tadpoles of the African clawed frog, *Xenopus laevis*—the lab rat of amphibians—in water with levels of atrazine varying from 0.01 to 200 parts per billion (ppb). The EPA standard is 3 ppb. At and above 0.1 ppb, 16% to 20% of the animals developed up to six gonads, including both testes and ovaries. In male adult frogs exposed to 25 ppb of atrazine, testosterone levels dropped 10-fold, to levels found in females.

"This study is ground-breaking," says Val Beasley, an ecotoxicologist at the University of Illinois, Urbana-Champaign. It may well "give us an important piece of the puzzle of amphibian declines," adds James Collins of Arizona State University in Tempe.

Atrazine concentrations used in the study are frequently encountered in the wild, affirms U.S. Geological Survey hydrologist William Battaglin. Atrazine is routinely present in streams, rivers, and reservoirs in the central portion of the United States at levels of 1 to 10 ppb in spring; peaks of 100 to 200 ppb have been recorded. Airborne atrazine is brought to earth in rainfall, sometimes at concentrations above 1 ppb. Because the herbicide is most often applied in the spring, its runoff peaks just as frogs are breeding and tadpoles developing—often in ditches and pools near agricultural fields.

Because Hayes and colleagues found no effects on mortality, growth rate, or external appearance, they argue that endocrine abnormalities might easily occur in the wild unnoticed. But critics point out that the current study doesn't reveal whether the abnormalities affect reproductive ability. It's also not clear whether atrazine-induced damage would lead to decreases in amphibian numbers. EPA biologist William Rabert adds that wildlife studies must demonstrate negative effects on populations before the agency will consider regulatory action.

As useful as *Xenopus* is in the lab, conservationists aren't trying to protect it, so Hayes and his group have been studying wild frogs in North America. Their unpublished data suggest that in northern leopard frogs the effects of atrazine are "even more dramatic than what we see in *Xenopus*," Hayes says. Lab work with this species has shown similar gonadal effects, and field collections across the United States reveal that frogs in areas of high atrazine use show more endocrine damage than those in areas devoid of the chemical, he says.

Hayes and colleagues suggest that atrazine disrupts the endocrine system in a different way from compounds known to mimic hormones. They propose that atrazine activates the enzyme aromatase, which converts androgens to estrogen. "The testes have been coopted by atrazine to make the wrong thing," Hayes explains. Reproductive biologist Louis Guillette of the University of Florida, Gainesville, and his students first demonstrated this mechanism in atrazine-exposed alligators, whose testes produced hormones as ovaries do, and it has since been shown or suggested in several other vertebrates.

The new report, published in the 16 April issue of the *Proceedings of the National Academy of Sciences*, appeared the same week that EPA was to release its revised risk assessment for atrazine, a key step in its years-long process of reviewing the chemical's effects on humans, wildlife, and the environment. Although EPA officials refused to comment on the risk assessment before *Science* went to press, they confirmed that Hayes's results were forwarded to them before publication and were considered in the assessment.

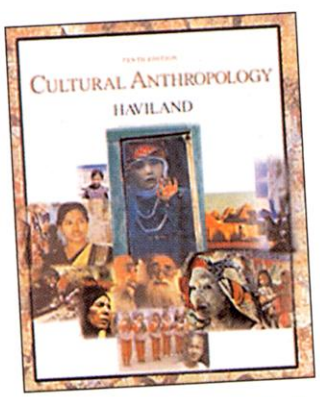
–JAY WITHGOTT

Jay Withgott writes from San Francisco.

SCIENTIFIC MISCONDUCT

Beijing U. Issues First-Ever Rules

BEIJING—China's most prestigious university has adopted the country's first explicit policy to root out research misconduct. The new policy, announced late last month, is distinctive for its sweeping range of offenses—and for having teeth.



Textbook misconduct. A Beijing University anthropologist used material from this popular U.S. text in his own book.

