



Egalite
Intersex
Ukraine



*Intersex people
are like everyone else*

**WHO ARE INTERSEX PEOPLE
AND HOW THEY CAN
BE ACTIVE MEMBERS IN THE SOCIETY
WHILE BEING THEMSELVES**



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The diversity of human society, the right of all its representatives to live a complete life, without experiencing harassment and humiliation, is the theme of the first Ukrainian publication about intersex people. Similarly to everybody else in society, they have the right for a humane treatment, equal health care, and legal assistance and maintenance.

This publication is addressed to all those interested in public life, who understand the heterogeneity of humanity and recognize the need to preserve and disseminate the principles of humanism in Ukraine and abroad.

Author: *Julia Poustovit*

Editor: *Alla Voloschenko*

Cover design: *Egalite Intersex Ukraine*

<https://www.facebook.com/IntersexUkraine>

egalite.i.ukraine@gmail.com

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**WHO IS THIS PUBLICATION FOR
AND WHY WE CREATED IT?**

It is not a new idea that many problems could be avoided or easily overcome if people have sufficient knowledge about them. Its relevance becomes even more apparent when the whole humanity, a country, a group of people, or a single individual become aware of the fact that, if they had known in advance about the problem, they would probably have solved it somewhat differently. It is particularly painful when the ignorance of an entire society leads to the sufferings of many people, because it is usually more difficult to correct a collective error than a mistake done by one person. And this is not only because of a different scale, but also because lately in the society this idea emerged that the majority is always right and the collective intelligence cannot be wrong, therefore anything that a minority proposes is false. The situation is aggravated by the fact that, while the knowledge in exact and natural sciences is impersonal and it is transmitted via different mechanical data, media and social knowledge about relationships and proper actions in society are largely reproduced and passed through live communication. Because of this reason, humanism, tolerance, kindness, and mutual assistance in a society cannot be established once and for all and then only enhanced. No, these virtues have to be recreated every time. This is why the moral qualities of a society or its ethical values are very vulnerable and volatile. If today something is considered unacceptable and evil, tomorrow it could be seen

as an absurd superstition, and vice versa. And, when a group of people suffers, they take their sufferings with them, and the next generations bother about it so little that they can make the same mistakes, condemning the next generations of citizens to suffer as well.

Can we get out of this vicious circle? Unfortunately, there is no explicit answer. However, in our opinion, not trying to do so while knowing that the current state can be changed is probably worse than simply committing evil acts out of ignorance.

Those who today are called intersex people and for many centuries have been called hermaphrodites can tell a lot about how the recognition, political expediency, and prejudices arising from the influence of religious and political or 'scientific' views destroy the lives of many people and keep the society as a whole in a state that is hardly civilized.

Therefore, the discrimination against intersex people in Ukraine and other former Soviet Union countries, along with legal harassment, the lack of adequate and often any type of medical care which these people need, and the 'normalizing operations' they had to go through in their childhood force us to address the society and inform it about things that have been well known for a long time in other countries and which do not lead to surprise and bias.

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Intersex people have always existed and they will continue to exist as long as the human race exists.

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Intersex people have always been and they will continue to exist as long as the human race exists. The earliest available information about them dates back to the first written and artistic sources. But there are especially many materials from ancient Greek history, upon which Western civilization is based.

It is no coincidence that the myth about the hermaphrodite was created in ancient Greece, because they were ruled by pantheism (polytheism) then and the gods competed with each other just like common people, and there was no notion of ultimate truth.

In the Greek mythology, Hermaphrodite (Greek Ερμαφρόδιτος) was the son of Hermes and Aphrodite. He was raised by the Naiads on Mount Ida in Phrygia. This golden-haired boy of great beauty, while bathing in the spring, stirred the passionate love of a nymph. But her plea for reciprocity found no response, and the inconsolable nymph asked gods to be eternally with her beloved one. And the gods united her and Hermaphrodite together into a single bisexual being.

However, the ancient Greek philosopher Plato wrote in his Dialogues that the gods created the first human in the form of sphere that combined two bodies and two sexes. Thus, he subordinated the reality to the symbol and underlined the divine qualities in man because hermaphroditism was usually seen as the exclusive property of the gods. So, according to Plato, there were hermaphrodites who combined two persons: they had four legs and four arms, but they were punished by Zeus for pride and were cut in two, and since then people are doomed to look for their other half.

Thanks to the spread of such ideas or maybe because of Plato's authority, in ancient times the attitude toward those who combined the features of both sexes was usually respectful. It was believed that the gods gifted them with special traits

and characteristics, which led to respect and admiration in the society. The evidence consists in numerous frescos, drawings on vases, and sculptures that have survived, despite the fact that in subsequent periods the attitude towards such people, similarly to all ancient cultures, has changed radically from respectful to hostile.

