parents want their children to be good. It depends on which part of the defective gene it is. If it is harmful to your health, you can modify it. But no one is perfect, there can be many defects to make up for, if they make up for it, there will be no diversity of people.

S: Do you support mandatory gene editing like "vaccinations" for certain potentially pathogenic genes?

I: I support it.

S: Do you think there is an essential difference between gene editing and plastic surgery?

I: Yes, I do. Gene editing is not my choice, it is imposed by the will of others. Plastic surgery is mostly voluntary. Although plastic surgery may have peer pressure, the impact of social atmosphere, and so on, the final decision is made on its own.

S: Do you think the development of gene editing technology will enhance or evolve humans?

I: Yeah.

S: Do you support the development of gene therapy?

I: I support.

S: Do you think people have the right to voluntarily modify their genes?

I: I think they have.

S: Do you support voluntary gene editing of somatic cells for adults to treat diseases?

I: Yes.

S: Do you think the biggest problem with gene therapy is technical safety or ethics?

I: In the current situation, I think the biggest problem is the technical safety question

S: Would you like to receive gene therapy if the technology is safe after that?

I: I'd like to.

S: Do you support gene editing in non-human bodies, such as animals, plants and microbes?

I: Yes.

S: Do you think humans have the right to modify the genes of other species for their own development?

I: I think we can modify some, but we can't completely destroy other genes. To ensure species diversity, it is not necessarily that the good genes found now are good genes thousands of years from now. Society is developing. At present, what humans see is only a very shallow part.

S: Do you support genetic modification of other organisms to serve human production and life?

I: Yes, but does not alter all the genes of the same species.

S: Would you like to use some unrelated gene editing products, such as genetically edited biological chemicals, genetically modified biological memory)?

I: Yes.

S: Do you think we should continue to develop gene editing technology?

I: I think we should continue. After all, if society wants to develop, what is good for human beings can continue.

S: Do you think gene editing is against the laws of nature?

I: Yes. It seems that human beings forcibly rewrite the laws of nature to make it become beneficial to human beings.

S: What do you think people should think of their position in nature in the era of modern science and technology?

I: I don't think humans are at the top. Since nature can create human beings, it can also destroy human beings.

S: What do you think should be paid most attention to in the development of modern biotechnology? Are they technical, security, ethical, socio-economic, or other problems that you think may exist?

I: I think the most important thing is security.