

**Genetic Technology:
Opportunities and
Challenges for Female
Miao Minority's Race
and Gender
Reconstruction**

**Fangfang Wen
Boston College
MIT GCWS**

Abstract

This essay means to discuss what are the opportunities and challenges genetic technology could bring to the female Miao minority. Genetic technology provides people chances to reconsider race and gender. It also offers the possibility to search for the origin of race. Under such condition, female Miao minority allows to enhance their race status, to reconstruct their gender status, and to reconstruct their racial identity. However, genetic technology also brings new challenges to female Miao minority. It is hard for female Miao minorities to consume genetic services and gain attention from genetic scientists. Besides, tracing the origin of race also may bring new discrimination for female Miao minority. To balance the opportunities and challenges of genetic technology requires female Miao minorities, government and non-governmental organization's cooperation.

Key word: Female Miao Minority, Genetic Technology

Introduction

Miao minority is a Chinese ethnic group that has a special culture and long history. As a female member of the Miao minority in China, I have a deep understanding of how this group of people is discriminated against by mainstream society. I grew up in the Miao's region, maybe one of the most rural places in China. I am very lucky to have the chance to pursue my graduate study in the U.S. and to take the course of Gender, Race and the Complexity of Science and Technology in MIT Graduate Consortium of Women's studies. What I am interested in is how to use technology to help female minority to enhance their social status, especially how to use genetic technology to help female Miao minority to reconstruct both of their race and gender status. I would like to use what I learned from here to help these women in my ethnic group who are still oppressed due to their gender and racial identity.

Genetic technology could be considered as part of the scientific revolution. It has great meaning not only in the health and medicine fields, but it also has an influential impact on the gender and race. Since the publication of the gene map, race has been proven not to have a scientific basis. There also are more and more biologists who argue that the differentiation between men and women is constructed by biological differentiation and environmental differentiation. Genetic technology has proved that both race and gender are social construction. That is to say, genetic technology provides people a new perspective about gender and race. Besides, the possibility to search for the origin of race with genetic technology offers people a chance to reconstruct their own racial identity. In such a gene era, female Miao minorities could

use genetic technology to change their mistreatment.

At the very beginning of this essay, I try to give a brief introduction about the female Miao minority. Through the introduction of female Miao minority, I want to let people know why the female Miao minority deserve people's attention. Then, I give an introduction of how genetic technology impacts gender and race. This is to help people understand how to relate genetic technology to gender and race. Due to the opportunities to reconstruct gender and race as well as the possibility to search for the origin of race that provided by genetic technology, I have chosen genetic technology as the method to help the female Miao minority to reconstruct their gender and race identity. Next, I argue about the opportunities and challenges that genetic technology brings to the female Miao minority. In the final part, I give some suggestions about how to balance opportunities and challenges of genetic technology.

Even though many critics argue about the negative influences of genetic technology, it still has a very positive impact on people's lives. This positive influence impacts both physical and social lives. I try to view genetic technology in a positive way and also to emphasize possible challenges at the same time. Through this essay, I hope to give people a general introduction of the female Miao minority, as well as why and how to use genetic technology to reconstruct the female Miao minority's gender and race identity.

History and Culture of Miao Minority

Miao minority is also known as Miao Zu in China, which is an ethnic group that has

