1998, p. 1830).

Not long after that hearing, Varmus tapped an independent panel to consider the future of OPRR. Leading the six-person team were co-chairs Nancy Neveloff Dubler, director of the bioethics division of the Montefiore Medical Center in the Bronx, New York, and Renee Landers, an attorney at Ropes & Gray in Boston. After interviewing 15 officials and reviewing files, they reached their conclusions in May.

The panel noted that the size of the clinical research enterprise is growing, as is public concern about the welfare of human subjects. But it warned that OPRR, as the public's guardian, has a problem: Because it is located in a research agency, there is a "perception that OPRR's actions will be biased in favor of research interests and will provide insufficient protection to research subjects." And this, the panel found, contributes "to the public distrust of the research enterprise."

The panel found that such concerns are "not just abstract or hypothetical." OPRR's recommendations sometimes seem "compromised" by its location deep in the bureaucracy, Landers said in a telephone interview. "It isn't able to speak with a clear voice" on policy initiatives, according to Landers, because NIH's process of collegial review tends to filter out disagreements. This process can muffle signals, preventing HHS higher-ups from hearing an important message, Landers said. At the same time, the panel suggested that NIH might have trouble supervising OPRR, because any attempt to exercise control might be interpreted as improper meddling.

The report recommends that OPRR be moved to HHS, preferably in the office of the surgeon general or assistant secretary for health. In addition, the report says the OPRR chief should be elevated to the Senior Executive Service, opening the way to recruiting a widely respected national leader. (If the civil service rank were changed, the current director, Gary Ellis, would have to reapply for his job.) And the panel urged that OPRR be given an advisory panel, a larger budget, and a more active role. It currently has a staff of just 28 people. But Landers is careful to add, "It was not our intent" to encourage a "more aggressive, prosecutorial approach."

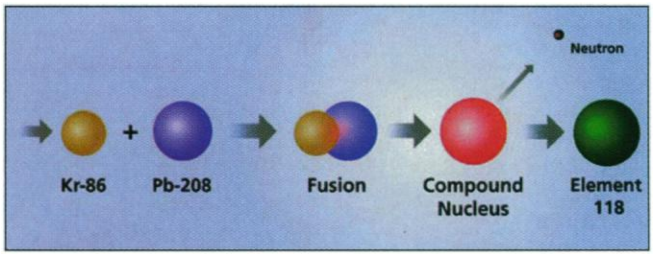
The initial response was muted. One member of Varmus's advisory panel—William Brody, president of The Johns Hopkins University in Baltimore—worried about the "profound implications" of turning OPRR into a "free-ranging organization." But biomedical and clinical research groups have not objected. Ellis commented that "OPRR feels thoroughly examined," but did not disagree with the report. Mark Yessian, a staffer in the office of the HHS inspector general who studied this issue last year, said the report "makes a good case" for relocating OPRR but added, "I just hope it isn't seen as 80% of the answer" to improving oversight. Yessian wrote a report last year that found that the network of local institutional review boards (IRBs) that monitor human subject research at universities and other institutions is "in jeopardy." He thinks the IRB system needs to be revamped as well.

Varmus, who foresaw "political trouble" for NIH if it retained authority in this area of bioethics, seemed happy to let it go. He said that he would send the new report to HHS Secretary Donna Shalala right away and urge her to implement it. **–ELIOT MARSHALL**

NUCLEAR PHYSICS

Berkeley Crew Bags Element 118

Step aside, element 114; there's a new heavyweight champ. Physicists at the Lawrence Berkeley National Laboratory in California announced earlier this week that they have created two new superheavy elements, tipping the scales at 118 and 116 protons. The new heavyweights come as something of a surprise, as standard theories had suggested that the technique used to create them—fusing two medium-weight nuclei at a relatively low energy—should top out at 112. The team's success suggests that the method may produce weightier champs, with atomic numbers 119 and beyond. "It's a very exciting result," says Ron Lougheed, a heavy-element physicist at Lawrence Livermore National Laboratory in California. "I suspect it will lead to a flurry of new isotopes in this region."



Rare species. It took roughly 10^{12} krypton-lead collisions to produce each atom of element 118.

Ever since the early 1940s, when Glenn Seaborg and his Berkeley colleagues created the first handful of artificial elements beyond the 94 that exist in nature, physicists have vied to forge the next heaviest element. The most recent milestone came in January when researchers at the Joint Institute for Nuclear Research in Dubna, Russia, won a race to create the long-sought element 114 (*Science*, 22 January, p. 474). Element 114 was a special prize because its 30-second lifetime seemed to confirm predictions of an island of stability—a realm of superheavy elements including 114 and its neighbors, whose nuclei have an internal structure that makes them more stable than heavier and lighter isotopes.

Although the 114 work has yet to be duplicated, the success marked an unexpected renaissance for a previously successful technique known as hot fusion, in which a beam of light isotopes is smashed into a heavier target, such as plutonium. Prior to that success, the technique of choice had been cold fusion, a gentler collision of medium-sized isotopes. Researchers at the Institute for Heavy Ion Research (GSI) in Darmstadt, Germany, used the technique to lay claim to five elements from 107 to 112 since the early 1980s. Conventional theories suggested that neither technique would be able to form elements as big as 118 without them instantly breaking apart, or fissioning.

The Berkeley team's big break came at the prodding of Robert Smolańczuk, a visiting theorist from the Soltan Institute for Nuclear Studies in Poland, who suggested that there may still be a little warmth left in cold fusion. His calculations suggested that bombarding a lead target with krypton ions would have reasonable odds of producing a few atoms of 118 after all: The compound nucleus, he found, was less likely to fission than previously thought. "We didn't really believe it," says Ken Gregorich, who led the 15-member Berkeley team. "But it was one of those experiments where there was little to lose and a big upside. We tried it and were surprised to see something."

They saw a lot of somethings. After an accelerator flung the krypton ions into the lead, the impact debris was swept into another machine that separated detritus from atoms of potential interest, which were channeled to a radiation detector. The detector measured a distinct pattern of alpha-particle emissions as the sought-after heavyweight shed pieces of itself in search of a more stable configuration. "During 11 days of experiments, three such alpha-decay chains were observed indicating production of three atoms of element 118," says Gregorich. As an added bonus, the first alpha decay in each case produced an atom of element 116—also never before seen. And the time course of the decays lent support to the theory of the island of stability around element 114.

Next up, Gregorich says, his team plans to switch the lead target for one of bismuth atoms, which harbor an extra proton. If they fuse with krypton, the group will have yet another champ at 119. **–ROBERT F. SERVICE**

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