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Growing Together

**Title:** Genetic Discrimination: CRISPR, Ethics, and Human Rights in Biomedical Advancements

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## **Title: Genetic Discrimination: CRISPR, Ethics, and Human Rights in Biomedical Advancements**

### **Abstract**

New findings for applying gene editing technologies such as CRISPR are innovative in practicing medicine because of their ability to address genetic diseases and demographically uplift human wellness. However, such advancements come with their own ethical dilemmas, of which risk remains one of the greatest threats: genetic discrimination. It occurs where individuals or groups are discriminated against on account of genetic characteristics, for example, where individuals or groups are locked out of jobs or even insurance because of tendencies towards certain diseases.

Said in this context, this paper considers the case that a tool as powerful as CRISPR could deepen inequality if the benefits it affords are not accessible to all. For instance, the elite will enhance certain genes via the use of CRISPR making society fully polarized between those who will afford the advancement of such a technology and those who cannot. Police and courts would also exploit genetic data and infringe on people's privacy; and eventually more discriminations would be instigated by employers or insurers against their own employees or insured persons.

The purpose of this study is to analyze the ethical concerns that relate to CRISPR and propose ways of avoiding genetic profiling. In this sense, a qualitative research approach was used, and after a literature review, case studies and analysis laws regarding genetic editing technology were reviewed. The results further demonstrate that, absent effective

restrictions, CRISPR may increase social injustice and be menacing to privacy and human rights.

This is a big issue from the human rights point of view. These rights must remain protected in order to stop this genetic information from being exploited. It is with this in mind that this paper recommends strict laws that ensure genetic data and recommend correct usage of genetic editing.

The discussion also sources communities and international relations in addressing possibilities of negative utilization of such technologies. If these challenges can be met, then indeed from this genetic progress, humanity will receive this through CRISPR. This paper is written to raise awareness about the responsible use of CRISPR and, perhaps more significantly, to defend people from discrimination based on their genes in today's rapidly progressing biomedical industry.

### **Keywords**

CRISPR, genetic discrimination, ethics, human rights, biomedical advancements

### **Introduction**

Great progress has been made in recent years regarding genetic engineering, most notably with the addition of CRISPR-Cas9. CRISPR (clustered regularly interspaced short palindromic repeats) lets scientists for the first time modify and repair DNA and genes and even redesign certain attributes. Although this technology can create a number of benefits, ethical and social imperative questions arise from it (Doudna and Charpentier).

One of these concerns is genetic discrimination; that is, one's treatment based on his or her genetic characteristics. This paper seeks to examine the CRISPR issue of ethics and human rights showcasing how the genetic aspect could lead to discrimination and inequality if well elaborated.

### **I. Literature review-**

CRISPR-Cas9 system has been extensively researched with high hopes through its use in medicine and agriculture. Studies have proven its use in genetic disorders such as sickle cell anemia and cystic fibrosis (Doudna & Charpentier, 2020). Those concerns include; on the other hand, it has been criticized on ethical grounds, especially in respect to the Genetic Information (Kohn et al).

The employment and insurance sectors are at a genetic discrimination risk as pointed out by Kohn et al. (2019). All the same, there are few studies which guide people on how to prevent misuse and at the same time ensure that everyone is given a fair chance to benefit from the use of CRISPR.

However, this review establishes the following limitations in the current literature. Moreover, existing legal protection isn't sufficient to discourage genetic discrimination across the globe. Second, where ethical considerations are called for, they are usually poorly defined, and lack concrete application (Gaj et al). Last but not the least, majority of the research works the power of option of CRISPR with likely inadequate social weightage given to it. These gaps call for more vigorous studies in order to come up with sound policies and practices.

## II. Methodology-

This work uses a qualitative research method that is achieved by conducting an analysis on past studies, articles, case and legal papers that construct the CRISPR technology. Here data collection involved identification of peer-reviewed journals, governmental and international guidelines and reports on genetic editing and discrimination.

In the current research, the intent has been to find out potential areas of misuse about genetic data. Parameters used for selection were the availability of CRISPR, the availability of laws regulating the use of genetic engineering, and cases of genetic prejudice. The chosen methodology enables identification of the specific ethical and social issues related to CRISPR and forms the basis for the measurable recommendations.

