

# The Science of Homosexuality

by Matthew Barry ~ January 2010

## Gay Twins and the Science of Epigenetics

~ Click on either the Image or Link below to be taken to the video to watch it. ~



[http://www.youtube.com/watch?v=r7aUIWjPZVw&feature=player\\_embedded](http://www.youtube.com/watch?v=r7aUIWjPZVw&feature=player_embedded)

**In the National Geographic video above, the narrator discusses what might cause identical twins to have non-identical orientation.**

Sexual orientation is genetic... but not fully genetic. If you have a fraternal twin brother who's gay, the odds are about 12% that you will be gay. Make it an identical twin and you have a 50/50 chance that you too will be gay.

Anti-gay activists irrationally declare that this proves that "there is no gay gene." In a sense they are correct, if orientation were entirely determined by purely genetic composition, then identical twins (who have the same genes) would always have the same orientation.

But the increase in odd with the increase in genetic similarity does show that genes play a part, and a big part. Which leaves the question, how does one twin end up gay and the other straight? The answer may be in how epigenetics triggers genes and can cause identical genes to respond differently.

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Please watch this 20/20 Video by Clicking on the image or link below:



<http://www.cbsnews.com/video/watch/?id=1391768n>

This story aired in 2006. Jared (left) and Adam are nine years old. Their mother says she began to notice a difference in Adam when he was only 18 months old. Adam's behavior is an example of childhood gender nonconformity, say scientists. Research shows that most children with extreme tendencies toward gender nonconformity grow up to be gay.

The bedrooms of 9-year-old twins Adam and Jared couldn't be more different. Jared's room is decked out with camouflage, airplanes, and military toys, while Adam's room sports a pastel canopy, stuffed animals, and white horses.

When Stahl came for a visit, Jared was eager to show her his G.I. Joe collection. "I have ones that say like Marine and SWAT. And then that's where I keep all the guns for 'em," he explained.

Adam was also proud to show off his toys. "This is one of my dolls. Bratz baby," he said.

Adam wears pinkish-purple nail polish, adorned with stars and diamonds.

Asked if he went to school like that, Adam says, "Uh-huh. I just showed them my nails, and they were like, 'Why did you do that?'"

Adam's behavior is called childhood gender nonconformity, meaning a child whose interests and behaviors are more typical of the opposite sex. Research shows that kids with extreme gender nonconformity usually grow up to be gay.

Danielle, Adam and Jared's mom, says she began to notice this difference in Adam when he was about 18 months old and began asking for a Barbie doll. Jared, meanwhile, was asking for fire trucks.

Not that much has changed. Jared's favorite game now is Battlefield 2, Special Forces. As for Adam, he says, "It's called Neopets: The Darkest Faerie."

Asked how he would describe himself to a stranger, Jared says, "I'm a kid who likes G.I. Joes and games and TV."

"I would say like a girl," Adam replied to the same question. When asked why he thinks that is, Adam shrugged.

"To me, cases like that really scream out, 'Hey, it's not out there. It's in here.' There's no indication that this mother is prone to raise very feminine boys because his twin is not that way," says Michael Bailey, a psychology professor at Northwestern University and a leading researcher in the field of sexual orientation.

Bailey says he doesn't think nurture is a plausible explanation.

Psychologists used to believe homosexuality was caused by nurture—namely overbearing mothers and distant fathers—but that theory has been disproved. Today, scientists are looking at genes, environment, brain structure and hormones. There is one area of consensus: that homosexuality involves more than just sexual behavior; it's physiological.

Bailey and his colleagues set up a series of experiments in his lab at Northwestern University. In one study, researcher Gerulf Rieger videotaped gay and straight people sitting in a chair, talking. He then reduced them visually to silent black and white outlined figures and asked volunteers to see if they could tell gay from straight. The idea was to find out if certain stereotypes were real and observable.

Based on physical movement and gestures of the figures, more often than not, the volunteers in the study could tell a difference.

"So, is the conclusion that gay people do in fact move differently?" Stahl asked Rieger.

"Yeah, absolutely," he replied.

It's not true 100 percent of the time; it is true on average. The researchers also studied the way gay and straight people talk, and they found differences on average there too.

This research is controversial. Some say it is reinforcing stereotypes. But to Bailey, the stereotypes suggest there's a feminizing of the brain in gay men, and masculinizing in lesbians. Ironically though, when it comes to their sex lives, he says gay and straight men actually have a lot in common.

"Straight men tend to be shallow in terms of focusing on looks. Gay men are shallow, too. Straight men are more interested than straight women in having casual, uncommitted sex. Gay men are like that, too," says Bailey.

"One has the impression that gay men are much more inclined toward casual sex than straight men," Stahl said.

“They’re just more successful at it, because the people they’re trying to have sex with are also interested in it,” Bailey explained.

“But don’t you find this interesting that the one big area where gay men are more like straight men is in sex? I mean, that is...both amusing and odd,” Stahl said.

“It suggests that whatever causes a man to be gay doesn’t make him feminine in every respect. There must be different parts of the brain that can be feminized independently from each other,” Bailey replied.

But how and when does this feminizing occur? If the differences were already apparent in childhood, that would point to an early, perhaps even genetic origin—and that’s what Bailey and Rieger are testing in a new study using childhood home movies.

In the study, volunteers were asked to rate each child’s femininity or masculinity. Stahl took the test and rated two girls highly feminine.

When shown video of a toddler girl running a truck off of a table, Stahl observed, “She’s really not girly. Isn’t that interesting? She’s not girly.”

She also observed differences in two boys, one of whom would grow up to be straight, while the other is now gay.

If you can spot a child’s future sexual orientation before the child even knows he or she has one, doesn’t that prove it’s genetic? Studies have shown that homosexuality runs in families. So genes must be the answer. But then the researchers tell you identical twins can have different sexual orientations.

60 Minutes found identical twins Steve and Greg Lofts in New York. They had the same upbringing, have the same DNA—and yet Greg is gay and Steve is straight.

When people meet the twins and find out one of them is gay, Greg says people have asked if he’s sure, and how it can be. “Everyone is curious about that,” he says.

There were signs, even when they were little kids. Their mother told Stahl that Steve loved sports and the outdoors while Greg liked helping out in the kitchen. But it wasn’t until high school that Steve became convinced Greg was gay.

Asked if he said anything to his brother, Steve says, “I did actually. And I think the way I worded it was something like, ‘You know, Greg, if you’re gay, it’s OK with me. And I’ll still love you the same.’ And he gave a very philosophical answer. He said something like, ‘Well, I love the soul of a person and not the physical being.’ And in my mind, I was like, ‘Yep, he’s gay.’”

“I wasn’t ready just yet,” Greg added.

Does this prove that it’s not genetic? “What it proves is it’s not completely genetic. They have the same genes,” says Bailey.

Asked if that brings us back to the mother and the father, Bailey says no.

"But that's environment," Stahl said.

"That's environment. But that's not the only environment. There's also the environment that happens to us while we're in the womb. And scientists are realizing that environment is much more important than we ever thought it was," Bailey explained.

