

# A O A O O

**A a**  
 a a a a a a a  
 a a a a : , a ;  
 a .  
 : , , a, a a .

### Abstract

*The paper analyzes the application of stem cells in medicine and partly in bioengineering. Author determined basic properties of stem cells, their division, self-renewal, differentiation. The questions of innovations in cell therapy and bioengineering achievements are highlighted.*

**Keywords:** stem cells, restoration, medicine, illness.

o o a o o o o a o o a o  
 o o o a a o o o o o- a o o o a  
 o a ' o o a o a . O o o ,  
 a , a o o a .  
 a o o a a a a a a : ' a a a ( o )  
 o o ( o a ), a a a a Geron,  
 A a , a a a a a a . . . a  
 .  
 o a o o i ' a

### a

a o a a a a o o , a, o o, o o ' a o  
 o a o o , o a o o o a o a  
 o a o o a o o a .  
 a o o a a o a o a o ' a  
 a o a o a o o o . o I o o a o  
 o o , o a a o o o a o .  
 o o - a o , a o - o , o a  
 o , a a o a o a , a a , o , ' , , o ,  
 o o , o , .  
 o o a o o a o , o o o a  
 o a a . o- , o a a o a . o o o a a  
 , o a o o o a o . o- , o o o  
 a ( ) a a o o a o a [1, 9].  
 .1.

### a

### a

a a a a a a a a a  
 . a ' a  
 a a , a a a a  
 a a , a a a a  
 a a a a a a , ' a a a  
 a a a a a a a



a a a o o a a o o o , o a  
o , a a, a o o a a a, a o a a, o a a a,  
o o . a o a a o o o o o . a a  
o a a a o o o o a o a a 1957 , a o 2010 o a a  
o a o . a a a o a o a a a a a  
o o o o .

a a a , a  
a a . a a a 1988 . a a a a  
a a a 40 . a a , a a , a  
a a a a a a , a a , a [5, 6].

1. a a a a a a  
a a a a , a a a ,  
a a a . a a a 500 a a a

2. , a -  
a a a a a

3. a a a a a a  
a a a , a a a a a . a  
a a a a a , a a

4. a a a a a ,  
" a a " a a ,  
a a a a a - , a ,  
( , a , a a a a a ).  
a a a , a a a a a a [6].

a a a a a a -  
a . a a a a a

- a a a a a . A. A. a a A a
- a a A a
- a a - . . . A a A a
- a a a a A a
- a a a a a a
- a , a a A

. A a a a a , a  
a a a : a a a , a  
• a a , a - a , .  
• a a a a - a  
a a , a a a a  
a , a a a  
a a a a a , a a  
. a a a , a a a «

a » a

a [8, 9].

o o o a o a o a .

a a a - a « a a a : , a a », a 7 a a 2014 . a a a a a a a a . 2014 . a a a a a . A 1987 2013 . A 71 a a a a a 122 a , 82 - a a . a a a a a a a , 1998 2014 . a 66 a a a , a 2005 . a 20 a a a ( , a , , a a a ) [6]. a , a a a a « a a » a , a a a a a . a a a a , ( A ) a a a . A 2013 . a , a a ( A ) . 2007 . a a . a a 3D- , a ( ) a a . A a a a a a a a .

o o, , o a o o o o o o o o o a

o a o o o ( a o o a ), a a o a

, a o a o o a , o a o o o o a o o a o a

a o [3, 7].

o o , a o o , a a o o o o a a

a a a a a a a -

a . ,

A A

1. / . . // . - 2004. - 10, 2. - . 253-258.
2. / . . , . . // . - 2007. - . 49, 7. - . 529-537.
3. . . / . . // . - 2004. - 9. - . 3-11.
4. . . : , , . , . / . . ; . . , . . - : , 2004. - 505 .

5.

6. Petersdorf E. W. The World Marrow Donor Association: 20 years of international collaboration for the support of unrelated donor and cord blood hematopoietic cell transplantation / E.W. Petersdorf // Bone Marrow Transplant. – 2010. – 45(5). – . 807–810.

7.

8. [https://tsn.ua/nauka\\_it/u-garvardi-vpershe-shtuchno-virostili-pechinku.html](https://tsn.ua/nauka_it/u-garvardi-vpershe-shtuchno-virostili-pechinku.html) (20.03.2017).

8.

9. <http://www.pharmencyclopedia.com.ua/article/655/stovburovi-klitini> (20.03.2017).

9.

4. – . 1–15.

e-mail: [kozerenko.masha@ukr.net](mailto:kozerenko.masha@ukr.net).

**Mariya P. Kozerenko** – student of group BIO-16b, Faculty of infocommunications, radioelectronics and nanosystems, Vinnytsia National Technical University, Vinnytsia, e-mail: [kozerenko.masha@ukr.net](mailto:kozerenko.masha@ukr.net).

Supervisor: **Dmytro Kh. Shtofel** – Cand. Sc. (Eng.), Associate Professor in Biomedical engineering, Vinnytsia National Technical University, Vinnytsia.