

Department of Obstetrics and Gynecology, Texas Tech University Health Sciences Center; Lubbock, Texas 794301 and Department of Animal and Food Sciences, Texas Tech University, Lubbock, Texas 794092

## Objective

Embryo cryopreservation has been a popular method for preserving fertility as it provides many benefits such as genetic preservation and the easy ability to transport and transfer embryos. This process continues to be carried out in IVF procedures and has led to many successful pregnancies. Although the freezing of embryos may produce many benefits, this method can also have a negative effect on the viability of embryos. Previous studies have demonstrated a modified specific gravity technique useful in determining the health and viability of a number of animal species. The current study is the first report of the use of this buoyancy technique with human embryos. Embryo cryopreservation at the blastocyst stage were thawed, and their buoyancy as it related to their viability, was used to determine the healthiest embryos for use in IVF procedures.

## Methods and Material

To thaw the cryopreserved donor embryos, instructions for blastocyst fast freeze thawing kit were used as reference. Hu frozen at the blastocyst stage were thawed using the Irvine Prior to measuring the drop time of the blastocysts, culture blastocyst culture media were prepared. Also prior to thawir culture plate was prepared with the five thawing solutions a mineral oil. After obtaining the embryo straw, the embryo st removed from liquid nitrogen and moved to 30 water bat straw was cut open and the embryo placed into solution one minutes. The blastocyst was then moved in sequence throug through five for five minutes per solution.

After the blastocyst was thawed, the individual blastocyst was the Modified Specific Gravity Device (MSGD) which was filled embryo culture media, the same media the embryos were o in. Prior to dropping the blastocyst, it was rinsed in the first remove mineral oil residue. The amount of time the blastoc passing a one-centimeter vertical distance was measured in a blastocyst was then recovered, and the diameter of the inne 57 Tm0 g0 G(c)-&ent)-5(im)6 G 0 0 1 126.02 &9.66 Tm-23(an)-

# First Report of Use of a Modified Specific Gravity Technique to Determine Viability and Quality of Human Embryos A.Brown<sup>2</sup>, A. Okimi<sup>1</sup>, A. Rook<sup>1</sup>, K. Ahamd<sup>1</sup>, L.L. Penrose<sup>1,2</sup> and S.D. Prien<sup>1,2</sup>

### Results

- No significant difference in average diameter at thaw across all blast ocysts No significant difference between initial drop times for expanded vs. nonexpanded blastocysts
- Expanded blastocysts had a longer secondary drop time as compared to non-expanded (P < 0.04)
- Hatched blast ocysts had lower initial and secondary drop times compared to non-hatched (P < 0.001 and P < 0.05 respectively) Differences between initial and secondary drop times were similar for both hatched vs. non-hatched blastocysts

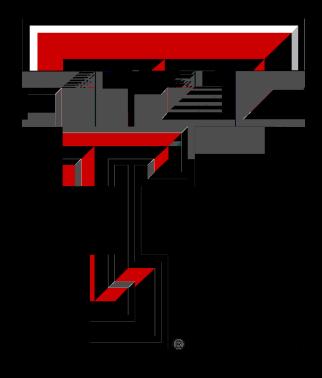
| the Gobal<br>luman embryos<br>Fast Thaw kit.<br>plates containing<br>ing the embryo, a<br>and overlaid with<br>straw was<br>ath. The embryo<br>he for three<br>igh solutions two   |   |
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| vas passed through<br>ed with Global<br>originally cultured<br>t thaw solution to<br>cyst took in<br>a seconds. The<br>er cell mass was<br>)4(d)-canP < </td <td>000051-&amp;an)4(Pi(d)-cd)26.02 <b>289i6</b>6t<b>ōnn-28(sani)ei(</b>d)</td> | 000051-&an)4(Pi(d)-cd)26.02 <b>289i6</b> 6t <b>ōnn-28(sani)ei(</b> d) |

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Preliminary results of these first studies with human embryos demonstrated potential differences in descent times among expanded and hatched blastocysts before and after incubation. Further studies are needed to evaluate this assessment technique on a larger scale.

Overall, the data suggests buoyancy may be used as an indicator for embryo viability, increasing conceptions rates through IVF.

Acknowledgements



## Conclusions