

## 'Flawed' stem cell data withdrawn

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IT IS one of the best-known stem cell papers in the past five years, describing adult cells that seemed to hold the same promise as embryonic stem cells. Now, following inquiries by *New Scientist*, some of the data contained within the papers is being questioned.

In 2002, a team led by Catherine Verfaillie of the University of Minnesota, Minneapolis, described "multipotent adult progenitor cells" or MAPCs, isolated from the bone marrow of rodents (*Nature*, vol 418, p 41). These cells seemed able to develop into most of the body's tissues. Previously, only

embryonic stem cells (ESCs) had proved so versatile, and the work was seized upon by opponents of ESC research, who claimed it showed similarly versatile cells could be harvested without destroying human embryos.

The results proved hard to repeat, and for more than six months from late 2003 even Verfaillie's own group was unable to isolate the cells. When *New Scientist* looked more closely, we found that six plots from the *Nature* paper and its supplementary information were duplicated in a second paper, published at about the same time in *Experimental Hematology* (vol 30, p 896), even though they were supposed to refer to different cells, taken

from different mice. The plots described "marker" molecules on the surface of the cells, supposedly characteristic of MAPCs.

After *New Scientist* questioned the results, a panel of experts reviewed the data. Verfaillie, now at the Catholic University of Leuven (KUL) in Belgium, has since written to the two journals informing them of problems with data within the two papers, stating: "It was [the experts'] consensus opinion that the data were flawed and should not be relied upon as accurate representation of MAPC marker profiles."

The flaws she refers to do not relate to the duplications in the papers, and Verfaillie stands by the claim that MAPCs can develop into most of the body's tissues, arguing that later papers have described reliable methods for identifying them. In her most recent paper, Verfaillie and Irving Weissman, a stem cell biologist at Stanford University in

California, showed that MAPCs can give rise to all the cell types found in blood (*New Scientist*, 27 January, p 17), but it is still unclear whether MAPCs are as versatile as she claimed in the original *Nature* paper.

Many researchers are unable even to isolate them. "They're very testy cells," observes Amy Wagers of Harvard

**"The paper describes 'multipotent' cells that seemed able to develop into most of the body's tissues"**

University, who spent a week in Verfaillie's lab trying in vain to learn the technique.

The problems with the marker profiles may help explain these difficulties. "If I had been following this recipe since 2002, I'd be extremely angry," says Jeanne Loring, a stem cell biologist at the Burnham Institute for Medical Research in La Jolla, California. ●

## INSIGHT

### Want to fly with NASA? Better not admit your problems

WE CAN never be sure how much Lisa Nowak's job or her space flight aboard the shuttle *Discovery* last July affected her state of mind. But her arrest for attempted murder last week has raised questions over the stress astronauts must cope with and the processes in place to deal with problems when they occur.

It is no secret that astronauts perform under great stress in space. What is not so well known, or so well understood, is the pressure they experience while on Earth. "There are tremendous stresses both before and after each mission," says Dave Musson, a psychologist who studies high-performance individuals, including astronauts, at McMaster University in Hamilton, in the Canadian province of Ontario.

Astronauts' celebrity status puts them under considerable pressure, he

says: "They are constantly under the spotlight of public scrutiny." This comes on top of the stress of their day-to-day jobs, in which they are under continual assessment for the shrinking number of spaces aboard future flights.

In 2003, the NASA inspector general criticised the agency for hiring too many astronauts. The shuttle flew only three times in 2006 and has only seven seats available on each flight, yet NASA has more than 125 astronauts on its books. To make matters worse, the shuttle is due to be retired in 2010, and it is not yet certain when its successor will be ready to fly. "Seats are hard to come by," says Musson. Nowak waited 10 years for her first and so far only flight. Given the shortage of spaces, she was unlikely to fly again even before her arrest. Her marriage is also reported to have recently broken down.



**Astronauts learn to keep difficult feelings bottled up**

Rumours of personal difficulties among astronauts abound, but most incidents result in the astronaut leaving the corps and are not publicised. NASA rarely comments on such problems, though Buzz Aldrin, the second man on the moon, is known to have battled with depression and alcoholism after he left the agency.

While psychological problems will be found in any group of people, there is a suspicion that NASA's way of assessing astronauts may exacerbate them. At the very least, the selection process discourages astronauts from discussing personal difficulties, says Musson. Psychologists tend to believe that the best predictor of a person's future conduct is their past conduct, which means that admitting weakness could end an astronaut's career. "It seems unfair, but that's the reality of selection," says Musson. **Justin Mullins** ●