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The science of being gay

Sydney Morning Herald
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MEN and women differ in myriad obvious ways.

But when an American psychologist, Dennis McFadden, decided to test his ideas about the causes of homosexuality, he focused instead on one of the most obscure features that distinguish the two sexes – how our inner ears respond to clicking sounds.

McFadden, from the University of Texas in Austin, is among a growing band of scientists which believes that hormone levels in the womb, rather than genetic or social factors, determine whether some people become gay or lesbian. Directly measuring the amounts of male and female hormones children are exposed to before birth is not an easy task. Perhaps people's inner ears could provide an indirect gauge, McFadden reasoned a few years ago.

Men were known to have inner-ear cells that produced much weaker "echoes" in response to quickly repeated clicking noises than women. And it was presumed high levels of male hormones such as testosterone in the first months of life were responsible for this damping-down effect in men.

To prove this relationship, McFadden took a novel approach. He tested girls who had shared their mother's womb with a boy twin. Sure enough, the girls' ear echoes, known as otoacoustic emissions, were weaker than those of most girls, thanks to the early influence of their brothers' hormones.

Two years ago McFadden and a colleague announced that lesbian and bisexual women also had partially "masculinised" inner ears. Higher-than-average levels of male hormones before birth had not only influenced the women's ear cells, but also the part of the brain that governed their sexual preferences, they concluded.

It was the first serious claim by scientists to have discovered a physiological characteristic that could distinguish lesbians from straight women. The study was published in the prestigious 'Proceedings of the National Academy of Sciences'.

But it's hard to get excited about ear emissions. And, not surprisingly, this 1998 find attracted much less attention than a new study published last week which shows exactly the same hormonal influence on lesbianism.

This time, University of California researchers claim that lesbian women have masculinised right hands, with ring fingers that are longer than their pointer fingers. Most women have second and fourth fingers that are of equal length.

The team, led by psychologist Marc Breedlove, also found that gay men with two or more elder brothers have finger patterns that suggest they were exposed to increased levels of male hormone before birth, too. The extraordinary possibility that an adult or even a child's sexuality can be revealed simply by looking at their hands demonstrates why the scientific study of gayness inspires both fury and fascination.

Fingers and ears are just the tip of the iceberg. In the past couple of years researchers have stepped up their search for clues to explain homosexuality, scrutinising factors such as the birth order of gay people, their number of siblings, parental age, fingerprints, penis size, age at puberty, left- or right-handedness, and mothers' stress levels during pregnancy.

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What keeps driving the research is that many homosexual people feel they were "born gay", says Dr Michael Dunne, an epidemiologist at Queensland University of Technology. "This hints at a biological cause." Dunne is co-author of a major study just published on the sexual orientation of 5,000 Australian twins, which found that the genetic influences on homosexuality are weak. It is important that humanity understands itself, he says: "And homosexuality is an important part of human sexuality."

Many gay people consider the latest research, at best, to be a waste of money and an unwanted distraction from the real issues that concern them, such as anti-gay violence and discrimination.

In past centuries, research on homosexuality had the underlying aim of controlling and eliminating it, says Dr Kathy Sant, co-convenor of the Gay and Lesbian Rights Lobby in Sydney. "That history of oppression gives us every reason to have grave concerns about the way research is going today."

Sant says it doesn't matter to most gay people whether environmental or hormonal or genetic factors have influenced their sexual orientation. "The point is that there have always been people who express their sexuality in a homosexual way. It's part of the normal spectrum of human activity." She also recommends that any new discoveries be viewed with some scepticism.

This happened with the most famous of recent gay discoveries: the 1993 announcement by Dr Dean Hamer that he was close to isolating a gay gene. Hamer had studied the DNA of 40 pairs of gay American brothers and found most of them shared a similar region of DNA near the tip of the X chromosome, which men inherit from their mothers.

The discovery, which bestowed celebrity status on Hamer, sparked an ethical debate about whether this could lead to abortion of gay fetuses in future. On the other hand, some gay men proudly donned T-shirts declaring "Thanks for the genes, Mom."

An innate, biological basis for homosexuality was seen as defence against prejudices that homosexuality was contagious or morally degenerate. Despite the obvious need to replicate Hamer's controversial finding, Canadian researchers had to use their own money to fund a similar study. A year ago, they announced they had found no evidence for his gene after studying 52 pairs of gay Canadian brothers. The Canadian scientists, however, did not rule out that some other genes might be associated with homosexuality, and the search for them should continue, they argued.

A strong genetic basis for homosexuality has never made sense to one group of scientists, those who study evolution. Any genes that are responsible for making people gay or lesbian should have disappeared long ago because homosexual people have fewer children, they argue. This problem of explaining the evolution of gayness was compounded last year with the publication of a treatise on homosexuality in the animal kingdom by an independent American scholar, Bruce Bagemihl.

