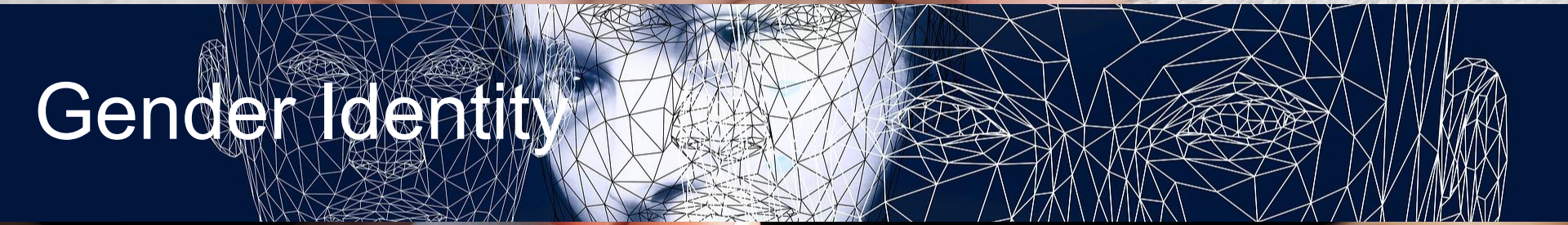
Understanding Human Gender and Sexuality

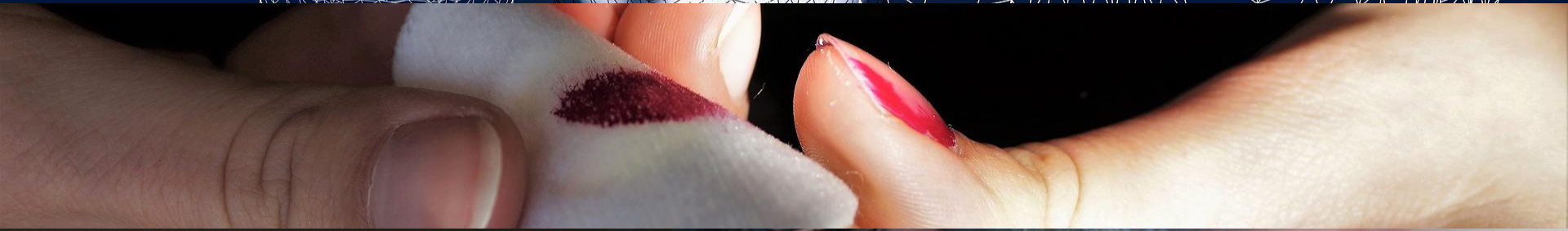
Caleb Jones

Gender Anatomy

Gender Anatomy



Gender Identity

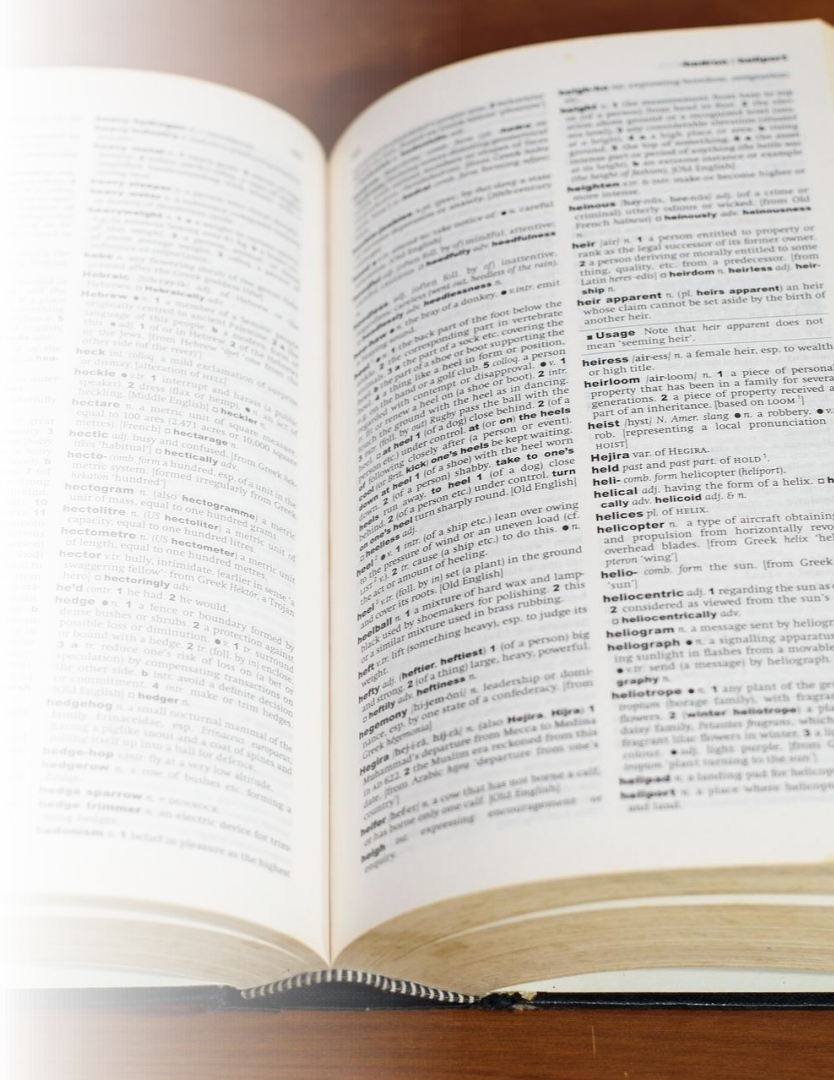



Gender Anatomy
Gender Identity
Gender Expression


Gender Anatomy
Gender Identity
Gender Expression
Sexual Attraction

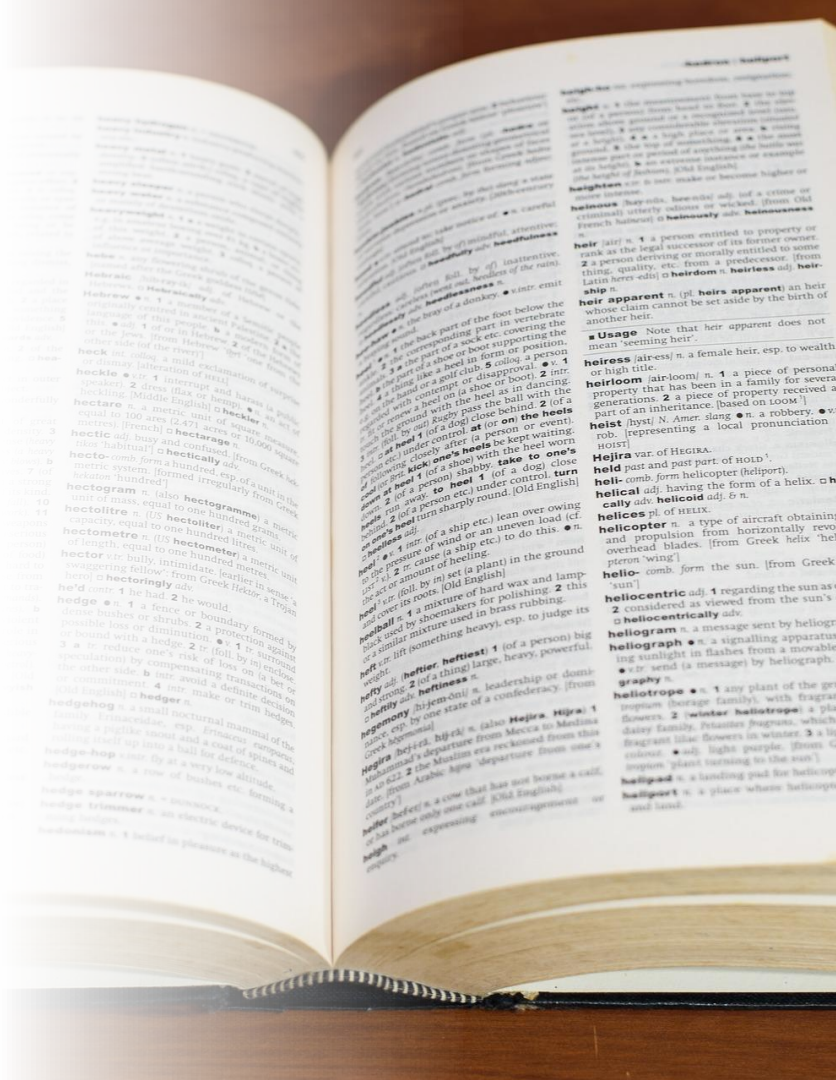
Vocabulary

- **Lesbian**: A woman whose primary sexual or affectional orientation is toward people of the same gender.
- **Gay**: A sexual or affectional orientation toward people of the same gender (often used to refer to men).
- **Bisexual**: A person whose primary sexual or affectional orientation is toward people of the same and other genders, or towards people regardless of their gender.
- **Transgender**: a person whose sense of personal identity and gender does not correspond with their sex assigned at birth (transgender is often preferred to transexual).
- **Bigender**: a person whose sense of personal identity encompasses two genders.



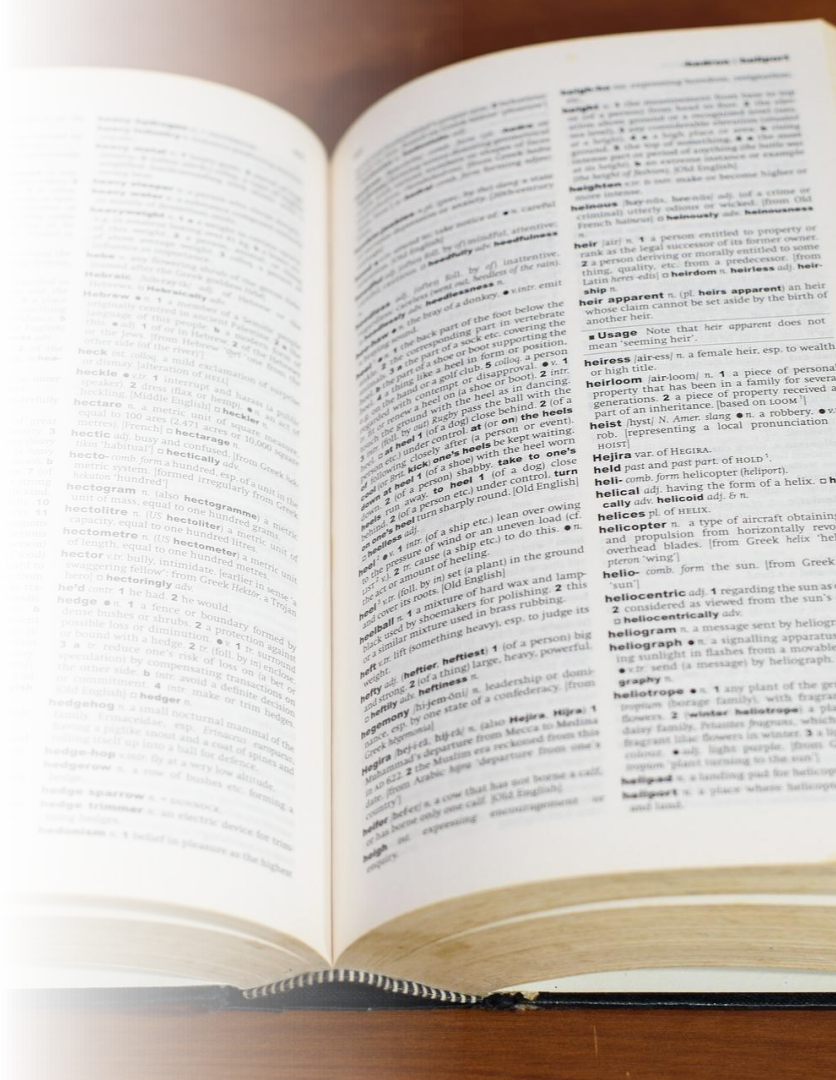
Vocabulary

- **Queer**: A person whose sexual identity or attraction is considered abnormal or strange (sometimes used as an umbrella term and is not considered impolite).
- **Asexual**: A sexual orientation generally characterized by not feeling sexual attraction or a desire for partnered sexuality.
- **Intersex**: A person whose primary or secondary sex characteristics do not fit neatly into society's definitions of male or female. Hermaphrodite is an outdated/inaccurate term.
- **Cisgender**: A person whose sense of personal identity and gender corresponds with their sex assigned at birth.



Vocabulary

- **WHO** - The World Health Organization (WHO) directs international health within the United Nations' system and to lead partners in global health responses.
- **APA** - The American Psychological Association (APA) is a scientific and professional organization that represents psychologists in the United States.
- **ICD** - The International classification of diseases (ICD) is the global standard for the diagnosis, treatment, research, and statistical reporting of health conditions, including mental and behavioral health.
- **DSM** - The Diagnostic and Statistical Manual of Mental Disorders (DSM) is the handbook used by healthcare professionals in the United States and much of the world as the authoritative guide to mental health.



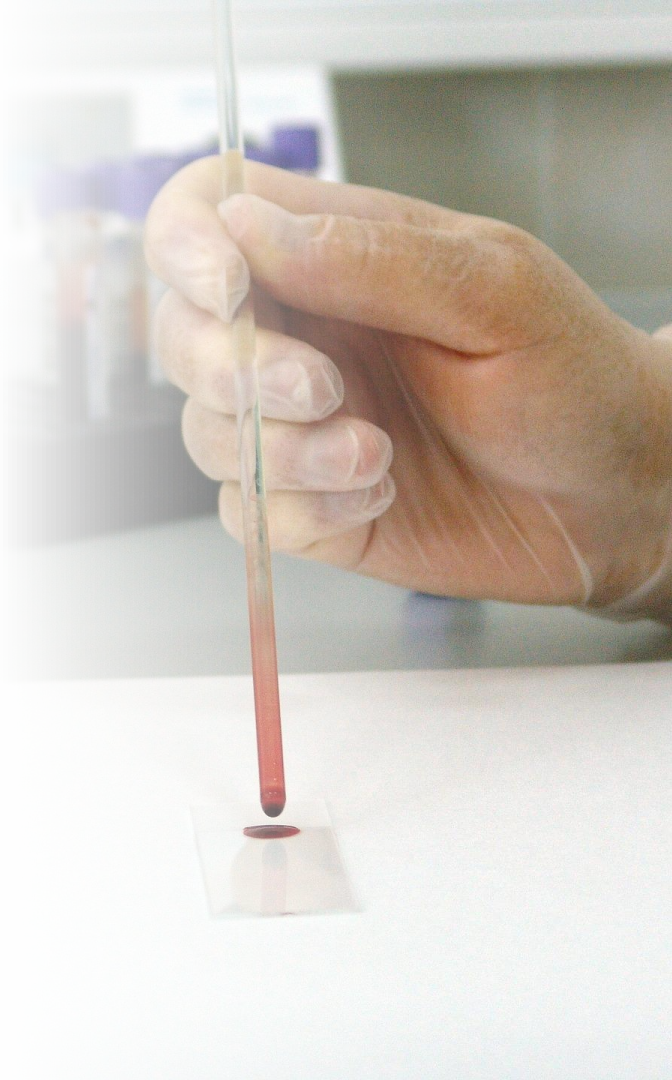
Pathologizing Homosexuality

1948 - The World Health Organization (WHO) publishes ICD-6, classifying homosexuality as “a sexual deviation” due to “an underlying personality disorder”.

1952 - American Psychiatric Association (APA) lists homosexuality in the DSM-I as a “sociopathic personality disturbance”.

1977 - WHO lists homosexuality in ICD-9 as a “mental illness”.

Note: History of pathologization has also created issues with queer healthcare that continues today.