By the mid-20th Century, scientific and popular literature mostly used the term hermaphrodite (an organism that has properties of both sexes). Now it is replaced by the term intersex, which means the same thing.

HOW THE ATTITUDE TOWARDS HERMAPHRODITES HAS CHANGED. IN THE SHADOW OF HOMOPHOBIA. HISTORICAL ISSUES

After the ancient times began the next historical period, when sexuality and anything associated with the relation between the sexes if it was not aimed at procreation was condemned and suppressed. There was a time when Christians considered any relationship with the infidels, especially sexual, a sin, which had to be punished immediately and severely with death. Under such circumstances, any difference or otherness was deadly dangerous and, therefore, carefully hidden as it could have been easily interpreted as a manifestation of demonic forces. Later, with the beginning of the Renaissance, Europeans gradually became more tolerant and, during the Age of Enlightenment in the eighteenth century, in some countries, especially in the Protestant ones, the attitude toward people who were somewhat different ceased to be so intolerant. However, in the nineteenth century, despite the rapid development of science, took place a new re-evaluation of the issue and intolerance gained scientific, instead of

religious, base as some countries struggled for the purity of race or nation.

The important reason that directly affected the attitude towards hermaphrodites was the fact that, during the second half of the 19th Century, in many countries Charles Darwin's theory became popular as he believed that the whites were the better race and that black African tribes, like the Hottentots, would eventually disappear, as they were a lower race.

Darwin's racism had a huge impact on the American public and educators as it did practically all around the world. S.J. Gould (1941-2002) from Harvard University wrote in his classic book *The Mismeasure of Man* that the spread of racism in education and science is the consequence of Darwinism. As Gould notes, the biggest supporters of Darwin were the educated people, thus "statements in favor of slavery, colonialism, about racial differences, class structure, and the social roles of sexes in that time were spread referring to the scientific data." Given the fact that many scholars in the field of natural and social sciences as well as teachers professed Darwinism, the intolerance towards anything and anyone unusual quickly became dominant in the society. And the humanity still cannot overcome this attitude till this day.

And it remained like that for almost one hundred years, until 1975, when the U.S. Congress passed the act about the education for children with disabilities (*The Education for All Handicap Children Act*), aimed at teachers and school staff who were to become more sensitive towards children with special needs. A year later, the American Association of Psychiatry decided to remove the article about homosexuality defined as mental illness from the classifier of mental illnesses.

But, before it happened, the scientific community had to overcome a great deal of ignorance and prejudice. Today no

one doubts the idea that real science is based on experiments. Real scientists gather information and try to understand it while avoiding biases. True scholars do not draw preconceived conclusions about what is normal and what is not; they organize data and suggest how different pieces of information can be combined.

In human sexology, an example of this is a truly scientific method used by A. Kinsey and his colleagues who worked in the 1940s. Unlike most of his contemporaries, Kinsey did not define what was normal or abnormal himself, instead first he tried to gather and organize information about sexual behavior and then to present it to the public.

His conclusions that the biological variability of people was widespread and the percentage of non-heterosexual people was significant were unexpected and unpleasant news for both psychologists and psychiatrists since Kinsey's discoveries questioned their professional competence and ruined their reputation, and, hence, prosperity.

At that time, most scientists rejected his data and, because of his findings, Kinsey suffered baiting and was laughed at. Certain methodological errors give reason to doubt the accuracy of the data, but his reports *Sexual Behavior in the Human Male* (1948, reprinted in 1998) and *Sexual Behavior in the Human Female* (1953, reprinted in

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1998) undoubtedly produced a revolution in science as, till this day, every serious research on human sexual behavior refers to them.

At that time, only a few human rights organizations were in existence, however, using the works of A. Kinsey, they were able to make a strong case in arguing that biological variability is a natural and common phenomenon and its carriers are normal citizens, and not some perverts, criminals, or outcasts.

For a long time, various denominations of Christians strongly believed that any sexual relation not leading to conception was illegal and 'unnatural'. Since the early Middle Ages, all the other sexual relations were considered extremely immoral.

For centuries (from ancient times through the Middle Ages and modern times) intersex people were essentially invisible in the shadows of people accused of immorality. For a long time, all such biological characteristics were treated by society and state as a sin of Sodom. Given such a rigid criminalization, it was life threatening to reveal one's otherness publicly.