His book, 'Biological Exuberance, Animal Homosexuality and Natural Diversity' (St Martin's Press), details a wide range of same-sex activities and couplings by birds, monkeys, walruses, lions, giraffes, ostriches, whales, dolphins, hedgehogs and hundreds of other creatures. Bagemihl's overriding message is that homosexual behaviour is as natural as heterosexual behaviour, and scientists who study animals have been remiss in not fully reporting on the sexual repertoire of their subjects.

Scientists have thought up lots of possible explanations as to how gay genes may have survived and become so widespread. Perhaps they confer some other evolutionary advantage. Women who inherit them might have a higher birth rate. Or heterosexual men with a gay gene or two may have a heightened interest

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in sex and father more children.

Perhaps, in past millenniums, homosexual men did have lots of children. All this is speculative. And the newly published Australian twin study suggests that if there is any genetic influence on gayness, then it is weak and operates through complex pathways, says Dunne. Certainly homosexuality runs in families. Plenty of studies have shown that both gay and lesbian people have more than expected gay siblings. The only way to tease out the influence of genes versus family or other social factors is to compare identical and non-identical twins, as in the Australian study carried out several years ago, but published last month in the 'Journal of Personality and Social Psychology', by Dunne, Professor Nick Martin, of the Queensland Institute of Medical Research, and a leading American in the field, Dr Michael Bailey, of Northwestern University, Illinois.

During the 1990s, Bailey consistently found that identical twins were much more likely to both be gay than non-identical twins, which indicates a strong genetic basis for homosexuality. But the twins for these studies were recruited through advertisements in gay publications or by word of mouth, which appears to have introduced a bias.

The weak genetic influence found by the Australian twin research carries much more weight because it is the first study to look at sexual orientation in a broad selection of twins from a registry, most of whom were not gay. The study did find, however, that genes seemed to play a significant role in gay men tending to be feminine boys, while lesbians tended to have been tomboyish girls.

The researchers say that much larger twin studies need to be done to clear up the conflicting information, but teams overseas seem reluctant to quiz their twins about their sexuality.

One well-accepted, but not generally known, factor influencing gayness in men is the number of elder brothers. Dr Ray Blanchard, of Clarke Institute of Psychiatry in Toronto, has carried out population studies in the past few years which show the chances of being gay increase by about a third for every elder brother a man has.

The Californian finger-measurers took this fact into account in their study. As with the inner ear study, it was already known men and women have different finger patterns, with men tending to have ring fingers that are longer than their index fingers.

This pattern is obvious by the age of two, which means it is probably established by foetal male hormone levels in the womb, British scientists studying fertility announced 18 months ago. They measured the finger-length ratios of 60 men attending an infertility clinic and found that men with more masculine hands had higher testosterone levels and higher sperm counts.

In the wake of that study, Breedlove's team took themselves to street fairs in San Francisco where they asked 720 people anonymously about their sexual orientation, family details and handedness. Then they measured the two fingers of the volunteers, who were given lottery tickets for their efforts.

The results were most clear-cut for lesbians. Their hands were masculinised, with an average finger ratio that fell between that of straight women and straight men.

Sant is concerned this kind of research reinforces stereotypes of lesbians as generally more masculine. "There are plenty of proud butch lesbians out there, but there are also plenty of proud feminine lesbians. There is a great deal of diversity," she says. When McFadden tested the ears of gay men he found they were no different to those of straight men. Breedlove's team found the same thing with finger length in men, until he separated out those who had two or more older brothers. These younger sons both straight and gay

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had more masculine hands than most men.

Breedlove's explanation is that somehow a mother's body "remembers" how many sons she's had. With each subsequent one she alters their foetal development so they are exposed to more male hormones, which increases their chances of being homosexual. Factors other than pre-natal hormones must influence homosexuality in first-born gay sons, he says. Critics, however, have questioned whether the study is seriously flawed because it did not take into account the ethnicity of the participants, which can affect finger length as well. Testosterone-boosted gays do not fit the feminine stereotype, admits Breedlove. "But homosexual men display several hyper-masculine characteristics, including a greater mean number of sexual partners in a lifetime than heterosexual men," he argues. Studies have shown gay men have more circulating male hormones in their bodies and larger genitalia, he says. The penis size study by a Canadian team was published last year and based on interviews and measurements of more than 5,000 men made by the Kinsey Institute for Research in Sex, Gender and Reproduction between 1938 and 1963. On five measures of penile length and circumference, gay men scored higher than straight men. The explanation, again, could be hormone levels before birth that affect both reproductive organ size and sexual orientation, conclude the researchers from Brock University in St Catherines.

The one conclusion that can be made with certainty from all the research of the past 10 to 15 years is that homosexuality has complex origins. Influences on sexual orientation also appear to be very different between gay men and gay women. Whatever the factors, there will always be a homosexual minority, says Sant. The important issue is how to ensure a society that accepts this diversity.

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