News of Bone Research Causes Fracture

Harvard's splashy announcement of major advance neglects to mention UCLA's priority

Harvard researchers "have demonstrated for the first time in human patients that new bone can be induced to grow where none previously existed," a 1 May press release from Harvard announced in its opening paragraph. That day, the Harvard scientists held a press conference to report what they touted as a major discovery in bone research. The announcement coincided with publication of the work in the 2 May issue of *The Lancet*.

Dan Lang/Harvard Medical School

Variations on a theme

Harvard's Julie Glowacki at press conference announcing study results.

The news that researchers had found a technique to make bone grow where none existed was reported on the front pages of newspapers across the country. But by the next day it was apparent that the news was indeed not so new. "It almost was like the rediscovery of the wheel," said C. A. L. Bassett, professor of orthopedic surgery at Columbia Presbyterian Hospital in New York. Bassett noted that similar work has been going on for years. In the days that followed, other researchers expressed chagrin over the announcement, pointing out that Marshall Urist of the University of California at Los Angeles was a pioneer in this area of bone research as long ago as 1965.

The Harvard scientists also took the occasion to credit Monsanto for supporting their research and announced that Collagen Corporation, of which Monsanto owns 30 percent, will be responsible for manufacturing the bone powder used in the study. Monsanto has contributed $88,000 toward the bone study. The grant is part of a $23 million commitment made to Harvard by the company in 1974 toward research conducted by Judah Folkman on factors that promote or inhibit cellular growth. There have been some suggestions tnat Monsanto and Collagen may have been the principal benefactors of the announcement, which marked the first fruits of the collaborative venture. Because the Harvard team's work does represent progress, it is unfortunate that it was presented in a way that would inevitably lead to a flap.

Urist has been keeping a low profile since the Harvard announcement because he does not want a public fight, other bone specialists said. Urist, who has been unavailable for comment, simply issued a statement saying that he "is pleased that the *Lancet* article confirms his continuing work. He endorses the research being done by the Harvard group . . ." and others in this field. Gerald Finerman, codirector with Urist of UCLA's bone research division, told *Science*, "We have no problem with the *Lancet* article, but with the way it was announced."

According to the *Lancet* report, decalcified bone taken from human cadavers was made into a putty-like substance and then used to spur bone growth in the craniofacial areas of the patients, who were principally children with birth defects. Julie Glowacki, a Harvard biochemist who headed the research team, said in an interview that for the first time, major deformities of the face, for example, were repaired successfully. During the past 2½ years, 34 patients have been treated with the decalcified bone preparation. Glowacki said that the study also demonstrated for the first time a biological principle of osteoinduction in which bone can be induced to grow even without contact with existing bone.

The press release, however, conveyed a different impression. Gary Friedlaender, an associate professor of orthopedic surgery and oncology at Yale University, said that the press release's statement that Harvard had shown for the first time that new bone can grow where none existed is something that Urist demonstrated 20 years ago. The Harvard team refined Urist's technique of repairing long bones and then applied it to a different area of the body. Even so, Friedlaender said, other researchers have successfully promoted new growth in the head area of children, with similar bone powder methods. The Harvard study is "a variation on an evolving theme," he said, "but the originality goes back to Urist."

Glowacki said she went to great lengths to cite Urist in the *Lancet* article and called him to ask what papers should be referenced in the publication. Urist was cited twice in the footnotes. The press release, which Glowacki said she reviewed carefully before it was distributed, did not mention Urist. "I claim innocence. I was not trying to avoid giving credit," Glowacki said. She explained that the press conference was held for two reasons: one, to inform the media, which had expressed great interest in the study since it began; and two, to show the benefits of the Monsanto-Harvard cooperation. The Harvard director of press relations, Lillian Blacker, said, "Giving Monsanto credit was a nice thing to do." Representatives from Monsanto were at the press conference at the invitation of Harvard.

A standardized bone powder has wide commercial potential in repairing congenital defects, fractures, deteriorating bone of the aged, and damage from periodontal diseases and bone cancers. The next step in research, scientists say, is to isolate either a nonhuman source of bone or a "bone morphogeneic protein," as Finerman calls it, that can be reproduced by recombinant DNA methods. Squibb Corporation in the 1950's marketed a bovine bone powder called Boplant that was widely used in humans to promote bone growth after it had been successful in animal studies. The product was discontinued a few years after it failed to be effective in humans.

Collagen president Howard Palefsky said in a telephone interview from his California office that the firm is in the

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process of applying for patents stemming from the Harvard research. The company hopes to begin clinical trials with a commercial product as early as fall of 1982. So, although Monsanto and Collagen may not see immediate profits from the Harvard investment, the potential in the long run seems to be there. Friedlaender said that if nothing else, the Harvard announcement constituted a legitimate pat on the back for Monsanto.