Depathologizing Homosexuality

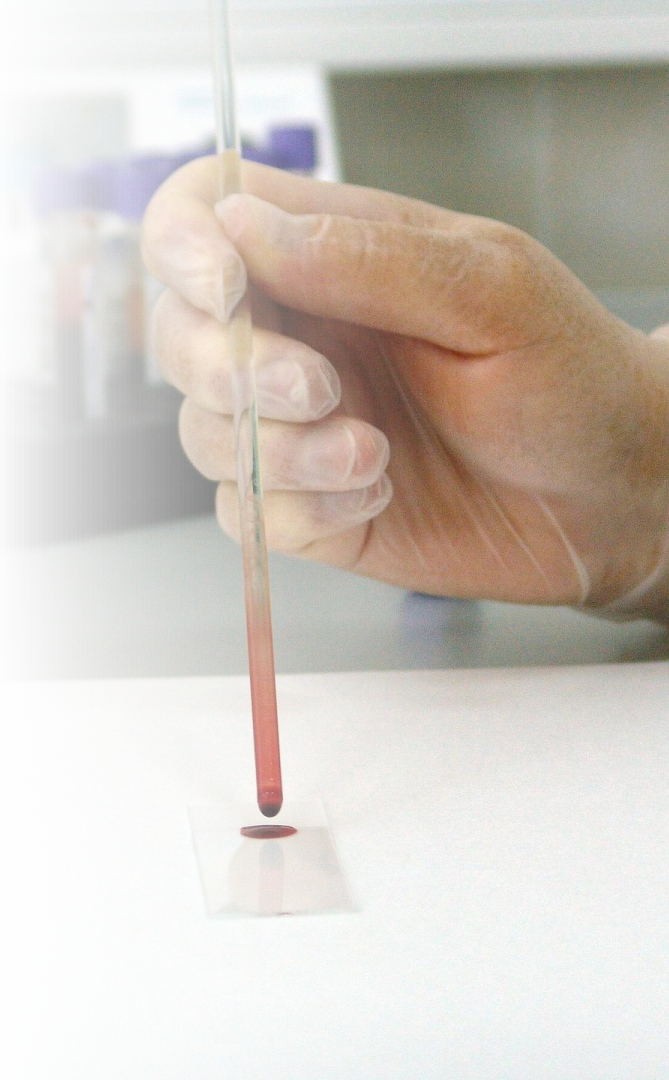
1973 - After scrutiny from National Institute of Mental Health and the APA's own thorough review, no empirical evidence was found that justified classifying homosexuality as a disorder and it is removed from DSM-II.

1975 - APA calls upon all mental health professionals to "[remove] the stigma of mental illness that has long been associated" with homosexuality.

1987 - APA removes "ego-dystonic homosexuality" DSM-III-R

1990 - World Health Organization removes homosexuality from ICD-10 citing "human rights standards and the lack of empirical evidence supporting the pathologization and medicalization of variations in sexual orientation expression."

1993, the National Association of Social Workers adopts the same position as the APA.



Pathologizing Transgenderism

1949 - David Cauldwell proposes one of the earliest diagnostic conceptualizations related to gender identity with the term “psychopathia transsexulialis.”

1980 - APA classifies “transsexualism” in DSM-3 in a chapter titled “Psychosexual Disorders” adopting classifications developed and used since the 1950s

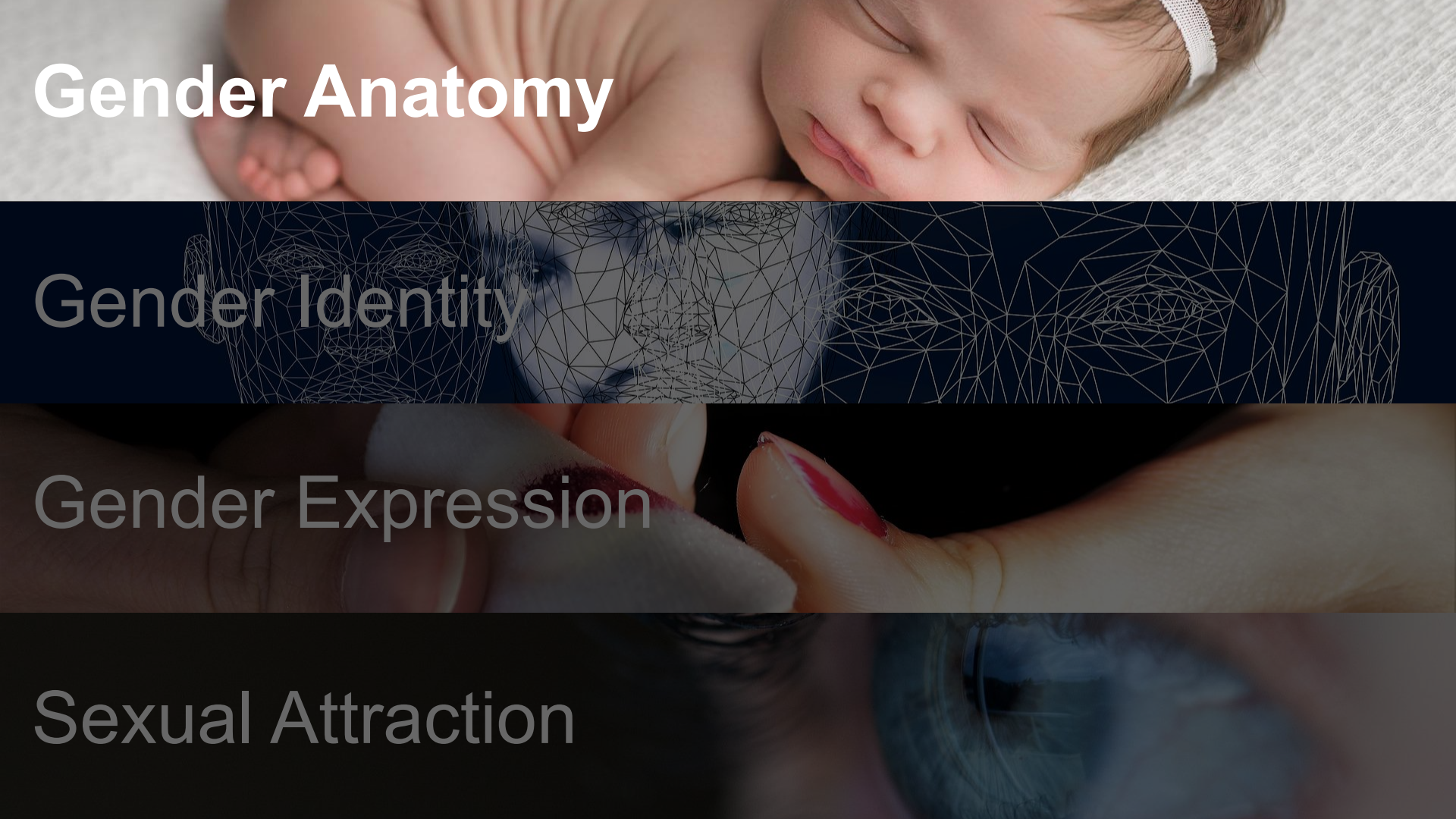
1990 - WHO places trans-related codes in ICD-10’s chapter titled “Mental and Behavourial Disorders”

Note: History of pathologization has also created issues with queer healthcare that continues today.

Depathologizing Transgenderism

2013 - APA removes “gender identity disorder” from DSM-5 and creates a new chapter titled “Gender Dysphoria”

2019 - WHO removes trans-related codes in ICD-11 from the chapter titled “Mental and Behavourial Disorders” and places them in a new chapter titled “Conditions Related to Sexual Health”


Gender Anatomy
Gender Identity
Gender Expression
Sexual Attraction

Gender Anatomy

Chromosomes:

The majority of assigned males have XY chromosomes and the majority of assigned females have XX chromosomes. However, not everyone has either XX or XY chromosomes. Roughly 1 to 2 per 1000 births are born with XXY chromosomes.[1] Other variants include X, XYY, XXX, XXYY, and more.

1 "Klinefelter syndrome". Genetics Home Reference. National Library of Medicine. 2012-10-30

Gender Anatomy

Gonads:

An organ (generally testes or ovaries) which produces gametes (the reproductive cells of an individual - sperm or eggs). However, some people are born with ovotestis which are a gonads with both testicular and ovarian aspects. Others are born with ovarian and testicular tissues with a variety of ambiguities.

Gender Anatomy

Sex and developmental hormones:

The estrogen hormone (usually higher in females) is received by estrogen receptors; the testosterone hormone (usually higher in males) is received by androgen receptors - with both simultaneously involved and levels varying at different periods of a person's life (e.g., puberty, menopause, or andropause). Sex hormones play a significant role in how one experiences gender in the context of their biology (see gender identity and expression or sexual orientation below). Differing levels of hormones, the existence of higher or lower numbers of hormone receptors, and those receptors' abilities to activate hormones affect this dynamic (e.g., Androgen Insensitivity Syndrome - AIS).

Gender Anatomy

Reproductive Anatomy:

This generally includes a vagina, cervix, uterus, fallopian tubes, and ovaries, vas deferens, seminal vesicle, prostate gland, Cowper's gland, epididymis, and testes. Some estimate that 1.7 percent of people are born with different combinations of these.[1]

Examples of intersex conditions:

5-alpha reductase deficiency, Aphallia, Clitoromegaly, Congenital Adrenal Hyperplasia (CAH), gonadal dysgenesis, hypospadias, Klinefelter Syndrome, Mayer-Rokitansky-Küster-Hauser syndrome (MRKH), ovo-testes, Partial Androgen Insensitivity Syndrome (PAIS), Progestin Induced Virilization, Swyer Syndrome, Turner Syndrome, and others.

1 Blackless, Melanie; Charuvastra, Anthony; Derryck, Amanda; Fausto-Sterling, Anne; Lauzanne, Karl; Lee, Ellen (March 2000). "How sexually dimorphic are we? Review and synthesis". American Journal of Human Biology.

Gender Anatomy

Genitalia:

The clitoris and penis are homologous organs, meaning they share the same biological origins even though they develop and function differently. They share the same tissue in fetal development (prior to gender development) and generally form into either a penis or clitoris and vagina. However, sometimes people are born with non-binary genitalia (see intersex conditions previously listed).

Gender Anatomy in Animals

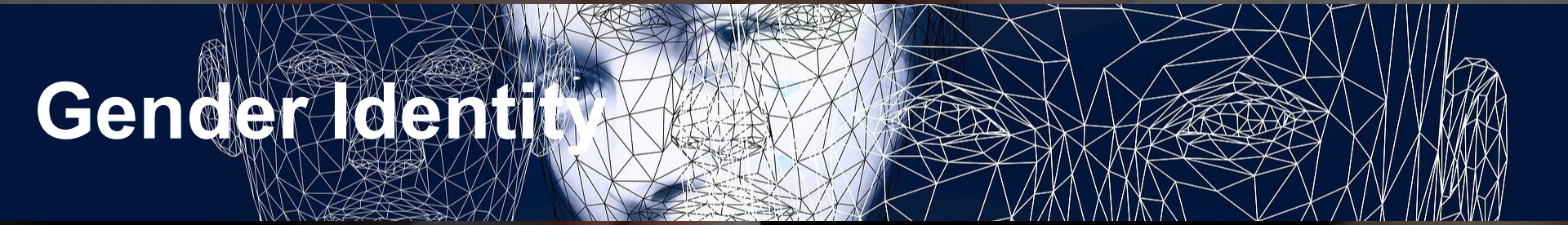
Most animal species (including humans) are gonochoric, where most individuals are of either a female or male sex. Hermaphroditic species (some animals and most flowering plants) are represented by individuals that can express both sexes simultaneously or sequentially during their lifetimes.[1]

As one example, many species of fish display some form of hermaphroditism - some even dynamically change their sex based on environmental factors.[2]

1 Christopher et. al. (August 2019). "Hermaphroditism promotes mate diversity in flowering plants". American Journal of Botany. 106

2 “Functional hermaphroditism in teleosts” (2008), Yvonne Sadovy de Mitcheson, Swire Institute of Marine Science, Department of Ecology & Biodiversity, University of Hong Kong, Pokfulam Road, Hong Kong

Gender Anatomy



Gender Identity

Gender Expression

Sexual Attraction

Gender Identity

Gender identity involves how one identifies and interacts with their own biology and gender mechanisms (e.g., genes and hormones).[1] Gender identity can correlate with assigned sex at birth or it can differ from it. Some labels that emerge here are cisgender, transgender, bigender, non-binary, gender-queer, agender, gender-fluid, and more.

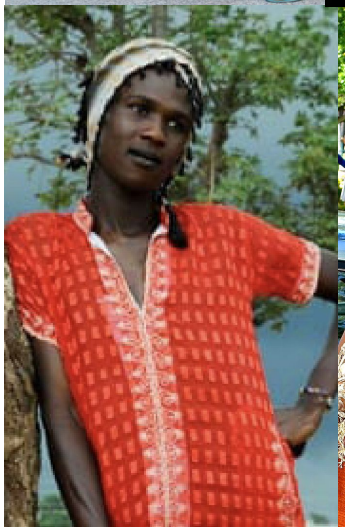
1 Effects of male sex hormones on gender identity, sexual behavior, and cognitive function, Zhong Nan Da Xue Xue Bao, Yi Xue Ban (Journal of Central South University, Medical Sciences), April 2006

Gender and Culture

Many cultures have long recognized non-binary genders (some dating back millenia):

- Native-American “two-spirit”
- Chilean Machi gender fluidity
- Indian Hijra/Sadhin
- Polynesian Māhū or Fa'afafine
- Filipino Bakla
- Non-gender or gender-fluidity in many African peoples [1] [2]



