

# I am the Best-Am I?



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Available literature of review confirms, Chromosome Segregation Errors (CSE) as the prime cause of pregnancy loss in aging females.<sup>1</sup> Amongst other well known potential causes of pregnancy loss in advanced age (35 yr onwards) *Bub1* (budding uninhibited by benzimidazole), is proved to be the leading cause. Most common chromosomal segregation error is aneuploidy, during Oogenesis<sup>2</sup> in advancing maternal age.<sup>3</sup> Disturbed functioning of (Spindle Assembly Checkpoint) SAC leads to aneuploidy.<sup>4</sup> The SAC restricts the abnormal drifting of sister chromatids and maintains accurate chromosomal segregation.<sup>5</sup> *Bub1* is the very important constituent of the (SAC). The (*Bub1*) is required for the efficient kinetochore localization. Depletion or absence of *Bub1* leads to loss of chromatid cohesion.<sup>6,7</sup>

Assisted Reproductive Technology (ART), still suffers from low implantation rates. Failure rate of IVF is approximately 62-65%.<sup>8</sup> To access the implantation rate, (Sakkas and Gardner, 2005),<sup>9</sup> studied the role of various metabolic parameters in this context. Pyruvate present in embryonic culture media has been positively correlated with embryonic viability, but this view was terminated by (Biggers et al. 1967<sup>10</sup> Hardy et al. 1989,<sup>11</sup> Turner et al. 1994,<sup>12</sup> and Gardner et al. 2001.<sup>13</sup>

In late nineties cytoplasmic transfer was tried, which may culminate into delivery of viable and healthy babies. (Cohen et al., 1997, 1998; Huang et al., 1999)<sup>14,15</sup>

Somatic cell nuclear transfer (SCNT) was tried (Wilmut, 2002; Cibelli, 2007),<sup>16,17</sup> but lost its validity due to placental dysfunctions, and other associated problems. (Bourc'his et al., 2001; Rideout et al.)<sup>18,19</sup>

Glucose uptake in embryonic culture media makes embryo's implantation as a potential marker, which yields better results<sup>20,21</sup> but for the contradiction made by.<sup>22,23</sup> Brison et al. (2004)<sup>24</sup> correlated increased pregnancy rates with increased asparagines levels and Seli et al. (2008)<sup>25</sup> with higher glutamate levels.

All above described metabolic technology being not validated on a practical platform due to cost and time effectiveness, so could not make its way for better perspectives.

Many studies are now conducted at cell organelle level which would benefit the aging embryo. These studies use Mitochondrial activators, which act as energy boosters and help in both in vivo and in vitro. (Bentov et al., 2010<sup>26</sup> Van Blerkom) 2011.<sup>27</sup>

Most recent study conducted by (Chung et al 2005)<sup>28</sup> used microwells, and observed that how rapidly a fertilized ovum changes in to 4-8 cell stage. This shows the competence of the embryo. By this technique number of transfer of embryos will be minimized and most competent embryo will be used for establishment of pregnancy avoiding chances of multiple implantation and its outcome.

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