A newborn rat pup in the lab of Dr. Marc Breedlove at Michigan State University, may, oddly enough, hold important clues to what happens in the womb.

Dr. Breedlove says he can take a male rat and make it behave like a female for the rest of its life, and vice versa for a female, just by altering the hormones it's exposed to at birth. Because rats are born underdeveloped, that's roughly the same as altering a third-trimester human fetus in the womb. But first, he said, Stahl would need a crash course in rat sex.

Dr. Breedlove explained that male rats, including one he showed Stahl called "Romeo," will mount any rat that comes their way. In the mating process, the female performs something called lordosis, where she lifts her head and rump.

If Romeo goes after a male, Dr. Breedlove says the male will seem profoundly indifferent.

But Breedlove says he can change all that. He gave a female rat a single shot of the male sex hormone testosterone at birth. Now grown up, she will never perform lordosis.

But a male rat did. He was castrated at birth, depriving him of testosterone.

"So you created a gay rat?" Stahl asked.

"I wouldn't say that these are gay rats. But I will say that these are genetic male rats who are showing much more feminine behavior," he explained.

So the answer may be that it's not genes but hormones. "That's exactly the question that we're all wondering. This business of testosterone having such a profound influence. Does that have some relevance to humans?" Breedlove said.

While biologists look at hormones for answers about human sexuality, other scientists are looking for patterns in statistics. And hard as this is to believe, they have found something they call "the older brother effect."

"The more older brothers a man has, the greater that man's chance of being gay," says Bailey.

Asked if that's true, Bailey says, "That is absolutely true." If this comes as a shock to you, you're not alone. But it turns out, it's one of the most solid findings in this field, demonstrated in study after study.

And the numbers are significant: for every older brother a man has, his chances of being gay increase by one third (33%). Older sisters make no difference, and there's no corresponding effect for lesbians. A first-born son has about a 2 percent chance of being gay, and the numbers rise from there. The theory is it happens in the womb.

"Somehow, the mother's body is remembering how many boys she's carried before," says Breedlove. "The favorite hypothesis is that the mother may be making antibodies when she sees a boy the first time, and then affect subsequent boys when she carries them in utero."

"You mean, like she's carrying a foreign substance?" Stahl asked.

"And if you think about it, a woman who's carrying a son for the first time, she is carrying a foreign substance," Breedlove replied. "There are some proteins encoded on his Y chromosome that her body has never seen before and that her immune system would be expected to regard as 'invaders,'" he added.

It's still not a proven theory and it gets even stranger.

"One of the things we've only found out lately is that older brothers affect a boy only if the boy is right-handed," Breedlove said. "If the boy is left-handed, if his brain is organized in a left-handed fashion, it doesn't matter how many older brothers he has, his probability of being gay is just like the rest of the population."

You can give yourself a headache trying to apply all the theories to real people. Greg and Steve Lofts both are right-handed, and they do have an older brother, so maybe that's why Greg is gay. But they also have several gay relatives, which suggests it could be in the genes, except where does that leave Steve?

Adam and Jared, fraternal twins, have older brothers, but they're ambidextrous.

Then there's the question of how something in the womb could affect one twin but not the other. There are many more questions at this point than answers, but the scientists 60 Minutes spoke to are increasingly convinced that genes, hormones, or both—that something is happening to determine sexual orientation before birth. Adam has come up with his own theory.

"I was supposed to be a girl in my mom's stomach. But my mom wished for all boys. So, I turned into a boy," Adam explained.

Asked if he wished he was a girl, Adam nodded.

"Do you think there was anything that you could have done that would have changed Adam?" Stahl asked Adam and Jared's mom Danielle.

"I could have changed Adam on the outside to where he would have showed me the macho boy that I would want as a boy. But that would not change who he is inside. And I think that would have damaged him a lot more," she said.

Stahl asked both boys if they are proud of the way they are, and both boys gave her big nods.

"Yup," Adam replied.

## WHY ARE WE BORN GAY

There are significant brain differences between male and female brains due to evolutionary process. For example women are better at multitasking, while men are better at focused problem solving, women have superior hearing. Girls are born pre-wired to be interested in faces, while boys are prewired to be interested in moving objects. The hormones that cause the sexing-out process in the fetus do not just effect sexual organs, they also effect the developing structures in the brain. It is true that there are men and women who seem exceptions, but we are just now realizing the critical role of hormones during fetal development.

Newborn infants and babies demonstrate gender difference in response to stimulus. In the early works done on homosexuality, "Gender Nonconformity" was one of the first things looked at. This is where young children do not display or behave with expected gender-based traits. Interestingly, not all gender nonconformity children turn out to be gay, just as some effeminate men are very heterosexual. There's some research to suggest that effeminacy in men may result when a fetus is somehow exposed to fewer androgen hormones—testosterone is one androgen—in the third trimester of pregnancy. Since the compound is responsible for "male" characteristics, this might cause some sort of "feminization" of the child, affecting the way he thinks and acts.

There is a lot of recent research focused on twins and homosexuality. It was noticed that in some sets of IDENTICAL twins one twin will be Gay and the other Straight—how can this be? Another major clue is found in the **The Older Brother Effect.**

IT WAS FOUND THAT EACH TIME A WOMAN GIVES BIRTH TO A SON, THE CHANCES OF THE NEXT SON BEING GAY INCREASED BY 33%.

A first born son has only a 2% chance of being homosexual. If you are the youngest brother of 4, the odds are high you will be gay or bisexual. This effect is true even when the boys are raised in completely separate environments, and there is no effect when the number of older brothers is increased by adopted brothers or step brothers.

### BORN GAY

It turns out that a boy is seen somewhat as a foreign invader by the woman's body, due to the Y chromosome in the male (histocompatibility Y-antigen), causing the woman to produce antibodies, which then lead to different brain development patterns in later male children. The HY antigen is found on the surface of the cells of male, but not female, mammals. The antibodies produced by the mother during pregnancy, stick around with the mother. Each time she gives birth to a son, the antibody response is even greater.

After the birth of each male, the mother's immunization to the H-Y antigen increases. Due to this immunity, the H-Y antigen's effects on sexual differentiation decreases, so later sons may develop more feminine brain characteristics.

Some women have a higher propensity to produce the antigen, and this propensity is genetic and passed down on the mother's side.

Here is a bizarre twist, the fraternal birth order effect appears to have the opposite effect in right-handed individuals than non-right-handed individuals—the incidence of homosexuality correlated with an increase in older brothers is seen only in right handed males.

In Twin studies, Identical twins share the same genotype (100%). Fraternal Twins share, on average, about 50% of their genotype.

In a study by J. Michael Bailey and Richard Pillard in "A Genetic Study of Male Sexual Orientation" in the *Archives of General Psychiatry* reported that:

- 52% of Identical twins were both Gay,
- 22% of Fraternal twins were both Gay,
- 9.2% of non-twin brothers were both Gay.