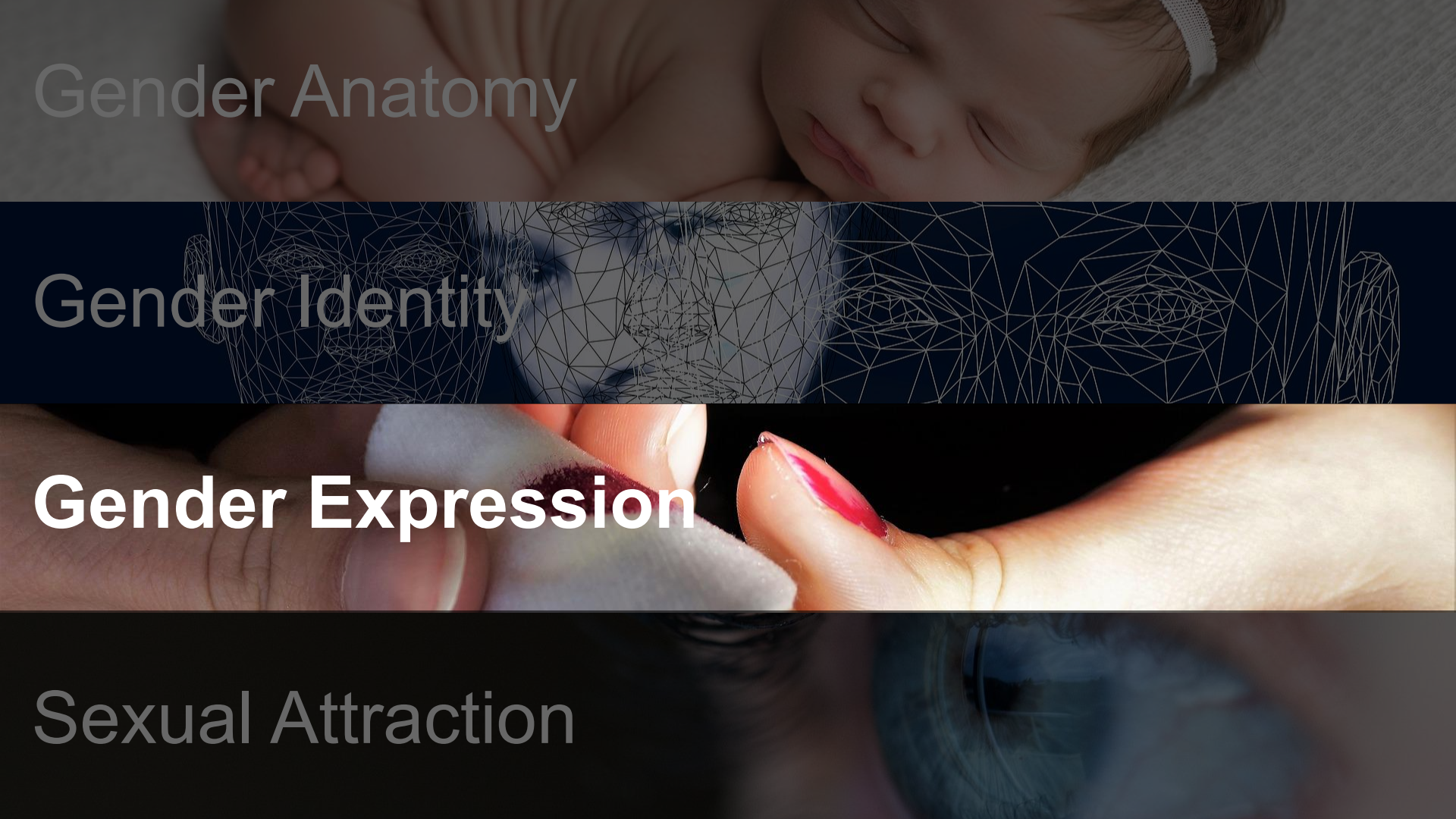
1 “Transgender Warriors”, Leslie Feinberg 1997, pg 44
2 “An Exploratory Journey of Cultural Visual Literacy of ‘Non-Conforming’ Gender Representations from Pre-Colonial SubSaharan Africa”, Open Information Science, 2019 3:1-21

Gender Identity

While the way one experiences their gender can evolve over time (e.g., puberty and advanced age), core gender identity has been regularly observed to initially emerge between ages 3 and 4.[1] Attempts to change another person's self-expressed gender identity often leads to psychological harm.[2]

1 George J. Bryjak and Michael P. Soraka, Sociology: Cultural Diversity in a Changing World (ed. Karen Hanson), Allyn & Bacon, 1997; 209–45 | J. A. Kleeman, The establishment of core gender identity in normal girls. I.(a) Introduction;(b) Development of the ego capacity to differentiate, in the Archives of Sexual Behavior, 1971 | E. Coleman, Developmental stages of the coming out process, in Journal of homosexuality, 1982: (Money & Ehrhardt, 1972)

2 Pamela J. Kalbfleisch; Michael J. Cody (1995). Gender, power, and communication in human relationships. Psychology Press | Boles, Jacqueline, and Tatro, Charlotte, Androgyny (subsection Gender-identity formation), in Men in Transition: Theory and Therapy, 2013

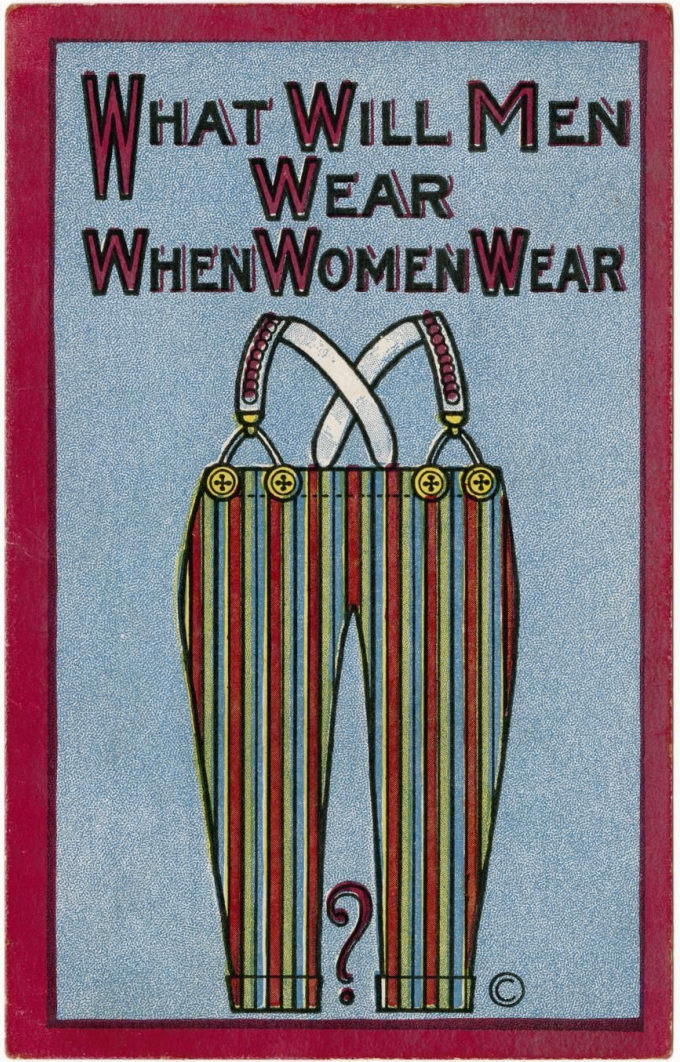

Gender Anatomy
Gender Identity
Gender Expression
Sexual Attraction

Gender Expression

Gender expression involves a person’s appearance, behavior, voice pitch, dress, mannerisms, or interests that are understood in a particular cultural context. Gender expression is the culmination of a person’s internal gender identity and biological gender understood by them and their culture. Gender expression is more fluid across cultures, languages, religions, geographical location, political belief systems, time-periods, and individuals. For example, in different cultures, men wear what other cultures might see as dresses (sarongs and kilts) without it being seen in their culture as non-masculine.

Gender Expression

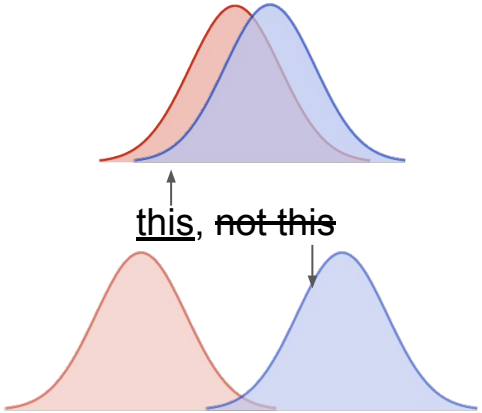
Gendered understandings towards certain activities have also changed over time (e.g., women voting, working, or obtaining higher education). These two elements (the gendered idea of dress and behavior over time) are encapsulated in a 1913 anti-suffrage postcard that shows a picture of pants with the question, “What will men wear when women wear [pants]?”[1]



1 The Dovie Horvitz Collection, from The Gender and Women's Studies Collection in the University of Wisconsin Digital Collections (http://bit.ly/suffrage-pants)

Variance in Gender Expression

Although men and women “do exhibit differences in brain formation and behavior, the variance within each sex is far greater than the variance between each sex.”[1]



1 ‘Fueling Gender’ by Jeanette Beebe, TIME Magazine “The Science of Gender”, 2020 - quoting Lisa Welling behavioral endocrinologist at Oakland university in Rochester, Mich.

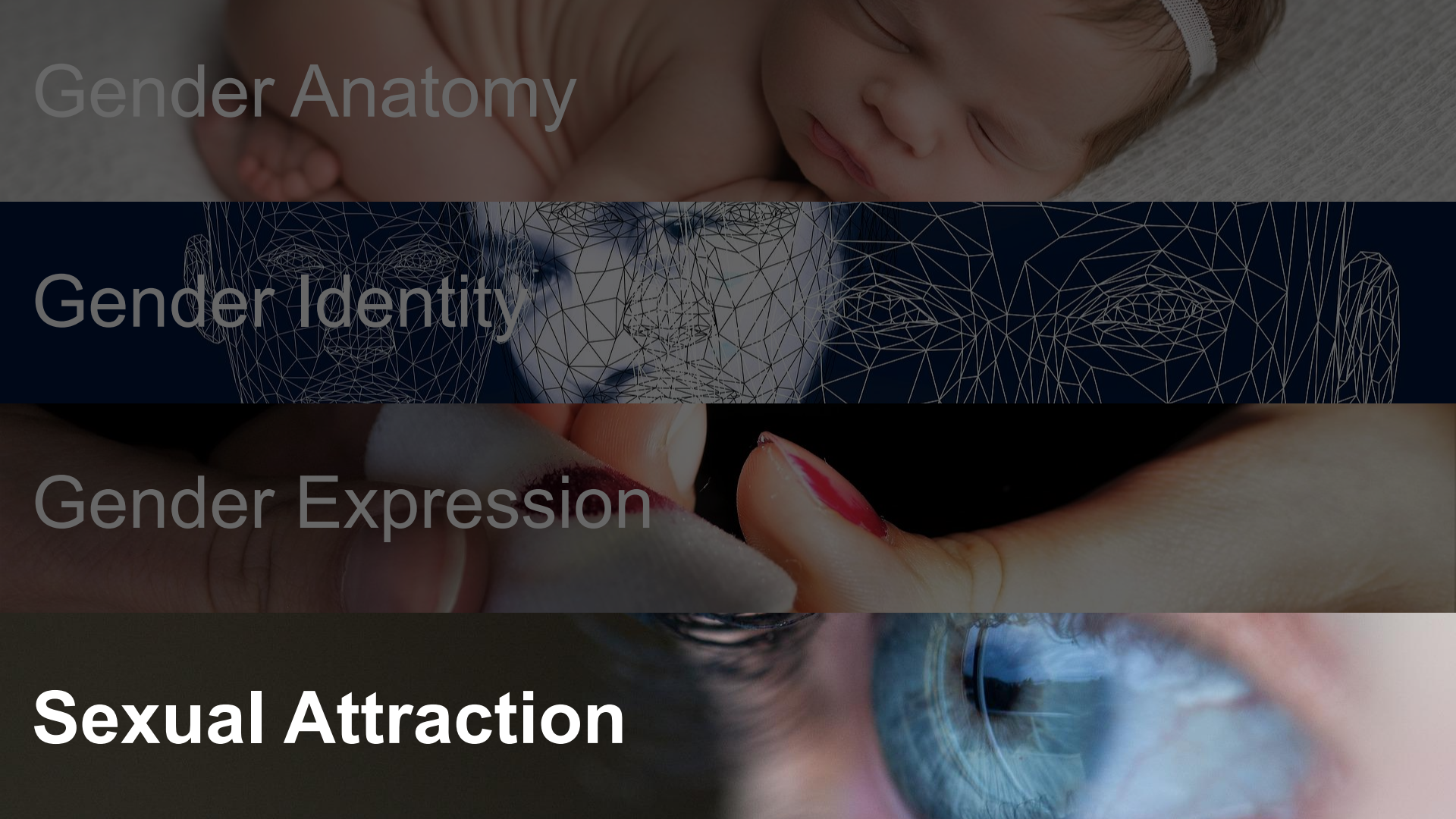
Gender Variance in Animals

Lionesses have been known to grow manes and act like male lions.[1]

Some species have very different maternal or paternal roles in mating and raising offspring.[2]

For one European bird of prey, the marsh harrier, 40% of adult males look and act like females.[3]

1 “Why This Lioness Suddenly Grew a Mane” National Geographic, Feb. 26, 2018
2 “Parenting in Animals” Karen L. Bales, California National Primate Research Center, University of California, Davis, 2017
3 “Are There “Transgender” Proclivities in Animals?”, Juliet Lamb JSTOR October 6, 2016


Gender Anatomy
Gender Identity
Gender Expression
Sexual Attraction

Sexual Attraction

While the difficulty of under-reporting and degrees of attraction should be noted, a conservative measure today is that 3.5 to 5 percent of adults throughout the world self-identify as gay, lesbian, or bisexual—with little variance across time, culture, or geography.[1]

1 "Is Australia getting gayer—and how gay will we get?". Roy Morgan Research. 2 June 2015 | “Quase a Metade dos Internautas Brasileiros Concorda com o Casamento Gay". Ibope (in Portuguese). 25 March 2013 | "Paris, ville lumière, ville de débauche ? L'OBSERVATOIRE DE LA VIE SEXUELLE DES PARISIENS". IFOP (in French). 19 December 2016 | Mor, Zohar; Davidovich, Udi (2016). "Sexual Orientation and Behavior of Adult Jews in Israel and the Association With Risk Behavior". Archives of Sexual Behavior. New York: Springer Science+Business Media | 電通ダイバーシティ・ラボが「LGBT調査2018」を実施 (in Japanese) | Sex Poll, Survation 2017 (UK) | "In U.S., Estimate of LGBT Population Rises to 4.5%". Gallup.com. 2018

Rate of LGBTQ Identification

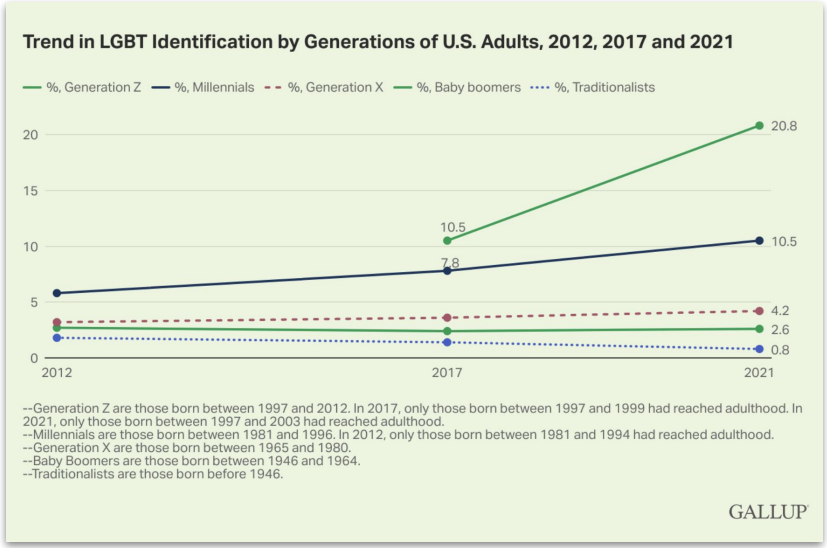
Studies that measure LGBTQ identification across generations find significant variation. In the US, 7.1% of adults identify as LGBTQ. “With one in 10 millennials and one in five Gen Z members identifying as LGBT, the proportion of LGBT Americans should exceed 10% in the near future.”[1] In a recent study, 6.5% of Americans identified as either lesbian, gay, or bisexual.[1]

1 “LGBT Identification in U.S. Ticks Up to 7.1%”, Jeffrey M. Jones, Gallup

Americans' Self-Identification as LGBT, by Generation

	LGBT %
Generation Z (born 1997-2003)	20.8
Millennials (born 1981-1996)	10.5
Generation X (born 1965-1980)	4.2
Baby boomers (born 1946-1964)	2.6
Traditionalists (born before 1946)	0.8

GALLUP, 2021



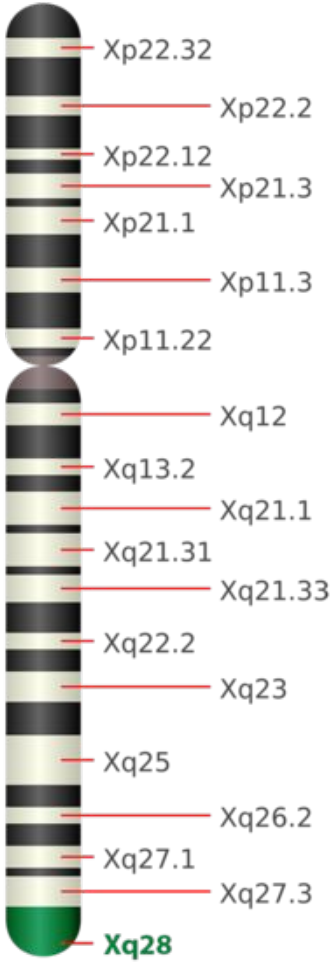
Homosexuality in Animals

Homosexual behavior is something that is common across a variety of species. For example, 8% of rams mate, for life, with other rams.[1] And homosexual behavior has been observed in well over a thousand species across birds, mammals, reptiles, and insects.[2] One researcher has noted that “No species [that has sexual reproduction] has been found in which homosexual behaviour has not been shown to exist.”[3]

1 Roselli CE, Reddy RC, Kaufman KR. The development of male-oriented behavior in rams. Frontiers in Neuroendocrinology. 2011;32:164–169
2 Bruce Bagemihl, “Biological Exuberance: Animal Homosexuality and Natural Diversity”, St. Martin's Press, 2000 - http://bit.ly/homosexual-species
3 Petter Bockman, “1,500 Animal Species Practice Homosexuality". News-medical.net. 2006-10-23

Gay Gene?

