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 — From Innovation to Impact —



Session OR07 - Reproductive Endocrinology I

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## O-083 - Mitochondrial DNA Copy Number in Trophectoderm is Not a Predictive Biomarker for Human Embryo Viability.

 March 15, 2019, 11:00 AM - 11:15 AM

 Room 243

### Categories

+10.2 - REI: Infertility, ART

### Keywords

Embryo  
Selection, Mitochondrial  
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### Abstract

**Introduction:** Mitochondrial biogenesis and adequate energy production are important for cytoplasmic maturation, fertilization, embryogenesis and placentation. Mitochondria also produce reactive oxygen species, which can result in damage to the embryo. Recent reports showed conflicting results regarding whether mitochondrial DNA (mtDNA) copy number in the human blastocyst is a predictive biomarker for reproductive potential. To further address this issue, we assessed mtDNA content in 700 euploid human embryos after single embryo transfer, and determined if the implantation outcome is associated with mtDNA copy number.

**Methods:** DNA samples from euploid human embryos with known clinical outcome following single embryo transfer (SET) were analyzed (n=700 embryos, between 2016-2018). Relative mtDNA copy number was determined using targeted amplification followed by quantitative real-time PCR (qPCR) for 2 mitochondrial loci (16S and MajArc) relative to a multicopy nuclear genome locus (AluYb8). A logistic regression model was used to determine whether mtDNA content was associated with the odds of achieving pregnancy. The maternal age and biopsy day were included as covariates.

**Results:** The range of maternal age was 21.8-45.3, and the sustained implantation rate at 9th gestational week was 65.3%. mtDNA copy number was not associated with pregnancy outcomes (p=0.74), and there was no threshold value above or below which pregnancy did not occur. There was also no correlation between mtDNA copy number and maternal age (p=0.45). In addition, in women who underwent a second single embryo transfer following a failed transfer (n=39), there was no association between relative mtDNA levels of sibling embryos and pregnancy outcomes (p=0.67).

**Conclusion:** Our findings suggest that mtDNA copy number analysis does not help predict the viability of euploid human embryos. In addition, there does not seem to be a change in blastocyst mtDNA copy number associated with female age.