

The Relationship Between Genes and Homosexuality

Student's Name or Students' Names

Department Affiliation, University Affiliation

Course Number: Course Name

Instructor's Name

Assignment Due Date

The Relationship Between Genes and Homosexuality

The link between sexual genes and homosexuality is an area that has elicited a lot of research interest for the last several years, mainly because of the desire to find out whether there is a genetic foundation of homosexuality. However, the scientific studies aiming to establish specific genes that make gay people gay have not come up with a particular result. Still, scientific research posits that genetic makeup is at least part of the reason for the psychological bent toward homosexuality.

Research on genetic correlations of homosexuality has been valuable where twin studies have been conducted. These studies look at the rates of similarity of homosexuality between monozygotic and dizygotic twins. When comparing identical twins, those are otherwise known to be genetically similar, and they enjoy higher concordance for homosexuality as opposed to fraternal twins, who have a genetic similarity of approximately 50%. For instance, a study by Bailey and Pillard (1991) demonstrated that the concordance rate of homosexuality among identical twins is approximately 52%, while that of same-sex siblings comes at 22% for fraternal twins. The results presented in these studies indicate the heritability of schizophrenia but also contribute to the so-called twins-environment effect because the concordance in monozygotic twins is not 100% (Khovanova, 2019).

Besides twin studies, scientists used another method to determine specific homosexuality-related genes. The method is known as Genome-Wide Association Studies (GWAS). In scientific literature, there was a 2019 study where researchers sequenced nearly half a million individuals' genomes. They established several genetic variants linked to same-sex sexual behavior. However, it showed that these variants accounted for only a small proportion of variance of sexual orientation and strengthened the fact that sexual orientation is a polygenic and

highly complex trait. The study, therefore, infers that no one gene is a gay gene, but several genes interact with each other compounded by environmental factors (Uffelmann et al., 2021).

Additional evidence about the theory on the genetic origin of homosexuality includes family studies that have illustrated that homosexuality is heritable. For instance, homosexual men are more likely to have homosexual brothers than heterosexual men. Also, some lineages have pointed to homosexuality as being from the X (Sun et al., 2021). This argument stems from the belief that most women, the bearers of chromosome X, tend to be more homosexual compared to their male counterparts. Hamer et al. (1993) realized that the MALG gene of male homosexual characteristics was in Xq28 chromosome. Hence, some published works follow this argument, but the results are conflicting, and the exact gene has not yet been discovered.

The epigenetic point of view is also to understand the works discussing the role genes play in homosexuality. Epigenetics is about the genes that are not related to the mutation of the DNA but are modifiable by other things in the environment. Many scientists to whom people listen presume that epigenetic changes that occur when the fetus is forming can affect sexual orientation (Uffelmann et al., 2021). Certain chemical transformations occurring in, let us say, the uterus will affect the expressivity of genes potentially connected to homosexuality.

However, researchers should not overlook the role of hereditary and epigenetic research because knowing the differences between identical siblings is also useful when considering the environment. There is no doubt that such things as social, cultural, and familiar settings impact the orientation of an individual toward their sexual choice. However, one has to conclude that the principle of androgen insensitivity must play a part in determining other sexual orientations apart from the mere category of homosexuals.

There are still questions as to whether the genes affect homosexuality and more studies are needed to explain this relationship. According to the specified data, many scientific findings indicate the truth of the genetic search of origin. However, it can also be noted that sexual orientation cannot be determined by a single gene or by adhering to a simple genetic concept. Therefore, sexual orientation could be due to gene-environment interaction involving not only epigenetics but also other genes. The same is true for the subsequent genes, epigenetics, and surroundings.

References

- Hamer, D. H., Hu, S., Magnuson, V. L., Hu, N., & Pattatucci, A. M. L. (1993). A linkage between DNA markers on the X chromosome and male sexual orientation. *Science*, *261*(5119), 321–327. <https://doi.org/10.1126/science.8332896>
- Khovanova, T. (2019). On the mathematics of the fraternal birth order effect and the genetics of homosexuality. *Archives of Sexual Behavior*, *49*(2), 551–555. <https://doi.org/10.1007/s10508-019-01573-1>
- Sun, Y., Yang, Y., Luo, Y., Chen, M., Wang, L., Huang, Y., Yang, Y., & Dong, M. (2021). Lack of MECP2 gene transcription on the duplicated alleles of two related asymptomatic females with Xq28 duplications and opposite X-chromosome inactivation skewing. *Human Mutation*, *42*(11), 1429–1442. <https://doi.org/10.1002/humu.24262>
- Uffelmann, E., Huang, Q. Q., Munung, N. S., De Vries, J., Okada, Y., Martin, A. R., Martin, H. C., Lappalainen, T., & Posthuma, D. (2021). Genome-wide association studies. *Nature Reviews Methods Primers*, *1*(1). <https://doi.org/10.1038/s43586-021-00056-9>



MyPaperWriters.net
Custom Writing at its Best

Contact Us for a High-Quality, Original Biology Paper.

Order Now
