

## **9<sup>th</sup> Yazd International Congress and Student Award on Reproductive Medicine with 4<sup>th</sup> Congress of Reproductive Genetics**

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### **Key Lectures**

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#### **K-39**

#### **Sperm selection using magnetic activated cell sorting (MACS) in assisted reproduction**

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Magnetic separation has been successfully applied to many aspects of both biomedical and biological research and also in clinical areas like cellular therapies for human autoimmune disease, like rheumatoid arthritis, diabetes, multiple sclerosis, and SLE. Infertile men with poor sperm motility and morphology were found to have increased sperm DNA fragmentation compared with individuals with normal semen analysis may also have a high degree of sperm DNA fragmentation, which can be a major cause of unexplained infertility, and sperm DNA fragmentation. Aberrant chromatin packaging during spermatogenesis, defective apoptosis before ejaculation, or excessive production of reactive oxygen species (ROS) in the ejaculate. Exposures to environmental or industrial toxins, genetics, and lifestyle are also known factors that may cause sperm

DNA fragmentation and infertility. Although the factors present in the paternal genome that may have an impact on poor reproductive outcome are still not well defined, there is accumulating evidence linking sperm nuclear DNA abnormalities to poor reproductive we come one of the most suspected organelles in the sperm nucleus. Several studies using the magnetic activated cell sorting (MACS) technique with human spermatozoa have been published over the years. Interests in these studies were mainly the molecular efficiency of the technique and improving the post preparation sperm quality. Researchers have evaluated the percentage of sperm recovery following the use of MACS as a sperm preparation technique, and they concluded that the integration of MACs with density gradient centrifugation (DGC) is an effective sperm preparation technique that does not lead to significant cell loss and separating a distinctive population of non-apoptotic spermatozoa with intact Membranes might optimize the outcome of assisted reproduction. Reduction of apoptotic spermatozoa within the ejaculate using the MACs system results in a distinct reduction of spermatozoa with DNA fragmentation, enrichment of spermatozoa free of apoptosis, improvement of sperm viability, motility, and mitochondrial membrane integrity.