Not less dramatic fate had 'other' people in the Soviet Union, where a criminal article of law for homosexuality was introduced in the early 1930s. This article of the repressive machine of the state got to be often used against dissidents and civil servants from the party apparatus to discredit them and to eliminate competition. At that time, intersex people were in fact forgotten. As we know, the Soviets denounced as criminal anything they could not control. Since it was difficult to control human biological variation, the Party decided to prohibit and criminalize everything that was even a little different from what was considered the norm. Therefore, in the Soviet Union, any surgical operations on intersex children were hidden from society and even from the parents of these children. The victims of such acts were thus left to wander in the darkness of uncertainty and lack of understanding of themselves, their state

of being, and their features. For example, there was a case of a five-year-old boy who was operated on to have the bladder diverticulum removed and the surgeon (as doctors told more than two decades later) also removed the patient's female sex organs. Unfortunately, the society had no idea that such people had been experiencing a lot of adversities over the years and often they still continue to suffer.

One sign of biological 'otherness' are sexual relationships. For some people, gay relationships are natural, they are a stable form of sexuality, which is formed as a result of heredity factors, characteristics of fetal development, childhood experiences, cultural environment, and so on. None of the factors is 100% necessary or sufficient.

Deeply rooted mystery and the desire to conceal their biological features led to the fact that even experts, not understanding the core of the problem (often they do not have sufficient knowledge), confuse intersex people (imposing their diagnoses and stigmatizing them) with transgender. Fearing unpleasant situations if their otherness is revealed, people who realize this fact often experience depression. Some are able to perceive the reality and accept themselves as they are, as they are created by nature; others die, and a lot of people suffer over the years from mental trauma caused by close relatives/friends and by society at large.

There are cases of people who begin to hate themselves and want to find a 'cure', to change. Unscrupulous and uneducated consultants lure such individuals in dubious communities where they are surrounded by fear and disgust; there patients constantly undergo brainwashing, the so-called 'reparative therapy'. The author of this brochure knows of the case of a certified candidate of psychological sciences who promised to turn an intersex person into 'a real man'.

A negative attitude toward the slightest deviation from

the officially recognized normative behavior had been cultivated for centuries, situation which pushed the intersex people into wanting to remain unnoticed for the most part and only recently they have begun to seek the right to be included in public life—along with the right to decide for themselves who they are, who they communicate and have a relationship with, and not give this right to the society, doctors, or even parents. Maybe one day discrimination of intersex people will become as unacceptable in our society as prejudice against ethnic and religious minorities or as the restraining the rights of women (which now is almost forgotten), and will be perceived as something absurd. There is some success already, however still a lot needs to be done.

The problem of the protection of the rights of the intersex is thus primarily a problem of the protection of human and civil rights. Protecting the rights of minority groups means restricting individual rights because a person is assigned to a particular group, which, at the same time, becomes separated from the society and thus opposes the majority. But to unite different intersex people into one group means to limit the recognition of their special characteristics and individuality and to simultaneously separate them from the rest of a diverse humanity. Therefore, in our view, it is necessary to achieve the level at which the rights of all citizens to medical care, legal assistance, labor, etc. will not only be declared by the state, but will actually apply to the real people who live here and now and not in some ideal tomorrow. We believe that this approach to the protection of intersex rights as individual citizens would pave the way for a consistent respect for the rights of all people without exception—regardless of their biological sex, sexual preferences, gender identity, race, religion, age, and so on.

HUMAN RIGHTS AND EDUCATION. THE RESPONSIBILITIES OF FAMILY AND SOCIETY

When talking about the rights of intersex and others who experience discrimination, it often seems that we use ‘the right rhetoric’, which really only blurs content and replaces concepts, creating a situation in which society is not encouraged to solve the problems of people who constantly live with limitations of their rights and legitimate interests.

Here is a fairly typical quote: “Families are different. There is no uniform family that would unite all possible forms of family relations. However, heterosexism in the Ukrainian society and the lack of public policy aimed at the protection of human rights create a situation in which only one type of family is considered normal and becomes privileged—covenant by which a man and a woman establish a partnership with each other, while others are ignored. Among them, gay families are perhaps the ones most exposed to discrimination. They are completely deprived of social guarantees from the state, public recognition, and support of their maternal families.”

This quote includes and combines so many different problems and discourses that even for a sympathetic reader it is hard to grasp it all at once. Let’s start from the

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True scholars do not make preconceived conclusions about what is normal and what is not; they organize data and suggest how different pieces of information can be combined.

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end. Social guarantees from the state, public recognition, and support of maternal families (why not paternal?!?): these are questions that belong to different levels and they have different jurisdictions.

Whether to support a child or not is a private family matter. These are personal relationships, which depend primarily on the personality of the parents as well as on their cultural environment.

The problem of the society is primarily a problem of education. If children are taught to be tolerant and to respect racial and gender equality, individual citizens and society in general will learn to accept its diversity, not to treat it as something strange, incomprehensible, so secret and hostile, and therefore potentially dangerous and aggressive.

