

# Brave New Biology: Granny Gives Birth

At a time when many of their peers are doting on grandchildren, some women in their 50s dream of delivering an infant of their own. A controversial new study now suggests that for some of these women, that dream can come true.

In a journal article that has stirred a wide range of emotions, a team of scientists led by Mark V. Sauer at the University of Southern California in Los Angeles reports helping fiftysomething women deliver healthy babies. "Women in their 50s are clearly not the same as 35-year-olds. They conjure up images of grandmothers in rocking chairs," Sauer says, adding that this stereotype can be misleading. "The reality is that most women that I see in their 50s are very successful, perhaps at the height of their careers."

Until recently, many older women had given up any hope of becoming pregnant. That barrier began to crumble with Sauer's earlier report that women in their 40s could get pregnant by turning to eggs donated by younger women and a procedure known as IVF, or in vitro fertilization (SN: 9/12/92, p.165).

Now, Sauer and his colleagues have pushed beyond the fortysomething limit. In the first study to focus on women in their 50s, Sauer's team has shown that such women can become pregnant at rates that resemble those seen in a much younger age group. "They did remarkably well," Sauer says. "Implantation and pregnancy rates are as good as the 30-year-old groups that we've done for years."

The team began by recruiting 14 healthy women in their 50s who wanted to have a baby but who had already passed through menopause. The researchers treated the women with sex hormones that prepare the uterus for pregnancy. Next, they collected eggs from younger women. Using standard in vitro techniques, the scientists mixed donor eggs with sperm obtained from each recruit's husband. The team then transferred the embryos from the petri dish to the womb.

Eight of the 14 women became pregnant, the team reports in the Feb. 6 LANCET. One woman suffered a miscarriage in the seventh week of pregnancy, four women have given birth to healthy babies, and the three women still pregnant continue to progress normally.

This reproductive accomplishment is not without critics. While there's no doubt that a baby can bring much joy to an older couple, many aspects of this scientific feat raise serious questions, comments ethicist Ellen Moskowitz of the Hastings Center in Briarcliff Manor, N.Y. Moskowitz wonders whether women who give birth in their 50s will be able to

handle the demands of a teenager.

IVF expert Martin Quigley agrees: "How many 72-year-old women should be raising a teenager?" The rigors of parenting an adolescent aside, Quigley wonders about the motivation of postmenopausal women who want to become pregnant. "Are they trying to recapture their youth?" he asks. Quigley is director of the Northeast Regional Center for Infertility & IVF in Beachwood, Ohio.

Sauer points out that an older woman's reasons for having a child can vary. Some of the women in his study had already had children (and in some cases were grandmothers), but they were in a second marriage and wanted to have a baby with their new partner. In other cases, couples had been married for years, had raised children together, but wanted more kids.

"I would call them professional parents," Sauer says. In still other cases, childless women who had pursued a career wanted one last chance to have a baby, he says. All 14 couples had to undergo extensive psychological testing before they could participate in the study, Sauer adds.

The report raises the specter of ever-older women achieving the goal of pregnancy, a prospect that Moskowitz finds troubling. She points out that older women may die or become disabled while their children are still quite young. Although ethicists have plenty to say about the social issues surrounding the procedure, IVF experts say the new report suggests there's no obvious age limit to such pregnancies. That thought leads Quigley to wonder, "Where will it end?"

— K.A. Fackelmann

## Plants and soils may worsen global warming

Call it the revenge of nature. Two new ecological studies suggest that plants and soils could exacerbate global warming in the next century by releasing vast reserves of carbon dioxide (CO<sub>2</sub>) that they have kept locked away for millennia.

Previous studies of vegetation patterns have indicated the opposite: that plants should eventually ameliorate global warming by growing vigorously and sopping up some of the CO<sub>2</sub> pollution now accumulating in the atmosphere. But such analyses have focused on what happens once the world has warmed, not on the transition period. A simple modeling study now indicates that because plants and soils cannot keep pace with climatic change, they will substantially boost CO<sub>2</sub> concentrations in the atmosphere over the next 50 to 100 years, report Thomas M. Smith and Herman H. Shugart of the University of Virginia in Charlottesville. They detail their findings in the Feb. 11 NATURE.

The CO<sub>2</sub> release forecasted by the two researchers may already have started in the Arctic, according to a separate study reported in the same issue.

To estimate how vegetation and soils will respond to global warming, Smith and Shugart started with general circulation models that simulate how greenhouse gas emissions will alter the climate. By matching climatic patterns with known plant limitations, the researchers produced maps showing the locations of tundra, forests, savannas, and other types of "life zones." They compared a life-zone map for current conditions with a map representing a climate with double the amount of CO<sub>2</sub>. Using crude estimates for how long it takes life zones to replace

each other, the two ecologists calculated how much CO<sub>2</sub> the land surface could store as vegetation patterns shift.

The study shows that transitions that release CO<sub>2</sub> take place much faster than those that store the gas. For instance, forests convert rapidly to grasslands through dieback or fire, which liberates CO<sub>2</sub>. But it takes centuries for CO<sub>2</sub>-storing tundra to replace polar deserts, because species must migrate long distances.

Land changes could boost CO<sub>2</sub> levels by up to a third of the present concentration, the study indicates. While they have little faith in the exact numbers in the study, Smith and Shugart believe their qualitative results have significance because the same conclusions emerge when they use other numbers.

Evidence collected from the tundra of northern Alaska suggests that global warming may already have spurred the land there to start releasing CO<sub>2</sub>, report Walter C. Oechel of San Diego State University and his colleagues.

Oechel's group set up airtight chambers along a 200-mile stretch in northern Alaska to measure gases absorbed and released by growing vegetation and degrading organic matter.

Since the end of the last ice age, the tundra has stored CO<sub>2</sub> by building up thick layers of peat. However, Oechel's measurements in the last decade indicate that tundra along Alaska's North Slope has started to release CO<sub>2</sub> — because microbes are consuming peat faster than it can grow.

Oechel believes the shift happened quite recently. In the early 1970s, measurements made at Barrow showed the tundra absorbing CO<sub>2</sub>. When Oechel and