long history and special culture. According to Chinese population general survey in 2000, the population of Miao minority is 894, 0116. Long long ago, before the occurrence of any character record, there already were ancient people living in the Yellow river valley and Yangzi river valley. Through years after years' breed and hard work, these people formed tribe association almost 5,000 years ago. The name of this tribe association was "Nine Li". And the leader of "Nine Li" was Chiyou (The brief history of miao,1985). Miao was the offspring of Chiyou (Ssu-ma Ch'ien, High official in ancient China, the chapter of lvxing). Chiyou was subordinated to the Yan Emperor. But Chiyou was killed in the war with the Yellow Emperor and the Yan Emperor in 26th century BC (The song of miao's move, recorded in 1987). After Chiyou was killed, Miao minority gradually moved into Hunan province, Guizhou province, Guangxi province and Yunnan province, where they mostly live in nowadays (Shi, 2006). The living characteristic of Miao minority is that they "live separately as a big community and live together as a small group". Miao minorities mostly live in remote mountain areas. Such distribution model is a result of years of race oppression and race discrimination. Since most Miao minorities live in mountain areas, it is very hard for them to communicate with outside world. And so that Miao minorities are isolated. However, isolated situation helps Miao minorities to keep their culture and tradition very well. They esteem nature, ancestor and ghost. There are many wizards (Gui Shi, also known as Shanman) in the rural Miao minority's inhabitation region. These wizards play a role as the spiritual leader in local area (Schein, 2000). Some Miao minorities are the believer of Christian and Catholicism

(Shi, 1997; He, 2000). Even though Miao minorities are isolated from outside world, they have own scientific knowledge. They try to learn the celestial body and the astronomical phenomenon (The epic of miao minority, the song of jin ying). They also have own calendar, which is thought of as one of the oldest calendar in the world. Miao minority's calendar was earlier than ancient Egypt's (6200 years ago) for 3800 years (Wu, 2000). Miao minority use the calendar to calculate the time, to anticipate the good or bad time and to decide the day of festival (Wu, 1999).

Dual Oppression of Race and Gender for Female Miao Minority

Female minority were under the dual oppression of race and gender. As members of Miao minority, female Miao minorities were driven and oppressed by majority ethnic group as male Miao minorities. Despite the oppression of their racial identity, female Miao minorities also were oppressed by their gender identity. Such oppression could be expressed through female Miao minorities' status inside ethnic group, traditional thoughts about female Miao minorities as well as female Miao minorities' marriage and education.

Female Miao Minority's Status Inside Ethnic Group

In Miao's community, men had much higher status than women. The reason of such phenomenon is the impact of traditional beliefs and male's important status in economic production since Miao minority live on farming and men are main labor force for farming work. Men are thought of as a family's hope. People think that the

family could only survive if this family had male child. If the female Miao minority can't breed a male child, her husband's family would treat her very badly. Many families breed lot of children just for wanting one son. Too many children often leads to greater poverty.

Traditional Thoughts about Female Miao Minority

The discrimination for female Miao minority could be found in many traditional beliefs and legends. The most popular legend about the female Miao minority is "Gu". "Gu" is similar to poison. It is a form of sorcery, which is thought to be only passed to women. And it is thought of the symbol of evil. If the female Miao minority was suspected to have "Gu", she would be isolated by the community, and that woman would get very severe punishment. In Han dynasty, Song dynasty, Ming dynasty and Qing dynasty, there were specific law for the punishment of "Gu". In Miao community, male wizard is thought of the spiritual leader. But the female wizard is always thought of evil and unforgivable. There are many Chinese works of literature and movies that depict female Miao minority as the evil conductor of "Gu". Actually, there is no adequate evidence to prove the existence of "Gu" and female Miao minority conduct "Gu". Another legend about the female Miao minority is "tiger ghost" (lao hu gui). That legend is popular in the Qian Dong Nan area. If any female Miao minority had the protruding canine like teeth, she would be thought of the tiger ghost. Being thought of tiger ghost, no one dare to marry that girl. If that girl had a lover, her lover's family also would not allow their marriage. Because of such

thoughts, many female Miao minority could only live in adversity.