DISORDERS OF SEX FORMATION

Understandably, parents and especially children want to know why it happened, why they have certain inherent features—endocrine, genetic, etc.—which make it difficult to explicitly determine their sex. But even nowadays medicine cannot give comprehensive answers.

It is known that sex formation has a number of successive stages: formation of gonads, internal, then external genitalia formation, and formation of secondary sexual characteristics. This process is regulated by genetic and hormonal factors.

Between the 4th and 5th weeks of fetal development primary gonads are formed. Karyotype (typical set of morphological characters) of humans consists of 44 autosomes and 2 sex chromosomes. At the genetic level, the sex of the embryo is determined by a set of X and Y chromosomes. The set contains genes that determine the sex formation. During insemination,

the genetic sex of a child is formed: if a spermatozoon carries the X chromosome, the genetic sex of a child is female (the set of sex chromosomes is XX); if it carries the Y chromosome, the genetic sex of a child is male (the set of sex chromosomes is XY). Now scientists have localized about 100 genes in the Y chromosome. To form male reproductive gonads the presence of the Y chromosome is required, because it contains the gene responsible for the synthesis of the specific protein surface—the HY antigen. This antigen determines the development of male gonads.

So, if sex chromosomes contain the Y chromosome, the testicle is formed; it is fully developed only if there are both X and Y chromosomes. The proper formation of ovaries requires the presence of at least two XX chromosomes. A normal female gonad is formed by the karyotype 46XX.

Subsequently, internal and external genitalia are formed. In the beginning of the embryo's development, the presence of female (paramesonephric or Müllerian) and male (mesonephric or Wolffian) ducts is observed. To create reproductive organs two pairs of ducts—Müllerian and Wolffian—are needed, and they open into the urogenital sinus. The female internal reproductive organs are formed from Müllerian ducts; the male ones, from Wolffian. The internal and external genitalia formation in male fetuses is an active process. Certain cells in the fetus' testicles synthesize a hormone that suppresses the development of the Müllerian ducts; in testicles, more and more testosterone is synthesized and, as a result, the Wolffian ducts differentiate into seminal vesicles, ejaculatory ducts, and the appendix of the testis. In the absence of the active influence factor that slows down the formation of Müllerian ducts, these develop and the uterus, upper vagina, and fallopian tubes are formed. Usually, in this case, the Wolffian ducts regress. Both male

and female external genitalia and the urethra develop from the urogenital sinus, genital (also known as phallic) tubercle, and the labia-scrotal swellings.

FORMATION OF GENITALS.

INTERNAL REPRODUCTIVE ORGANS

Starting with the 10th week of fetal development, a large amount of testosterone is synthesized, which influences the formation of external genitalia. Besides testosterone for the external reproductive organs, the differentiation of its active metabolite dihydrotestosterone is needed, which is produced directly in tissues due to the activity of the correspondent enzyme. Under the influence of hormones, the urogenital sinus turns into prostate and the inner part of urethra. The urethral crest is transformed into the urethra and the cavernous body of the penis. The genital tubercle forms the glans penis. This is anatomically homologous to the clitoral glans of females. At the end of the first trimester the reproductive organs are fully formed.

EXTERNAL GENITALIA

When a child is born, he or she has fully formed sex organs. The gonadal sex of healthy children and the structure of their internal and external organs, i.e. phenotype or the morphological sex, fully corresponds to their karyotype or genetic sex.

During the postnatal stage of development a child has to undergo other very important stages of sexual formation—puberty and sexual maturity. Therefore, the development of the sex organs of a healthy person is completed only at the end

of puberty. After that an individual is able to perform his basic biological function—to reproduce.

SEX DEVELOPMENT DISORDERS

The fact that the person is intersex can be revealed at any time in their life: immediately after birth, in early childhood, during puberty, or even in adulthood. There are cases when a person does not suspect anything to be special about themselves. Main causes of sex development disorders (SDD) are chromosomal or more subtle genetic abnormalities. Sometimes there is a wrong number of sex chromosomes or their structure is broken. It can also happen that the genes that are responsible for sexual differentiation are damaged. Sex development can go wrong if there is a pathology of autosomes or rather genes that are located on autosomes but are indirectly involved in the sex formation. Rarely sex development disorders are caused by hormonal imbalance of pregnant women (hormonal drugs or hormone-active tumors) and/or the hormonal function of the placenta.

The action of these unfavorable factors that disrupt the normal processes of sex formation can occur in the following two ways:

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...to unite different intersex people into one group means to limit the recognition of their special characteristics and individuality and simultaneously separate them from the rest of a diverse humanity.

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1. Abnormal factors that prevent the development of typical gonads, which leads to the wrong genitalia formation.

