English 1101
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Is Sexuality Genetic ?

The word “Gay” has been used as a reference to homosexuality as early as the late 19th century. The term originally meant "happy," or "lighthearted and carefree.” Then, the word was coined as an insult, or slur meaning “foolish,” “stupid,” or “unimpressive.” Being called gay could ruin relationships and even end lives. Today, being gay is mostly met with love, acceptance, and understanding. Falling anywhere on the Kinsey scale is something to be proud of, not ashamed by, even though some still believe it is. But what makes a person gay? Is it genetic? Is it culture and environment? Is it the family? Is it something in the water? Despite the heavy influence of environment and culture, homosexuality is completely genetic and sexuality is fully dictated in the brain which is understood at the hands of the researchers Simon LeVay, Dean Hamer, J.Michael Bailey, and Richard Pillard.

In “*Homosexuality: Born or Bred*” by the Newsweek staff, they discuss Simon LeVay, a neuroscientist at the Salk Institute. LeVay knew he was homosexual by the time he was 12 years old. He fit the stereotypical English “sissy boy” profile, a strong attachment to his mother and a hostile relationship with his father. It was considered, even in his eyes to be “the perfect Freudian recipe for homosexuality”(1/14). He believed however, Freud got the cause and effect backward. The hostile fathers do not make their sons inherently homosexual, their fathers turn hostile because their sons were unmasculine to begin with. By 1991, LeVay got to examine his hypothesis up close. He scanned the brains of 41 cadavers, 16 heterosexual men, 19 homosexual

men, and 6 heterosexual women. All the homosexual men had died of AIDS. as had seven of the heterosexuals, including one woman (4/14). LeVay found that a cluster of neurons known as INAH 3, is the third interstitial nucleus of the anterior hypothalamus, which LeVay calls, "the business end as far as sex goes"(Newsweek Staff 4/14), was more than twice as large in the heterosexual males then in the homosexuals, whose INAH 3 was around the same size as the women's. This discovery was the first direct evidence that LGBTQ people were not choosing to be different, they are born different. Interestingly, The hypothalamus also has a cluster of 2,000 neurons that ignite puberty when they secrete pulses of gonadotropin releasing hormones, which sets off a cascade of other hormones (Wade 2/6). This gives even more evidence that the hypothalamus has the controls of sex hormones, which are mainly developed during puberty. One large criticism was that AIDS could have affected the brain structure of the homosexual subjects. LeVay stated that he has found no pathology suggesting such damage in either homosexual or heterosexual men who died to AIDS. In fact, LeVay examined the brain of a homosexual man who died of lung cancer and found the same results with the INAH 3. LeVay stated that "What I reported on was a difference in the brain structure of the hypothalamus … we can't say on the basis of that what makes people gay or straight. But it opens the door to find the answer to that question"(4/14). However, In "The Innate-Immutable Argument Finds No Basis in Science" by A. Dean Byrd, Shirley E. Cox, Jeffery W. Robinson, they criticize LeVay's study of the hypothalamic differences between homosexual and heterosexual men. They quote LeVay with his own research, stating, "It's important to stress what I did not find. I did not prove that homosexuality is genetic, or find a genetic cause for being gay. I did not show that gay men are born that way, the most common mistake people make in interpreting my work. Nor did I locate

a gay center in the brain"(2). This is correct. LeVay never said he proved that homosexuality is genetic. He did however find solid differences in homosexual and heterosexual men. LeVay said that his research will open doors to the question of "is homosexuality genetic"? He even states he is not sure, but his research and many other scientists research is creating a pathway to a true answer.

In The Last Mile, a chapter in the book "*The Gene an Intimate History*" by Siddhartha Mukherjee, he writes about two other prominent researchers in the big debate of the genetics of being gay, J. Michael Bailey, an American psychologist, and Richard Pillard, professor of psychiatry at the Boston University School of Medicine. In the 1980's Bailey had tried to study the genetics of sexual orientation by using a twin study experiment. Bailey believed that if sexual orientation was partly inherited, than a higher proportion of identical twins should both be gay compared to fraternal twins (Mukerjee 373). Bailey had the recruited 110 male twin pairs where at least one twin was gay. Bailey's results were striking. Among the fifty-six pairs of identical twins, both twins were gay in 52 percent. Of the fifty-four pairs of non-identical twins 22 percent were both gay-lower than the fraction for identical twins, but still significantly higher than the estimated 10 percent gay in the overall population (Mukerjee 373-374). These twin studies provided incontrovertible evidence that genes influence homosexuality more strongly than, genes that influence diseases like type 1 diabetes (Mukerjee 374). However, In "The Innate-Immutable Argument Finds No Basis in Science" by A. Dean Byrd, Shirley E. Cox, Jeffery W. Robinson, they criticize the Bailey and Pillard twin studies by stating, "If homosexuality were in the genetic code, all of the identical twins would have been homosexual" (2). That would imply that

identical twins were exact clones. When in actuality, twins who start out with identical DNA always have slightly different DNA by the time they're born. Identical twins do indeed start with identical DNA—they are the result of the same sperm from the father and the same egg from the mother. Then the fertilized egg divides until the original clump of cells split into two.These two clumps of cells will then result in the twins. In the process of becoming a human with trillions of cells, the cells in each clump divide over and over again. DNA differences or mutations can happen any time a cell divides.So in regards to homosexuality, one twin clump would hypothetically divide and develop differences in DNA, which could create a homosexual twin.