Female Miao Minority's Marriage

Female Miao minority's marriage always is thought of in terms of patriarchy, even though female Miao minority got more freedom after the establishment of new China in 1949. The traditional thoughts still have profound impact on female Miao minority's marriage. Female Minorities have the right to find their lover in Miao's traditional festival. Such behavior is called "You Fang" or "Yao Ma Lang". But for marriage, the female Miao minority has to get the agreement of her father and her mother's brother. There is a custom in Miao's area called "Qiang Qin". If the female Miao minority's marriage didn't get her family's agreement, that girl may go to her lover's family in secret. After they hold their wedding, the female Miao minority would inform her family. At that time, it's difficult for her family to do anything. It is also very hard for the female Miao minority to initiate divorce. If it was the female Miao minority who refer initiates divorce, she would face pressure from her family and the clansman. Before the establishment of new China, female Miao minority's marriage was usually decided by her parents. Female Miao minorities were often betrothed at a very early age and they had no right to change this decision. This phenomenon is called "Wa Wa Qin". Besides, there is a custom in short skirt Miao (Duan Qun Miao) that called "trying marriage" (Shi Hun). It means that the female Miao minority has to have sex with many male Miao minorities. The female Miao minority could marry to other male Miao minority until she could prove she has the

breeding ability. Female Miao minority always get married at a very early age. And in the rural area, many Miao minority's marriage don't get the legal protection since such marriage usually didn't go through the law procedure.

Female Miao Minority's Education

Since the male Miao minority is thought as hope of family, it is hard for the female Miao minority to get opportunity for education. This thought also leads to delay of the conduction of nine years compulsory education for female Miao minority (Weng, 2004). Of course, government set lot of funds and policies to improve the education status of Miao minority, especially for women. However, lacking of effective monitoring mechanism, the result is not so good. Even though some female Miao minority could complete the nine years compulsory education, it is also hard for them to continue their education. And the educational resource in Miao's area is very limited. Female Miao minority can't get high quality education. And they also face the family's economic pressure. Many female Miao minority drop out from school and go to the east coast provinces to find a job. In 1990^s, many female Miao minorities went to Guangdong province to work in factories. Some of them became the mistresses of local wealthy men. With the increase of their age, they were abandoned by these men and lived miserable lives. Some female Miao minorities became sex workers during their migrant labor process. I did an interview about female sex worker in Kaili bath center in 2007. I found many sex workers are Miao minority. Some female Miao minorities were cheated and sold to other areas to be

wives while they are looking for a job.

Brief Look at Biology, Women and Race

Biology, women and race always have relation with each other. At very beginning, women played important role in medicine and health care. But their status was replaced by men finally. Even though biology is a subject that controlled by men and majority ethnic groups in developed countries, it still has great meaning for minority ethnic groups in developing countries and women. Genetic technology, which is one of important technology in biology, offers people a new chance to reconsider race and gender.

Biology, Women and Men

Although men have dominated science, from the earliest times women have been involved in the healing professions (Rosser, 2008). The first report about women in medicine, Aagmede(12th century BC), appears in Homer's Iliad (Homer Iliad II .740; Rosser, 2008). After women were allowed to practice medicine on their own sex in the last third of fourth century BC, there were more women who became involved in medicine and health care area. In the medieval era, more women got the opportunity to conduct medicine and health care jobs due to the construction of universities and the support of religious communities. In the Renaissance age, women also played substantial role in health and healing. They have been undercounted in studies that rely upon occupational labels, but when we look at caregiving and bodywork, we can

see women providing a broad range of services (Fissell, 2008). This tendency of women controlled much of traditional health and medicine until the late nineteenth century in most western countries and until the late twentieth century elsewhere. (Rosser, 2000)

Biology is a profession that is dominated by men in which women have to work harder to compete, have less status, get passed over for promotion, and find it difficult to get a partnership (Dobson, 1997). The most obvious evidence that men have dominated biology and medicine may be the list of Nobel Prize winners. Only 8 female scientists have been awarded the Noble Prize in physiology or medicine. Men get more recognition in biology and medicine. In contrast, much work done by women in science has been brushed aside, misunderstood, or attributed to male colleagues (Rosser, 1992). Women's role in science is thought be more of a "support role", and therefore less important (Werskey, 2007). That could be considered as the anonymous status of women in science.