The researchers estimated that the heritability of male homosexuality was between 31% and 74%. A similar study carried out by the same researchers on the siblings of lesbian women reported concordance rates of:

- 48% of Identical twins were both Lesbian,
- 16% of Fraternal twins were both Lesbian,
- 14% of non-twin sisters were both Lesbian.

Heritability of Femal Homosexuality was estimated as between 27% and 76%. Overall, data appear to indicate that genetic factors play a significant part in the development of sexual orientation.

Any genetic component must be rooted in evolution by natural selection. Gene prevalence and therefore selection, can be influenced by increasing the reproductive success of individuals with whom we share genes in common. While it may be unclear to some how homosexuality could offer a selective advantage to individuals, many hypotheses exist that explain why an inherited tendency toward this orientation might offer a selective advantage to the genes they carry. Most hypotheses speculate that the presence of homosexual members may also promote intragroup harmony. These are hypotheses: hard empirical data is lacking. Apparent homosexual behavior provides a stealth mechanism for slipping past alpha males in some species.

An Italian research team (Camperio-Ciani et al. 2004) concluded that there was genetic material being passed down on the X chromosome which both promotes fertility in the mother and homosexuality in her male offspring.

## **Testosterone**

Homosexuality has also been correlated with elevated testosterone levels in adult males, which may indicate an indirect genetic influence.

Studies involving mice have shown differences in female sexual behavior depending on distance from testosterone sources in the womb (Ryan & Vandenberg, 2002). Female mice flooded with higher levels of testosterone in the womb are prone to more masculine sexual behavior, such as mounting other females, whereas their sisters exposed to lower levels of foetal testosterone act in more traditionally feminine ways, and are typically courted more by male mice (vom Saal, 1989; vom Saal & Bronson, 1980; Rines & vom Saal, 1984). This suggests a pivotal role of hormones, and specifically testosterone, in the development of sexual orientation.

## **Pheromones**

Recent research conducted in Sweden has suggested that gay and straight men respond differently to two odors that are believed to be involved in sexual arousal. The research showed that when both heterosexual women and gay men are exposed to a testosterone derivative found in men's sweat, a region in the hypothalamus is activated, causing sexual arousal. Heterosexual men, on the other hand, have a similar response to an estrogen-like compound found in women's sweat.

## **FETAL DEVELOPMENT**

It has been theorized that events in the womb may contribute to some subset of homosexual behavior (though certain individuals may be genetically predisposed to be vulnerable to such events, and the conditions inside the mother's reproductive system are of course influenced by her genetics).

### **\*Pre-natal hormones in males**

Researchers in the Breedlove study found evidence correlating prenatal hormones to male homosexuality. Males exposed to high levels of androgens (sexual hormones) as fetuses are predominantly homosexual.

### **Pre-natal hormones in females**

Researchers at the University of Texas at Austin, lead by Dennis McFadden, found the response of the inner ear to soft sounds tended to be weaker in homosexual women than in heterosexual women. The response among men tended to be weaker than either female group. Fetal exposure to androgens is hypothesized to affect this attribute, suggesting that fetal exposure to the same chemicals may also predispose a daughter to a lesbian orientation.

### **Masculinization / Feminization**

A popular hypothesis in this vein is that the developing brains of homosexual men are less masculinized than heterosexual men (i.e. they are partially "feminized") and that homosexual females are "masculinized" in some way.

Supporting evidence for this hypothesis includes:

- Observed differences in three areas of the brain in homosexual vs. heterosexual men (the anterior commissure, the supra-chiasmatic nucleus the interstitial nuclei of the anterior hypothalamus).
- Observed differences in cognitive testing showing results for homosexual men typical of heterosexual women and results for homosexual women typical of heterosexual men.
- Observed differences in the preferences that homosexual men, heterosexual men, and heterosexual women have for the age of their sexual partners.

It is unclear whether the observed anatomical and cognitive differences are signs of a (possibly genetic) mechanism that determines sexual orientation, or symptoms of the formation of an atypical sexual orientation during childhood.

One possible mechanism is differential fetal hormone exposure, especially to testosterone (and a compound it is transformed into, estradiol) and luteinizing hormone (LH) is proposed as the mechanism. The concentrations of these chemicals is thought to be influenced by

fetal and maternal immune systems, maternal consumption of certain drugs, maternal stress, and direct injection.

Hormone levels may of course vary over time. Given the semi-sequential nature of fetal development, and because multiple hormones are involved, it is possible for the hypothesized “masculinization” or “feminization” process to affect only some body or brain systems. (This is necessary to explain why someone might be say, born with a male body but with a “feminized” sexual attraction.)

The Rev. R. Albert Mohler Jr., the president of the leading Southern Baptist seminary has incurred sharp attacks from both the left and right by suggesting that a biological basis for homosexuality may be proven, and that prenatal treatment to reverse gay orientation would be biblically justified. He also referred to a recent article in the pop-culture magazine Radar, which explored the possibility that sexual orientation could be detected in unborn babies and raised the question of whether parents even liberals who support gay rights might be open to trying future prenatal techniques that would reverse homosexuality, or even worse, ABORT potentially homosexual fetuses.

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## **7-Year-Old Twins Boys**

With crystal-blue eyes, wavy hair, and freshly scrubbed faces, the boys look as though they stepped out of a Pottery Barn Kids catalog. They are 7-year-old twins. Call them Thomas and Patrick; not their real names.

Spend five seconds with them, and there can be no doubt that they are identical twins—so identical even they can’t tell each other apart in photographs. Spend five minutes with them, and their profound differences begin to emerge.

Patrick is social, thoughtful, attentive. He repeatedly addresses me by name. Thomas is physical, spontaneous, a bit distracted. Just minutes after meeting me outside a coffee shop, he punches me in the upper arm, yells, “Gray punch buggy!” and then points to a Volkswagen Beetle cruising past us. It’s a hard punch. They horse around like typical brothers, but Patrick’s punches are less forceful and his voice is higher. Thomas charges at his brother, arms flexed in front of him like a mini-bodybuilder. The differences are subtle—they’re 7-year-old boys, after all—but they are there.

When the twins were 2, Patrick found his mother’s shoes. He liked wearing them. Thomas tried on his father’s once but didn’t see the point.

When they were 3, Thomas blurted out that toy guns were his favorite things. Patrick piped up that his were the Barbie dolls he discovered at day care.

When the twins were 5, Thomas announced he was going to be a monster for Halloween. Patrick said he was going to be a princess. Thomas said he couldn’t do that, because other kids would laugh at him. Patrick seemed puzzled. “Then I’ll be Batman,” he said.

Their mother—intelligent, warm, and open-minded—found herself conflicted. She wanted Patrick—whose playmates have always been girls, never boys—to be himself, but she

worried his feminine behavior would expose him to ridicule and pain. She decided to allow him free expression at home while setting some limits in public.

That worked until last year, when a school official called to say Patrick was making his classmates uncomfortable. He kept insisting that he was a girl.

