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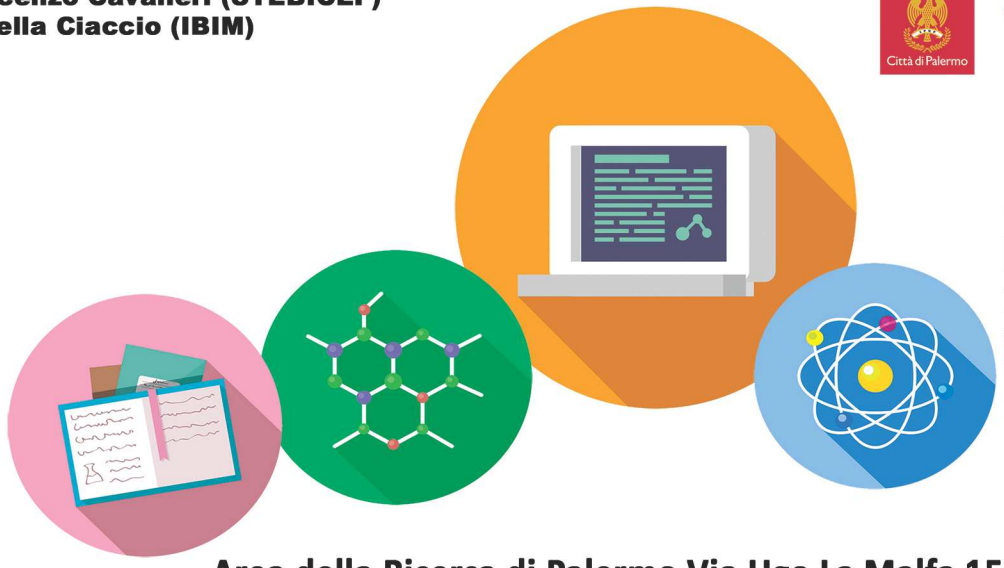

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Apoptosis in human sperm as a quality marker for a new diagnostic approach of infertile patients

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The quality of the sperm DNA is one of the most important molecular markers of male reproductive potential (Bosco, L et al., 2018, Environ Toxicol Pharmacol 58:243-249). The aim of this study was to evaluate sperm DNA fragmentation according to morphology, to predict the probability of selecting a sperm with normal morphology and intact DNA. An observational study was performed on 70 patients with oligoasthenoteratozoospermia. Sperm DNA Fragmentation Index (DFI) and semen parameters such as sperm density, motility and morphology were evaluated in all patients. DFI was calculated using the *in situ* TUNEL assay. DFI can be determined and thus used as a marker of sperm quality for a diagnostic approach of infertile patients. For each patient, out of the total of sperm DFI, we calculated the proportion between sperm with normal morphology and with abnormal morphology. Among 35 patients (A Group), the DFI was inferior than 15% (average value was 8.1%), while 35 patients (B Group) had a DFI higher than 15% (average value was 24.6%). When the analysis was restricted only to spermatozoa with normal morphology, it was observed that among patients of B Group the DFI value was 13.6%, while in A Group the average was 2.2%. DFI calculated on sperm of normal morphology can provide an important information on the risk of injecting, during ICSI procedure, a sperm with normal morphology but with DNA fragmentation. This risk is higher if the semen sample has a baseline DFI higher than 15%.