Since men dominated biology and medicine, thus it seems that men just use their norm to be the general norm for medicine and health. Women have been discriminated against by a male-dominated health-care system. One possible reason for women status in medicine and biology is the social bias about women. From Aristotle, women were thought of as not distinct from slaves (Aristotle, Politics, 1252b). And Aristotle also argues that the inequality between male and female is permanent (Rosser, 2008). Society has labeled women as lacking ability. Under such expectations, it becomes difficult for women to become successful in science and

other causes. According to Rosser's survey for women in science, lacking of trust is one of the important factors that influence women's participation in science (Rosser, 2004). Without enough support, women could only stand outside the domain of biology and medicine.

Genetic Technology and Race

Genetic technology provides a new perspective about race that race is a socially constructed definition. With the publication of gene map, race is confirmed not to be a scientific concept (Philipkoski, 2001). For sequences from a single location with >99% identical nucleotides, only one was used for phylogenetic analysis (Short and Suttle, 2005). It was thought that as little as only .1% of genetic code was pertinent to racial traits. The conclusion was that people are fundamentally similar. This research result just breaks through people's stereotype about the biological difference among race. Race is a social construction. We should take human interaction rather than natural differentiation as the basis for racial categorization (Rivkin and Ryan, 2007). In race relations one is considered not just with individual prejudice, nor merely with labeling, but with assumptions, and ways of seeing, interrelating and interacting that are shared within the "in-group"(Figueroa, 1991).

With the development of genetic technology, people also get the chance to trace the family tree. New technology makes searching for racial origins possible. Definitely, the possibility of searching one's family tree means the possibility of improving one's health or resolving some healthy issues for a certain group of people. It also could be

used as a way to reconstruct a race's identity and history.

Genetic Technology and Gender

The meaning of gene technology to women is not only limited in the improvement of women's health, but also includes the opportunity provided by gene technology to reconsider what is gender and how to know gender. Many scholars have rendered their viewpoint about what genetics means to gender and race. Hubbard, Henifin and Fried (1979) suggest that the division by sex of power and privilege in society is politically motivated and not based on biology. Janet Sayers (1982) suggests that it is the social construction of menstruation that reinforces sexual inequality. Ann Fausto-Sterling (1985) argues in her "the Myth of Gender" that there is not a significant difference between men and women. And we also should consider environmental factors when we try to explain the behavior of men and women. Bonnie B. Spanier (1995) argues that we should reinforce a sexist ideology of difference and empowering it with an added dimension of cellular and molecular organization of living beings-even more, by widening the perceived distance between science and society-current molecular biology unwittingly promotes the exclusion of politically aware women, people of color, and some white men from the field of molecular biology and from the new biology. Sue V. Rosser (2000) suggests that the globalization of biology provides an opportunity to expand topics, to examine the complexity of diversity, to expand the definition of work, to redefine politics and to rethink major historical events, social movements, and gender relationships. The

metaphor of woman as a separate species may provide some guidelines for setting policies and models of interaction that are less harmful to women (Rosser, 1992). Our bodies are too complex to provide clear-cut answers about sexual difference. It is hard to find a simple physical basis for “sex” (Fausto-Sterling, 2000). Gene technology just gives people a new perspective about the gender. Gender is not only a biological concept, but also a social concept. Thus, maybe we can say there is no biological prevalence for male or female, just difference. Because of the gene technology, we get the chance to explore this issue in a deeper level.

Race as Social Construct: Equal Race Status for Female Miao Minority

Genetic technology has proved that race is a social construct. It means that people contain the same gene sequence, no matter what race or class that people obtain. Since race contains no scientific basis, it means new opportunities to reconstruct race status and to obtain equal treatment.