All in all, it appears that the press release overstated the case. The work improved the lives of children who were grossly deformed. But other researchers have conducted similar work based on a well-known principle studied by Urist. "To say that it's a whole new spanking thing just boggles the imagination," said Bassett.—MARJORIE SUN

POINT OF VIEW

Leon Rosenberg on the "Human Life" Bill

On 23 and 24 April, the U.S. Senate held hearings on a bill (S. 158) that would effectively ban abortion by defining conception as the moment "human life" begins. The hearings, which seemed designed to marshall "scientific" evidence to support this point, took an unexpected course when Yale University geneticist Leon Rosenberg argued forcefully that there is "no scientific evidence which bears on the question of when actual human life begins." Rosenberg, who personally favors individual choice where abortion is concerned, had not been actively engaged in the abortion controversy before. Excerpts from his testimony follow.*

. . . . The crux . . . of the bill before you is the statement . . . "that present day scientific evidence indicates a significant likelihood that actual human life exists from conception." I must respectfully but firmly disagree with this statement for two reasons: first, because I know of no scientific evidence which bears on the question of when actual human life exists; second, because I believe that the notion embodied in the phrase "actual human life" is not a scientific one, but rather a philosophic and religious one. I base my opposition on a third reason as well, namely that I am convinced that the clinical implications of this bill are fundamentally counter to the best interests of the people of the United States.

. . . . There is no reason to debate or to doubt the scientific evidence indicating that conception is a critical event in human reproduction [that establishes the potential for the development of human life]. . . .

When does this potential for human life become actual? I do not know. Moreover, I have not been able to find a single piece of *scientific evidence* which helps me with that question. Not surprisingly, a great deal has been spoken and written on the subject. . . . In 1967, Dr. Joshua Lederberg, a Nobel laureate in genetics wrote the following: "Modern man knows too much to pretend that life is merely the beating of the heart or the tide of breathing. Nevertheless he would like to ask biology to draw an absolute line that might relieve his confusion. The plea is in vain. There is no single, simple answer to 'when does life begin?' ". . . . I have no quarrel with anyone's ideas on this matter, so long as it is clearly understood that they are personal beliefs . . . and not scientific truths.

If such beliefs are not scientific, you might say, just why can't they be made scientific? My answer is that science, per se, doesn't deal with the complex quality called "humanness" any more than it does with such equally complex concepts as love, faith, or trust. The scientific method depends on two essential things—a thesis or idea, and a means of testing that idea. . . . I maintain that concepts such as humanness are beyond the purview of science because no idea about them can be tested experimentally. In discussing this matter with a number of scientific colleagues, I found a similar view. . . . Dr. Lewis Thomas, a leading medical scientist, philosopher and author observed that ". . . whether the very first cell that comes into existence after fertilization of an ovum represents, in itself, a human life, is not in any real sense a scientific question and cannot be answered by scientists. Whatever the answer, it can neither be verified nor proven false using today's scientific knowledge. It is therefore in the domain of metaphysics; it can be argued by philosophers and theologians, but lies beyond the reach of science." . . . If I am right in asserting that the question of when actual life begins is not a scientific matter, then, you may ask, why have so many scientists come here to say that it is? My answer is that scientists, like all other people, have deeply held religious feelings to which they are entitled. In their remarks at these hearings, however, I believe that those who have preceded me have failed to distinguish between their moral or religious positions and their professional, scientific judgments.

. . . . My third reason [for opposing S. 158] is based on my clinical experience and judgment. I believe that this bill has implications both far-reaching and counter to the health interests of our people. This bill, if enacted into law, will prohibit the use of such commonly employed contraceptives as certain birth control pills and the intrauterine devices because these forms of birth control prevent implantation into the uterus of the fertilized ovum that has, by legal decree, been made a person. Moreover, this bill will protect a conceptus that has possibility of realizing its human potential. . . . Finally, this bill would almost certainly stop all amniocentesis used for prenatal diagnosis of a growing list of genetic disorders . . . for which no successful treatment is at hand. . . .

Let me conclude by divesting myself of all scientific or clinical credentials and speak simply as an American. I believe we all know that this bill is about abortion and about nothing but abortion. If this matter is so compelling that our society cannot continue to accept a pluralistic view which makes women and couples responsible for their own reproductive decisions, then I say pass a constitutional amendment that bans abortion and overturns the Supreme Court decision in Roe *vs.* Wade. But, don't ask science or medicine to help justify that course because they cannot. Ask your conscience, your minister, your priest, your rabbi—or even your God—because it is in their domain that this matter resides.

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