

## IVF Technology

The Parliament of Great Britain approved three-parent IVF project with 382 votes for and 128 votes against it on 3rd February, 2015. In case of the project approval in House of Lords, Great Britain would be the first country which legalizes the action. The purpose of this procedure is prevention of genetic diseases with mitochondrial defects in which the defective mitochondria in the cytoplasm of the mother's egg is transferred to the embryo. The consequence is the death of the child, muscle weakness, blindness and heart diseases. If the healthy mitochondria of another person are used in this procedure, the defects would disappear. This is done in two ways:

1. Nucleus transfer from the mother's egg with mitochondrial defects or egg cytoplasm to the donated egg in which the nucleus has been removed,
2. Transfer of parents' nuclei from the early embryo (zygote) containing the cytoplasm to a donated early embryo (zygote) in which the parents' nuclei have been removed.

In each of these cases, the mitochondria in the egg or the donated zygote replace defective mitochondria and protect the child from related diseases.

The advancement of IVF technology brought up the possibility in replacing the egg of patients with mitochondrial diseases with healthy donated eggs. In this case, the child produced has no genetic relationship with the patient, while in the current practice, 23 pairs of parental chromosomes construct the genetic essence of the child. In this practice, 37 mitochondrial genes, which comprise 1.10% of the total genetic essence of the child and play key roles in production of energy in cytoplasm of the egg, can be replaced with donated mitochondria in case of any defects, and thereby culminate in preventing mitochondrial defects in 1200 cases of children in Great Britain.

The support of majority of reproduction scientists from the action and the concern and opposition of the Catholic Church together with some law and ethics specialists for authorizing the birth of engineered children denote the contrary position of the parties in applying this preventive and therapeutic action. The advent and development of reproductive technologies have always been intermingled with theological, ethical, legal and social issues and consequences. While great emphasis has been placed on ethical, legal and social dimensions and implications of cutting edge advances in reproduction, it seems that under supervision and surveillance of law makers and regulations, the possibility for amending inappropriate decisions is always provided. This is the focal point that the Parliament of Great Britain adhered to. However, there is no doubt that if necessary practical measures are not taken for discussing problems and compiling rules and regulations in treatment of reproductive diseases with higher incidence (such as application of IVF in indications for surrogacy in Iran), more theoretical and practical vexing issues will emerge which are complicated enough to be handled optimally. Although further studies are required to evaluate the action approved by the Parliament of Great Britain, the legal aspect of the action is worthy of attention since timely evaluation of it has been done. Also, as a prominent advancement in the field of biotechnology, the potential for its modification and amendment is permitted by the law.

*Mohammad Mehdi Akhondi, Ph.D.  
Chairman*