

Health
The Big Chill
Erika Brown, 09.20.04

Antifreeze potions are allowing women to preserve their eggs with greater success than ever before.

Since she was a little girl, Grace Drake had her life all planned out. She would get married, buy a house with a white picket fence, have children and drive a Volvo. But first she would go to college, get her master's and travel the world. The plan started out okay; she married in her late 20s, but got divorced in less than a year. Today, at 35, she owns a home in Austin, Tex., is studying for her M.B.A. and just returned from a trip to Brazil and Uruguay. She misses very much a vital piece of the equation: a family. "You wake up and realize you're 35, you're alone and you're getting older," says Drake. "I look at every baby I see now and think, 'What if I can't have a child?' The fear of the unknown is wicked."

There are 5 million single, childless women in their 30s in the U.S., three times as many as in their mothers' generation. Though workplace equality is getting better, women will always suffer a lack of parity in fertility. A healthy man can produce sperm throughout his entire life, as many as 100 million per day, and if he freezes them, father a child at any age. A baby girl is born with 6 million eggs. By the time she hits puberty she is down to 500,000; she loses 30 each menstrual cycle. By age 27, her fertility begins to decline. So it is that one out of seven women now childless and between the ages of 30 and 34 will never bear a child. By age 40, it's three out of five.

If sperm can be frozen, why not eggs? Until recently most technologies have yielded disappointing results: only a 1% to 3% successful birth rate. But new advances in the science of egg freezing may offer a way for women to regain control of their reproductive life spans or circumvent the sterility brought on by cancer treatment or ovarian surgery. Extend Fertility, a Boston company launched this June, is the first to take freezing out of experimental labs and into clinics. It has brought to the U.S. from Europe a method for slowly freezing eggs so that they're far more apt to be fertile when thawed.

Earlier this month Grace Drake became one of Extend's first customers. She began injecting herself with hormones that spurred her ovaries to produce multiple mature eggs at once. Ten days later Dr. Lisa J. Hansard at the Texas Fertility Center extracted 13 eggs and froze 10.

Christina Jones, an entrepreneur who cofounded her first company, Trilogy Software, at age 19, was inspired to start Extend after a dinner conversation in 2002 with her mother and three sisters. Her mom had just seen a chilling episode of Oprah about childless working women. Jones' mom joked that Christy and her sisters should start freezing their eggs.

Jones took it to heart. At the time, she was 32, single and working on her M.B.A. at Harvard. She figured she'd graduate at 34, then spend a few years on her career before settling down. But by then her eggs might not be viable. She discovered how disappointing existing egg-freezing technologies were. Meanwhile, egg envy had become the topic of cocktail party conversation.

When she heard about the work of Dr. Raffaella Fabbri at the University of Bologna in Italy, Jones knew she was onto something big. In February 2001 Fabbri had published a report claiming pregnancy rates as high as 40% from once-frozen eggs. "I realized the science was at an inflection point," says Jones.

Fabbri made some key discoveries. Egg cells are mostly water. If they're frozen too quickly, ice crystals will destroy the eggs. Fabbri came up with a way to slowly freeze-dry eggs by dipping them in different dehydrating solutions at different temperatures. She found that by removing

more water from the eggs, she could prevent what is essentially freezer burn. She used similar solutions in the thawing process. Normally, after a frozen egg is thawed, its shell becomes hardened and is impenetrable to sperm. So, instead of using natural insemination, Fabbri decided to use the newer procedure of injecting sperm directly into the egg. To date some 130 babies have been born worldwide using variations of Fabbri's recipe. In 2001 MediCult, a culture media manufacturer in Denmark, bought Fabbri's patent for the freezing and thawing solutions for an undisclosed sum.

While finishing her M.B.A., Jones first thought she would start a chain of Extend clinics. But costs were prohibitive. Better to start an outsourced service. Jones moved quickly upon graduating in June. She entered negotiations with MediCult for exclusive rights to distribute its solutions in the U.S. She also signed up California Cryobank in Los Angeles to store the eggs.

Extend manages the egg-freezing process from beginning to end. Its counselors educate women about their options, refer them to fertility doctors and eventually will also provide hormones to boost egg production. Extend also gives doctors Fabbri's freezing solution and elaborate instructions, then keeps track of the eggs, which are stored in liquid nitrogen tanks at California Cryobank's facilities. Extend charges \$10,000 for the service, which it splits with the fertility clinic. The woman still has to spend \$4,000 on hormone treatments and another \$15,000 to \$20,000 later on for each round of in vitro fertilizations with her eggs.

Jones has signed up clinics in Pasadena, Calif., Palo Alto, Calif., and Austin with letters of intent from clinics in Miami and New York City. Since launching three months ago Extend has signed up 25 people for the service and has fielded 200 inquiries. Not everyone will qualify. Women must be under the age of 40 and pass hormone tests that indicate sufficient ovarian reserves. Patients can finance the egg-freezing process with five-year personal loans (at a rate as low as 8.9%) from Capital One.

Some fertility doctors worry that the science hasn't caught up to the marketing hype. "It gives women a false sense of security that they can postpone their childbearing years into their 40s," says Dr. Zev Rosenwaks, director of the Center for Reproductive Medicine & Infertility at New York Weill Cornell Medical Center. "As a routine method for ensuring fertility, egg freezing is still premature."

Jeffrey Boldt, an embryologist at Community Hospital in Indianapolis, says he has been freezing eggs for five years without a corporate partner. He already has the equipment, a steady stream of patients and access to published reports from which he can mix the antifreeze solution on his own. Retorts Boldt, "We published a report last year where we did 42 thaw procedures on 37 patients. Twelve got pregnant, and 8 have already given birth. The proof is in the pudding." Jones argues that labs that operate without MediCult's prefab solution may not have as rigorous quality controls, and their solution batches may vary.

Jones is seeking out venture capitalists for growth capital, but she's already invested \$500,000 of her own money to get Extend started. She can well afford it. The computer seller she had carved out of Trilogy Software and took public in 1999, PCorder.com, fizzled out, but she sold it back to Trilogy in 2000 for \$30 million, netting maybe \$2 million.

Jones is getting married in September. She says she and her husband will try starting a family the old-fashioned way, but Jones paid to freeze a batch of her eggs in May, anyway. "If we have trouble, at least I've got my eggs as a backup."