

## **"HAPPY WORLD EMBRYOLOGIST DAY"**

### **The Role of an Embryologist in Advancing Fertility Technology - Empowering Parenthood Through Scientific Progress**

- Sanketh Dhumal Satya

The groundbreaking success of human IVF four decades ago marked the beginning of a remarkable journey in Reproductive Medicine. **Today, we stand at a point where embryo editing is within our grasp.** However, this progress was far from easy, and throughout the evolution of IVF, Embryology has been at the forefront of innovation, playing a pivotal role in fulfilling the dreams of infertile patients worldwide. At the heart of any ART clinic lies the embryology department, **where dedicated Clinical Embryologists work tirelessly to bring the gift of life into existence.**

The success of IVF is evident as millions of individuals have been conceived through this revolutionary technique. For couples battling infertility for extended periods, IVF babies are nothing short of miraculous, celebrated rightfully in a world where many suffer from reproductive challenges. **Despite these triumphs, the journey of IVF is not without obstacles. Numerous treatment cycles often fail, subjecting women and couples to the emotional rollercoaster of hope and disappointment.** The fertility industry's profitability can sometimes lead to the promotion of false hope, emphasizing the urgent need for progress in understanding the intricacies of fertility.

Fortunately, scientific advancements have been made over the years, making IVF more efficient and safer for women undergoing treatment. The reduction in twin and triplet deliveries has minimized pregnancy risks. Safer hormone treatments, combined with technologies like egg and sperm freezing, donation, and surrogacy, have provided various pathways to parenthood for individuals, including same-sex couples and single parents. **Nonetheless, the process remains physically and emotionally taxing.** The high cost of fertility treatment makes it an unaffordable luxury for many. Additionally, some countries adhere to conservative moral codes and ration treatment accordingly, limiting access to IVF.

The root cause of these challenges lies in understanding the complexities of conception. **The cellular, molecular, and genetic processes underlying fertility are still largely mysterious.** For instance, little is known about the mechanisms determining a woman's stock of eggs from birth or why they diminish in number and quality until menopause.

However, there is hope on the horizon. **Scientists are exploring novel approaches, such as in vitro gametogenesis, utilizing stem cells to create eggs and sperm from skin and blood cells.** While human application is still distant, this research offers valuable insights into the development of reproductive cells.

**Embryologists are essential in this journey as they continue exploring cutting-edge techniques like creating embryo models using stem cells.** Such models provide valuable

data on the development of actual embryos and may eventually lead to groundbreaking treatments for fertility challenges in near future.

While IVF will remain crucial in the foreseeable future, advancements in fertility technology could potentially transform parenthood. The understanding gained through scientific research and breakthrough treatments may significantly raise the success rate of IVF, making it more accessible and reducing the emotional and financial burdens associated with fertility treatment.

This ongoing progress could herald a new revolution in fertility technology granting will lead to newfound hope to countless infertile couples, enabling them to embrace parenthood and fulfill dreams they once deemed unattainable.

**Through embryologists' dedication and expertise, such transformative change becomes possible, offering hope and possibilities to countless aspiring parents worldwide.**

