

Egg Vitrification FAQ

Vitrification, a cutting edge technology for cryopreservation (freezing) of embryos and eggs, is now available at many fertility clinics across the United States. Dr. Rebecca Matthews, an Embryologist from Oregon Reproductive Medicine, answers a few questions about egg vitrification, how it's done, and why it appears to be the wave of the future.

Facts About Egg Vitrification by [Dr. Rebecca Matthews](#)

What is egg vitrification?

Oocyte (egg) vitrification is a method of freezing which involves dehydrating the eggs in a series of cryoprotectants and then plunging them into liquid nitrogen in a very small volume. It literally means “turning to glass”.

How long has egg vitrification been around?

Oocyte (egg) vitrification has been practiced since around 2000 and has been growing in popularity ever since for both embryo and egg freezing.

How is it performed?

The embryo is processed through solutions containing high concentrations of cryoprotectants, then quickly placed in a tiny drop that is barely larger than the embryo itself, then onto a “leaf” that looks like a small spatula. The “leaf” is then plunged into liquid nitrogen before being placed into a secure holder labeled with the patient’s identification.

How does vitrification of eggs work?

The main problem with freezing biological material is the formation of ice crystals. Because water expands when it is frozen, this causes damage to the surrounding tissue if it is not fully removed prior to freezing.

Any type of cryopreservation involves dehydration of the tissue and vitrification uses quite high concentrations of these dehydrating solutions. During the process all the water inside the cell is replaced with the cryoprotectant solution, enabling the cells to be plunged into nitrogen without any ice crystal formation.

When is vitrification used to freeze eggs?

At our clinic ([Oregon Reproductive Medicine](#)), we always freeze eggs using vitrification, as we have found this to be the most effective method.

Is it safe?

So far there have been only a few hundred babies born from vitrified eggs (including 6 babies from [Oregon Reproductive Medicine](#) and 3 currently pregnant as of September 2009). These babies appear

to be perfectly healthy and normal. When we start using a new technique, we never know the long term effects, but historical use of egg/embryo freezing leaves us confident that this method is entirely safe.

Why is it better or different than the old way of freezing eggs?

Because this method uses higher concentrations of cryoprotectants it is more efficient at removing the water from the egg cell. This coupled with the faster freezing rate allows the eggs to be further protected from the damaging effects of the freezing process. The old way of freezing was slower and gentler but often did not fully dehydrate the cells and left the eggs and embryos susceptible to damage.

How will it help success rates in donor egg programs?

It is possible that in the future we will see a wave of egg banks that offer frozen eggs at a lower price than doing a fresh cycle. I don't think egg vitrification is necessarily going to help success rates in the future as fresh eggs/embryos are more likely to implant than frozen; however, it may provide a more affordable and accessible option for some people. One positive aspect of using frozen eggs is that they are readily available and pre-screened and so their use alleviates a lot of the waiting time and synchronization between the donor and recipient.

Is it the wave of the future?

Yes. It is definitely a superior method than the slow freezing method. It is somewhat technically challenging but I believe that in the future most if not all clinics will use this technique.

Can you freeze and thaw and freeze using this technique

Definitely. Once we thaw the eggs and fertilize them we usually see a pattern of growth that is very similar to fresh eggs/embryos. When we get to Day Five (5) and do a transfer of the best blastocysts, we freeze the spares that are of good quality. The freeze/thaw success rate of these embryos is the same as embryos which came from eggs that had never been frozen.

Q. What excites you the most about what you do?

A. Every day is a gift, whether it is checking the eggs to see if they fertilized, looking on Day Five (5) to see if the embryos grew to blastocysts or finding out that someone is pregnant. As embryologists, we understand the importance of our role in the process and the honor it is to be trusted with this important job.

[Dr. Rebecca Matthews, BSc, PhD](#), joined Oregon Reproductive Medicine in October 2000 and plays a pivotal role in the laboratory. She received her Bachelor of Science degree in biochemistry from the University of Manchester. As part of her degree course she spent a year working for the Forensic Science research laboratories in Birmingham, England, where she looked at a novel DNA fingerprinting technique. Rebecca began her career in clinical embryology in 1998 in Leeds, in the north of England. If you have further questions for Rebecca, she can be reached at Rebecca@portlandivf.net