2. Gonads are fully formed. In these cases, disorders related to sex development can be caused by a congenital defect of testosterone synthesis or dihydrotestosterone metabolism, low sensitivity of target tissues to the action of sex hormones, and increased levels of sex hormones of non-gonadal origin.

Let us define the semantic content of the words 'sex' and 'gender' and the terms associated with them. In English, the word 'sex' has two main meanings: 1) the sum of the characteristics that distinguish organisms on the basis of their reproductive function and 2) short for 'sexual intercourse'. In Ukrainian, there are two different words and the word «стать» (sex) can be either male or female, depending on the anatomical components. That is also how the word 'sex' was understood in English literature until the middle of the 21st Century. In the late 19th Century, the meaning of the word had somewhat expanded, and it began to determine the anatomy of sexual organs, their functions, and the differences between man and woman. By the middle of the 20th Century, it began to mean also sexual behavior and sex appeal. The word started not only to determine the category but also the phenomenon itself and the process associated with it. As the word 'sex' began to be used in the sense of 'coitus' (sexual intercourse), it acquired 'dirty' meaning, and, in order to determine cognitive, behavioral, and personal characteristics that distinguish men and women, the term 'gender' was offered. As the time went by, the word 'sex' was more and more commonly used in everyday life in the sense of sexual intercourse, so a tendency to use the word 'gender' as a euphemism to distance from the negative meanings of the word 'sex' emerged. All this information should be taken into account when reading literature dedicated to the study of such phenomena as 'sex' and 'gender'.

GENDER CRITERIA OF PEOPLE

Ancient Greek cultural tradition proclaimed the domination of men over women (especially when it came to social life) to significantly affect the development of the scientific understanding of the anatomical differences between the sexes. Aristotle believed that sex was created for reproduction, and an active participant in this process was the man and the passive one was the woman. He considered a woman to be only a miniature man: what a man has outside, a woman has inside her body. Aristotle considered the vagina an analogue of the penis, the uterus an analogue of the scrotum, and menstruation he believed to be the equivalent of ejaculation. It is significant that in ancient times ovaries were called the same as testicles and the special anatomical term for vagina was completely absent before the 18th Century. According to I. Cohn, such idea of the supremacy of men remained widespread in science for a long time.

HOW SEX IS DETERMINED

Is it possible to determine with 100% accuracy the sex of a person based on their appearance and behavior? The accumulated experience in science shows that sex is a much more complex phenomenon than most people think. There is a whole set of sex criteria and not all of them are visible to the naked eye. In the medical and psychiatric practice, there are cases of children who looked like girls and later turned into men, and individuals with female bodies (female phenotype) according to their genetic characteristics who were actually men.

So, an everyday question about one's sex turns out to be not such a simple and obvious one. The mechanism of sex

determination is a complex and multi-dimensional process. Any deviations from the species' norm can lead to paradoxical results, especially for a novice observer. In some cases, the distinction between genetic factors (e.g., XY genotype) and the external morphological indicators of gender (female appearance) is not visible. A woman can live her whole life not knowing that her genetic gender is male and a man can never learn that his cells have an extra female chromosome.

The situation gets even more complicated if people are mosaic chimeras, meaning that their bodies contain XY and XX chromosomes at the same time or that one body has both male and female cells. This combination can cause unexpected results, depending on which organs and tissues in the body are mosaic. From biology we know that sometimes two eggs grow in a female ovary and they are simultaneously fertilized by sperm. Both fertilized eggs begin to divide and in rare cases they can merge into one germ. Embryo-chimera develops and grows into a person who in fact consists of two individuals. In exceptional cases, one hemisphere of a person's brain develops according to the mother type and another according to the father type. Such individuals may look like males or females, and their behavior does not depend on the genetic constitution of their gonads.

In medical practice and jurisprudence, it is sometimes necessary to objectively identify an individual's sexual characteristics. This need induced sexologists to develop a set of clear criteria that illustrate the importance of this type of expertise. For example, in 1968, the International Olympic Committee introduced compulsory sex chromosomal tests for female athletes. In this case it would be better to clarify that sex differences, including the physical, physiological, and psychological ones that determine the possible level of athletic achievements are limited by the sex (not sex related). Obviously, they are a direct consequence of differentiated gene

expressions that have both male and female individuals. These symptoms can have either a dichotomous or a continual nature.

Thus, the question about a person's sex at first seems easy, but in real life can not only be difficult but also very delicate. Today, the most objective and complete scheme is considered to be the one proposed by the American sexologist John Money. This scheme takes into account the complex way of sexual formation during individual development and is based upon eight criteria (*or components*) of sex. This includes six biological components: *genetic, gonadal, intrauterine hormonal sex, internal morphological sex, sexual differentiation of the brain, and hormonal pubescent (external morphological) sex*. The last two criteria are connected to the psychological and social factors—education and self-identification.