Reconstruction of Race Status

Genetic technology offers opportunities for female Miao minority to reconstruct their racial status. Genetic technology proved the differentiation of gene sequence among human being is extremely tiny, thus it gave race a reconstruction: race is a symbol of culture other than any biological classification. Female Miao minorities as members of Miao minority, their racial identity are their representation of Miao’s culture other than any basis for discrimination.

Miao minorities could be thought as the third type of culture, which is neither farming nor nomadic. Miao minority mainly live on farming. The most important crops for them are paddy and corn. But they also have long moving history. They had 4 times bid scale of moving in the history and their population distributed in worldwide: Asia, Europe and the U.S. (Wu, 1990; Li, 1996; Shi, 2006). Even though Miao minority has long moving history, their culture is still preserved completely. UNESCO included Qian Dongnan, which is the main inhabitation region for Miao minority, as the first choice of tourist destination for "Return to Innocence, Back to Nature". In Asia, only Tibet and Qian Dongnan got this title.

Female Miao minorities' traditional costume is a symbol of Miao's culture and it is also a good way to preserve Miao's culture (Long, 2005). Female Miao minorities' costume is the symbol of Miao minority's racial characteristics, customs, aesthetic consciousness as well as the harmonious relation between human and nature. Thus, it is a vector of Miao's culture (Tan, 2008). Female Miao minorities' costume is an important part of Miao's culture, thus female Miao minorities play an important role in representation and preservation of Miao's culture. Culture is a record of history and a way to preserve diversity, so people's attitudes toward culture should be appreciated other than discriminated.

Obtainment of Equal Treatment

Since race has no biological differentiation, it also means every ethnic group has the same gene sequence and deserves the equal treatment. Female Miao minority as

members of Miao ethnic group, they also deserve equal treatment other than discrimination. Equal treatment for female Miao minority should include effective implementation of related policies as well as equal treatment of female minority and female majority.

It is hard to evaluate whether female Miao minority recently get equal treatment from Chinese government. In China, the government does much work to improve the female Miao minority's status. Such endeavor includes both policies and financial assistance. However, the issue is whether the government did effective implementation. Giving equal treatment to female Miao minorities not only means legislation of related policies, but also means implementation of these policies. Legislation is representation about government's attitude about female Miao minority. However, only through implementation of these related policies could female Miao minorities get benefit. Lacking of effective implementation of related beneficial policies for female Miao minority is the result of lacking of monitoring mechanism as well as effective communication between central government and local government. Establishing monitoring mechanism about related policies as well as achieving effective communication between central and local government could improve female Miao minorities' treatment from government.

Besides, it is also hard to evaluate whether female Miao minorities get equal treatment as female Majorities. For example, in Miao's area, most elementary school teachers only have a high school education or a professional school diploma. In contrast, the majority ethnic group's elementary school teachers usually have bachelor

or master degrees. Worse education quality for female Miao minorities may lead to less competition ability and less consciousness to improve their own status. Therefore, government should try to decrease beneficial gaps between minorities and majorities through improving beneficial policies' quantity and quality for female minorities.

Gender's Redefinition: Reconstruct Female Miao Minority's Gender Status

Genetic technology not only has great meaning on human's health, but is also provides a chance for scholars to rethink gender. Gender, typically described in terms of masculinity and femininity, is a social construction that varies across different cultures and over time (Wood, 1997). Gender differences really exist. However, such differences are not completely based on Darwin's principles of sexual selection, it also based on a series of social factors (Fausto-Sterling, 1985; Geary, 1998). Some feminists argued that people should also include feminism perspective in rethinking some disciplines (Hewitt, 1997; Rosser, 2000). For female Miao minorities, it is an opportunity to redefine their work and reconstruct their gender status inside Miao minority.

