ward to support the allegations of misconduct.

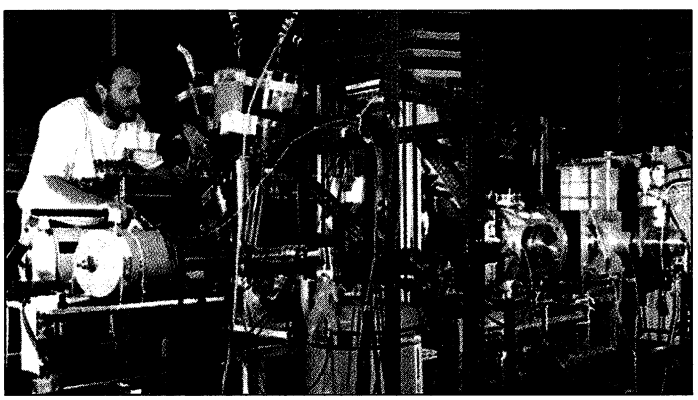
Kay is willing to settle out of court, Awerkamp says, but so far the university has made "no formal response" to the breach of contract claim, although it has offered her back pay to the day of her first firing. "We will be back in court," he predicts.

–ELIOT MARSHALL

NUCLEAR PHYSICS

Double Magic for New Nickel Nucleus

In what you might call a smashing success, physicists have chiseled out an atomic nucleus laden with a record eight more protons than neutrons. The new nucleus, nickel-48, self-destructs in a fraction of a second, but it may help researchers study a form of radioactive decay that they have long sought but not yet observed.



Nickel and time. Nuclear physicist Bertram Blank spent 10 years searching for proton-laden nickel-48.

As with fraternity brothers in a phone booth, you can cram only so many protons into a nucleus. There, protons and neutrons stick to one another with a peculiar pull called the strong force. But the like-charged protons also push against one another with an electric force. If the protons outnumber the uncharged neutrons by too wide a margin, the electric force wins out and the nucleus falls apart. That's why almost every atomic nucleus in nature has more neutrons than protons.

But proton-rich nuclei can stabilize themselves by playing a shell game. Like the electrons buzzing around in their orbital shells, the protons and neutrons in the nucleus pile into distinct nuclear shells. And just as elements with full electron shells are inert, nuclei with full nuclear shells tend to be more stable. So nuclei that are "doubly magic"—that possess a full shell of neutrons and a full shell of protons—may be stable, even if the protons outnumber the neutrons. Knowing this, nuclear physicist Bertram Blank and his team at the Grand Accélérateur National d'Ions Lourds in Caen, France, spent the last 10 years hunting for nickel-48, a doubly magic nucleus with 28 protons but only 20 neutrons.

To make the novel nucleus, the researchers smashed a high-energy beam of naturally occurring nickel-58 nuclei (28 protons and 30 neutrons) into a nickel-58 target. The collision knocked bits and pieces off the passing particles, producing a shower of odd nuclei. The team measured the charge and mass of every one with a sophisticated spectrometer. After sifting through millions of nuclei, they found four nickel-48 nuclei, as the researchers report in the 7 February *Physical Review Letters*.

The barely stable nucleus is a prime candidate for two-proton decay, a form of nuclear decay that until now has been strictly theoretical, says P. Gregers Hansen, a nuclear physicist at Michigan State University in East Lansing. Because of peculiarities of the strong force, nickel-48 cannot eject one proton, but it might just spit out two at once, thereby emitting a kind of radiation that has never been detected. "It's wonderful to know [nickel-48] exists," Hansen says. "Someday we may do some experiments with it."

–ADRIAN CHO

EPIDEMIOLOGY

U.K. Plans Major Medical DNA Database

Following the examples of Iceland, Sweden, and Estonia, the United Kingdom is drawing up plans to create a national database linking the DNA of 500,000 of its citizens to their medical records and lifestyle details. Its main goal is to tease apart the genetic and environmental components of conditions such as cardiovascular disease and cancer and, eventually, to come up with new drugs to treat—or even prevent—these conditions. An expert panel is currently hammering out a strategy for setting up the database and is due to report its recommendations next month.

Dubbed the U.K. Population Biomedical Collection, the database is a joint project of Britain's two principal supporters of biomedical research, the government-funded Medical Research Council (MRC) and the Wellcome Trust, a charitable foundation, in collaboration with the National Health Service. "It's basically a very large-scale epidemiological study," says Tom Meade, director of the MRC Epidemiology and Medical Care Unit, who also heads the MRC/Wellcome working group convened last May to look into the feasibility of the project. Although the working group has found few major technical stumbling blocks, it is taking a cautious approach to such issues as personal privacy and consent, following the outcry that greeted the setting up of the Icelandic database.

In Iceland, the database project was initiated by a private company, deCODE Genetics. Once the project won parliamentary approval in 1998, deCODE could gain access to the medical records of Icelandic citizens who did not opt out of the scheme (*Science*, 1 January 1999, p. 13). Researchers and civil liberties campaigners protested deCODE's monopoly of the data and expressed concern about informed consent procedures and patient confidentiality.

Meade stresses that the U.K. collection will have several fundamental differences from the Icelandic scheme. "Instead of being run by a commercial company, the MRC and the Wellcome Trust are independent research organizations," he says, adding that the British database would be based "entirely on an opt-in approach; participation would be completely voluntary." After getting patients' consent, physicians would gather information about their social status and lifestyle—such as dietary habits, smoking, and exercise—and take blood to obtain DNA samples. The patients would then have regular checkups, and their medical records in the database would be updated.

Many working details, such as who should have access to the data or have rights to the intellectual property contained in it or drugs derived from it, are yet to be worked out, Meade says. Meanwhile, the MRC and the Wellcome Trust are consulting widely "to gather information about how the public feels" about such a medical database, says Ify Uwechue, a Wellcome spokesperson. Sue Mayer, director of the pressure group GeneWatch U.K., says such a study is essential. "Before steaming ahead, we need to have rules and guidelines in place and a proper public debate about such urgent issues as privacy, consent, and access," she says. Mayer predicts that a medical data bank "is going to be a very sensitive issue in the United Kingdom."

Nevertheless, Meade is optimistic that "if we can make it very clear why we do it and what the tremendous potential benefits will be, most people will find [the database] acceptable." If they succeed in getting their message across, Meade adds, the database could be up and running as early as next year.

–MICHAEL HAGMANN

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