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Genetic sex

The first criterion in the Money's list is chromosomal (or genetic) sex. Genetic differences between women and men are a fundamental phenomenon of gender; they create the basis of sexual reproduction. Most mammals, including humans, inherit two sex chromosomes—one from the father, another from the mother. Women have in their chromosome set two X chromosomes

(the female genotype is XX) and men have one X and one Y (respectively, their genotype is referred to as XY).

The sex of a baby depends on which of the male sex chromosomes in the sperm fertilizes the egg. If the X chromosome, it is a girl; if the Y—a boy. As male genotype carries only one X and one Y chromosome, men have a single set of genes related to sex, while women have a double one. Therefore, any genetic abnormalities located in the male X chromosome often have some external manifestation. In contrast, it is unlikely for any unusual genes located on the female X chromosome to show themselves in the phenotype (external appearance).

This happens only in closely related marriages, such as between first or second/third cousins. In most cases, the 'healthy' genes in the female chromosome pair would prevent the clinical expression of the disease in women.

A common example of the illnesses related to gender is hemophilia and color blindness (Daltonism). Both diseases occur mostly in men. For example, Prince Alexei, the son of the last Russian Emperor Nicholas II, suffered from severe hemophilia. However, none of his four sisters or the mother who gave her son the hemophilia gene had any signs of the disease. A carrier of the hemophilia gene was also Queen Victoria.

Often the female sex in humans is regarded to be basic and more resistant to the environment than the male. Scientists believe that the X chromosome is more active than the Y, and it carries many genes that are necessary for the normal functioning of both the female and male body. As women have two X chromosomes, in literature the question of how female sex chromosomes produce the appropriate amount of the necessary compounds was often raised. Relatively recently, in 1995, N. Williams discovered that in the human genotype there is a special dosage compensation mechanism that levels the expression of the X chromosome's genes in males and females.

Let us note that the latest research of the structure of the Y chromosome showed that many concepts about it were mostly wrong. First of all, in its structure there are not 40 but 70 genes; secondly, the male chromosome is replete with so-called mirror fields (complexes that duplicate the structure of each active gene). They allow to 'repair' the genes that are damaged by mutations. This mechanism ensures the stability of the male organism, neutralizing the effects of genetic abnormalities on the Y chromosome. In fact, mirror fields play the same compensatory role as the healthy gene on the second X chromosome, if the first one has a defect.

The presence of a XY or XX chromosome set determines the human gender. However, this fact does not imply that a zygote (fertilized egg) with this set of sex chromosomes will develop into an individual who will have the correspondent phenotype. There are cases (e.g., 5 α -Reductase deficiency, which is an autosomal recessive intersex condition) when supposedly a girl is born, but, when puberty begins, the individual undergoes significant morphological transformations and can become a fully formed young man.

Gonadal sex

Another important criterion in Money's list is the differentiation of embryonic gonads (reproductive organs). Mammals' Y chromosome has a specific gene that was identified as "the part of the Y chromosome that determines the sex." It forms the gene complex, called "the factor that determines the development of the testicles." If there are all the required genes and they function properly, the complex activates the genes located in the other chromosomes, and testicles are formed in the fetus. So, it means that, although the internal male reproductive organs develop under the influence of genes located on the male

chromosome, actually other chromosomes (not sex related ones and female X chromosome) take part in this process as well.

The factor that determines the development of the embryo's testicles is activated only at the age of seven weeks. Accordingly, earlier an embryo has only a sex chromosome but is asexual judging by internal and external appearance.

All human embryos contain genes responsible for the development of testicles and genes which code the ovarian formation. Each embryo has a pair of small gonads that could potentially develop into testicles or ovaries, and two pairs of ducts: the Müllerian ducts that are potentially female reproductive organs and the Wolffian ducts that can become a male reproductive system. Which organs will develop a particular embryo—testicles or ovaries—is entirely determined by the activity of the factor that determines the development of testicles, located on the Y chromosome. If an embryo has this factor and it is activated on time, it acquires the features of a male individual, if not, then it develops a female body.

If, for some reason, this genetic complex remains inactive for nine weeks or the chromosome sex is female, then on the 12th week the ovaries appear. Previously it was thought that the development of ovaries did not need any special trigger factor, that they were formed unconditionally. This is how cases of individuals who looked like women actually having male sex chromosome was explained. But now there is evidence that the X chromosome has a special gene SDD, which controls the transformation of 'neutral' sex glands (gonads) in ovaries that are capable of producing fertile eggs in the future.

