Double check casts doubt on statistics in published papers

Helen Pearson

A study highlighting statistical gaffes in scientific literature has brought renewed calls for vigilance among mathematically challenged researchers and journal editors.

Statistical tests are sometimes seen as a necessary evil by researchers, who fear their complexity but know that they are needed to test hypotheses. With this aversion in mind, biostatisticians Emili García-Berthou and Carles Alcaraz of the University of Girona, Spain, gauged the extent of statistical errors in four volumes of *Nature* from 2001 (409–412) and a sample of results in two *BMJ* volumes (322–323) from the same year.

The pair used three standard software packages to recalculate '*P* values', the parameters by which researchers measure whether a result has statistical significance. Generally a *P* value of less than 0.05 is taken to be significant and unlikely to have resulted from chance. This may indicate, for example, that blood pressure in a patient group was reduced more by an active drug than by a placebo.

In the *Nature* and *BMJ* papers, each *P* value was calculated from two other parameters that are included in the papers. García-Berthou and Alcaraz recalculated the *P* values from these numbers, and found that their results differed from those published in more than 11% of cases. They also found small mistakes, such as rounding errors, in 38% of the *Nature* papers and 25% of the *BMJ* ones (*BMC Med. Res. Methodol.* www.biomedcentral.com/1471-2288/4/13; 2004).

In only 1 case out of 27 did an incorrect *P* value change a significant result to a non-significant one. But, although minor, some believe that the slip-ups expose a pervasive sloppiness towards statistics in published research. "There are small mistakes that may occasionally have big consequences," says Martin Bland, an expert in medical statistics at the University of York, UK.

Philip Campbell, the editor-in-chief of *Nature*, says the journal will take a closer look at the study's numbers before deciding whether remedial action is needed. He adds that *Nature* has amended its editing practices since the period covered by the study.

Richard Smith, editor of the *BMJ*, says that one way forward is for researchers or journals to publish more raw data on the Internet, where others would be able to check them. ■

J.-M. LEE/AP

Unwatched: questions have been raised over how Woo Suk Hwang's laboratory obtained human eggs.

Korean bioethicists call for inquiry into stem-cell work

David Cyranoski, Tokyo

Bioethicists are pushing for an investigation into the cloning work of a South Korean research team — but are having no luck in finding someone to lead it.

Woo Suk Hwang from Seoul National University and colleagues cloned a human somatic cell, creating an embryo that they used to establish a stem-cell line. It was a huge leap in a field full of medical promise and a major boost for Korean science.

But ethical questions have been raised, particularly about how egg donors were recruited for the experiment and whether they included junior members of the laboratory (see *Nature* **429,** 3; 2004).

Hwang denies that any members of his laboratory were donors and he is backed up by the Institutional Review Board (IRB) of Hanyang University Hospital in Seoul, which originally approved the experiment.

But critics question whether the board has been sufficiently rigorous. At its annual meeting in Seoul on 22 May, the Korean Bioethics Association called on Hwang and the review board to answer questions concerning the recruitment of donors and funding sources. "We request the institutes involved and the participants to present clear explanations regarding the following queries about therapeutic human embryonic cloning research," reads the statement they issued.

The questions, posted on the association's homepage and picked up by major South Korean newspapers, include: "Did the Hanyang University Hospital's IRB perform a continuing review on this research project in order to monitor its ethics?"

Some bioethicists accuse the board of not including the non-researchers required by guidelines from the Korea Food and Drug Administration. Institutional review boards are obliged to include "more than one attorney or religious representative, not from the fields of medicine, dentistry, oriental medicine, pharmacy or nursing sciences". Hanyang's consisted of 12 doctors, a pharmacologist, a nurse and a theologian.

The bioethics association wants the case pursued by the National Human Rights Commission, an independent investigative body funded by the government. The commission established a bioethics task force two months ago, but senior commissioner Kyung Seo Park says it was set up to implement rules that come into force next year, not to investigate specific research projects.

"There are no provisions to deal with special cases like Professor Hwang's," Park says. He admits that last month a member of the task force asked the Hanyang review board for documents about the research, and that the board said it was not possible to provide them. But he adds, "The task force does not have any kind of binding power so I told them to stop." Park says the commission may still take up an investigation later.

The situation worries Young Mo Koo, a medical ethicist at the University of Ulsan College of Medicine and member of the bioethics association. The Korea Food and Drug Administration oversees commercial projects, but no one regulates basic research involving human samples, says Koo. "It's a grey area," he adds. "There is a serious need for an investigation." ■

Corking result for French whine

M. KAPLAN/ALAMY

Paris In a country where wine is drunk like water, the government is contemplating reclassifying the drink as a 'natural food' instead of alcohol.

French winemakers say sales of their national drink have been falling for years, thanks in part to a strict 1991 law on alcohol advertising and anti-drinking campaigns run by the government. They describe the situation as a 'crisis' and say that wine, as an important part of France's culture and history, ought to be given a helping hand.

Their complaints appear to have had an effect. Later this month, Prime Minister Jean-Pierre Raffarin will be presented with draft legislation proposing the reclassification. If passed, this will alleviate the heavy advertising restrictions.

US plans extensive cut to nuclear weapons stockpile

Washington The US government has announced plans for a significant cut in its stockpile of nuclear weapons between now and the end of 2012.

The plan is outlined in a report sent to Congress on 1 June by the National Nuclear Security Administration, which oversees the nation's nuclear stockpile. The report's details are classified, but Linton Brooks, the agency's administrator, says that the stockpile will be cut "almost in half". Currently, the United States is thought to have about 10,000 weapons.

The move has been welcomed by many. But Ivan Oelrich, who directs the Federation of American Scientist's Strategic Security Project, says it does not go far enough. "The US still has approximately ten times the number of warheads it needs," he says.

Sandia boss knew I was innocent, says worker

San Diego Sandia National Laboratories is being sued by an employee who claims she was made a scapegoat for security lapses, and that her career and reputation have been ruined in the process.

The New Mexico nuclear weapons lab came under congressional scrutiny in early 2003 after whistle-blowers reported problems with security, such as napping guards and disappearing master keys. An external review committee claimed that Patricia Gingrich contributed to one such lapse — by helping to destroy evidence of an inappropriate romantic liaison. Gingrich says she was later demoted to a job with an $11,000 drop in salary.

Gingrich's lawsuit, filed on 19 May, claims that lab president Paul Robinson knew the review's accusations to be false, but reprimanded her publicly in order to persuade Congress that steps were being taken to improve security. The lab has declined to comment on the case.

Correction

A News item in the 3 June issue of *Nature* (**429,** 490; 2004) erroneously states that Hanyang University Hospital's Institutional Review Board (IRB) was in violation of Korean Food and Drug Administration guidelines. The article says that the guidelines require IRBs to include more than one layperson. In fact they only require one, which this IRB had appointed. The error in the text was made by a Seoul-based translation company that *Nature* paid to translate the document. *Nature* asked the translator to verify the passage prior to publication, but the mistake was overlooked. We apologize for the error.