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A Cloning Scandal Rocks a Pillar of Science Publishing
By GINA KOLATA

Science magazine has seen its share of controversies over the years: papers questioned and withdrawn and occasional accusations of scientific fraud. But none of those incidents, says Science's executive editor, Monica M. Bradford, can compare to the turmoil that has been shaking the magazine for the last month.

It involves a dazzling paper in which South Korean scientists announced not only that they had produced cloned human embryos and extracted their stem cells but that they had done so with such efficiency that it seemed almost easy.

The publication of that paper, celebrated by Science with great fanfare on May 19, has now turned into a debacle. And the mood in Science's editorial offices on the 10th floor of a gray marble office building in Washington has gone from elation to distress and exhaustion.

On Friday, Science announced that that paper was in the process of being withdrawn. In the meantime, investigations continue into what actually happened at the South Korean research labs and where the truth lies.

"This has become so dramatic," Ms. Bradford said, saying she could think of no precedent at the journal. "In a sense it has been unlike anything else."

For Science, the chain of events began on Tuesday, March 15, when the manuscript arrived by e-mail. It was clearly a high-profile paper, and its lead author, Hwang Woo Suk of Seoul National University, was known at the journal.

He had published a previous paper in Science, on Feb. 12, 2004, announcing that he had, with great difficulty, cloned a human embryo and extracted stem cells.

Still, Science put this latest paper from Dr. Hwang's lab through the same process it put the nearly 12,000 other papers received this year, Ms. Bradford said.

Papers are sent to one or two outside experts on the journal's board of reviewing editors who advise on whether they are appropriate for Science magazine. Seventy percent of submitted papers are rejected. The others are sent to at least two additional scientists for in-depth review.

The reviewers comment on the paper and also assess its quality, checking off boxes ranging from "reject" to "publish without delay." About 25 percent of those reviewed end up being published. But the reviewers are not the science police, Ms. Bradford and outside scientists emphasized.

"We work on the assumption that the data are real," Ms. Bradford said. "The question is, Do the data support the conclusions?"

On May 12, after having passed scrutiny by three outside reviewers, Dr. Hwang's paper was accepted for publication, faster than the journal's average time from submission to acceptance, which is about three months.

When the paper appeared May 19, it met with enormous acclaim. Dr. Hwang traveled the world lecturing on his work and scientists trekked to South Korea to visit the lab and see how the feat was accomplished.

The first hints that something might not be right came in November. By Dec. 9, Ms. Bradford and her colleagues - Katrina L. Kelner, the deputy editor, who has an office next door; another editor, working from another city, whom Ms. Bradford would not identify; and the editor in chief, Donald Kennedy, who is at Stanford - were trying to get some answers.

As the weeks passed, Dr. Hwang, was hospitalized for stress but insisted that his group had really cloned human embryos and created 11 lines of stem cells, as his paper reported. But one of his co-authors, Dr. Roh Sung Il, said the data were fraudulent.

One question was whether photographs, described in the paper as being stem cells derived from cloned human embryos, were frauds. Dr. Roh said they were actually from a large computer file of stem cells and not derived from cloning experiments.

Another question involved the veracity of the DNA fingerprints in the Science paper that were used to show that a stem cell was genetically identical to a person who provided cells for cloning.

"We sent a series of questions to the authors," Ms. Bradford said. "How did this high resolution image get put together? Look at all your images. Go through your data. The same with the DNA fingerprinting: go through your data. What are your answers?"

But despite repeated calls and e-mail messages to South Korea, Ms. Bradford said Thursday, "We haven't gotten any answers yet."

All along, Science's news department, a group of journalists at the magazine, was kept separate from the editorial investigation.

Colin Norman, Science's news editor, said the editors on the editorial side "tell us when something is going to be released to the press, but not much more." In fact, he said, "I only know what I'm reading in the press at the moment, which is pretty amazing."

The story continues, with its twists and turns. On Dec. 12, the one American author on the paper, Gerald Schatten of the University of Pittsburgh, asked that his name be taken off and his university began an inquiry. On Friday, Dr. Schatten and Dr. Hwang told Science they wished to retract the paper.

But Dr. Hwang also held a news conference on Friday in which he insisted that the data were correct. And Dr. Schatten, in a telephone interview on Wednesday, did not really distance himself from Dr. Hwang, whom he had previously introduced as his best friend, or from the results.

"I still remain totally optimistic and convinced about all of this," Dr. Schatten said. "I'm optimistic that at some point, I hope sooner than later, this is brought to a satisfactory conclusion that I think will be constructive for everyone including the man I still think of as my best friend."

Dr. Kennedy said in news conference by telephone on Friday afternoon, "As of now we can't reach any conclusions with respect to misconduct issues." He also said that as of now the journal's editors did not know the exact reasons that Dr. Schatten and Dr. Hwang asked that the paper be withdrawn.

If the paper is withdrawn, Dr. Kennedy said, "There will have to be a retraction statement, and it will have to contain more than we now know about the authors' reasons for retracting it."

He added, "I can't state chapter and verse, but it is more than we have gotten now."

Dr. Hwang and Dr. Schatten were the only 2 of the paper's 25 authors who asked that it be retracted, Dr. Kennedy said. Ordinarily, Science requires each one of a paper's authors to sign a statement agreeing to a retraction. Ms. Bradford said that despite quite a bit of effort, she and her colleagues had been unable to get even e-mail addresses for all of the authors. But Dr. Kennedy said Dr. Hwang was trying to reach the members of his group.

Meanwhile, stem cell scientists and ethicists continue to follow the story with what Laurie Zoloth, an ethicist at Northwestern University, describes as "a kind of collective mesmerized despair," and some troubling questions.

"What we do not understand is how one person could have hoaxed all 24 of the collaborators on the papers - all of whom seemed eager to claim the work as 'our' work at the time," Dr. Zoloth said. "Did we see only what we yearned to see?"