Densitometry-based sorting allows the selection of healthier embryos from obese mice

Stanford researchers have developed a non-invasive, densitometry-based sorting method to select healthy embryos for in vitro fertilization (IVF). Families and individuals suffering from infertility often turn to Assisted Reproductive Technologies (ART) to help them conceive and have children. Almost 2% of infants born in the US every year are conceived using ART, with In Vitro Fertilization (IVF) making up the biggest share. A key limitation of IVF procedures is the low success rate of embryonic development. Less than 5% of harvested oocytes result in birth using IVF. Chronic health issues like obesity, which affects half of women of child-bearing age in the US, only further decrease the chances of a successful fertilization, implantation, and embryonic development with IVF procedures. Better methods for selecting healthy embryos are critical for improving the efficacy of IVF, particularly in patients suffering from obesity. Stanford researchers have developed a straightforward, non-invasive method to measure the density of single pre-implantation embryos and have demonstrated that embryo density is predictive of post-implantation growth and fetal development in obese mice models.

Applications

- In Vitro Fertilization (IVF)
- Pre-implantation embryo screening

Advantages

- Embryo density is fundamentally linked to metabolic state
- Can measure density of single embryos

- Non-invasive
- No need for biomarkers, tags, antibodies

Publications

- Naside Gozde Durmus, H. Cumhur Tekin, Sinan Guven, and Utkan Demirci et al. "[Magnetic levitation of single cells.](#)" *Applied Biological Sciences*. Vol. 112 (No. 28). E3661-E3668. June 29, 2015.

Patents

- Published Application: [WO2022251582](#)

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