## III. Results- The analysis revealed several critical findings:

1. Lack of Regulations: Majority of countries have inadequate legal framework in handling the regulation of the artistic use of bioengineering technology. It means there is a regulation gap that enhances the possibility of misuse. (Kohn et al)
2. Economic Inequality: The use of the CRISPR treatments is relatively expensive and only reaches the financially wealthy people, thereby encouraging the formation of a new evaluative division on the basis of genetic traits. (Doudna & Charpentier)
3. Privacy Concerns: Demographic data is in danger of being misused by employers, insurers and policemen more and more frequently. (Kohn et al)

4. Ethical Dilemmas: The respondents' opinion regarding the permissibility of gene editing not for the treatment of diseases but for the luxurious traits is quite a split half. (Gaj et al)

These results underline the necessity of international collaboration in elaboration of the ethical norms and the effective legal requirements.

## **Discussion**

### **I. What the results show**

The results clearly demonstrate the potential of the CRISPR technique as a research tool but also confirm the unique risks of the methodology. Despite its undeniable advantages of changing people's lives, it represents a danger to human rights if used inappropriately. For example, failures of laws could result in a situation where a person has their genetic profile utilized to deny them a chance at a job, education or any opportunity they desire most thereby eradicating their privacy as well as freedom (Kohn et al).

Comparing these findings with existing literature reveals a consistent theme: what has emerged as the need for social justice and efficiency of protection. Though the adoption of these measures is not easy because ethical practices and policies vary from country to country. This underlines the need for international cooperation in establishing best practice in this and other spheres.

## **II. Understanding CRISPR and Its Potential**

CRISPR is a tool that is used to cut, or slice through a DNA sequence in an ultra-tiny manner. It works like a switchblade knife that can trim particular segments of the DNA as it will remove, replace or insert new segments. This has created chances of destroying diseases including cystic fibrosis, sickle cell anemia, and some cancers. Apart from medicine, the technology is also applicable in farming by invoking pest resistant crops and in environmental matters where it can cause invasive species.

However, the technology is not without dangers as this paper will show. Of equal alarm is the possibility of undertaking what has been called 'designer babies,' where folks choose for their own kid's desirable traits like intelligence, looks, athletic prowess, or any other features they prefer. Could, for example, that such applications could widen the gap of social inequality and only few privileged families could afford them. This begs the question on fairness and what can and cannot be tampered with genetically.

## **III. What is Genetic Discrimination?**

Genetic discrimination is where one is mistreated based on his or her DNA. For instance, an employer can refuse to give employment to a person who has a genetic history of having one or more chronic diseases. Similarly, insurance firms may set exploding tariffs or even exclude policies for conditions hereditary inherited. This type of discrimination intrudes into one's personal life and results in social embarrassment, making it difficult for the people affected to be employed.

Therefore, there is a high prospect of genetic discrimination, an example being sickle cell anemia and other illnesses, whenever the available technologies, such as the testing through CRISPR is more frequent. Without ensuring a proper protection of this particular genetic information, it stands an uphill probability of being misused resulting in harm for some people alongside social gapes.

#### **IV. CRISPR's Role in Genetic Discrimination**

CRISPR is powerful enough to alter genes, a feature that many people can relate with genetic discrimination. For example:

**Economic inequality:** Some treatments with CRISPR may be expensive or available for those who can afford treatments. It may even give rise to a new form of Bio-Division of labor where the rich are genetically improving themselves while the poor can do nothing about it.

**Workplace Bias:** Employers may prefer certain employees on grounds of their gene make up for instance low susceptibilities to diseases; this will breed discrimination at workplaces.

**Social Stigma:** Taking genes without editing, the so-called "natural genes", individuals will be discriminated against, as the world gradually turns into the Gene Wild.

## **V. Human Rights Perspective**

Discrimination on genetic grounds therefore brings out some of the major ethical and legal issues as those provided under human rights – namely; equality and dignity. Two core rights are especially relevant:

### **1. Right to Privacy**

The concept of genetic information is closely related to person identity that is why it is crucial to consider it as private data. Failure to protect this information also violates the right to privacy due to lack of autonomy and control of personal information. For instance, authorities forcing people to undergo genetic tests can reveal all sorts of information and contradict personal trust.

### **2. Right to Equality**

discrimination on the ground of genetic characteristics is unfavorable to the principle of equity in handling individuals irrespective of their color, ancestry, or other such characteristics. Genetic discrimination makes individuals, groups and societies worse off by setting up barriers or labeling them in ways that deny them, like employment, insurance or education, a fair chance at life or just deserts.

