

Stem cell researcher falsified images

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A FORMER member of one of the highest-profile teams in stem cell biology has been found guilty of falsifying results.

Last year, the work of researchers led by Catherine Verfaillie of the University of Minnesota in Minneapolis became mired in controversy after *New Scientist* pointed to irregularities in their published results. Now an expert panel called in by the university to investigate one set of irregularities has ruled that a PhD student on the team, Morayma Reyes, falsified data.

Verfaillie's group shot to prominence in 2002 when their paper in *Nature* (vol 418, p 41) suggested that a rare type of adult stem cell from bone marrow – first isolated by Reyes – could give rise to all the body's tissues. This had previously been seen only in embryonic stem cells (ESCs).

The findings were seized on as an alternative to ESCs by self-styled "pro-life" activists – who oppose the destruction of human embryos to isolate stem cell lines. But other researchers were unable to repeat the results.

The verdict of falsification relates to an earlier paper on the cells, published in *Blood* (vol 98, p 2615) in 2001, that formed part of Reyes's PhD work. Less well known than the *Nature* paper, the *Blood* paper is significant because it describes cells isolated from the bone marrow of humans rather than experimental mice.

Last year, *New Scientist* revealed that images in the *Blood* paper documenting the presence of proteins in the stem cells also appeared in a US patent (number 7015037), where they were supposed to have originated in different experiments. *New*

Scientist also found that the same image, flipped through 180 degrees and slightly altered, was used twice in the *Blood* paper to represent the results of different experiments.

An expert panel of three scientists has now concluded that the problems ran deeper still. According to a summary of the panel's findings released by the university, images in four figures in the *Blood* paper were falsified by manipulating the originals. For another image, the panel was unable to find the raw data. The university has now asked for the paper to be retracted.

While the panel decided that images in the patent were "seriously flawed", the evidence it found was not sufficient to show that misconduct was involved in their preparation.

The panel also found duplicated data in both the *Blood* paper and another paper in *The Journal of Clinical Investigation* (vol 109, p 337), but ruled that these errors were not misconduct. *The Journal of Clinical Investigation*

has been informed of the problems, but the university has not asked for the paper to be withdrawn.

The panel cleared Verfaillie, now at the Catholic University of Leuven (KUL) in Belgium, of misconduct along with the other authors of both papers, but criticised her for inadequate training and oversight of Reyes.

"I have initiated a number of additional oversight measures designed to further enhance the integrity of research and scientific publications coming from my lab," Verfaillie says. "I am

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confident that these measures will avoid the recurrence of a similar problem in the future."

Reyes's punishment, if any, is unknown, as the university is not allowed by Minnesota law to reveal disciplinary action against a former student. Now at the University of Washington in Seattle, Reyes disputes the finding that she misrepresented data: "These were honest errors in part due to inexperience, poor training and lack of clear standards," she told *New Scientist*.

The finding follows an earlier discovery by *New Scientist* that six graphs prepared by another junior member of the team were duplicated between the *Nature* paper and one published in *Experimental Hematology* (vol 30, p 896). An earlier panel found no evidence of deliberate misconduct in this case, but said the work was flawed, because the controls were not carried out correctly.

Biologists worry that the intense competition in stem cell research may cause similar problems in future. "My concern is that this sort of thing will happen again," says Arnold Kriegstein, who heads the Institute for Regeneration Medicine at the University of California, San Francisco. ●

A SHORT HISTORY OF CONTROVERSY

- 2001: Paper published in *Blood* (vol 98, p 2615)
- 2002: Paper published in *Nature* (vol 418, p 41). Minnesota group shoots to prominence
- 2002: Paper published in *Experimental Hematology* (vol 30, p 896)
- February 2006: *New Scientist* queries researchers about duplications of data in *Nature* and *Experimental Hematology*
- October 2006: A University of Minnesota inquiry rules that there are errors but no deliberate misconduct in this case
- March 2007: *New Scientist* shows US patent (7015037) granted in 2006 contains images used in *Blood* to describe different results
- March 2007: The University of Minnesota launches inquiry into *Blood* paper and patent
- June 2007: *Nature* publishes correction to paper
- 2008: Expert panel called in by the University of Minnesota rules a PhD student on the team, Morayma Reyes, falsified data in *Blood* paper

SOUNDBITES

"I'm not one to attribute every man – activity of man to the changes in the climate. There is something to be said also for man's activities, but also for the cyclical temperature changes on our planet."

Republican candidate **Sarah Palin** makes her position on the causes of climate change absolutely clear in last week's vice-presidential debate (*The New York Times*, 2 October)

"Why aren't we thinking of mimicking the effects of childbirth?"

Many breast cancers are caused by the absence of hormones related to childbirth, according to **Valerie Beral** of the University of Oxford, who says we should use this knowledge to develop preventive medicines (*The Guardian*, London, 6 October)

"The surprise is there isn't a surprise."

Physicist **Mark Lancaster** of University College London on the Wakeham Review of the state of UK physics. The report was commissioned amid an outcry at £80 million of funding cuts last year, and many physicists had feared it would contain radical recommendations for basic science (*Physics World*, 2 October)

"For me there is no Plan B."

UN climate chief **Yvo De Boer** worries that the global financial crisis could derail efforts to agree a new UN climate treaty by the end of 2009 (Reuters, 6 October)

"This meteor will be a real humdinger."

A meteor that was due to burn up in the atmosphere above Africa on Tuesday was up to 5 metres across, according to **Gareth Williams** of the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts. It was the first rock of any size to be found on a collision course with Earth (Reuters, 6 October)