



Keith Beaty/Toronto Star

A vat of liquid nitrogen holds embryos donated to LifeQuest Reproductive Centre Medicine for research. Similar containers will soon hold the eggs of young women who want to preserve their fertility.

Babies of the ice age

Technology could extend the lifespan of female fertility, *writes Jen Gerson*

About a dozen freezing vats hold the seeds of future people at the LifeQuest Centre for Reproductive Medicine in downtown Toronto.

These temporary wombs are refreshed with liquid nitrogen twice a day, keeping sperm and pre-defined cells in a cold, quiet and indefinite stasis. Visitors here wear blue fabric booties and yellow lab

coats to keep dust away from the embryos. The fine glass instruments used to poke and prod the ova to life are immaculate. Magnified more than 1,000 times under a microscope, the nuclei holding the genetic information that will determine what these cells have the potential to be, look like exploding stars.

Most of these seeds

will fail. Those that don't will go on to fulfill the dreams of hopeful, would-be parents. They'll become children.

No time is the right time for a baby, but those vats of nitrogen in the fertility clinic may hold hope for young women who want to pursue careers and education, but fear that their ovaries are being placed in peril by the passage of time.

The term "frozen eggs" has long been the punch line for jokes about

single women. But they could soon be a promising alternative for working women in this country, where the fertility rate hovers at about 1.5 children born to women aged 15 to 49 - less than the 2.1 needed to maintain the population.

Statistics Canada says that as a woman becomes more educated, she becomes less likely to have children. Women now spend their 20s and 30s - the most fertile years - trying to get an education and

start a career. It's a trend that's likely to continue as more young women enter the workforce and university enrolment rates continue to hit consecutive all-time highs.

"But on the biological side, women realize that the older they get, the less likely it is that they will conceive," says Dr. Ken Cadesky, the medical director at LifeQuest Reproductive Centre in Toronto. He adds that a woman without a life

> Please see **Embroyos, C5**

From small beginnings

> Embryos, from C1

partner, or little means to support herself, is in a reduced position to raise a child, but "you never know when biology, career and education are going to intersect. There isn't a right time."

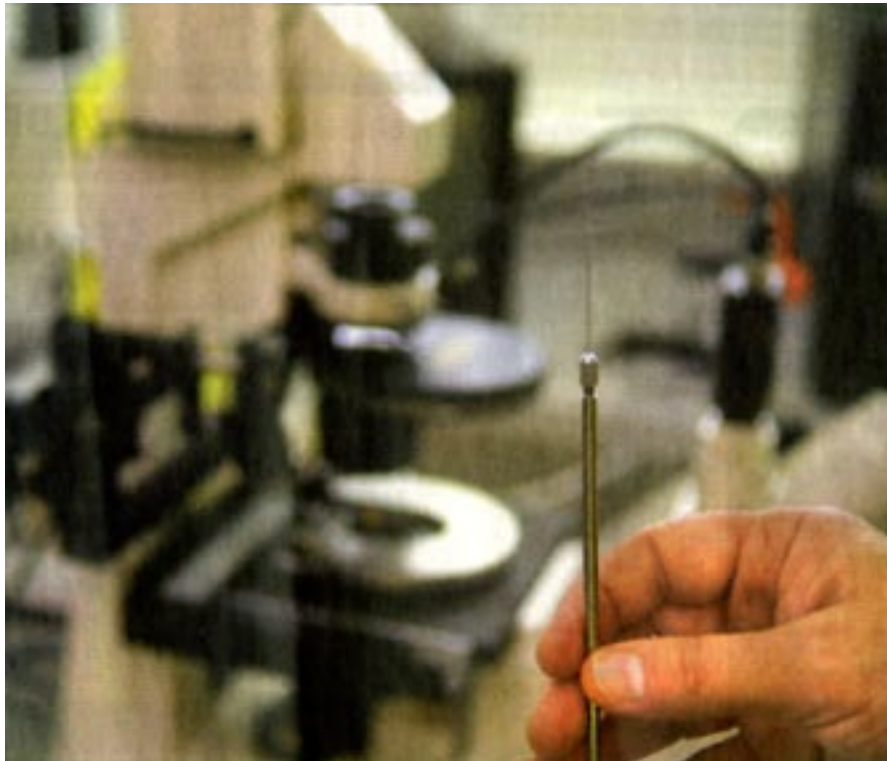
Recently released census data show that Canada's birth rate is stagnating and the country is relying on immigration to replenish its population. The average age at which a woman gave birth in 2003 was 29.6 years. In the 1980s, it was 26.9.