Redefinition of Female Miao Minority's Work

Genetic technology offers people chances to rethink women's work. It inspires people to expand the definition of work since women also play an important role in genetic research as well as other disciplines (Boserup, 1970; Hubbard, 1995). It also inspires people to re-evaluate women's contribution (Rosser, 2000). For female Miao

minorities, it means a chance to redefine work and re-evaluate work inside Miao minority. Miao minority lives on farming. Thus, people in Miao minority always think farming work is the definition of work. As a result, people discriminated other work against the definition of work. Farming work becomes the most important part of “work”. Male Miao minorities undertake most farming works, thus both their jobs and they get the highest evaluation. In contrast, female Miao minorities always undertake reproduction, caring children and parents as well as housework. Their works always are thought as supportive, thus female Miao minorities hold a much less important status in the ethnic group. Actually, farming work provides Miao minority food to survive. Reproduction helps Miao minority to survive as an ethnic group. Other works such as caring children and house work also are very important for Miao minorities’ normal lives. Therefore, farming work is not only work for Miao minorities. Other works should be included in the definition of “work” for Miao minorities. Only through the redefinition of “work” could female Miao minorities’ work get appropriate evaluation.

Reconstruction of Gender Status

Genetic technology offers female Miao minorities opportunities to reconstruct their gender status. Such opportunities include reconstruction of female Miao minorities’ status in reproduction as well as reconstruction of equal treatment for men and women inside ethnic group.

Genetic technology proved that embryo’s gender is not only determined by women.

Humans are born with 46 chromosomes in 23 pairs. The X and Y chromosomes determine a person's sex. Most women are 46XX and most men are 46XY. Research suggests, however, that in a few births per thousand some individuals will be born with a single sex chromosome (45X or 45Y) (sex monosomies) and some with three or more sex chromosomes (47XXX, 47XYY or 47XXY, etc.) (sex polysomies). In addition, some males are born 46XX due to the translocation of a tiny section of the sex determining region of the Y chromosome. Similarly some females are also born 46XY due to mutations in the Y chromosome. Clearly, there are not only females who are XX and males who are XY, but rather, there is a range of chromosome complements, hormone balances, and phenotypic variations that determine sex (World Health Organization, 2009). In Miao's community, people always think that embryo's gender is totally decided by women. Breeding a son could bring enhancement of status in family for female Miao minority. In contrast, if female Miao minority can't breed a son, they have to keep breeding for wanting a son or they would get bad treatment from family. Since genetic technology has proved that determining sex is a complicated process, female Miao minorities do not need to be responsible for embryo's gender. Propaganda about basic knowledge of reproduction could be a good way to correct people's thoughts and help people to get a correct understanding about who decide embryo's gender.

Genetic technology proved that the existence of gender difference, it also provides people the chance to reconsider gender as a social construct. Gender difference is differentiation between men and women other than the basis for gender discrimination.

For female Miao minorities, equal gender treatment should mean equal decision right and removal of any stigma about them. In Miao's community, men always control all of decision and put many stigmas on female Miao minorities. To achieve these two goals, education can be a good way. On the one hand, male Miao minorities should get education to get a general understanding of equal gender treatment. On the other hand, female Miao minorities should get education to improve their own education level and to establish the awareness.

Tracing Family Tree: A Possible Way to Reconstruct History and Racial Identity

Genetic technology makes tracing family tree become possible. Tracing family tree has great meaning on medical care. It provides possibilities to find treatment for some diseases (Leroi, 2005). It is also used to trace genetic diversity in populations around the world and human migration that originated from the first humans in sub-Saharan Africa (Adams, 2008). For female Miao minorities, the possibility to trace family tree means possibilities for them to reconstruct history and racial identity.

Tracing family tree offers female Miao minorities the possibility to reconstruct their history. Miao minority have own language. It includes 3 dialects: east, middle and the west (Li, 2002). However, according to "The Epic of Miao Minority", Miao minorities lost their character during their moving process. Lacking of character, Miao's history is preserved as songs (Graham, 1954). Thus, songs become one of important evidences for scholars to research female Miao minorities' history and culture. The other important evidence is female Miao minority's costume (Yang,

1998). Advanced genetic technology could trace the origin of a specific race, thus it provides the possibility to trace Miao's origin. For female Miao minorities, it could be used to reconstruct female Miao minorities' own history. It could help female Miao minorities as well as people to get a better understanding about female Miao minorities' history and culture.