Patrick exhibits behavior called childhood gender nonconformity, or CGN. This doesn't describe a boy who has a doll somewhere in his toy collection or tried on his sister's Snow White outfit once, but rather one who consistently exhibits a host of strongly feminine traits and interests while avoiding boy-typical behavior like rough-and-tumble play. There's been considerable research into this phenomenon, particularly in males, including a study that followed boys from an early age into early adulthood. The data suggest there is a very good chance Patrick will grow up to be homosexual. Not all homosexual men show this extremely feminine behavior as young boys. But the research indicates that, of the boys who do exhibit CGN, about 75 percent of them—perhaps more—turn out to be gay or bisexual.

What makes the case of Patrick and Thomas so fascinating is that it calls into question both of the dominant theories in the long-running debate over what makes people gay: nature or nurture, genes or learned behavior. As identical twins, Patrick and Thomas began as genetic clones. From the moment they came out of their mother's womb, their environment was about as close to identical as possible—being fed, changed, and plopped into their car seats the same way, having similar relationships with the same nurturing father and mother. Yet before either boy could talk, one showed highly feminine traits while the other appeared to be "all boy," as the moms at the playgrounds say with apologetic shrugs.

"That my sons were different the second they were born, there is no question about it," says the twins' mother.

The mother of twins Patrick and Thomas says her son's feminine behavior suggests he will grow up to be gay, and she has no problem with that. She just worries about what happens to him between now and then.

After that fateful call from Patrick's school, she says, "I knew I had to talk to my son, and I had no clue what to say." Ultimately, she told him that although he could play however he wanted at home, he couldn't tell his classmates he was a girl, because they'd think he was lying. And she told him that some older boys might be mean to him and even hit him if he continued to claim he was a girl.

Then she asked him, "Do you think that you can convince yourself that you are a boy?" "Yes, Mom," he said. "It's going to be like when I was trying to learn to read, and then one day I opened the book and I could read."

His mother's heart sank. She could tell that he wanted more than anything to please her.

"Basically, he was saying there must be a miracle—that one day I wake up and I'm a boy. That's the only way he could imagine it could happen."

In the year since that conversation, Patrick's behavior has become somewhat less feminine. His mother hopes it's just because his interests are evolving and not because he's suppressing them.

"I can now imagine him being completely straight, which I couldn't a year ago," she says. "I can imagine him being gay, which seems to be statistically most likely."

She says she's fine with either outcome, just as long as he's happy and free from harm. She takes heart in how much more accepting today's society is. "By the time my boys are 20, the world will have changed even more."

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## THE SCIENCE OF WHAT HAPPENED TO THE TWINS

So what happened between their identical genetic starting point and their births? They spent nine months in utero. In the hunt for what causes people to be gay or straight, that's now the most interesting and potentially enlightening frontier.

BECAUSE IT'S UNCLEAR why twin brothers with identical genetic starting points and similar post-birth environments would take such divergent paths, it's helpful to return to the beginning.

Males and females have a fundamental genetic difference—females have two X chromosomes, and males have an X and a Y. Still, right after conception, it's hard to tell male and female zygotes apart, except for that tucked-away chromosomal difference. Normally, the changes take shape at a key point of fetal development, when the male brain is masculinized by sex hormones. The female brain is the default. The brain will stay on the female path as long as it is protected from exposure to hormones. The hormonal theory of homosexuality holds that, just as exposure to circulating sex hormones determines whether a fetus will be male or female, such exposure must also influence sexual orientation.

The cases of children born with disorders of "sexual differentiation" offer insight. William Reiner, a psychiatrist and urologist with the University of Oklahoma, has evaluated more than a hundred of these cases. For decades, the standard medical response to boys born with severely inadequate penises (or none at all) was to castrate the boy and have his parents raise him as a girl. But Reiner has found that nurture—even when it involves surgery soon after birth—cannot trump nature. Of the boys with inadequate penises who were raised as girls, he says, "I haven't found one who is sexually attracted to males." The majority of them have transitioned back to being males and report being attracted to females.

During fetal development, sexual identity is set before the sexual organs are formed, Reiner says. Perhaps it's the same for sexual orientation. In his research, of all the babies with X and Y chromosomes who were raised as girls, the only ones he has found who report having female identities and being attracted to males are those who did not have "receptors" to let the male sex hormones do their masculinizing in the womb.

What does this all mean? "Exposure to male hormones in utero dramatically raises the chances of being sexually attracted to females," Reiner says. "We can infer that the absence of male hormone exposure may have something to do with attraction to males."

Michael Bailey says Reiner's findings represent a major breakthrough, showing that "whatever causes sexual orientation is strongly influenced by prenatal biology." Bailey and Reiner say the answer is probably not as simple as just exposure to sex hormones. After all, the exposure levels in some of the people Reiner studies are abnormal enough to

produce huge differences in sexual organs. Yet, sexual organs in straight and gay people are, on average, the same. More likely, hormones are interacting with other factors.

Canadian researchers have consistently documented a “big-brother effect,” finding that the chances of a boy being gay increase with each additional older brother he has. (*Birth order does not appear to play a role with lesbians.*) So, a male with three older brothers is three times more likely to be gay than one with no older brothers, though there’s still a better than 90 percent chance he will be straight. They argue that this results from a complex interaction involving hormones, antigens, and the mother’s immune system.

By now, there is substantial evidence showing correlation—though not causation—between sexual orientation and traits that are set when a baby is in the womb. Take finger length. In general, men have shorter index fingers in relation to their ring fingers; in women, the lengths are generally about the same. Researchers have found that lesbians generally have ratios closer to males. Other studies have shown masculinized results for lesbians in inner-ear functions and eye-blink reactions to sudden loud noises, and feminized patterns for gay men on certain cognitive tasks like spatial perception and remembering the placement of objects.

New York University researcher Lynn S. Hall, who has studied traits determined in the womb, speculates that Patrick was somehow prenatally stressed, probably during the first trimester, when the brain is really developing, particularly the structures like the hypothalamus that influence sexual behavior. This stress might have been based on his position in the womb or the blood flow to him or any of a number of other factors not in his mother’s control. Yet more evidence that identical twins have womb experiences far from identical can be found in their often differing birth weights. Patrick was born a pound lighter than Thomas.

Taken together, the research suggests that early on in the womb, as the fetus’s brain develops in either the male or female direction, something fundamental to sexual orientation is happening. Nobody’s sure what’s causing it. But here’s where genes may be involved, perhaps by regulating hormone exposure or by dictating the size of that key clump of neurons in the hypothalamus. Before researchers can sort that out, they’ll need to return to the question of whether, in fact, there is a “gay gene.”

In 1991, a neuroscientist in San Diego named Simon LeVay told the world he had found a key difference between the brains of homosexual and heterosexual men he studied. LeVay showed that a tiny clump of neurons of the anterior hypothalamus—which is believed to control sexual behavior—was, on average, more than twice the size in heterosexual men as in homosexual men. LeVay’s findings did not speak directly to the nature-vs-nurture debate—the clumps could, theoretically, have changed size because of homosexual behavior. But that seemed unlikely, and the study ended up jump-starting the effort to prove a biological basis for homosexuality.

