AN OVERVIEW OF TRANSGENIC ANIMALS

Ghanbari Mahtab[1], Ivantsova Maria N.[1], Atambire Agomo[1], Osman Nabayire Kanwugu[1]
[1)] **Institute of Chemical Engineering, Ural Federal University**
[a)] corresponding authors: mahtab.ghanbari1992@gmail.com
[b)]m.n.ivantsova@urfu.ru

INTRODUCTION

A transgenic animal is an animal that is genetically modified and has foreign genetic material giving it the desired trait. For this purpose, external DNA is introduced to the animal using recombinant DNA technology and then transmitted through each germ cell. Thus, each animal germ cell contains the same genetically modified material.

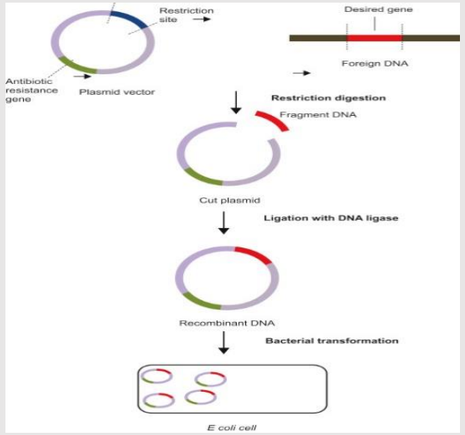

Figure 1

Transgenic animals are widely used for solving theoretical problems and practical purposes, mostly for biomedicine and agriculture. It is considered that the technique has been multiplying in recent years, and there is a need to control the creating and usage of such animals due to that there are potential risks occur when testing the method and especially for aims that can be out of human ethics. Therefore, although the technique provides beneficial experiments to researches, there are potential risks when creating transgenic animals.

ETHICS USING TRANSGENIC ANIMALS

As the health and safety of human is important when using the technology, here the welfare of the animal is to say; some researches on animals cause pain or even death in them. many different arguments in society about the testes on animals. For example, there are animal rights groups such as ASPCA (American Association for the Prevention of Animal Violence) and PETA (People for Animal Moral Behavior) to regulate and restrict testing on animals. The number of articles relating to animal welfare has been increasing during the first years when the technique introduced to the world. The number of articles on MEDLINE with the keyword "animal welfare" is shown in figure 2.

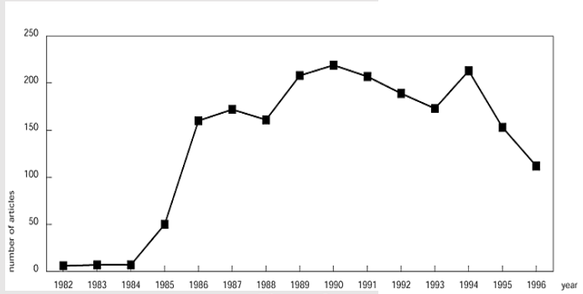

Figure 2

TRANSGENIC ANIMAL REGULATION

Today, the United States is a world leader in biotechnology and the commercialization of human nature, and the Europeans of the Old World insist on the need for proper attention. In order to regulate and discuss possible habitats for transgenic animals using recombinant DNA technology, the Asilomar Conference, led by Paul Berg, was held in 1975 in the Pacific Ocean of Grof, California. It was agreed at the conference that strict guidelines should be developed by the National Institutes of Health in the United States and by comparable organizations in other countries to regulate its application. Besides, Animal Care Committee (ACC), US FDA guidelines, the Canadian Council for Animal Welfare care (CCAC), the US Cancer Society, Case Oncomouse in Europe, and Case Oncomouse in Canada are responsible for controlling the use of this technology. Possible hazards to human health using transgenic farm animals and agricultural products can be controlled. There are published ethical rules and regulations by the food and drug administration (FDA).

FUTURE OF USING THE TECHNIQUE

Transgenic technologies have been critical in many aspects of science, including biomedicine, pharmaceuticals, agriculture, food technology, and the materials industry. Therefore, the use of transgenic animals is leading to improvements that could save the lives of many patients with various diseases. Moreover, by the mentioned examples of advantages, creating transgenic animals looks positive in the future. According to the WHO report, the market for transgenic animals is estimated to grow, shown in figure 3. Beside we are already faced with issues and risks, taking to account that there is no specific information for monitoring the other nations; if they are respectful to the regulations or not, here the future of transgenic animals is not clear.

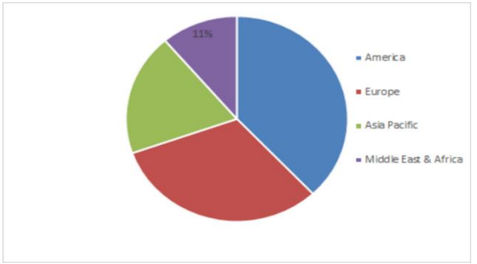

Figure 3

CONCLUSION

Despite all the advantages of this helpful method, transgenic technology is one of the potentially dangerous technics for all the species and the planet earth. The purpose of creating a method like transgenic animal technology should lead to the improvement of human and animal welfare, as it is saving the lives of humans and many living organisms and future generations, and not to damage the species and environment, then we can consider it as a safe technique. Regarding that, scientists have been making regulations according to human ethics to protect the mentioned possible issues.

we should continue to use animals for research that are vital for human, but according to scientist's regulations. This science is proliferating around the world, and every day we are facing with discoveries due to our knowledge grows speedy; therefore, our responsibility must increase more quickly. Furthermore, there is a need to assess and control risks by monitoring potential environmental issues considering that many nations have had access to the technique of transgenic animals and they may not follow the international regulations.