Tracing family tree also could help female Miao minority to tie together. Years' driven by the majority, Miao minority kept moving. Nowadays, Miao minorities distribute in different places around the world. Genetic technology may become an effective tool to help Miao minorities to tie together as a whole ethnic group since genetic technology can determine whether people have the same racial origin. For female Miao minorities, genetic technology can help them to tie together as a big community. Being a big community can enhance possibilities for female Miao minorities to gain more attention and to strive for equal treatment since they can get more support from each other from this big community.

Challenges of Genetic Technology to Female Miao Minority

Genetic technology offers opportunities to female Miao minorities to reconstruct their racial status, gender status and history, but it also brings challenges. Such challenges include high cost of genetic technology, men and majority ethnic groups' domination on genetic technology and the possibility of new race discrimination.

High Cost of Genetic Technology

Genetic service somehow looks like a luxurious consumption. A survey about the cost of genetic testing versus clinical screening conducted by 3 Canada scientists shows that the average cost in the genetic screening arm is \$2259.23 in Canadian dollars (Chikhaoui, Gélinas, Joseph & Lance, 2002). The per capita income for Canadians in 2002 was \$22390. At the same time, the per capita income for China was \$960. (Data source: World Bank, 2004) Thus, the cost of genetic screening is 10% of the annual per capita income for Canadians. And for Chinese, it is equal to the more than 2 years and 3 months' income. It means that only the most wealthy people have the right to consume genetic services. For the lower class, especially for the lower class in developing countries, the most important and urgent need is to fulfill basic needs. These people have neither the money nor the necessary knowledge to consume genetic services. Female Miao minorities mostly live in rural places in southwest China, which people hold a much lower income than the per capita income for China. It is almost impossible for female Miao minorities to consume genetic services by themselves.

Men and Majority Ethnic Groups' Domination on Genetic Technology

Genetic technology is men and majority ethnic groups dominated science. Thus, it may probably become a service exclusively for the male and the majority ethnic groups. It is hard for minorities to participate in scientific research, and it is especially hard for female minorities to participate in scientific research. Like other science disciplines, genetic technology also is a "white" science subject. That means it is the white people

who mainly conduct the genetic technology and participate in the genetic service. In contrast, there are fewer people of color involved in genetic technology. Of course, we can't deny that there are more and more people getting the chance to participate in genetic technology, both in research and in benefitting from the research achievements. But the majority of genetic analysis research and consumption is still conducted by white people, maintaining the status of genetic science as a "white" subject. Female Miao minorities as members of minority ethnic group in China, it is very hard for them to gain attention from scholars in developed countries.

Possibility of New Race Discrimination

Genetic technology offers the possibility to reconstruct race identity also may bring new race discrimination during the reconstruction process since reconstruction also means emphasis of racial differentiation. Besides, tracing family tree also means finding racial differentiation. Thus, using genetic technology to trace family tree also may lead to racial differentiation (Leroi, 2005). Genetic technology offers opportunities for female Miao minorities to reconstruct their racial status, but it also may bring new racial discrimination when they try to use genetic technology to reconstruct their racial identity due to reconstruction of racial identity also means declaration of female Miao minorities' difference from other ethnic groups.

Suggestions to Balance Opportunities and Challenges of Genetic Technology

Balancing opportunities and challenges is a work that needs female Miao minorities,

government and non-governmental organization's common participation. Female Miao minority are the direct beneficial group, thus they should have both awareness and ability to be benefit from genetic technology. For government, it is their responsibility to help female Miao minorities to get equal race and gender status. Besides, non-government's comparative advantage entitles them the ability to fulfill human services (Matthias and Green, 1994).