For years the government here has tried to combat what is seen as a rising tide of questionable behavior in the scientific community (*Science*, 18 October 1996, p. 337; 5 March 1999, p. 1427). In keeping with that campaign, the new policy at Beijing University (also called Beida) goes beyond the universally accepted sins of plagiarism, fabrication, and falsification of research data to include much broader misuses of scientific information. Its definition includes "intentionally exaggerating the academic value and economic and social results of a research finding; publishing results without appraisals from school authorities or other academic organizations, … and disclosing research findings that should be kept confidential according to the country's laws and regulations."

The rules, 3 years in the making, flesh out well-meaning but bland statements on ethical conduct that were issued recently by the Chinese Academy of Sciences and the Ministry of Education. "Our regulations are more practical compared with similar regulations published earlier," says Zhou Yueming, who heads the university's department of human resources and who helped draft the document. In addition to the definition, the policy describes procedures for investigating allegations of misconduct and lays out a range of penalties for those found guilty.

Even before the policy was officially adopted, Beida officials had already applied it to a faculty member found to have plagiarized large amounts of material from a leading U.S. textbook on cultural anthropology. A university investigation found that Wang Mingming, a 38-year-old anthropologist, had used the material in his 1998 book *Imaginary Alien Nation*. Late last year, the university removed Wang from his post as director of the folklore study center, as well as from the sociology department's academic board and its anthropology teaching and research section. Wang is not allowed to recruit new doctoral students for 2 years, although he may continue advising those currently under his supervision.

Wang has declined to comment, but last fall he wrote about his situation to William Haviland, a retired University of Vermont anthropologist and author of the popular college text, *Cultural Anthropology*. "He said he'd done a terrible thing and asked for my forgiveness," says Haviland. "In other words, he 'fessed up. I told him that it was wrong and that he shouldn't have done it. But I forgave him."

Ironically, Haviland says that he gave Wang permission to translate the third edition of his textbook, which appeared in Chinese in 1987, and that Wang wrote him last fall asking for permission to translate the 10th edition, which had just appeared. "I was told that my text was the first Western anthropology textbook allowed in China in the post-Mao era," Haviland says. "And although plagiarism is a serious offense, it is also the sincerest form of flattery."

University officials say that media coverage of Wang's case this winter influenced the timing of the announcement. Three other Beida employees have been disciplined in recent years for misconduct involving improper crediting of research material. One teacher was moved out of the classroom, and two others were made ineligible for promotions.

Senior faculty members, some of whom were consulted on the policy, say they are pleased with the new rules. "I am a strong supporter of those regulations," says Chen Dayue, deputy director of the college of mathematics science. "Research ethics have been passed on from teachers to students over generations at our university. But now a

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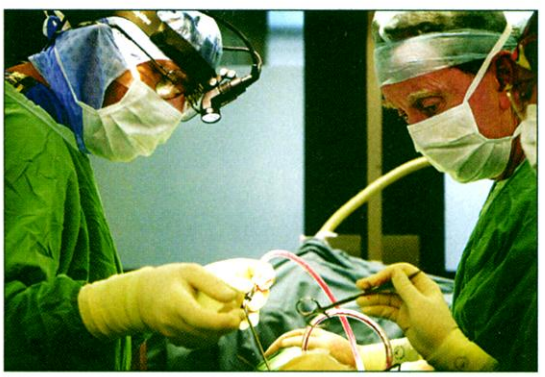
large group of faculty members are from other universities both at home and abroad. So we need a written document to guide and instruct our teachers and to prevent them from misconduct." **–DING YIMIN**

Ding Yimin writes for *China Features* in Beijing.

SCIENTIFIC MISCONDUCT

Australia Probes Kidney Researcher

SYDNEY—The Australian government has frozen funding to a prominent medical researcher and clinician pending the outcome of an investigation into allegations that he committed scientific misconduct. The case has raised questions about the adequacy of the country's present system of investigating misconduct.



Open inquiry. Bruce Hall (left) is under investigation by the University of New South Wales.

The allegations against Bruce Hall, a renal transplant physician and professor of medicine at the University of New South Wales (UNSW), have been made by three members of Hall's laboratory. In a series of submissions to university officials beginning last fall, they alleged that Hall misrepresented and fabricated experimental results, manipulated authorship credit in presentations and papers, and provided false data on a federal grant application. The work in question involves the role of CD4+ and CD25+ cells in organ acceptance and rejection as well as experiments involving monoclonal antibodies. Hall has declined to comment on any aspect of the case.