In 1993, gay brothers were shown to share the Xq28 marker.[1] This marker has repeatedly (and independently) been observed in gay brothers.[2] But this gene is only one part of a complex process we're just beginning to understand and does not fully account for sexual expression. Reducing gender or sexuality merely to genes or biology is problematic. A study of nearly half a million genomes revealed five DNA markers associated with sexual behaviour — but none with the power to predict the sexuality of an individual.[3]



https://en.wikipedia.org/wiki/Xq28

1 Hamer, D.; Hu, S; Magnuson, V.; Hu, N; Pattatucci, A. (1993). "A linkage between DNA markers on the X chromosome and male sexual orientation" Science. 261 (5119): 321–7

2 Sanders et. al, "Genome-wide scan demonstrates significant linkage for male sexual orientation". Psychological Medicine. 45 (7): 1379–88, (November 2014).

3 Ganna, A. et al. Large-scale GWAS reveals insights into the genetic architecture of same-sex sexual behavior, Science, Vol. 365 (2019)

Genes and Epigenetics

Genes: Strains of nucleotides (discovered in 1957 - Nobel Prize) which are used in cells as blueprints for creating proteins which are largely responsible for the structure, function, and regulation of the body's tissues and organs.

Epigenetics: Mechanisms (e.g., DNA methylation, histone modifications, and noncoding ribonucleic acid regulation) which control the expression of those genes. Understood starting in 1990s.

1972 - first gene sequenced
1994 - first breast cancer gene discovered
2003 - human genome sequenced
2017 - FDA approves first gene therapy in the US

Identical Twins

Identical twins come from the same fertilized egg and so share virtually identical genes. If sexual attraction were entirely determined by genes, identical twins would almost always share the same sexual attraction.

However, concordance of sexual attraction among identical twins is only 60%.[1]

1 Jacques Balthazart, “Minireview: Hormones and Human Sexual Orientation”, Endocrinology. 2011 Aug; 152(8): 2937–2947

Fraternal Twins

If genetics were no factor at all, we could expect the same concordance of sexual attraction among fraternal twins (separate eggs fertilized by separate sperm).

However, concordance of sexual orientation among fraternal twins is only 15%.[1] Genes, while influential, do not solely determine sexual orientation.

1 Jacques Balthazart, “Minireview: Hormones and Human Sexual Orientation”, Endocrinology. 2011 Aug; 152(8): 2937–2947

Birth Order Effect

One epigenetic example can be seen in what is called the birth order effect. Observed only in males, and nearly ubiquitous across populations[1], it is the 33% increased likelihood of homosexuality observed for each subsequent son born to the same mother.[2] This appears to involve interactions between the male fetus and the maternal immune system, is not influenced by sisters in birth order, and does not impact left-handed males.[3]

1 Bogaert AF; Skorska M (2011). "Sexual orientation, fraternal birth order, and the maternal immune hypothesis: a review". Frontiers in Neuroendocrinology. 32 (2): 247–54 9, 2018

2 Jacques Balthazart, “Fraternal birth order effect on sexual orientation explained”, Proceedings of the National Academy of Sciences, January

3 Blanchard R. Review and theory of handedness, birth order, and homosexuality in men. Laterality. 2008 Jan

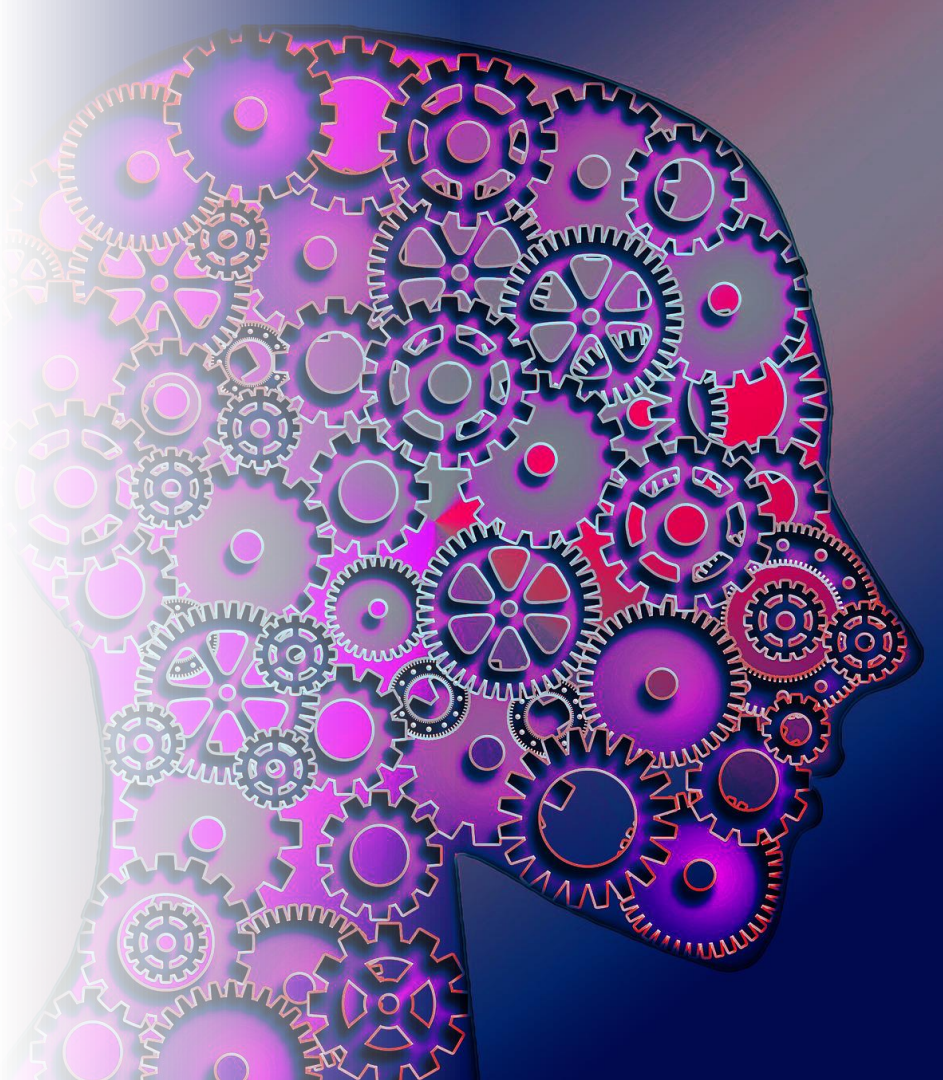
Epigenetics

Another example is called “epigenetically canalized sexual development”[1] where prenatal epigenetic factors (inherited either from mother or father) are passed to a developing fetus that affect how sex is imprinted on the fetus’ brain. The effect can lead to assigned males with low levels of testosterone receptors in their brain or assigned females with high levels of testosterone receptors in their brain.

1 Rice, William R et. al. “Homosexuality as a Consequence of Epigenetically Canalized Sexual Development”, The Quarterly Review of Biology Vol. 87, No. 4 (December 2012), pp. 343-368

Epigenetics

At puberty, when testosterone and estrogen levels spike[1], their fetally-imprinted brains are unaffected (or minimally affected) by these sex hormones leading to an assigned female with a fetal-masculinized brain (generally sexually attracted towards females) or an assigned male with a fetal-feminized brain (generally sexually attracted towards males). This may account for some identical twins who share the same genes but may have different sexual orientations.



1 Decaroli MC, Rochira V. Aging and sex hormones in males. Virulence 2017;8:545–70.

Gender Anatomy
(at birth)

Chromosomes | Hormones | Genitalia

Gonads | Reproductive Anatomy | Hormone Receptors

Gender Identity
(often 3-4 years old)

Cisgender | Bigender | Genderqueer

Agender | Non-binary | Transgender

Gender Expression
(more subjective/dynamic)

Behavior | Dress | Culture

Voice pitch | Mannerisms | Interests

Sexual Attraction
(at puberty)

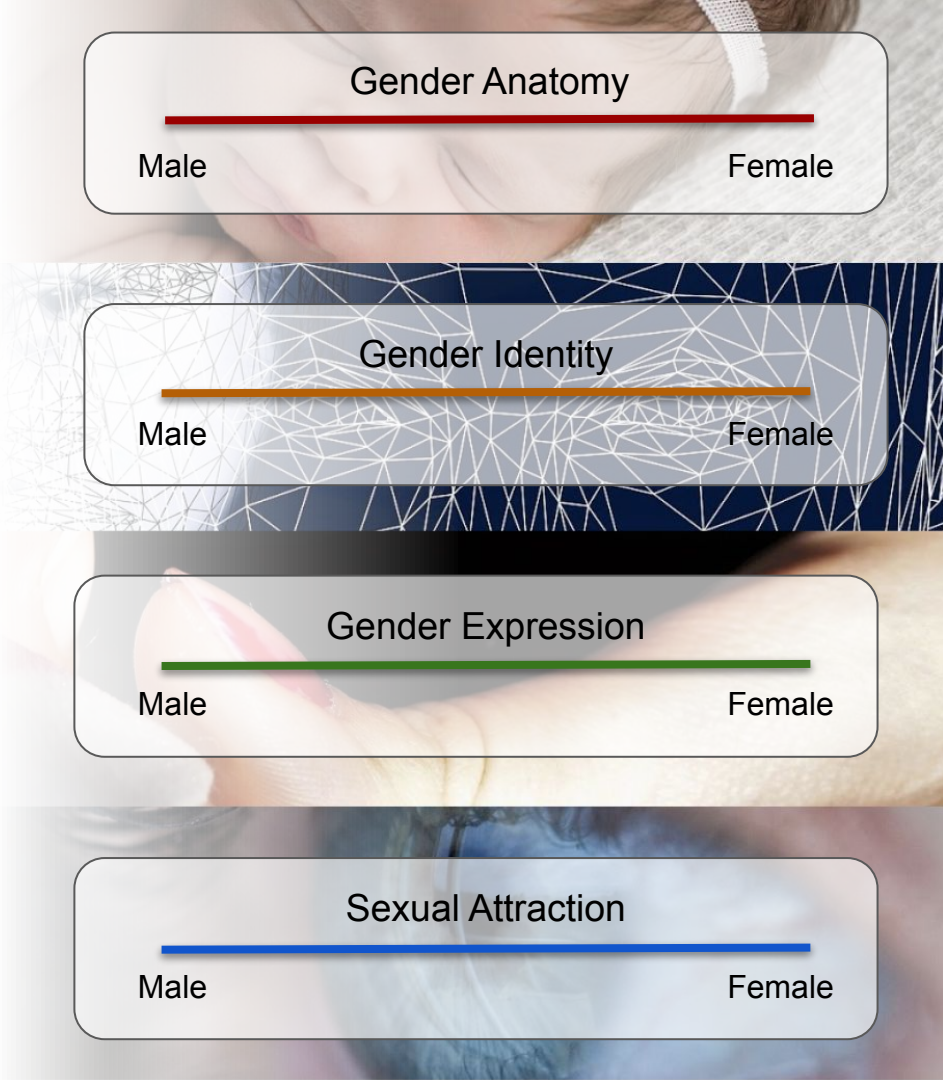
Genetics | Xq28 Marker | Hormone receptors

Epigenetics | Birth-order | 3-5+% LGB

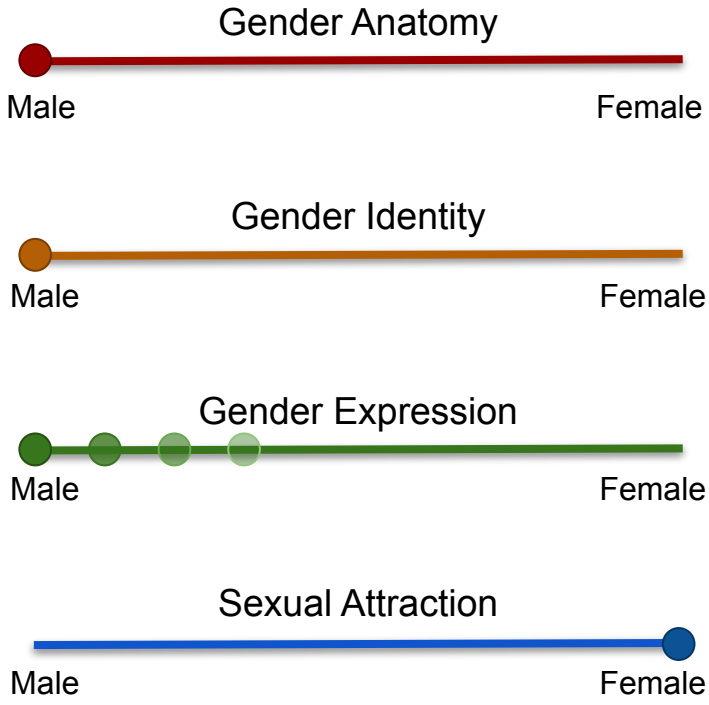
Independence of Traits

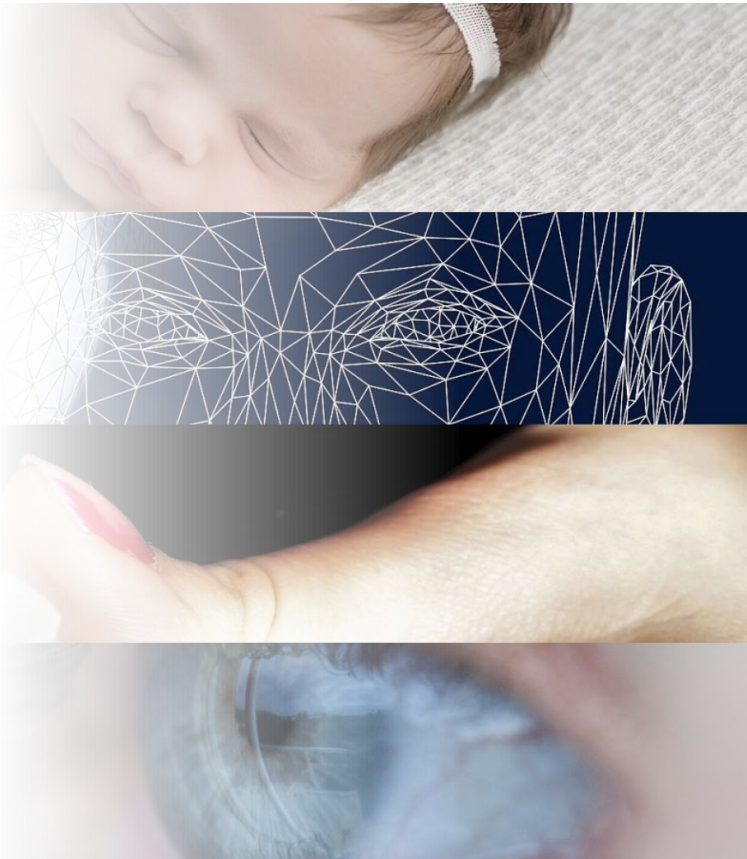
When understanding human sexuality, it is important to see how the traits of gender anatomy, gender identity, gender expression, and sexual attraction can emerge in a variety of configurations in people.