Female Miao Minorities' Participation

Genetic technology is a technology that controlled by men, majority ethnic groups and high class, thus only female Miao minorities have ability and awareness to strive for their own right could they benefit from genetic technology. Firstly, female Miao minorities should have basic knowledge about what is genetic technology and why genetic technology could provide opportunities for them to enhance race as well as gender status. They can have awareness to be benefit from genetic technology until they have related knowledge. It could achieve by providing propagandist brochure and holding community peer workshop. Both propagandist brochure and peer workshop are a cheap way and do not need hiring expert. Secondly, female Miao minorities should have enough ability to strive for own ability. That means their education quality should be enhanced. To enhance female Miao minorities' education quality need to ensure the implementation of nine years compulsory education policy for female Miao minorities. It needs specific legislation and strict monitoring mechanism. So, education becomes a good way to help female Miao minorities to

have basic quality to establish awareness and enhance ability to strive for their own right through genetic technology.

Government's Participation

Government plays important role in the participation of social affairs (Gilbert and Terrell, 2009). Government's responsibilities for female Miao minorities' enhancement of race and gender status could be fulfilled through setting related policies and affording financial assistance. On the one hand, setting related policies could give research institution direction and control in order to prevent the occurrence of new race discrimination. On the other hand, setting financial funding could give opportunities for lower class people, such as female Miao minorities, enough support to be benefit from genetic technology. As the most powerful organization, government's work will have great impact on genetic technology.

Non-Governmental Organization's Participation

Non-governmental organization's comparative advantage entitles non-governmental organization become the best organization to conduct human service. Non-governmental organization has a comparative advantage over other sector agencies in areas where their distinctive ambiguous and hybrid structures enable them to overcome problems of principal-agent gap, median voter reluctance, weak messages from politicians to staff and lack of market interest (Billis and Glenerster, 1998). Thus, non-government organization can have positive impacts on balancing

opportunities and challenges of genetic technology for female Miao minorities. Such impacts could be described as setting assistant funding to give lower class people necessary financial support, conducting education activity to help people to get general understanding about genetic technology and conducting propaganda activity to help minorities to gain scientists' attention.

Conclusion

Genetic technology and female Miao minorities are not two separate concepts. Female Miao minority is a group that under oppression due to their race and gender status. It is also a group that with myth and great history. Genetic technology offers opportunities as well as challenges to female Miao minority. On the one hand, genetic technology not only means progress of both science and technology, but it also provides new perspective about gender and race. Genetic technology is a new chance for female Miao minorities to enhance both their race and gender status. On the other hand, genetic technology also means new challenges for female Miao minorities. Genetic services are very expensive and controlled by men and majority ethnic groups, thus it is not easy for female Miao minorities to be benefit from genetic technology. Besides, genetic technology also brings possibility of race discrimination to minority ethnic groups since it provides chances to explore racial differentiation in a deeper level. To balance opportunities and challenges of genetic technology, female Miao minorities, government and non-governmental organization have to work a certain function. Female Miao minorities have to establish awareness and enhance ability to

be benefit from genetic technology through education. Government has to give certain control and direction to research institution as well as support to minority ethnic groups though setting related policies and financial funding. Non-governmental organization could afford gene education, propaganda and assistant funding to give minority ethnic groups for improving their chances to be benefit from genetic technology. Through cooperation of female Miao minorities, government and non-governmental organization, genetic technology could be opportunities other than challenges for female Miao minorities.

Acknowledgements

I would like to gratefully acknowledge Professor Peter Taylor, who opens my eyes to science and technology studies. I am particularly grateful to Professor Peter Taylor for his precious suggestions about this research. I appreciate the encouragement and support from members at the Gender, Race and the Complexity of Science and Technology class. Their work and comment always inspire me.

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