Later that same year, Boston University psychiatrist Richard Pillard and Northwestern University psychologist J. Michael Bailey announced the results of their study of male twins. They found that, in identical twins, if one twin was gay, the other had about a 50 percent chance of also being gay. For fraternal twins, the rate was about 20 percent. Because identical twins share their entire genetic makeup while fraternal twins share about half, genes were believed to explain the difference.

In 1993 came the biggest news: Dean Hamer's discovery of the "gay gene." In fact, Hamer, a Harvard-trained researcher at the National Cancer Institute, hadn't quite put it that boldly or imprecisely. He found that gay brothers shared a specific region of the X chromosome, called Xq28, at a higher rate than gay men shared with their straight brothers. Hamer and others suggested this finding would eventually transform our understanding of sexual orientation.

In May of 2005, Swedish researchers reported finding important differences in how the brains of straight men and gay men responded to two compounds suspected of being pheromones—those scent-related chemicals that are key to sexual arousal in animals. The first compound came from women's urine, the second from male sweat. Brain scans showed that when straight men smelled the female urine compound, their hypothalamus lit up. That didn't happen with gay men. Instead, their hypothalamus lit up when they smelled the male-sweat compound, which was the same way straight women had responded. This research once again connecting the hypothalamus to sexual orientation comes on the heels of work with sheep. About 8 percent of domestic rams are exclusively interested in sex with other rams. Researchers found that a clump of neurons similar to the one LeVay identified in human brains was also smaller in gay rams than straight ones. (Again, it's conceivable that these differences could be showing effect rather than cause.)

In June 2005, scientists in Vienna announced that they had **isolated a master genetic switch for sexual orientation in the fruit fly**. Once they flicked the switch, the genetically altered female flies rebuffed overtures from males and instead attempted to mate with other females, adopting the elaborate courting dance and mating songs that males use.

## **In Regards To Sexual Orientation, There Is A Fundamental Difference Between Male and Female Sexual Arousal Patterns.**

Researchers at Northwestern University, outside Chicago, found that while straight men were aroused by film clips of two women having sex, and gay men were aroused by clips of two men having sex, most of the men who identified themselves as bisexual showed gay arousal patterns.

More surprising was just how different the story with women turned out to be. Most women, whether they identified as straight, lesbian, or bisexual, were significantly aroused by straight, gay, and lesbian sex. "I'm not suggesting that most women are bisexual," says Michael Bailey, the psychology professor whose lab conducted the studies. "I'm suggesting that **whatever a woman's sexual arousal pattern is, it has little to do with her sexual orientation.**" That's fundamentally different from men. "**In men, arousal is orientation. It's as simple as that. That's how gay men learn they are gay.**"

These studies mark a return to basics for the 47-year-old Bailey. He says researchers need a far deeper understanding of what sexual orientation is before they can determine where it comes from.

Female sexual orientation is particularly foggy, he says, because there's been so little research done. As for male sexual orientation, he argues that there's now enough evidence to suggest it is "entirely in-born," though not nearly enough to establish how that happens.

## Homosexuality Runs In Families

Alan Sanders is a psychiatrist with the Evanston Northwestern Healthcare Research Institute who is leading the NIH-funded search for the genetic basis of male homosexuality [www.gaybros.com](http://www.gaybros.com). He is spending the summer crisscrossing the country, going to gay pride festivals, hoping to recruit 1,000 pairs of gay brothers to participate. (His wife, who just delivered their third son, wasn't crazy about the timing.) When people in Boston ask him how much genes may contribute to homosexuality, he says the best estimate is about 40 percent.

Homosexuality runs in families—studies show that 8 to 12 percent of brothers of gay men are also gay, compared with the 2 to 4 percent of the general population.

All of the gene studies so far have been based on small samples and lacked the funding to do things right. Sanders's study should be big enough to provide some real answers on linkage as well as shed light on gender nonconformity and the big-brother effect.

There is, however, a towering question that Sanders's study will probably not be able to answer. That has to do with evolution. If a prime motivation of all species is to pass genes on to future generations, and gay men are estimated to produce 80 percent fewer offspring than straight men, why would a gay gene not have been wiped out by the forces of natural selection? This evolutionary disadvantage is what led former Amherst College biologist Paul Ewald to argue that homosexuality might be caused by a virus—a pathogen most likely working in utero.

That argument caused a stir when he and a colleague proposed it six years ago, but with no research done to test it, it remains just another theory. Other scientists have offered fascinating but un-persuasive explanations, most of them focusing on some kind of compensatory benefit, in the same way that the gene responsible for sickle cell anemia also protects against malaria. A study last year by researchers in Italy showed that female relatives of gay men tended to be more fertile, though, as critics point out, not nearly fertile enough to make up for the gay man's lack of offspring.

But there will be plenty of time for sorting out the evolutionary paradox once—and if—researchers are able to identify actual genes involved in sexual orientation. Getting to that point will likely require integrating multiple lines of promising research. That is exactly what's happening in Eric Vilain's lab at the University of California, Los Angeles. Vilain, an associate professor of human genetics, and his colleague, Sven Bocklandt, are using gay sheep, transgenic mice, identical twin humans, and novel approaches to human genetics to try to unlock the mystery of sexual orientation.

Instead of looking for a gay gene, they stress that they are looking for several genes that cause either attraction to men or attraction to women. Those same genes would work one way in heterosexual women and another way in homosexual men. The UCLA lab is examining how these genes might be turned "up" or "down." It's not a question of what genes you have, but rather which ones you use, says Bocklandt. "I have the genes in my body to make a vagina and carry a baby, but I don't use them, because I am a man." In studying the genes of gay sheep, for example, he's found some that are turned "way up" compared with the straight rams.

The lab is also testing an intriguing theory involving imprinted genes. Normally, we have two copies of every gene, one from each parent, and both copies work. They're identical, so it doesn't matter which copy comes from which parent. But with imprinted genes, that does matter. Although both copies are physically there, one copy—either from the mom or the dad—is blocked from working. Think of an airplane with an engine on each wing, except one of the engines is shut down. A recent Duke University study suggests humans have hundreds of imprinted genes, including one on the X chromosome that previous research has tied to sexual orientation.

With imprinted genes, there is no backup engine. So if there's something atypical in the copy from mom, the copy from dad cannot be turned on. The UCLA lab is now collecting DNA from identical twins in which one twin is straight and the other is gay. Because the twins begin as genetic clones, if a gene is imprinted in one twin, it will be in the other twin as well. Normally, as the fetuses are developing, each time a cell divides, the DNA separates and makes a copy of itself, replicating all kinds of genetic information. It's a complicated but incredibly accurate process. But the coding to keep the backup engine shut down on an imprinted gene is less accurate.

So how might imprinted genes help explain why one identical twin would be straight and the other gay? Say there's an imprinted gene for attraction to females, and there's something atypical in the copy the twin brothers get from mom. As all that replicating is going on, the imprinting (to keep the copy from dad shut down) proceeds as expected in one twin, and he ends up gay. But somehow with his brother, the coding for the imprinting is lost, and rather than remain shut down, the fuel flows to fire up the backup engine from dad. And that twin turns out to be straight.