But a woman's fertility begins to decline exponentially after she leaves her peak years. At the age of 20, she has a one-in-five chance of conceiving each month. By the time she reaches her early 40s, she has less than a five per cent chance.

Doctors don't know quite why, but old eggs just don't work as well as young ones.

If research funding comes through for LifeQuest, it could be one of the first clinics to offer egg freezing to healthy women in Canada. The research funding could ultimately mean an extension on the time frame for these healthy women to conceive.

Cadesky expects that the program could be running within one to five years and to cost between \$1,000 and \$4,000, depending on the government subsidy. In vitro fertilization has a success rate of about 25 per cent per round, and doctors say that frozen eggs should carry the same chances - but no one knows for sure because the technology is so new.



Keith Beaty/Toronto Star

A microscopic ovum would be held on the minuscule tip of this instrument for treatment at LifeQuest.

"You still have to get pregnant when it's feasible to get pregnant," says Cadesky who will also speak about the topic of fertility at LifeFest, a lifestyle- and health-related convention at the Metro Toronto Convention Centre starting next weekend. He says that about one in six couples are experiencing trouble trying to conceive.

Cancer patients facing infertility because of radiation and chemotherapy have been freezing their eggs for almost a decade in North America.

The first baby born successfully from an egg thawed before being inseminated with sperm arrived two years ago at McGill University Health Centre in Montreal. No one's certain how long an egg could last on ice, but embryos, which

have later grown into full-fledged babies, have been stored successfully for more than a decade.

While frozen embryos, or eggs that have been prompted to divide after being injected with sperm, have long been used in IVF treatments, a woman's ova are, in fact, much more fragile. Ova contain more water, which create jagged ice crystals when frozen. These crystals can then destroy the egg.

For couples who are struggling to make a baby, Cadesky says he talks with them about timing and lifestyle choices, like smoking and drug use. Treatments include fertility drugs and, in some cases, in vitro fertilization - a process that can cost up to \$6,000 and is not always covered by OHIP. He adds that, half

the time, the fertility issues start with the sperm, rather than the ova.

Egg harvesting isn't a simple procedure.

First, a woman has to produce multiple eggs, a feat accomplished by daily injections of a follicle-stimulating hormone, which prompts ova to mature. Once the eggs ripen, the area around the cervix is anesthetized, which allows doctors to take a foot-long hollow needle, puncture the top of the vagina and suck mature ovum follicles out of the ovary. The needle is guided into place by ultrasound.

The procedure takes about half an hour, and between five and 30 eggs can be harvested.

Once removed, the eggs are dehydrated, which keeps them from forming ice crystals. They are then

placed in plastic vials - about the size and shape of the cartridge the holds the ink in a pen - and placed in a tub that looks like a large beer keg, filled with liquid nitrogen.

Eggs, embryos and sperm are colour-coded to particular patients so that no eggs get switched before birth.

The practice is already being used by U.S. companies, including Extend Fertility in Massachusetts. The company recently stated that seven babies have been born through their clinic using thawed eggs in the last year.

There, the American Society for Reproductive Medicine has cautioned against it, saying the technology is still too new and experimental to be marketed en masse.

Egg freezing could have saved Toronto-based infertility activist Dalit Hume seven years of stress and heartbreak. Hume began premature menopause at the age of 33, and spent years trying to get pregnant using fertility drugs.

In her case, the drugs failed to help her body form a life.

"People are quiet about it. There's no education and (infertility) is riddled with wives tales," she says. Even if the opportunity to freeze her eggs had been open to her, "I'm not sure I would have gone for it," says Hume.

"Not unless I had had the education to go with it that said 'Oh, by the way, your fertility starts to decline by the time you're 27.'"

Jan Gerson is an intern without the financial means for childbearing