

**HUMAN CHIMERISM: TWO OR MORE GENOTYPES IN ONE BODY*****Kahramanov Akbar****Student of Tashkent State Medical University*

**Abstract:** Natural and artificial chimerism, experiments conducted in this regard, the phenomenon of mosaicism, the similarity of organ transplantation to chimerism, the case of Lydia Fairchild, the causes of chimerism and its damage, methods of studying chimerism, and microchimerism.

**Keywords:** natural chimerism, mosaicism, artificial chimerism, allograft, DNA analysis.

**INSON XIMERALIGI: BIR TANADA IKKI VA UNDAN ORTIQ GENOTIP*****Qahramonov Akbar****Toshkent davlat tibbiyot universiteti talabasi*

**Annotatsiya:** Tabiiy va sun'iy ximeralik, bu borada qilingan eksperimentlar, mozaiklik hodisasi, organ transplantatsiyasini ximeralik bilan o'xshashliklari, Lidya Fairchilda uchragan holat, ximerizmning sabablari va uning zararlari, ximerizmni tekshiruv usullari, mikroximerizm.

**Kalit so'zlar:** tabiiy ximerizm, mozaiklik, sun'iy ximerizm, allograft, DNk tahlili.

**ХИМЕРИЗМ ЧЕЛОВЕКА: ДВА И БОЛЕЕ ГЕНОТИПА В ОДНОМ ТЕЛЕ*****Кахраманов Акбар****Студент Ташкентского государственного**медицинского университета*

**Аннотация:** Естественная и искусственная химерность, эксперименты, проведенные в этом отношении, явление мозаичности, сходство трансплантации органов с химерностью, случай, обнаруженный у Лидии Фэйрчайлд, причины химеризма и его повреждения, методы исследования химеризма, микрохимеризм.

**Ключевые слова:** естественный химеризм, мозаичность, искусственный химеризм, аллотрансплантат, анализ ДНК.

**Kirish.** Fertilization usually occurs in the initial part of the fallopian tube. The zygote formed as a result of this process immediately transitions to the initial stage of embryonic development - the stage of fragmentation (blastulation). In placental mammals, including humans, zygote fragmentation is complete, asynchronous, and uneven, during which the embryo is formed as a result of the uneven arrangement of blastomeres and an increase in their number. In some cases,

the fertilization of two or more egg cells can occur simultaneously. Usually, dizygotic (binary) twins are born in this condition, genetically unlike each other. However, under natural chimeric conditions, two zygotes can merge at the early stages of embryonic development, dissolving the placental barrier and integrating with each other. If these genetically different cells cannot immunologically accept each other, embryonic development stops, and spontaneous abortion occurs.

**Mavzuga oid adabiyotlarning tahlili (Literature review).** Natural chimeras are often not identified, especially if both zygotes have the same genetic sex, as this does not lead to significant differences in their appearance. Many cases of chimeras are discovered accidentally, for example, during forensic medical examinations, such as blood group tests or DNA tests, including paternity testing. To date, the number of documented cases of natural chimeras in the world is approximately 45-50, but this number may reflect only a small portion of actual cases. At the same time, along with chimerism, mosaicism is also observed, where within a single organism, there are genetically different groups of cells originating from a single zygote and, unlike chimerism, not related to the fusion process.

Mosaicity occurs as a result of DNA mutations that occur during cell differentiation during human embryonic development or during life after birth. In this process, cell populations within one organism are genetically different, meaning one group of cells differs from another in their genetic composition. These differences are usually caused by chromosomal abnormalities, genetic mutations, or epigenetic changes. Chimerism is fundamentally different from mosaicism because chimeras contain two or more genetically completely different populations of cells within a single organism, which are usually formed as a result of the fusion of two or more zygotes.

**Tadqiqot metodologiyasi (Research Methodology).** Organ transplantation is a complex and vital area of medicine in which an organ or tissue is removed from a so-called donor (alive or deceased) and transplanted to another person called a recipient. This process is carried out to replace damaged, functionally lost, or missing organs, which allows for improving the recipient's quality of life or saving their life. Donors and recipients can be located in the same location, but organs are often delivered from other geographical regions using special transportation methods. Transplantation performed between people of the same biological type (for example, from person to person) is called allotransplantation (allotransplantation). In allografts, a donor can be a living person (for example, donors of kidneys or liver lobes) or a deceased person. Immunological compatibility plays a significant role in these processes, as there is a possibility that the transplanted organ will be rejected by the organism due to differences in the genetic structure of the donor and recipient. Therefore, during organ transplantation, the fusion of cells with different genetic information in one organism is observed, which can lead to similarity with genetic phenomena such as chimerism or mosaicism.

**Tahlil va natijalar (Analysis and results).** Chimerality was artificially created not only in humans but also in animals, such as rabbits and mice, where a special female species is fertilized, and in the early embryonic stages, one or more zygotes are combined through radioactive or chemical influences. If the mother organism perceives these cells not as pathogens, but as a fetus, a normal offspring is formed. This generation can grow up healthy, eat, and leave normal offspring.

Lydia Fairchild (USA, 2002) is a person whose natural chimerality has sparked widespread discussion. Lydia was a mother of three children. To receive state aid through the court, a DNA analysis was conducted. The results showed that she is not the biological mother of her children. Because she herself gave birth to children. Later, additional tests revealed that Lydia was a

chimera. It actually originated from two twin embryos, but one of the embryos served as the basis for some parts of the body, and the other for others. Therefore, her ovarian cells had one genotype, while skin and blood cells had another. The children descended from the "double genotype" in her ovaries, but blood tests revealed a different genetic set. This phenomenon sparked much discussion in the legal system and led to the general public hearing about human chimerism for the first time.

Lydia Fairchild (born 1976) is an American who was found to have two different DNA sets. In 2002, while pregnant with her third child, she divorced her husband, Jamie Townsend. When Lydia sued for alimony for her children, a DNA test of Townsend's paternity was required during the trial. The results clearly show that Townsend is the father, but the tests showed that Lydia herself is not the mother. As a result, Fairchild is accused of fraud - that is, extorting alimony for other people's children or participating in a hidden surrogacy scheme. Even the documents about her previous births are being questioned. When the third child is born, the judge orders that a doctor-observer be present during childbirth, and that the blood of the child and Lydia be immediately examined. However, DNA analysis conducted two weeks later once again led to the conclusion that Lydia was not the biological mother of the child. The change was made by the defense attorney Alan Tindell. She read an article in the New England Journal of Medicine about a woman with chimerism named Karen Keegan from Boston and suggested that a similar probability existed in Lydia's case. Following this, extended family visits were conducted. The results showed that Lydia's children's DNA matched her mother's DNA at the level of her grandmother and granddaughter. Additionally, while the DNA obtained from Lydia's skin and hair cells did not match her offspring, the DNA from the uterine smear (cervical sample) matched it.

**Xulosa va takliflar (Conclusion/Recommendations).** Problems of chimerism: Due to such diversity of genetic information, a number of problems arise in such practices as organ transplantation, blood and other biological fluids donation. With the help of the aforementioned extensive inspections, this problem can be prevented.

#### **FOYDALANILGAN ADABIYOTLAR RO'YXATI:**

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