After spending years sifting through all the available data, British researchers Glenn Wilson and Qazi Rahman come to an even bolder conclusion in their forthcoming book *Born Gay: The Psychobiology of Sex Orientation*, in which they write: "Sexual orientation is something we are born with and not 'acquired' from our social environment." No matter how imperfect the many studies have been, when you put them all together and examine them closely, the message is clear: While post-birth development may well play a supporting role, the roots of homosexuality, at least in men, appear to be in place by the time a child is born.

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## Mom's Genetics Could Produce Gay Sons

The arrangement of a mother's genes could affect the sexual orientation of her son, according to a new study, detailed in the February 2006 issue of the journal *Human Genetics*.

The researchers examined a phenomenon called "X chromosome inactivation" in 97 mothers of gay sons and 103 mothers whose sons were not gay.

### **X and Y**

Chromosomes are large thread-like molecules that contain an organism's genetic instructions. Humans have 23 chromosome pairs. The X chromosome is one of two sex chromosomes in mammals; the other is the *Y chromosome*. Females have two *X chromosomes* and no *Y's*, while males have one X and one Y.

Even though women have two X chromosomes, only one is functional because the other is inactivated through a process called “methylation.”

“It gets wrapped up in a ball and is not used with the exception of a few genes,” explained study leader Sven Bocklandt of the University of California, Los Angeles.

If one of the females’ X chromosomes is not turned off, then there is too much genetic material, which can lead to a harmful overabundance of proteins. Down syndrome, for example, results from the presence of an extra copy of chromosome 21.

### **Big difference**

Normally, X chromosome inactivation occurs at random: half of the cells in a woman’s body will have one X chromosome inactivated, while the other half inactivates the other chromosome.

However, when the researchers in the current study examined cells from the 42 mothers who had at least two gay sons, they found that about a quarter of the women in this group showed something different.

“Every single cell that we looked at in these women inactivated the same X chromosome,” Bocklandt told *LiveScience*. “That’s highly unusual.”

In contrast, only 4 percent of mothers with no gay sons and 13 percent of those with just one gay son showed this type of extreme skewing.

Bocklandt thinks this suggest that a mother’s X chromosomes partly influences whether her son is gay or not.

“We think that there are one or more genes on the X chromosome that have an effect on the sexual orientation of the sons of these mothers, as well as an effect on the cells we were looking at,” Bocklandt said.

### **Other chromosomes implicated**

Bocklandt was also involved in an earlier study that looked at the entire human genome of men who had two or more gay brothers. The researchers found identical stretches of DNA on three chromosomes—7, 8 and 10—that were shared by about 60 percent of the gay brothers in the study.

That study also found mothers to have an unusually large role in their son’s sexual orientation: the region on chromosome 10 correlated with homosexuality only if it was inherited from the mother.

The results from these two studies suggest that there are multiple genetic factors involved in determining a person’s sexual orientation and that it might vary depending on the person.

“We think that there are going to be some gay men who are X chromosome gay men and some who are chromosome 7 gay men or chromosome 10 gay men or some combination,” Bocklandt said in a telephone interview.

Most researchers now think that there is no single gay gene that controls whether a person is homosexual or not. Rather, it's the influence of multiple genes, combined with environmental influences, which ultimately determine whether a person is gay.

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## **OPPOSITE-SEX TWINS AND ADOLESCENT SAME-SEX ATTRACTION**

Peter Bearman (Sociology) and Hannah Brückner (Yale), considered social, genetic, evolutionary, and hormonal transfer hypotheses for same-sex romantic preferences of adolescent (N=5,552) sibling pairs drawn from a nationally representative sample.

They show that male but not female opposite-sex twins disproportionately report same-sex attraction; and that the pattern of concordance of same-sex preference among siblings is inconsistent with a simple genetic influence model.

Their results provide substantial support for the role of social influences, reject the hormone transfer model, reject a speculative evolutionary theory, and are consistent with a general model that allows for genetic expression of same-sex attraction under specific, highly circumscribed, social conditions.

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## **IMPORTANT GENETIC QUOTES**

*Brian S. Mustanski, PhD, Assistant Professor of Psychiatry at the University of Illinois at Chicago, in a Jan. 27, 2005 University of Illinois at Chicago news release about his Human Genetics article "A Genomewide Scan of Male Sexual Orientation" stated:*

"There is no one 'gay' gene. Sexual orientation is a complex trait, so it's not surprising that we found several DNA regions involved in its expression. Our best guess is that multiple genes, potentially interacting with environmental influences, explain differences in sexual orientation. Our study helps to establish that genes play an important role in determining whether a man is gay or heterosexual."

*Ebru Demir, PhD, Researcher at the Institute of Molecular Biotechnology of the Austrian Academy of Sciences, and Barry J. Dickson, PhD, Senior Scientist at the Institute of Molecular Biotechnology of the Austrian Academy of Sciences, wrote in their 2000 Cell article titled "Fruitless Splicing Specifies Male Courtship Behavior in Drosophila":*

"We show that male gene splicing is essential for male courtship behavior and sexual orientation. More importantly, male gene splicing is also sufficient to generate male behavior in otherwise normal females. These females direct their courtship toward other females (or males engineered to produce female pheromones).

The splicing of a single neuronal gene thus specifies essentially all aspects of a complex innate behavior."

*Dean H. Hamer, PhD, Chief of the Section on Gene Structure and Regulation at the Laboratory of Biochemistry at the National Cancer Institute, et al., wrote in the July 16, 1993 Science article "A Linkage Between DNA Markers on the X Chromosome and Male Sexual Orientation":*

"The role of genetics in male sexual orientation was investigated by *pedigree* and *linkage analyses* on 114 families of homosexual men. Increased rates of same-sex orientation were found in the maternal uncles and male cousins of these subjects, but not in their fathers or paternal relatives, suggesting the possibility of sex-linked transmission in a portion of the population.

DNA linkage analysis of a selected group of 40 families in which there were two gay brothers and no indication of non-maternal transmission revealed a correlation between homosexual orientation and the inheritance of *polymorphic markers* on the X chromosome in approximately 64 percent of the sib-pairs tested.

The linkage to markers on Xq28, the subtelomeric region of the long arm of the sex chromosome, had a multipoint lod score of 4.0 ( $P = 10^{-5}$ ), indicating a statistical confidence level of more than 99 percent that at least one subtype of male sexual orientation is genetically influenced."

*Kenneth M. Cohen, PhD, Lecturer in Human Development at Cornell University, wrote in the 2002 Archives of Sexual Behavior article "Relationships Among Childhood Sex-Atypical Behavior, Spatial Ability, Handedness, and Sexual Orientation in Men":*

"Recent scans of the human genome reveal that some gay males share a genetic marker for homosexuality on the X chromosome. One avenue through which genes regulate homoeroticism is by instructing the brain to develop in a sex-atypical manner."