Again, In "The Last Mile", a chapter in the book "*The Gene an Intimate History*" by Siddhartha Mukherjee, he writes about Dean Hamer, an American geneticist. Hamer, a researcher at the National Cancer Institute, was, in Mukherjee's words, bored (371).Hamer had spent his time comfortably studying the regulation of a gene called metallothionein, or MT, that is used by cells to respond to poisonous heavy metals, such as copper or zinc. Hamer was never really intrigued by the genetics of any form of identity, or sexuality (371). Then in 1991, two developments arose that peaked Hamer's interest. First, was the announcement of the Human Genome Project. Hamer's idea was to map genes related to homosexuality. Secondly, the AIDS crisis. The illness almost fully wiped the gay community in the 1980s. After being goaded by activists and patients, the NIH committed hundreds of millions of dollars to AIDS focused research (Mukerjee 375). Hamer chose to piggyback the gay gene hunt on an AIDS related study. By 1992, Hamer had attracted 114 gay men to his study. He then created elaborate familial trees to determine if sexuality ran in families. If Hamer found brother pairs where both

were homosexual, it would be easier to map the gay gene. Twins were vital to the Bailey & Pillard study because twins share the same genes. Brothers, however, only share some sections of genomes. If Hamer could find homosexual brothers, he would be able to find the subsections of the genome shared between them, and thereby isolate a gay gene (Mukerjee 375). By the summer of 1992, Hamer collected information from nearly one thousand family members and built family trees for the 114 gay men. Once Hamer studied his data, he instantly felt a sense of validation. In accordance with the Bailey study, the sibling pairs in Hamer's study had a higher concordance in sexual orientation - about 20 percent, nearly twice the population rate of about 10 percent (Mukerjee 375-376). But while looking at the data on a screen, he could not find a pattern. It was once he looked at the physical family trees he drew out. Hamer had placed the paternal relatives on the left, and maternal relatives on the right for all families. Homosexual men were marked red, which showed Hamer a trend: the red marks tended to cluster on the left side. Gay men tended to have gay uncles, but *only* on the maternal side. Then, Hamer hunted the family trees for the gay relatives, a "gay roots project", as he called it - the more the trend intensified (Mukerjee 376). This pattern carried on from generation to generation. It meant the gay gene must be carried on the X chromosome, an inherited element passing through generation to generation. But where on the X chromosome? Hamer then turned to fourty of the gay siblings pairs from whom he collected DNA from. If the gay gene is indeed located on the X chromosome, the forty siblings would possibly share that chunk of DNA at a significantly higher frequency of the siblings where one is homosexual and the other is heterosexual. Hamer ran through a series of twenty-two markers along the entire length of the X chromosome. Out of the forty siblings, thirty-three brothers shared a small stretch of the X chromosome called Xq28. It

was predicted that only half the brothers would share the same stretch of X chromosome. The chance that thirteen extra brothers carried it as well was extremely small, less than one in ten thousand. Somewhere near Xq28 was a gene that could be the "gay gene". However, In "The Innate-Immutable Argument Finds No Basis in Science" by A. Dean Byrd, Shirley E. Cox, Jeffery W. Robinson, they criticize Hamer"s study because a research group, Rice et al, found the genetic markers nonsignificant. They conclude, "It is unclear why our results are so discrepant from Hamer's original study. Because our study was larger than that of Hamer et al, we certainly had adequate power to detect a genetic effect as large as reported in that study. Nonetheless, our data do not support the presence of a gene of large effect influencing sexual orientation at Xq28" (2). Since Hamer's first paper in 1993, several groups have tried to replicate his original study, finding not only links to Xq28, but links to chromosomes seven, eight, and ten. Thus far however, no one has isolated an actual gene that influences sexual identity. Linkage analysis does not solely identify a gene, it only identifies a chromosomal region where a gene might be found. Some genes that reside in these locations are candidates as regulators of sexual behavior but none of these candidates have been experimentally linked to heterosexuality or homosexuality (Mukerjee 378). The sought after "gay gene" might not even be a gene. Mukerjee states, "It could be a stretch of DNA that regulates a gene near it or influences a gene far away from it. Whatever the identity of the "gay gene" is, this much is certain: sooner or later, we will discover the precise nature of the heritable elements that influence human sexual identity"(379).

Throughout all these texts there is one constant theme: homosexuality is genetic. From the size of the hypothalamus in homosexual or heterosexual men to the markers on the X chromosome, there is substantial evidence on the fact that sexuality is genetic. Although there is opposition, the substantial evidence is irrefutable. In the 1950s, being left handed was considered wrong, and even a sin. Today however, there's even a left handed pride day. Being a left handed person is not a choice. People are still hired for being left handed. Being gay is not a choice, but LGBT people do not get hired because of their sexuality. Being gay is still considered wrong and even a sin, even though our society today is extremely accepting and open to all different types of people. Is the world really moving backward? In ten years will left handed people not be hired because of their unique dexterity? Hopefully, in ten years, being gay will be like being left handed, a uncontrolled difference, but an unimportant difference to the quality of a person. Hopefully, the term gay will not only be the word for a homosexual person, but for happy.

Works Cited

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