Fetal hormonal sex

The mysteries of sex do not end here. A further role in the shaping of the male or female appearances is played by

hormones. The third critical component of Money's scheme is the hormonal balance of the fetus. The reproductive organs of an embryo produce sex hormones: primary testosterone in testicles and estrogens (female sex hormones) in ovaries. In addition, testicles produce special anti-Müllerian hormone (Müllerian substance that inhibits development). Testosterone and its derivatives ensure the formation of internal and external male genitalia. The function of the Müllerian substance is the initiation of the reverse development (reduction) of primitive internal female genitalia. The need of two hormones for a male embryo's formation is called the "Adam principle."

However, no specific hormone is required for the further development of female sexual organs and the entire reproductive system. The regression of the primary internal male organs and formation of female genitalia starts automatically. In the absence of the SRY gene, rudimentary gonads turn into uterus, fallopian tubes, and vagina, and, if there is no testosterone, the Wolffian ducts disappear. The lack of specific hormonal stimulation during the development of a female embryo is called the "Eve principle."

As for the proper development of men, more complex genetic and biochemical interactions are required and scientists consider this way of formation more

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A woman can live her whole life not knowing that her genetic gender is male and a man can never learn that his cells have an extra female chromosome.

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vulnerable as male embryos are more sensitive to the environmental changes and to the stress experienced by women during pregnancy.

Male sex hormones play a more important role than the female ones in the sex differentiation during the prenatal period. The influence of the male sex hormones androgens on fetuses leads to their masculinization. In the medical practice, there are cases of pregnant women who receive hormonal treatment to prevent premature birth and, as a result, their daughters are born with pronounced masculine (male) features: they have enlarged clitoris, some even penises. The behavior of these girls is more common in boys. They are frolicsome children, prefer active games, enjoy fighting, dolls do not interest them, and they do not see themselves as mothers and housewives. A similar effect on fetuses can cause some synthetic hormones that are used by pregnant women to treat certain diseases.

Internal morphological sex

The fourth component of the human sex is the internal morphological sex—the final development of the genitalia, which ends during the 16th week of the fetal formation. At this point, the influence of the hormones becomes irreversible. Therefore, from this age on the sex of a baby can be actually determined by ultrasound. Apart from playing the leading role in the formation of male and female genitalia, sex hormones also influence the brain of the embryo.

Male and female brains

The fifth sign of sex differentiation is the brain structure. It is known that, on average, the male brain is larger than that of a female by 100-150 cm³, partly due to the larger body size

of men. Although these gender variations in the brain volume do not play a significant role, morphological differences in the structure of certain parts cause different behavior and explain the difference in the occurrence of brain diseases, their frequency, and the characteristics for men and women.

Androgens and estrogens significantly affect the sexual brain differentiation. It all starts under the influence of the germ's hormones at the end of the third month of embryonic development. As a result, men and women form some structures, including the hypothalamus, differently. It is important to take into account that the function of the hypothalamus includes the control over the activity of the hypophysis, which, in turn, affects the hormonal secretion of all the other human endocrine glands. Thus, although the hypothalamus secretes only several hormones, thanks to the control over hypophysis, it regulates all the hormonal activities in our body. The consequence of the female type hypothalamus formation is the cyclical production of female sex hormones in adulthood. The male development pattern of the hypothalamus leads to a lack of monthly recurrence in the production of male sex hormones. Differences in the structure and functioning of the brain, though hidden, can have a greater impact on our lives than sex differences in the structure of a body. One of the most important functions of the hypothalamus is the transformation of unconscious physiological needs into psychological motivations such as hunger, thirst, and sexual desire.

Pubertal hormonal status and external morphological sex

The last biological indicator of sex, according to Money, is the pubertal hormonal status. Pubertal hormones (hormones that are active during human puberty) stimulate the development of body characteristics that determine the sexual maturity (sperm

production for men and menstrual cycle for women) and the development of secondary sexual characteristics. Moreover, pubertal hormones directly affect human sexual behavior and its psychological characteristics.

Of course, there are individual differences when it comes to puberty. Female secondary sex characteristics may develop four years before the onset of menarche (first menstruation). During the first few years, menstrual cycles may be irregular, and in the process of ovulation failures can occur.

Unlike girls, boys mature much later; however, they are able to impregnate a woman almost immediately with the onset of spermarche (first ejaculation), in spite of the fact that boys develop secondary sexual characteristics later compared to girls. This paradox was noted by the American anthropologist G. Bogin in 1999. Previously, it was considered that women mature earlier. In adulthood people differ significantly in terms of sex hormones: men have higher androgen levels and women more estrogen.

Thus, endocrine and hormonal disorders in the process of human formation lead to difficulties when it comes to the determination of a person's gender. Therefore, we cannot state that there are only men and women in the world. Along with them live hermaphrodites, intersex people—the third gender. Human society is as diverse as the world around us. No doubt that all people have the equal right to exist and all of us need attention, care, and respect.