The following slides are some examples that relate to several LGBTQIA+ identity combinations. Not all terms will correspond to terms LGBTQ individuals choose to identify themselves with and may be more clinical than preferred. Always ask someone how they choose to identify.

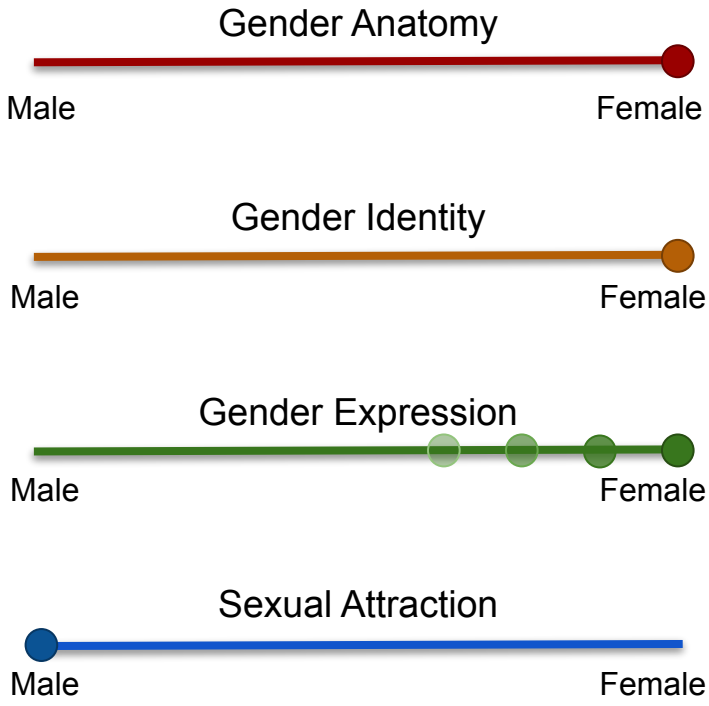


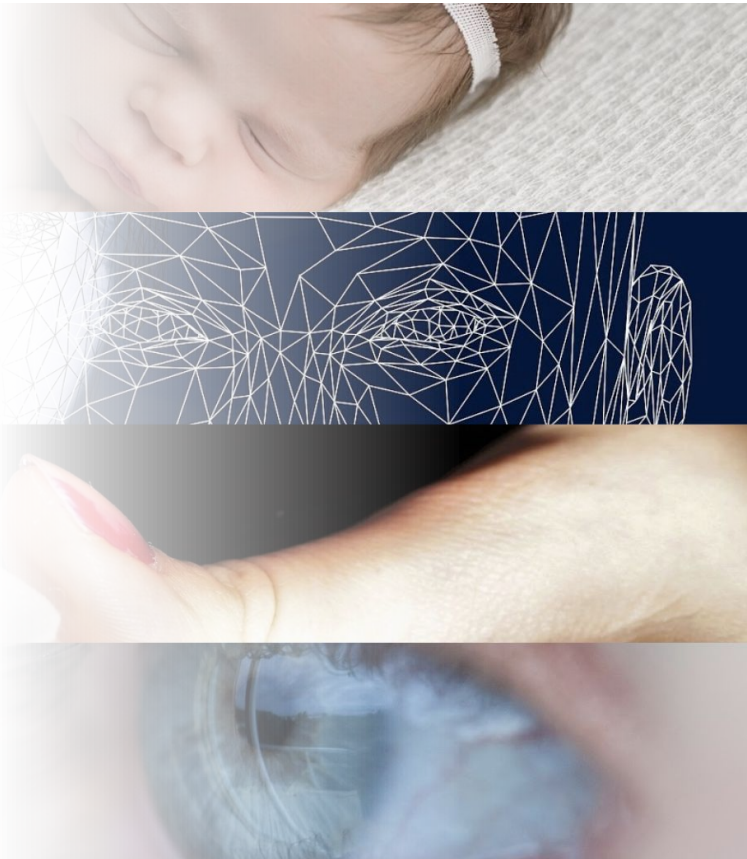
Cisgender, Heterosexual, Male



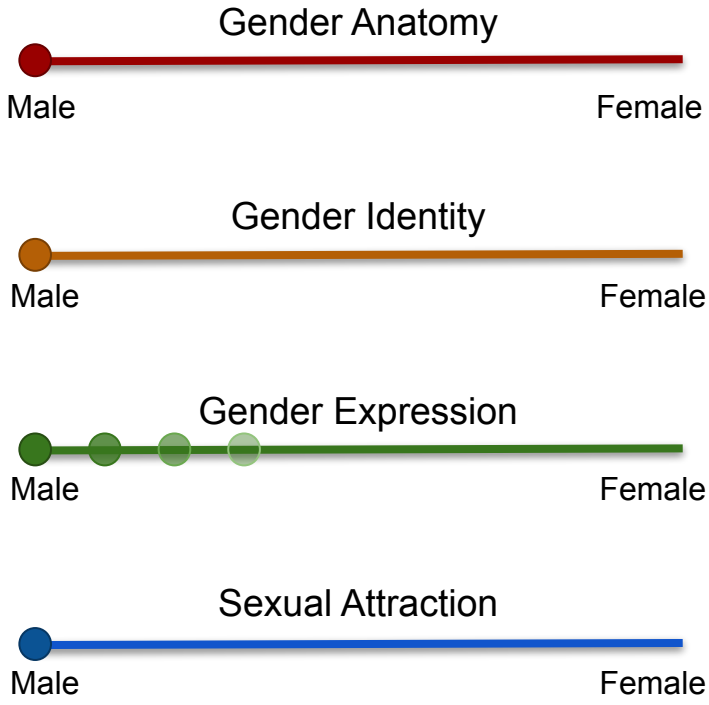


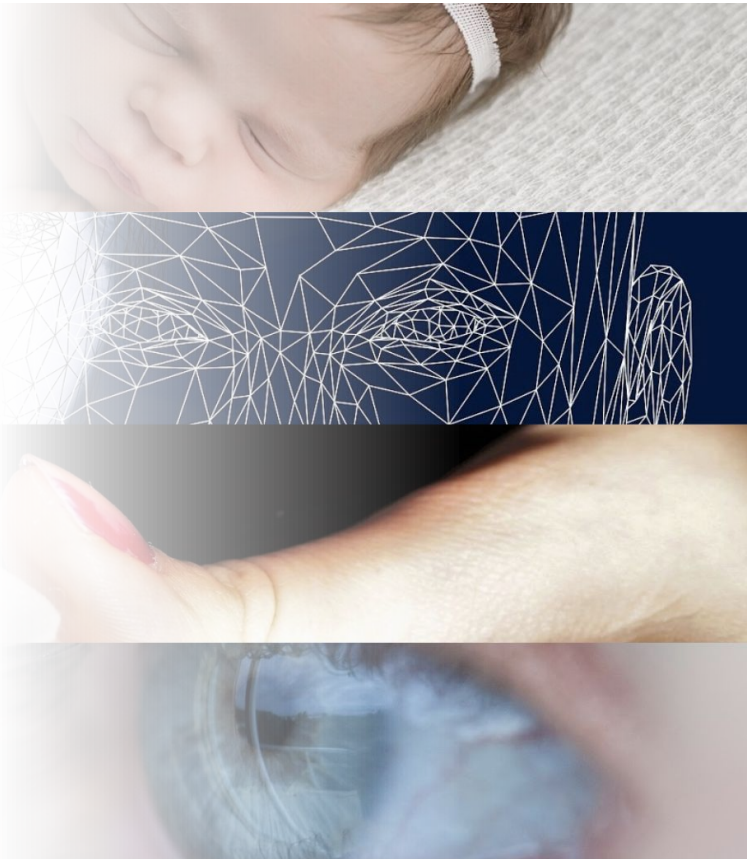
Cisgender, Heterosexual, Female



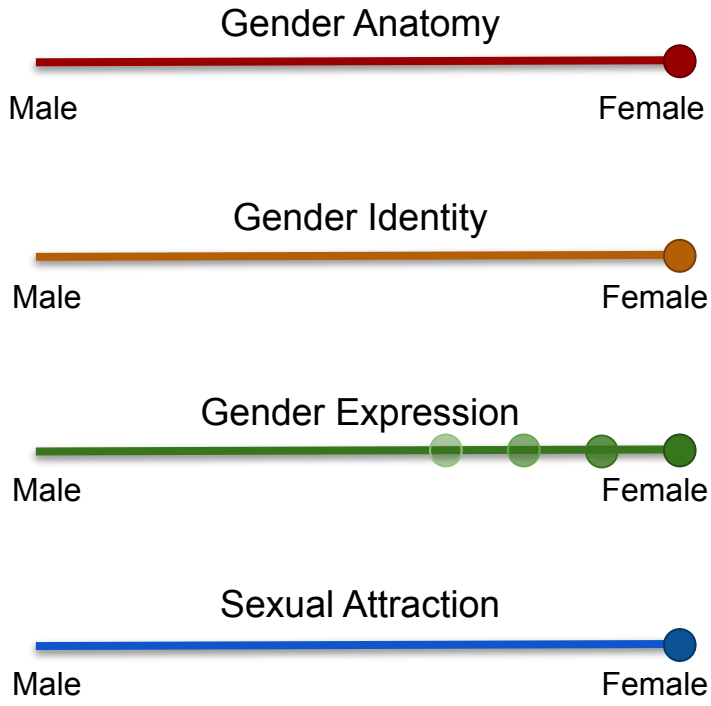


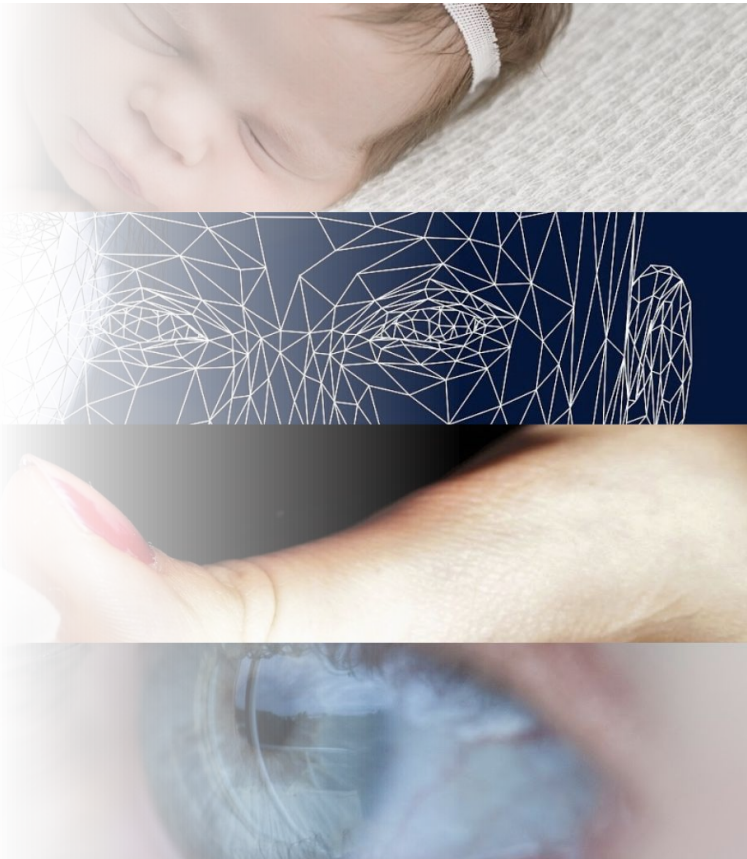
Cisgender, Homosexual, Male



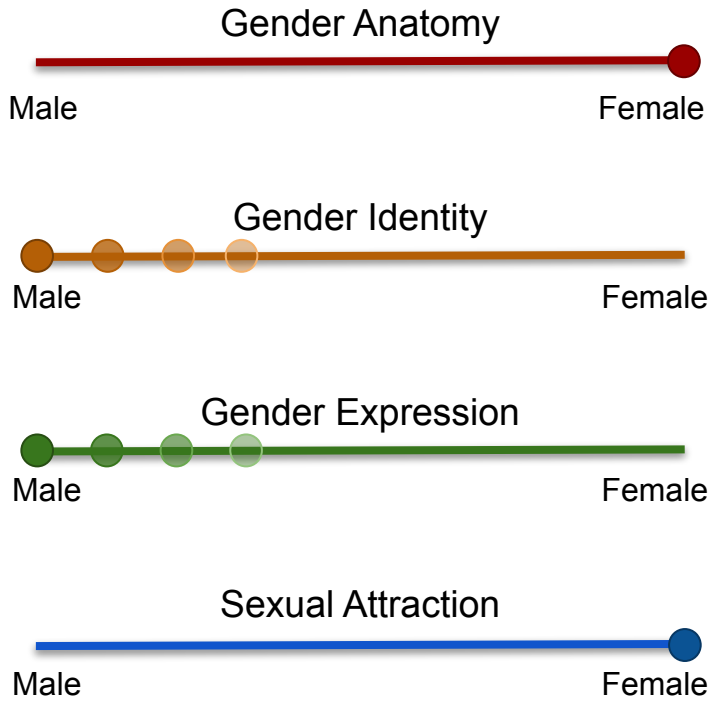


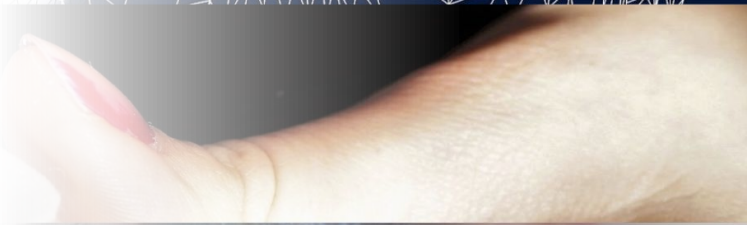
Cisgender, Homosexual, Female

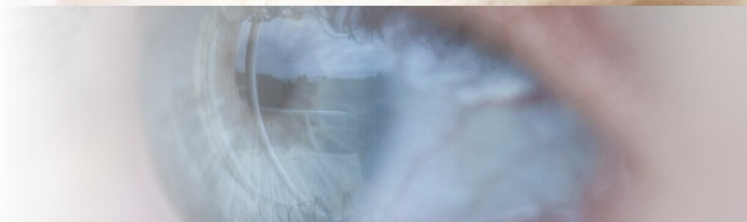




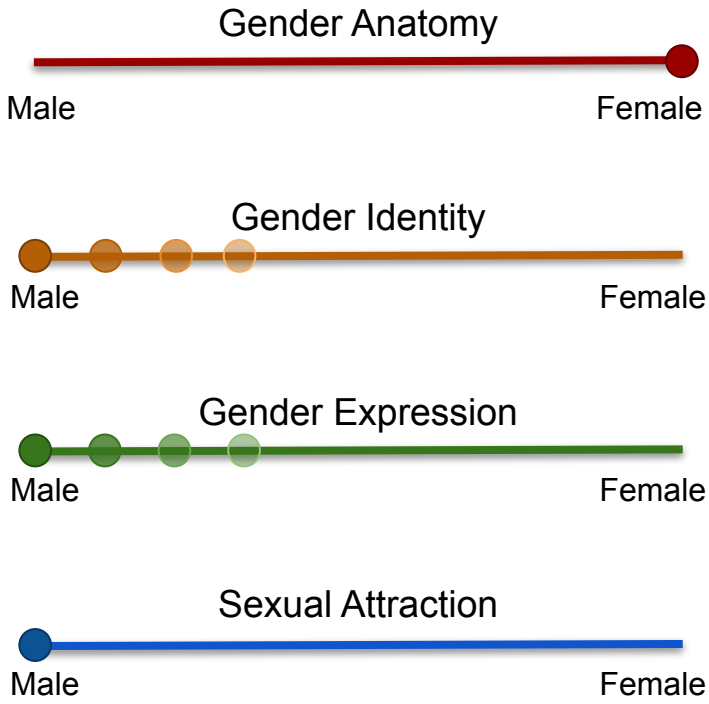
Transgender, Heterosexual/Gynosexual, Male