This month, in an attempt to put pressure on the university, the researchers—Clara He, Juchuan Chen, and Hong Ha—took their charges to ABC radio, which aired them last weekend. Two days after the ABC story ran, the UNSW Council, the institution's governing body, ordered an outside inquiry into the matter as well as an internal review of the university's procedures relating to possible misconduct. "The allegations are enormously disturbing," says council member Jeremy Davis, a former dean of the university's management school and past president of the academic board. "If the allegations are true, all our deep processes have failed."

Immediately after the show aired, John Ingleson, the university's deputy vice chancellor, issued a statement saying that the radio program "contained a number of serious inaccuracies." The statement also asserted that "the university has taken all appropriate steps to investigate the complaints referred to in the program." Ingleson said that its findings would be made public but did not give a timetable.

In a 16 January letter to UNSW officials, the National Health and Medical Research Council (NHMRC), the country's leading biomedical research funding agency, said that it was suspending a recently awarded grant to Hall—one of several he holds from the council—because of questions He had raised about the accuracy of the data upon which the application was based. "We don't have a view [on the truthfulness of the allegations]," says a council spokesperson. "But we take the matter very seriously, and we've asked that [the investigation] be done quickly."

Australia has no national body to monitor, investigate, and prosecute allegations of misconduct. Instead, each institution sets its own procedures, which must follow relevant state employment or anticorruption laws. To receive federal funding, institutions must agree to a code of conduct written by NHMRC and a nationwide body of university vice chancellors.

But that system may be inadequate for the task, says Merrilyn Walton, an ethics scholar at the University of Sydney and a former state commissioner for health care complaints. While making no judgment on the allegations against Hall, Walton says it's unrealistic to require institutions to root out serious scientific misconduct that could damage their reputations and their bottom lines. "It's like asking police to investigate police," she says.

–LEIGH DAYTON

Leigh Dayton writes from Sydney.

CHEMISTRY

To Net Big Molecules, Widen the Mesh

Some tradeoffs seem unavoidable. Industrial efforts to purify water or natural gas, for example, separate desired compounds from mixtures by passing them through membranes pocked with tiny holes. The smaller the holes, the more selectively the membrane lets molecules pass. But the tighter passage also slows the overall flow, requiring the use of higher pressures to push compounds

ScienceScope

Touching a Nerve Do investigators believe that grant size and duration have a big impact on their research? The National Science Foundation (NSF) is still tallying the answers to that and other questions put to some 6000 grantees as part of a study ordered by the White House budget office. But the 92% response rate to its Web-based questionnaire indicates how strongly researchers feel about the subject, officials say.

"I've never seen such a high response. It's amazing," says Norman Bradburn, a survey veteran who heads NSF's social and behavioral sciences directorate. NSF director Rita Colwell expects that the survey results, due out next month, will help her persuade Congress and the White House that larger, longer awards would make researchers more productive. "We hope it will reveal what more they could do with the right size and length of grants," Colwell told the National Science Board at its March meeting. The average NSF grant is now $113,000 and runs for 2.9 years.

One Beluga, Two Beluga Responding to critics, an international body has disclosed the data it relied on in allowing Caspian nations to resume fishing beluga. Pressure groups have argued that stocks of this sturgeon species, prized for its caviar, cannot sustain commercial harvest (*Science*, 22 March, p. 2191). But the secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) deems the beluga's status "far from precarious," claiming that there are an estimated 9 million individuals in the North Caspian alone (www.cites.org/eng/programme/Sturgeon/catch.pdf).

The 2002 allowed catch of 1780 beluga—a 39% decline from the average over the previous 4 years—is "sustainable and conservative," argues CITES Deputy Secretary-General Jim Armstrong. Critics are unimpressed. "I'm not at all convinced that they have a case," says Ellen Pikitch of the Wildlife Conservation Society. She hopes CITES officials change their mind before the main sturgeon harvest in the north Caspian commences in May.

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