## **VI. Broader Implications**

1. Workplace and Insurance Bias: That is, employers or insurers could unfairly lock people out of work or insurance solely based on prior tendencies to genetic diseases.

2. Intersectionality: Because genetic discrimination intertwines with racism or class prejudice issues, more risks are posed to the marginalized community.

3. Stigmatization: People with such genetics may experience social stigma – their human dignity and worth erodes.

4. It is critically important to stand up against genetic discrimination in order to protect equal and inalienable human rights. Law statutes like GINA in US are designed not to allow such misuse; apart from that, privacy and equality are to be afforded to everyone.

## **VII. The Ethical Dilemma of CRISPR**

Discrimination is not the only ethical dilemma associated with use of CRISPR. For example:

- i. Informed Consent: Such patients require detailed information and knowledge relating to the implications of genetics editing. This is so especially when parents are making decisions on behalf of their unborn children.
- ii. Unintended Consequences: Changes in the gene sequence could have side effects, for example new diseases, or may have bad impacts on the environment.
- iii. Global Inequality: As much as some states put a lot of funding into carrying out genetic studies, the latter for one reason or another cannot reap the fruits of such studies hence widening the gap between the developed and the underdeveloped world.

## VIII. Genetic discrimination and prevention

These concerns have to develop sound measures in order to eradicate such national and international issues. Here are some recommendations:

- i. **Legislation:** These governments will eventually have to address legislation that prevents people from being discriminated against on the basis of genetics. For example, rules of antigen testing s and screens in America do not allow employers and insurers to use genetic data when making choices.
- ii. **Data Privacy:** Patients' genetic data should not be lost or stolen and may not be altered in any way and patients' consent should be sought before the data is disclosed. Such data should only be processed by highly sensitive data security organizations.
- iii. **Equal Access:** Efforts should be made such that every person who needs to opt for the CRISPR-based treatments should be allowed to do it without becoming one of the elites 'haves' or the destitute 'have nothing' people.
- iv. **Public Awareness:** There is one strategy that consists in giving the public certain information on what might be done with the help of this technology, and what threats are implied.
- v. **Global Cooperation:** The same rigidities and ethical standards should be set globally to nurture the associated technologies.

## **IX. The Role of Ethical Oversight**

It is always possible to create free ethical committees that will help to protect genetic studies and developments. These committees can:

- i. Check up on specific genetic editing projects to see whether they conform to the norms laid down with regard to ethics.
- ii. Be alert on publicity about the effects of genetic technologies.
- iii. This is a good place to advise on handling incidental effects.

## **X. The Future of CRISPR and Human Rights**

In correlation with the development of CRISPR, there needs to be a constant weigh between the benefits that it yields, and the implications that are therein involved. Thus, putting human rights and equality at the forefront will allow us to gain a worthy result along with GE without compromising the values of society. For instance, it is possible to develop CRISPR to cure diseases without producing 'design babies. Likewise, principles could make it possible to use the genetic information for enhancing the health care delivery and not for having a sift.

## **Conclusion**

In this paper, ethical and social issues of CRISPR are discussed focusing on one of the important aspects – discrimination in insurance and employment. Some of the aspects highlighted in the paper include; no policy was made to guide the use of the technology,

imbalanced economic status, and no privacy measures were implemented. To address these issues, the study recommends:

- Developing international guidelines for the ethical use of CRISPR.
- Ensuring equitable access to genetic editing technologies.
- Implementing strict data protection laws to safeguard genetic information ((Doudna and Charpentier; Gaj et al.; Kohn et al.).

If these challenges will be solved, then society will be ready to gain benefits from the CRISPR without violating human rights. Future studies should therefore entail empirical research, and about creating real, feasible measures to advance ethical gene editing.

Lastly, CRISPR is a revolution in biomedical science which will provide an exceptional chance for bettering human being's health. However, due to possible abuses it can spoil people's lives, therefore it is crucial to have strict rules and ethical boards. Genetic Discrimination poses serious danger to human rights primarily the rights to privacy and equality. The following categories should be managed through legislation, public awareness and global cooperation to make the genetic advancements for the benefits of the whole society. Finally, proper utilization of CRISPR can give a direction that will financially grow the field of biology and, at the same time, respect the principles of ethical and moral practice in society.

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