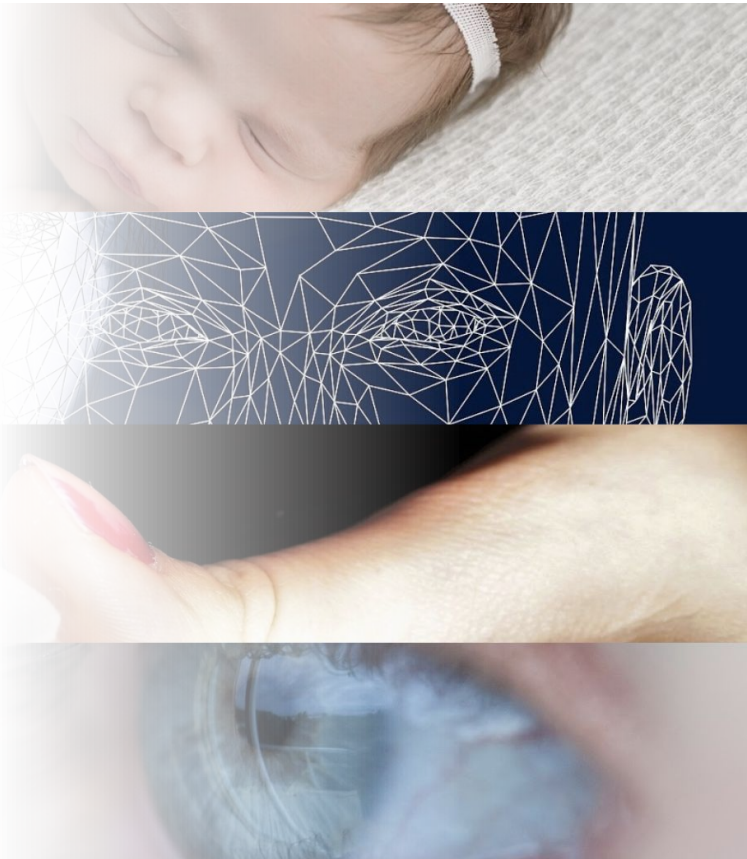




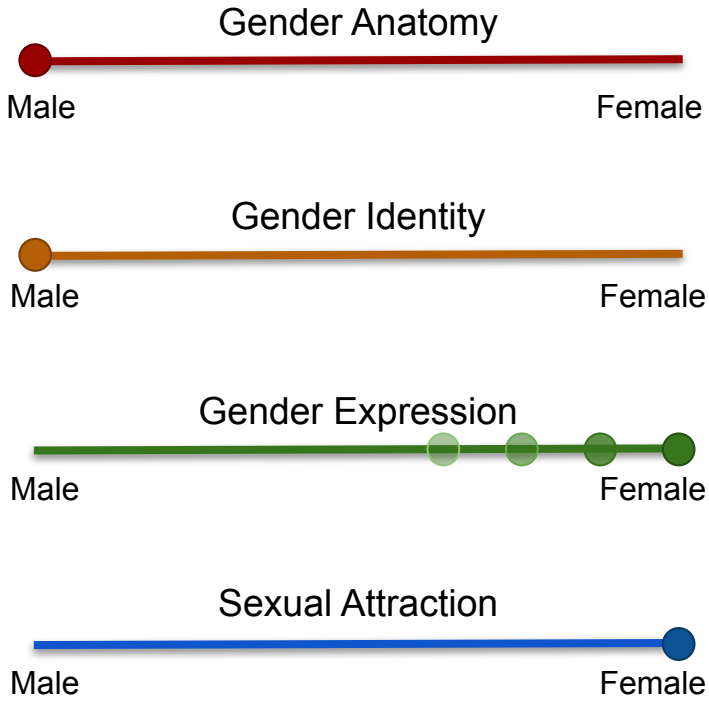


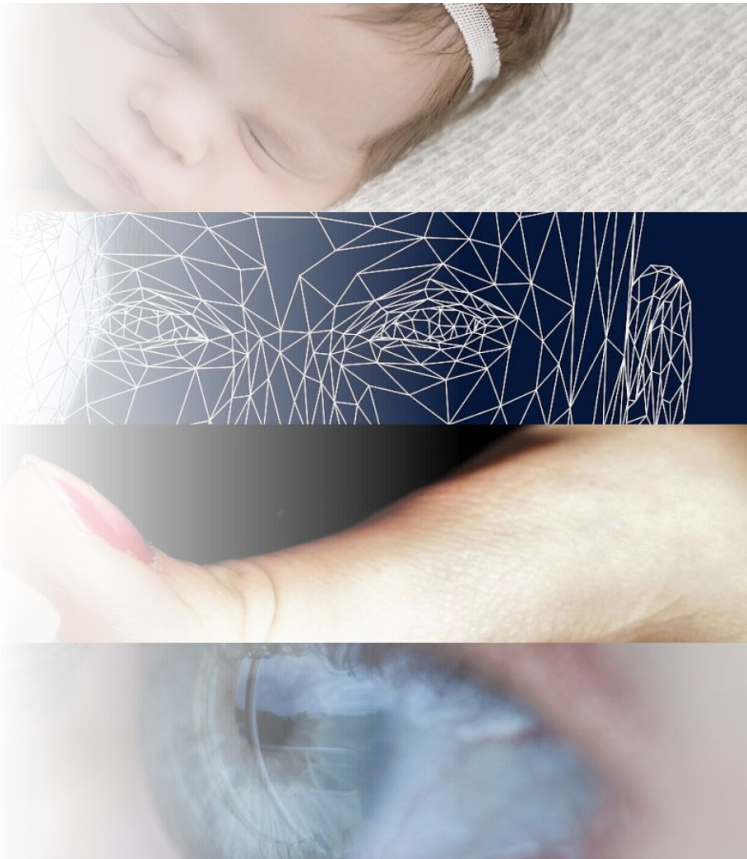
Transgender, Homosexual/Androsexual, Male



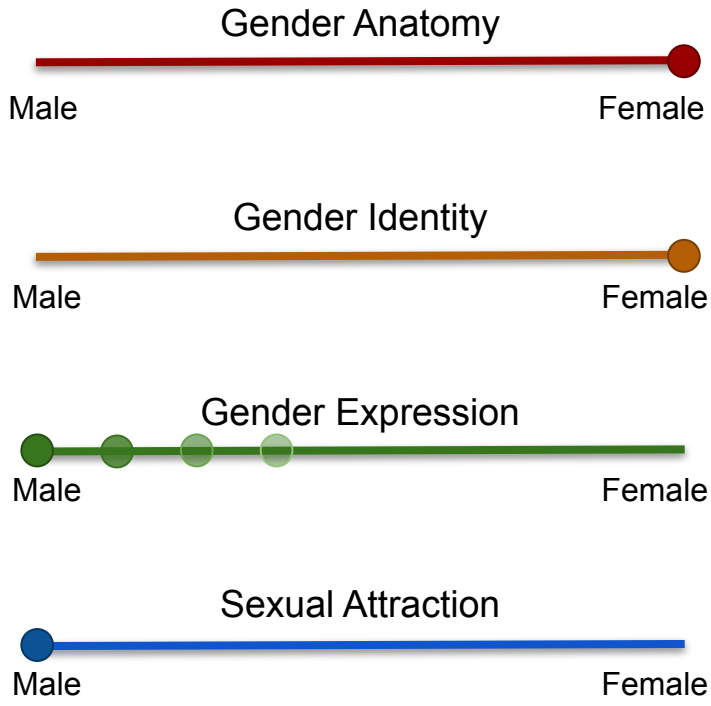


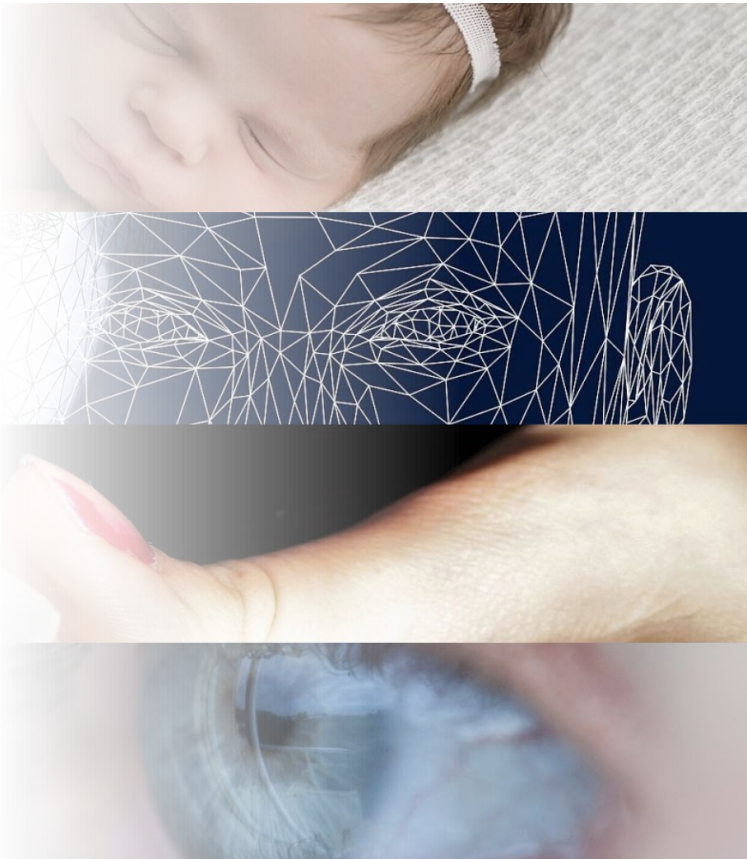
Cisgender, Heterosexual, Queer/female-presenting, Male



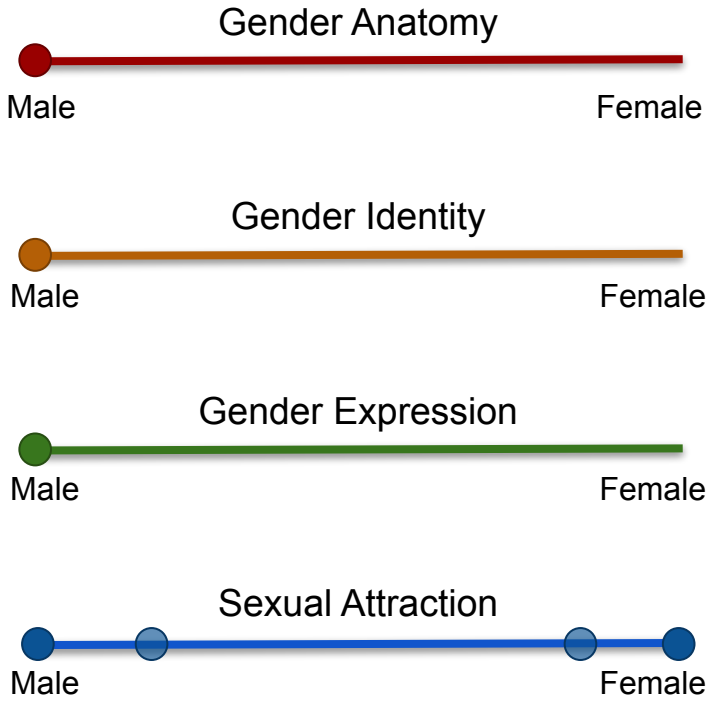


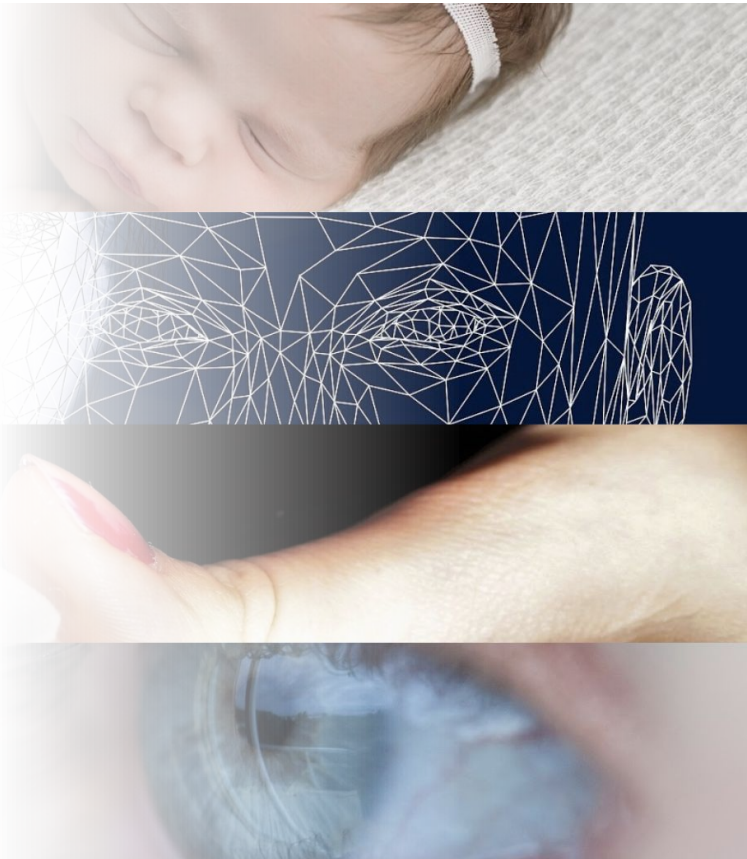
Cisgender, Heterosexual, Queer/male-presenting, Female



