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МАТЕРІАЛИ

XIV ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ СТУДЕНТІВ, АСПІРАНТІВ ТА ВИКЛАДАЧІВ ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ КАФЕДРИ ІНОЗЕМНИХ МОВ

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tree should be already cut down, but it is so rooted in the ground that it is no longer possible.

A famous Ukrainian poet Shevchenko said: «Well, it seems the words, words and voice nothing more, but the heart beats and revives when it hears them». And a medical student revives when he or she hears a familiar Latin word or phrase, because sometimes it is easier for a student to hear a term in Latin than several times in Ukrainian or English. The first thing we encounter at the medical institute is knowledge of Latin. We start using it from the first lesson in Human Anatomy, Histology, Medical Biology and other subjects. Latin is incredibly beautiful and quite melodic, but in its turn rather complicated.

Latin is the most important language in medicine. By the way, all medicines and diagnoses were derived from Latin or Greek. By learning to recognize different components you can understand the meanings of the new words in clinical terminology. For prescribing medicaments a future physician should master a special structure of a Latin prescription because the international pharmacological nomenclature has generally been based on the Latin language. That's why all prescriptions are written in Latin and any spelling mistake can cost a person`s life. That is why every medical student requires a good knowledge of Latin.

THERAPEUTIC CLONING

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The review is devoted to the current biomedical direction in cell-replacement therapy - therapeutic cloning, which is the most universal approach for obtaining patient-specific embryonic stem cell lines (hESC) with tremendous potential in maintaining and restoring human health.

Now the main sources of stem cells directly for biomedical work are stem cells from umbilical cord blood and adult stem

cells. Both sources have serious limitations: umbilical cord blood stem cells are autogenous only to the newly born, and receiving stem cells from the patient himself is unsafe for him. In addition, in general opinion, the potential for differentiation in these cells is lower than in ESCs. Obviously, the most versatile and reliable source of human stem cell (SC) production is through cloning technology.

To date, fundamental scientific and technological aspects do not create barriers to therapeutic cloning. And although there are already about 500 human ESC lines in the world, none of them have been obtained by cloning technology — by nuclear transplantation. Two sensational publications in the journal Science for 2004 and 2005 of South Korean scientists on receiving individual ESC lines for 11 seriously ill patients turned out to be unreliable. There is a report about obtaining a patient-specific line from activated parthenogenetic human oocytes containing histocompatible stem cells for an oocyte donor, a potential patient in whose treatment it is already possible to use autogenic cells without an immune rejection reaction. Another achievement is the production of cloned human embryos with fibroblast nuclei that developed to the blastocyst stage, but the ESC lines were not created.

At the same time, an intensive search is underway in the world for alternative possibilities for obtaining patient-specific ESC lines for biomedical purposes. The most promising alternative approach for creating patient-specific lines from somatic cells for biomedical purposes is to obtain KSK-like cells or induced pluripotent SC CiPSD lines. This is a new area of research in cell replacement therapy, initiated by the work of Japanese scientists in 2006 on mice to reprogram fibroblasts to a status similar to pluripotent. The possibility of such a transformation for human fibroblasts was soon shown. Genetic modification of fibroblasts was performed by retroviral transfection of four key pluripotency factors: 0ct3 / 4, Sox2, Klf4, c-Myc, and subsequent expression of these genes induced

reprogramming of somatic cells with a return to pluripotent state. Although the effectiveness of this approach was very low, and it is also known that the use of viral vectors can lead to malignancy of iPS cells, these works became a sensation. A whole series of studies with induction factors followed, and an active search was undertaken for other ways of introducing genes into somatic cells (without resorting to retroviruses) with minimizing the modification of the genome. As a result, the possibility of a safe method of reprogramming cells using transposons and only one Klf4 factor was shown in mice.

However, it is too early to consider iPS cells to be an adequate alternative replacement for ESCs for regenerative therapy. For biomedical purposes, it is necessary to reprogram your own cell genes instead of adding new copies, and only therapeutic cloning technologies provide a unique opportunity for such reprogramming of somatic cell nuclei. The reversibility of the gene expression program under the influence of the oocyte cytoplasm, a return to the pattern of embryonic expression in somatic donor nuclei allows us to consider reconstructed human embryos as the main source for obtaining patient-specific ESC lines.

The unique value of ESCs for medicinal purposes determines a serious need for the development of therapeutic cloning in our country. It is possible to accomplish the tasks of therapeutic cloning on the basis of reproduction centers, which, in addition to their direct purpose, can become centers for obtaining ESC lines, primarily for women patients of this center and any members of their families. It can be expected that with the development of therapeutic technologies, obtaining one's own ESCs will become available to everyone. It is necessary to carry out close cooperation of reproduction centers with relevant research laboratories focused on solving fundamental problems and developing new technologies.