FAMILY, SOCIETY AND INTERSEX CHILDREN

Most parents who learn about certain features in the sexual formation of their child experience despair but try hard to hide it. This unfortunately happens because they know too little

about such matters. And the worst part is that the medical staff is not always very knowledgeable of these issues either. So, parents seek more information, but the problem is that there are only a few reliable sources. And when parents learn something, they usually carefully conceal it. But, as the child gets older, he or she has the right to decide what information others can know about him or her.

Parents and relatives should be frank and honest while communicating with such a child. Openness is a sign that they are not ashamed of what has already happened. After all, there is nothing shameful in their love and respect for the child and they do not have to be ashamed. They should accept things as they are. Shame is often caused by fear and ignorance. Very well if a person has friends or close acquaintances with whom one can share and talk about special features of their child. Concealment of such information creates a sense of shame and inevitably causes stressful situations in a family.

Some religious groups believe that human diversity is sinful. But man is made in the image of God and God is never wrong. In addition, He created a rich and varied world.

It is essential to make contact with the child's educators and teachers. They can help the intersex child to adapt. It can also

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Human society is as diverse as the world around us. No doubt that all the people have the equal right to exist and all of us need attention, care, and respect.

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be beneficial to talk to the parents of the peers. The result of this conversation can be certain goodwill and reduction of unhealthy interest and hostility that appears because of ignorance about the special features of such a child.

It is useful for parents to keep short notes of the talks about their child with other people, especially with health workers. The first step is to get an accurate medical diagnosis. Parents should know as much as possible about their children to be able to help them explore the world that does not always tolerate people who are somewhat different. Medical information has to be confirmed by research and documentation. At the same time, unnecessary medical examinations by doctors, medical students, and different interns should be avoided, as well as forced photographic and videographic recording of the child. Any examinations should be aimed only at providing medical aid to the children, not using them as guinea pigs.

As for psychological help, this question should also be handled with care. After all, not all psychologists or psychiatrists have the necessary experience required to solve issues related to the gender formation of a child with special biological characteristics. Often, parents are more knowledgeable in this area.

In some cases, there is a need for surgery on the genitals. However, sometimes doctors exaggerate its necessity, misleading parents by explaining to them that the correction of male or female genitalia will simplify their lives. In fact, the decision about surgical corrective operations must be made by the intersex person and only when he or she has reached a certain age. Operations without the consent of the children and their parents are still conducted by doctors in spite the appeals of human rights defenders, intersex activists, and the United Nations; such surgical interference is often a medical experiment and it is not always successful for the patient.

THERE IS AN INTERSEX CHILD IN A FAMILY

If there is an intersex child in a family, the parents have special responsibilities when the child reaches adolescence. Teenagers compare themselves with their peers and often are dissatisfied. Questions about hormone therapy or even surgical correction arise. The child, parents, and doctor have to figure out all the pros and cons of such interventions together and only then make a decision.

Child's puberty is not an easy period for parents; it is the time for first sexual attractions. Although it is often difficult for parents to deal with this topic, it should be done so that the child can feel better emotionally and possibly arrive at some conclusions. It is a good idea to involve in such conversations specially trained medical and teaching staff trusted by the parents. Despite some peculiarities, sex relations of such people can be normal and comfortable. At puberty, parents should help their offspring find psychological and emotional courage when an intersex child realizes that he or she is in some way different than most people. This period may begin much earlier or much later than normal; in these cases, it is advisable to seek assistance from a child endocrinologist.

It should be emphasized that adolescence is a period of physical, emotional, and intellectual growth, a time during which our way of thinking changes. During this period, in addition to the attention of the family and the health workers, a child requires the support of a psychologist. It is vital that intersex children know that they are more important for their families than all their special features, that they are loved despite their otherness.

Very often these special children have a limited social circle. Learning about their special features, they often choose to be

lonely, to avoid even those peers whom they used to be friends with. Intersex teenagers closely study their appearance and their body features and wonder: why it has happened? And how? Relatives should answer their questions as frankly as possible. There is no need to hide or embellish anything. Openness and honesty on the part of the parents and relatives should help intersex children feel good, even if in some aspects they are slightly different, but in all the other areas they can be just like everyone else. They are able to learn and work. They should know that this world is diverse; there are many models and intersecting interests out there. Each case is unique and it only confirms the wealth of this world and its overall excellence.

We believe that protecting the rights of intersex-people, will pave the way for consistent adherence to the human rights for all people without any exception - regardless of biological sex, sexual preference, gender identity, race, religion and age.

Author Julia Poustovit