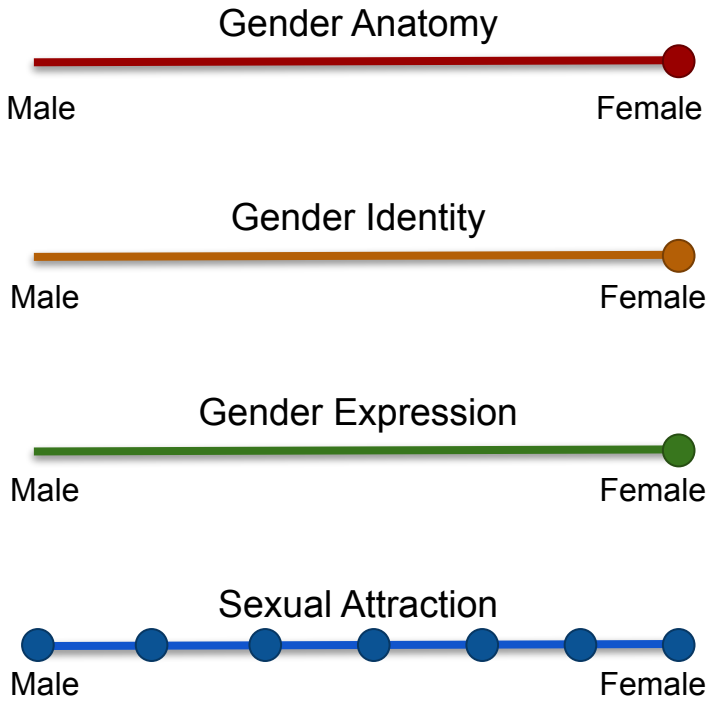


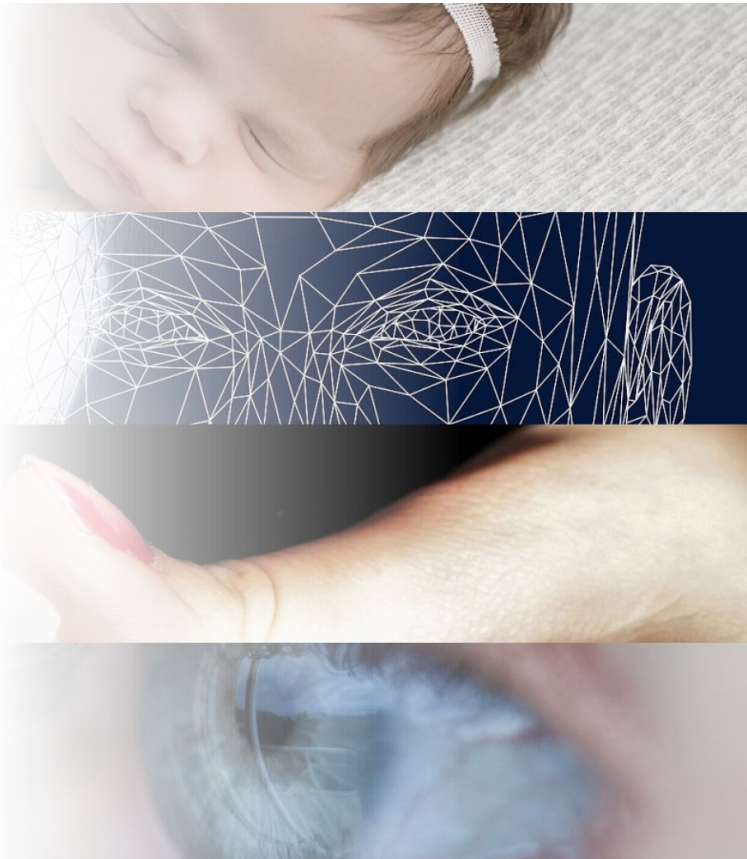
Cisgender, Bisexual, Male



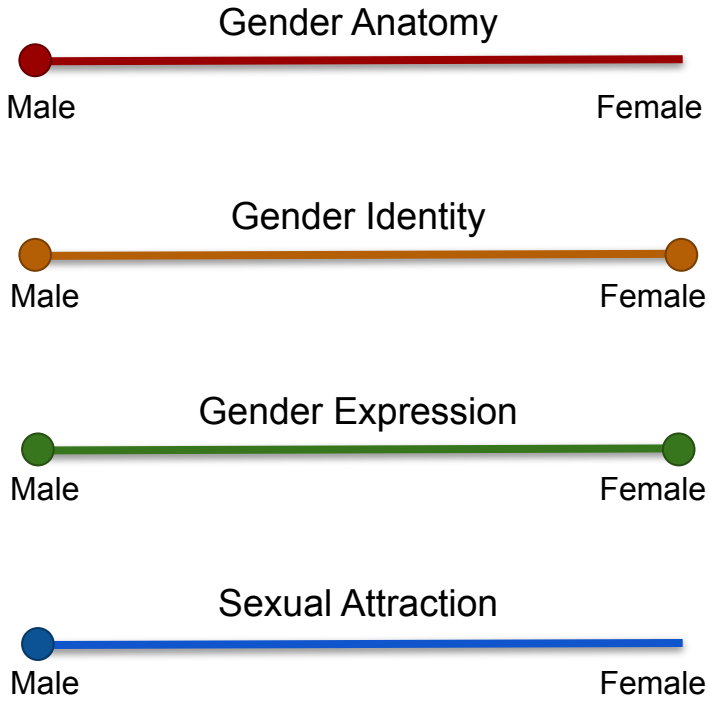


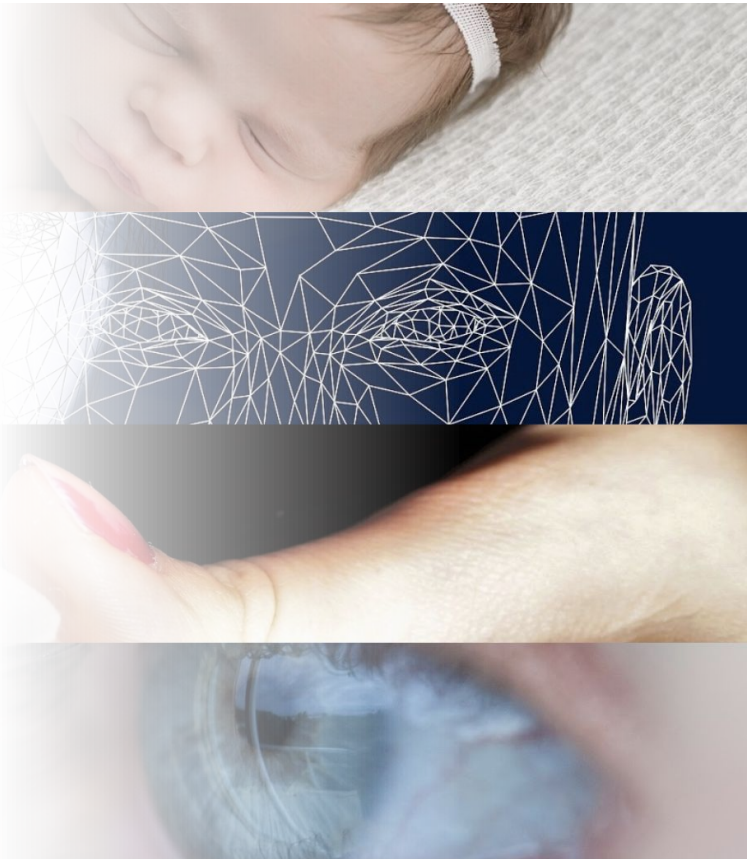
Cisgender, Pansexual, Female



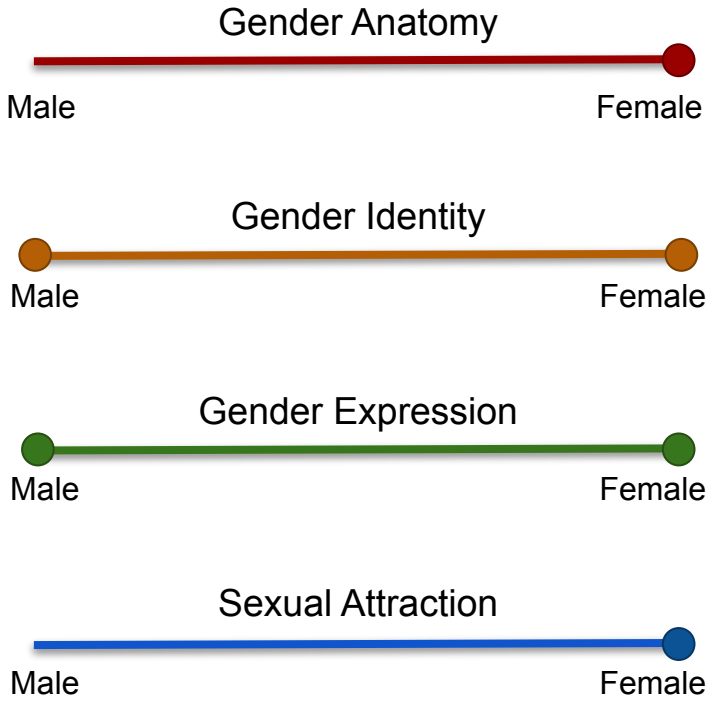


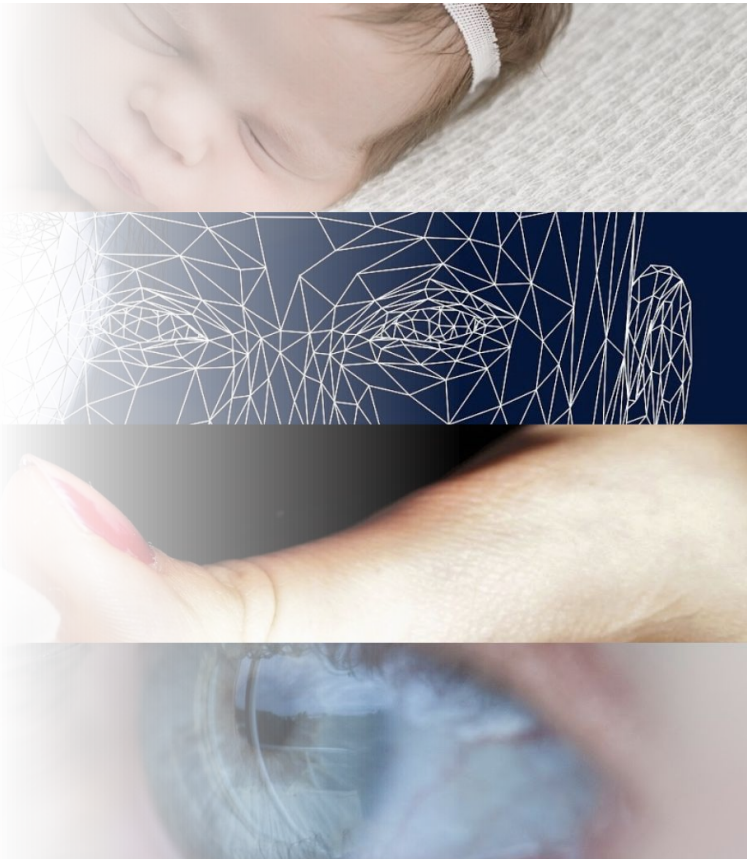
Bigender, Androsexual, Assigned Male at Birth



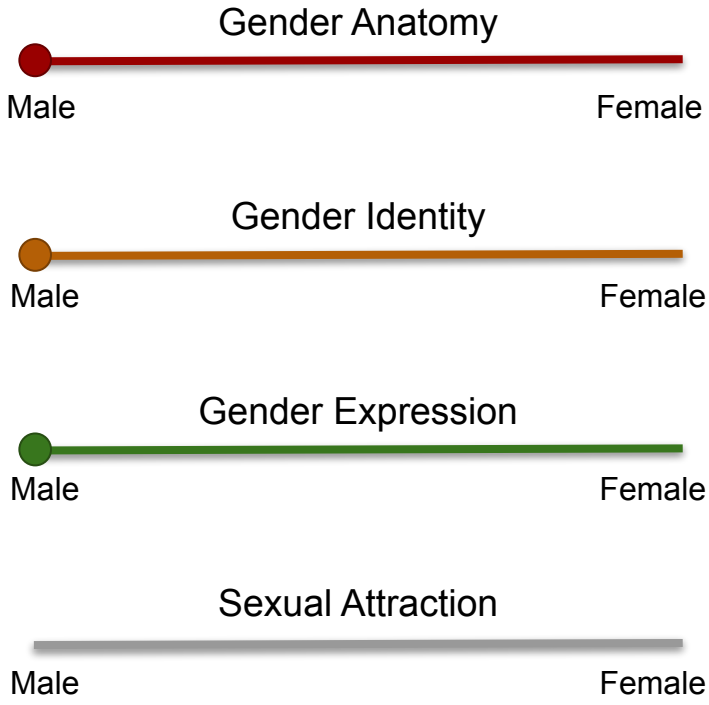


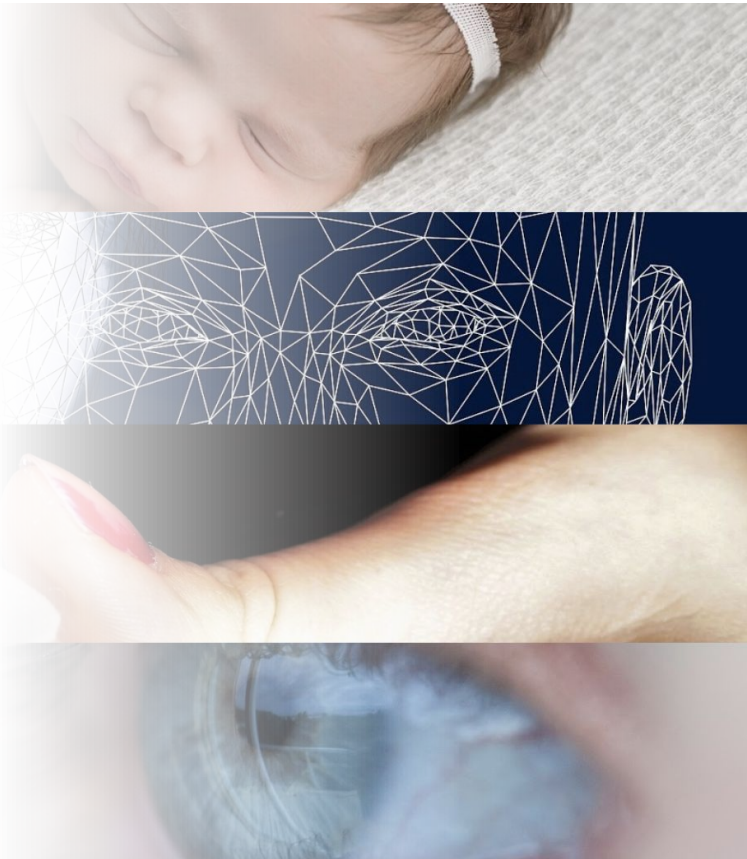
Bigender, Gynesexual, Assigned Female at Birth