*Ontario Consultants on Religious Tolerance, in the Apr. 21, 2007 article "Homosexuality and Bisexuality: Is Homosexuality Genetically Determined?" published on its web site, explained:*

"Religious conservatives often point to studies of identical twins who were separated at birth and raised independently. If one is gay, then the other twin is found to be gay only about 55% of the time. They reason that: since identical twins have the same genetic structure, then if homosexual orientation were determined by genes, 100% of the other twins would be gay... [This is] based upon a faulty or inadequate knowledge of the detailed workings of genetics. Genes have a property called penetrance, which is a measure of their effectiveness, or power...

The penetrance of the gene which causes Type 1 (early onset) diabetes is only 30%. So, if one identical twin has the allele that causes diabetes, then the other twin will have the same allele. Both will have a 30% chance of developing the disorder. Both twins will have the same genetic structure. But it may or may not be triggered by something in the environment, and cause diabetes. If one identical twin develops schizophrenia, the other twin has about a 48% chance of also developing the disorder. If one twin develops bipolar affective disorder, (formerly called manic depression) the other twin's chances are about 60% of having it as well...

We do not wish to imply that homosexuality is a disease. We are merely suggesting that the root cause of many diseases—and traits like left-handedness—are genetic. Most human sexuality researchers who are not religious conservatives regard homosexual orientation as a trait like left-handedness.”

Finally, there is another large body of research showing actual physical differences between Homosexuals and Heterosexuals of the same gender. Gays and Lesbians show physical characteristics too, such as:

- Gay men and lesbians have a 50 percent greater chance of being left-handed or ambidextrous than their straight counterparts.
- Gay men are more likely than straight men to have a counterclockwise whorl to their hair (looking down at the crown).
- Gay men and straight women have an increased density of fingerprint ridges on the thumb and pinkie of the left hand.
- The index fingers of most straight men are shorter than their ring fingers, and for most women they are the same length or longer. Gay men and lesbians tend to have reversed ratios.
- The brains of gay men show brain response to hormones similar to that of heterosexual women, and to a lesser extent the brains of lesbian women show a response to hormones similar to that of heterosexual men.

These ALL point to Genetic differences.

For an explanation of the physical difference between Homosexuals and Heterosexuals, see my paper on “The Science of GAYDAR.”

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## Gay Animals Out of the Closet?

**Homosexuality has been documented in almost 500 species of animals, and 1,500 species total, signaling that sexual preference is predetermined.**

From male **Killer Whales** that ride the dorsal fin of another male to female bonobos that rub their genitals together, the animal kingdom tolerates all kinds of lifestyles.



A first-ever museum display, “*Against Nature?*,” which opened last month at the *University of Oslo’s Natural History Museum* in Norway, presents 51 species of animals exhibiting homosexuality.

“Homosexuality has been observed in more than 1,500 species, and the phenomenon has been well described for 500 of them,” said Petter Bockman, project coordinator of the exhibition.

The idea, however, is rarely discussed in the scientific community and is often dismissed as unnatural because it doesn’t appear to benefit the larger cause of [Species Continuation](#).

“I think to some extent people don’t think it’s important because we went through all this time period in sociobiology where everything had to be tied to reproduction and reproductive success,” said Linda Wolfe, who heads the Department of Anthropology at East Carolina University. “If it doesn’t have [something to do] with reproduction it’s not important.”

### **For pleasure**

However, species continuation may not always be the ultimate goal, as many animals, including humans, engage in sexual activities more than is necessary for reproduction.

“You can make up all kinds of stories: Oh it’s for dominance, it’s for this, it’s for that, but when it comes down to the bottom I think it’s just for sexual pleasure,” Wolfe told *LiveScience*.

Conversely, some argue that homosexual sex could have a bigger natural cause than just pure pleasure: namely evolutionary benefits.

Copulation could be used for alliance and protection among animals of the same sex. In situations when a species is mostly bisexual, homosexual relationships allow an animal to join a pack.

“In bonobos for instance, strict heterosexual individuals would not be able to make friends in the flock and thus never be able to breed,” Bockman told *LiveScience*. “In some bird species that bond for life, homosexual pairs raise young. If they are females, a male may fertilize their eggs. If they are males, a solitary female may mate with them and deposit her eggs in their nest.”

### **Mom and Dad and Dad**

Almost a quarter of [Black Swan Families](#) are parented by homosexual couples. Male couples sometimes mate with a female just to have a baby. Once she lays the egg, they chase her away, hatch the egg, and raise a family on their own. Homosexual couples account for up to 20 percent of all pairings annually. Almost a quarter of all families are parented by homosexual couples that remain together for years. At times, male couples use the services of a female by mating with her. Once she lays a clutch of eggs, the wanna-be fathers chase her away and hatch the eggs. Other times, they just drive away heterosexual couples from their nests and adopt their eggs.

“Homosexuality” and “heterosexuality” are terms defined by societal boundaries, invisible in the animal kingdom.

"Many species are hermaphrodites," Bockman said. Hermaphrodites have both male and female sex organs. A lot of marine species have no sex life at all, but just squirt their eggs or semen into sea. Some creatures even reproduce asexually, by dividing themselves into two organisms. In one species of gecko, females [Clone Themselves](#).

Like most complex issues, animal homosexuality is challenging and poorly understood. Therefore, educators tend to shy away from covering it in their teaching. Many scientists don't even want to be associated with this type of research. "I've had primatologists offer to give me their data on homosexual behavior because they didn't want to publish it," Wolfe said.

"Against Nature?" was set up partly to demystify the concept. The argument that a homosexual way of living cannot be accepted because it is against the "laws of nature" can now be rejected scientifically, said Geir Soli, project leader for the exhibition. "A main target for this project was to get museums involved in current debate; to show that museums are more than just a gallery for the past."

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## [Wikipedia List of Animals Displaying Homosexual Behavior](#)

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### **Dragonflies**

Male homosexuality is found in several species of dragonflies.

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### **Bonobo Chimpanzees**

Homosexuality has been documented in almost 500 species of animals, signaling that sexual preference is predetermined. Considered the closest living relative to humans, bonobos are not shy about seeking sexual pleasure. Nearly all of these peace-loving apes are bisexual and often resolve conflict by the "make love, not war" principle. They copulate frequently, scream out in delight while doing so, and often engage in homosexual activities. About two thirds of the homosexual activities are amongst females.

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### **Japanese macaques**

Female macaques form intense bonds with each other and are serially monogamous, meaning they only have one sexual partner at a time. However, they have several of these relationships during each breeding season. Female macaques engage in sexual activities such as genital stimulation and vocalize their delight in forms of cackling sounds. Males also take to homosexual play but tend to leave their partner soon after, making it what we call in the human world a one night stand.

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## American Bison

Homosexual mounting between males tends to be more common than heterosexual female-male copulation among American bison, especially because females only mate with the bulls about once a year. During mating season, males engage in same-sex activities several times a day. More than 55 percent of mounting in young males is with the same gender.