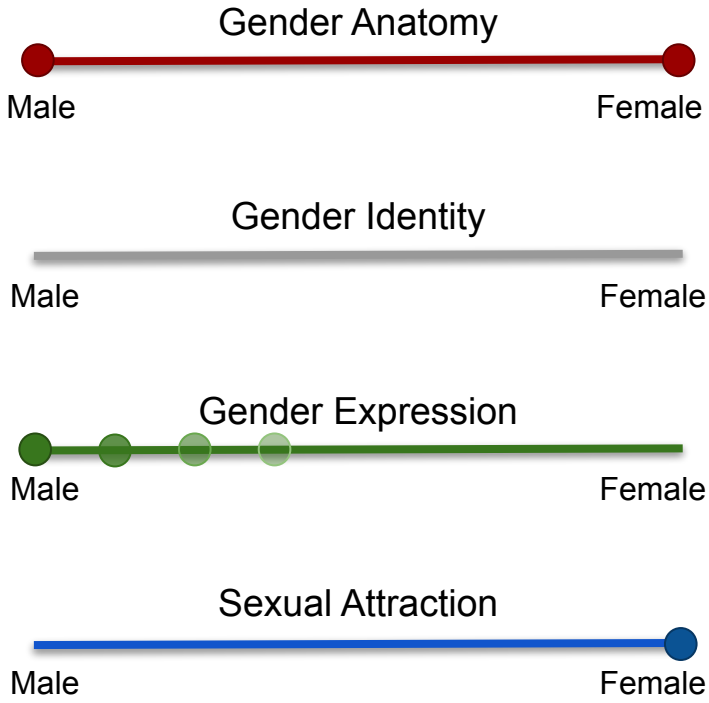


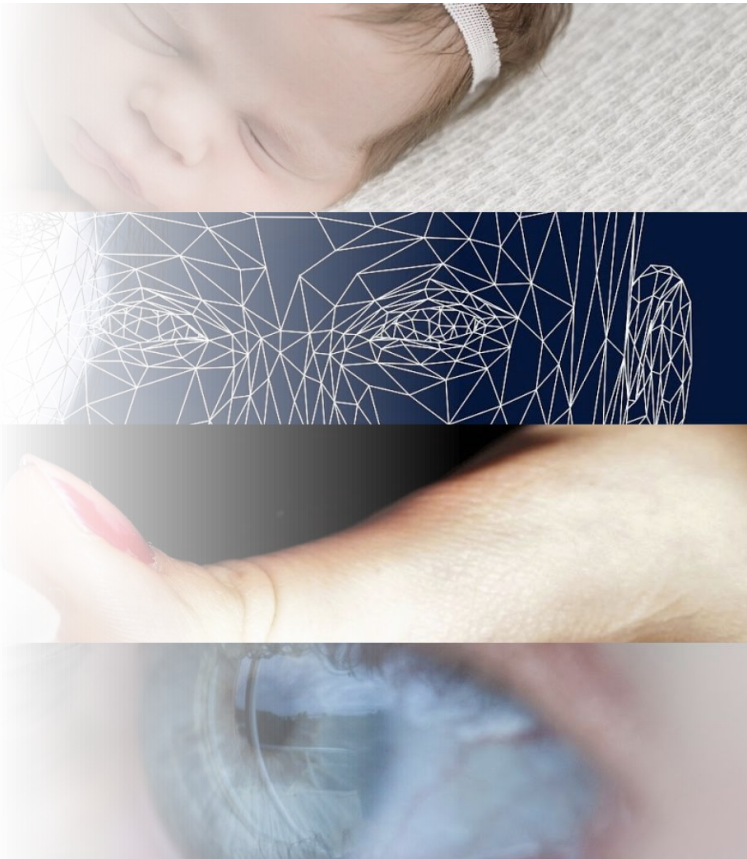
Asexual, Cisgender, Male



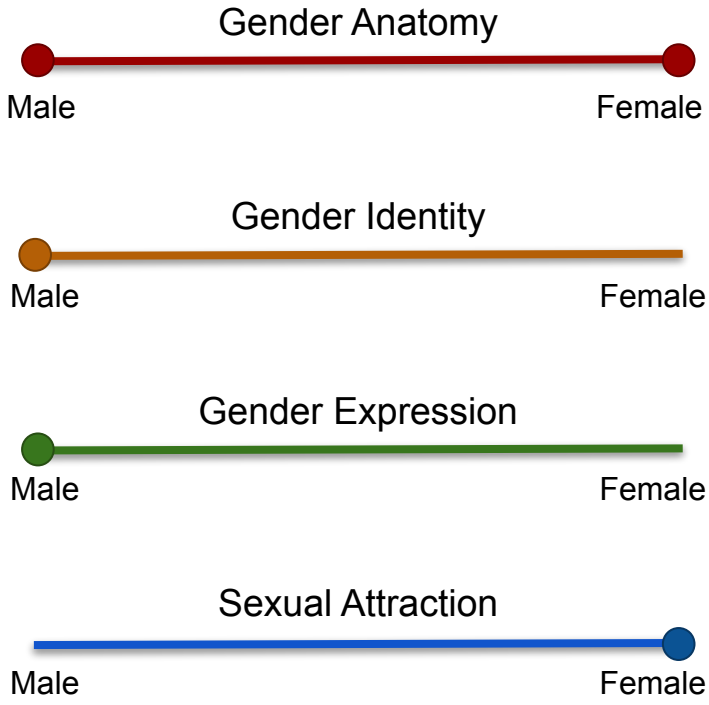


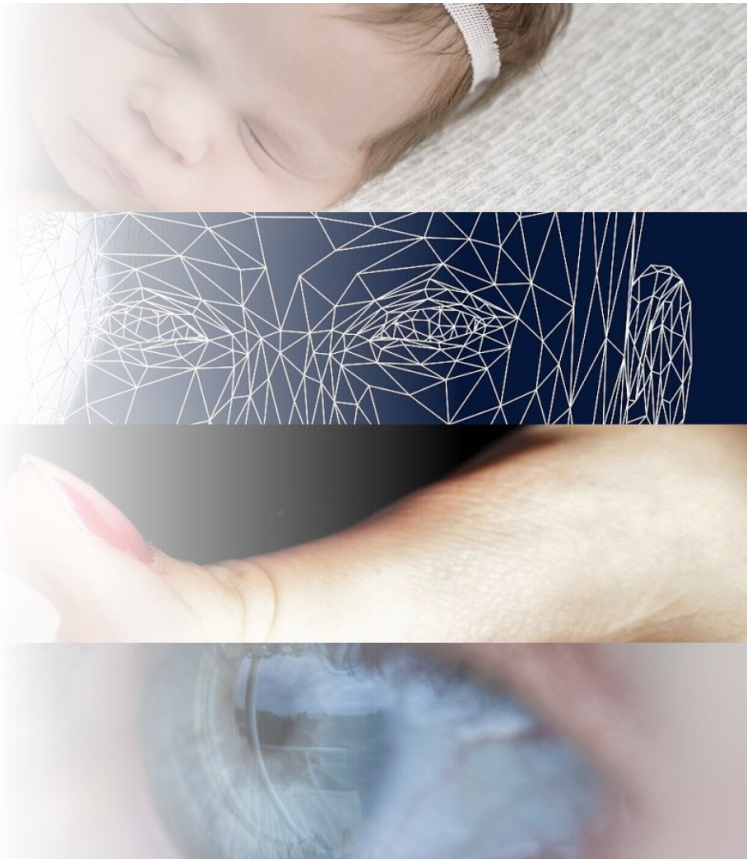
Agender, Intersex, Cis-passing Man, Gynosexual



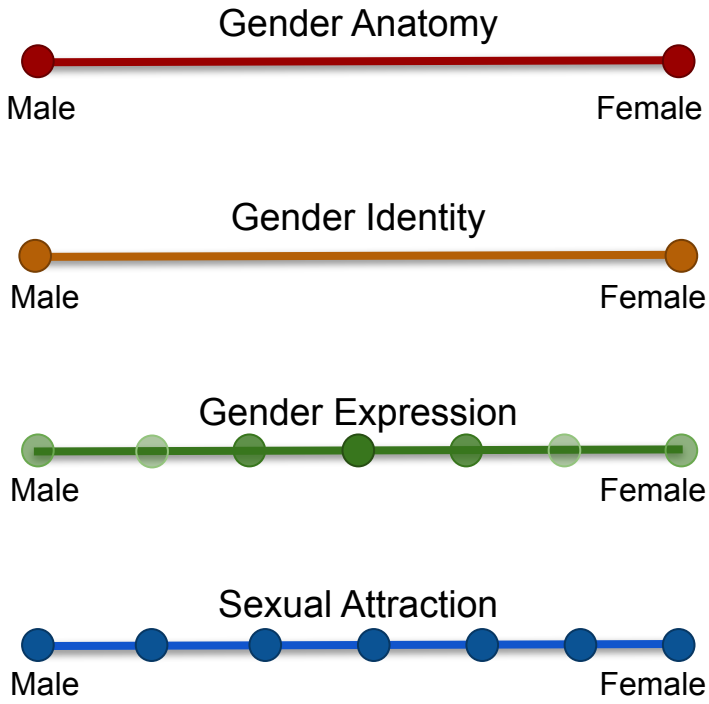


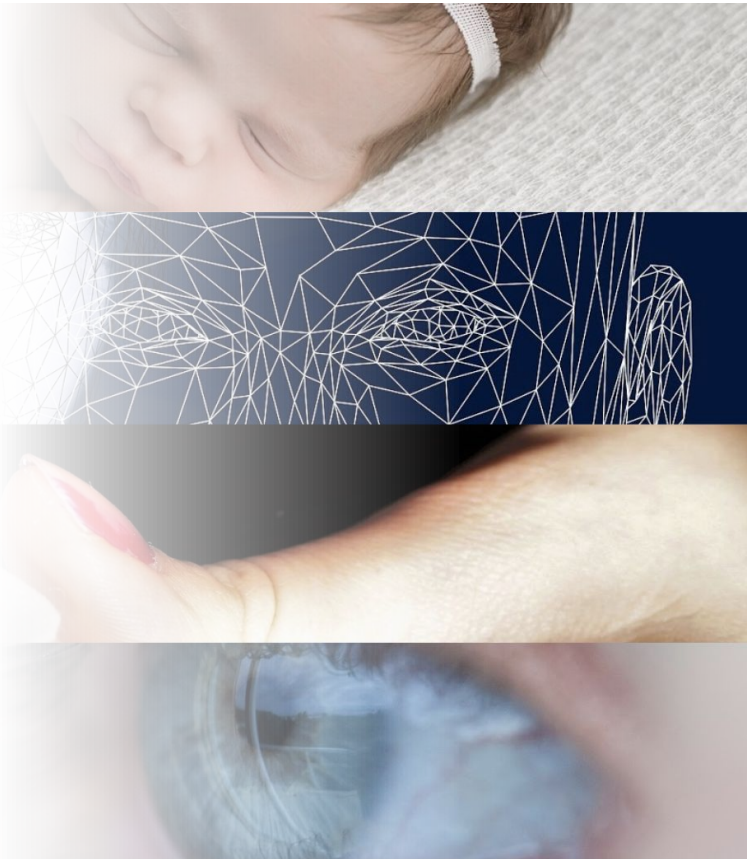
Intersex, Male-identifying, Heterosexual/Gynesexual





Intersex, Bigender, Androgenous, Pansexual





More Spectrums to Consider

Gender Anatomy at Birth

Male Female

Present Gender Anatomy

Male Female

Gender Identity

Male Female

Gender Expression

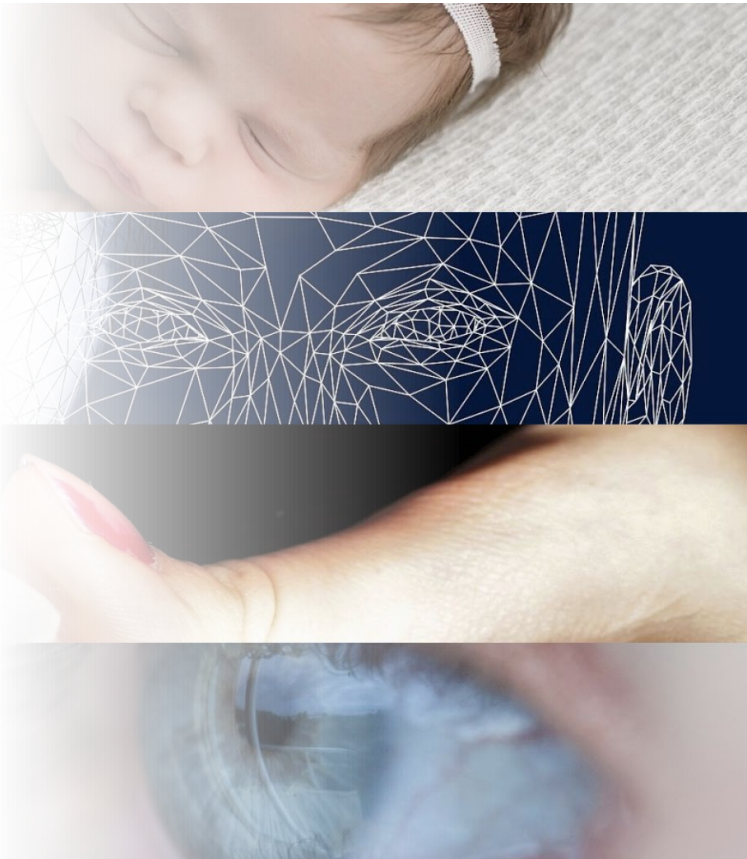
Male Female

Romantic Attraction

Male Female

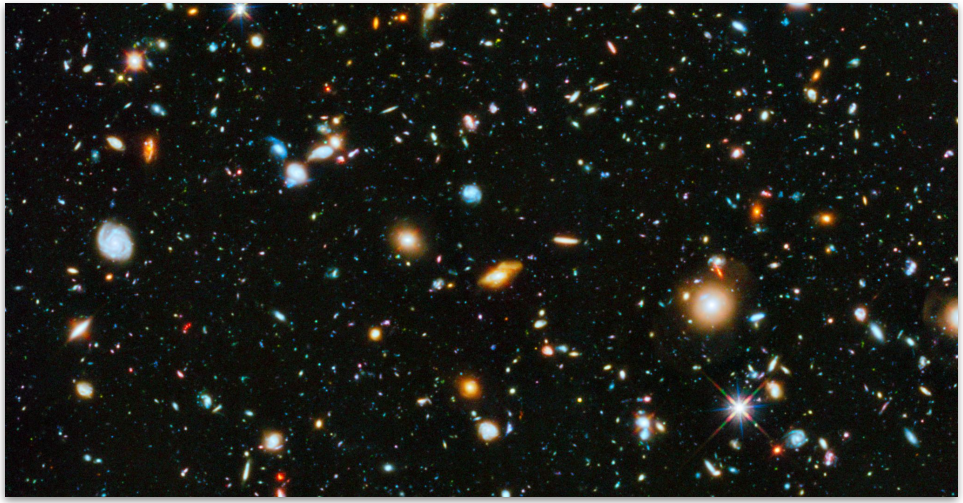
Sexual Attraction

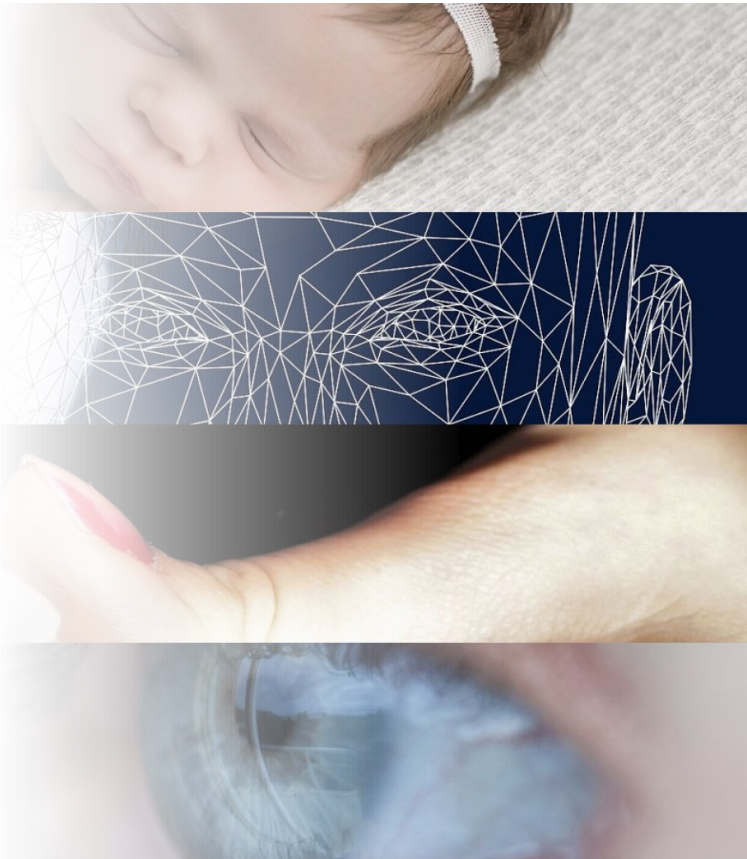
Male Female



Beyond Spectrums

The above presented gender and sexuality as linear spectrums between a binary. That approach may itself be too simplistic. As we learn more about gender and sexuality and its complex interrelationships, the more diverse it appears. What can we see and understand as we open our eyes?





Understanding Human Gender and Sexuality

Caleb Jones