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## Bottlenose Dolphins

Homosexual activity occurs with about the same frequency as heterosexual play amongst these marine mammals. Male bottlenose dolphins are generally bisexual, but they go through periods of being exclusively homosexual. The homosexual activities of these mammals include oral sex during which time one dolphin stimulates the other with its snout. Males also rub their erect penises against the body of their partner.

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## Giraffes

Male courtships are frequent amongst these long-necked mammals. Often a male will start necking with another before proceeding to mount him. This affectionate play can take up to an hour. According to one study, one in every 20 male giraffes will be found necking with another male at any instant. In many cases, homosexual activity is said to be more common than heterosexual.

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## Kob Antelope

On average, females mount with other females a couple of times an hour during the mating season. Homosexual mounting encompasses almost 9 percent of all sexual activities within these hoofed mammals in the wild. While courting, the pursuer sidles up behind a pal and raises her foreleg, touching the other female between her legs. This leggy foreplay ultimately leads to mounting.

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## Black swan

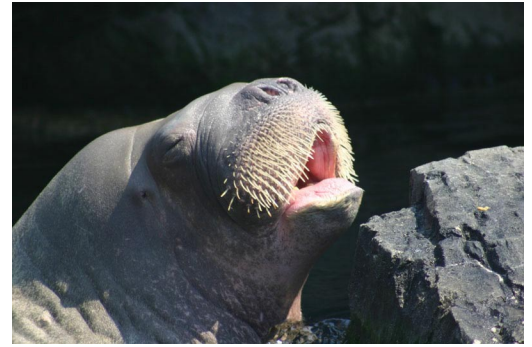
Homosexual couples account for up to 20 percent of all pairings annually. Almost a quarter of all families are parented by homosexual couples that remain together for years. At times, male couples use the services of a female by mating with her. Once she lays a clutch of eggs, the wanna-be fathers chase her away and hatch the eggs. Other times, they just drive away heterosexual couples from their nests and adopt their eggs.



## Walrus

Male walrus don't reach sexual maturity until they are four years old. During that time, they are most likely exclusively involved in same-sex relationships. The older males are typically bi-sexual, mating with females during breeding season and copulating with other males the rest of the year. Males rub their bodies together, embrace each other and even sleep together in water.

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## Gray Whale

Splashing around in the water is brought to a completely new level in gray whales, where homosexual interactions are quite common. In slip-and-slide orgies, as many as five males roll around, splashing water, and rubbing their bellies against each other so that their genitals are touching.

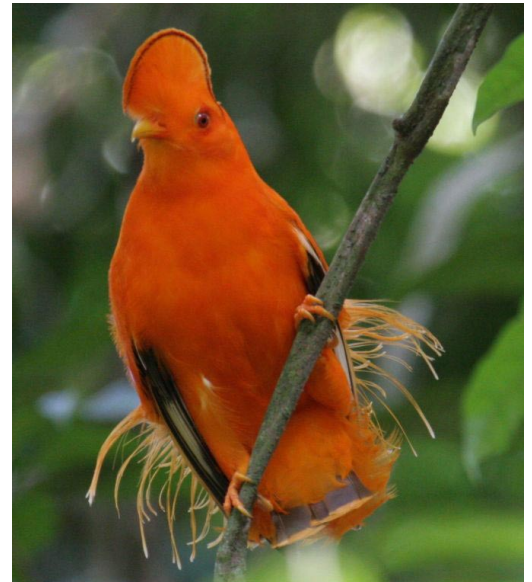
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## Guianan-Cock-of-the-Rock

Males of this stunning perching bird delight in homosexuality. Almost 40 percent of the male population engages in a form of homosexual activity and a small percentage don't ever copulate with females.

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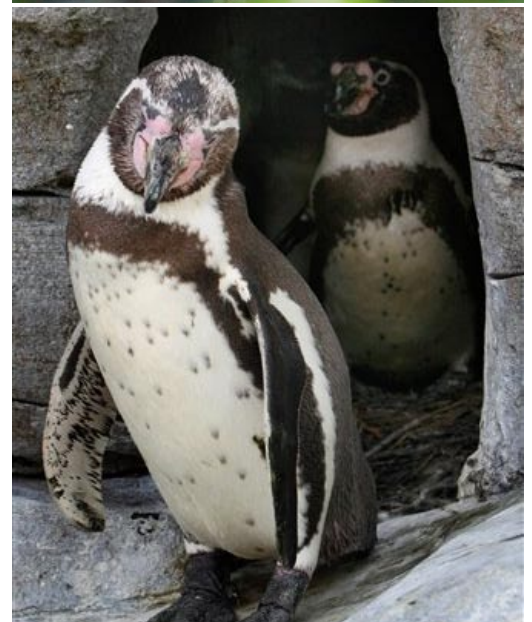


**Gay Penguin Dads** in German zoo hatched their first chick on June 4, 2009. Z and Vielpunkt, two male [Humboldt Penguins](#) at Germany's [Bremerhaven Zoo](#), are the proud new parents of a healthy penguin chick.

"Another couple threw the egg out of their batch. We picked it up and put it in the nest of the gay penguins," veterinarian Joachim Schöne told the German newspaper Bild of the pair's entry into parenthood. Z and Vielpunkt faithfully cared for their adopted egg for more than a month; in late April it hatched. Since then, they've been taking care of their chick around the clock; it's still too young to feed itself, so the dads feed him fish mash, Schöne explained.

"Since the chick arrived, they have been behaving just as you would expect a heterosexual couple to do," the zoo said in a statement. The Bremerhaven Zoo's same-sex penguin couples (there are three such pairs in residence there, all males) first made news back in 2005.

Z and Vielpunkt aren't the first same-sex penguin pair to successfully care for a chick...



Another such couple were [Male Chinstrap Penguin residents of New York's Central Park Zoo](#) named Roy and Silo. Roy and Silo had been devoted to each other for nearly six years by 2004, and they had been inseparable. They exhibit what in penguin parlance is called "ecstatic behavior": That is they entwine their necks they vocalize to each other they have sex. Silo and Roy are to anthropomorphize a bit gay penguins.



When offered female companionship they have adamantly refused it. And the females aren't interested in them either. At one time the two seemed so desperate to incubate an egg together that they put a rock in their nest and sat on it keeping it warm in the folds of their abdomens said their chief keeper Rob Gramzay. Finally he gave them a fertile egg that needed care to hatch. Things went perfectly and a chick Tango was born.

For the next 2 1/2 months they raised Tango keeping her warm and feeding her food from their beaks until she could go out into the world on her own. Gramzay is full of praise. "They did a great job" he said.

Another male penguin couple were removed from their colony in a Chinese zoo last year when they repeatedly tried to steal eggs from male-and-female pairs. *In a rather ingenious move, they actually replaced the eggs they were stealing with rocks.* But visitors complained when the penguins were removed, and eventually they were given two eggs of their own. Since then, a keeper told the Daily Mail, "they've turned out to be the best parents in the whole zoo."



## SHOCK: San Francisco's Gay Penguins, Harry & Pepper Split ... Over a Girl

Matthew Barry©2010

