DNA forensics experts say this shift in critical focus means that the scientific furor is ending. What's changed, they say, is that the validity of their assumptions about DNA marker inheritance is now supported by lots of data. The FBI and other agencies have tested thousands of DNA samples from many ethnic groups. This has not turned up any surprises, says population geneticist Ranajit Chakraborty of the University of Texas, Houston. It has confirmed that differences in marker frequency are greater between broad racial groups than within them, suggesting that in calculating the odds of a match, it is best to use data for a single ethnic group, not an average or mix of values. But no matter how the odds are calculated, if one uses four or more markers, the likelihood of finding an erroneous match is vanishingly small. Says Mark Stoneking of Pennsylvania State University, an expert in population genetics: "The data are pretty conclusive."

Because confidence in the validity of DNA markers has increased, the NRC panel agreed that when the race of a person leaving evidence at the crime scene is known, the court should use the appropriate ethnic database to calculate the odds of a DNA match occurring by chance. If the race of the perpetrator is not known, the report says, the odds should be calculated using several different population profiles, and the court may decide which is the best to use.

The NRC panel decided not to ask the courts to mandate a uniform policy of proficiency testing for DNA labs, something many critics had sought. Instead, the report suggests that labs "should adhere to a high quality standard," "make every effort to be accredited," and "participate regularly in proficiency tests." Critics of DNA forensics practices fault the NRC panel for making such a bland recommendation. But the report says blind testing would impose "formidable" logistical demands on the system. As an alternative, the NRC panel asks that defendants be allowed to verify results by conducting independent tests on DNA samples "whenever feasible."

The NRC's new advice will still leave critics—and some enforcement officials—grumbling. For example, California prosecutor Harmon thinks that the report's recommendation for research on how to present complex statistics to a jury will prompt defense attorneys to file appeals on grounds that statistics are misunderstood. But for the most part, forensics experts say, the new NRC rules offer a rationale for practices that the courts are already adopting.

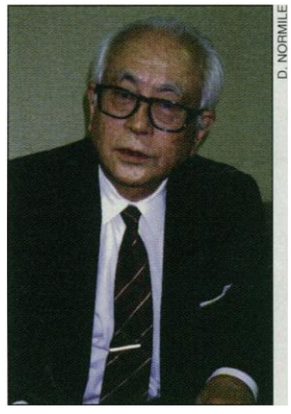
–Eliot Marshall

JAPAN

Five-Year Science Plan Under Debate

TOKYO—Next month a high-level working group will submit a draft of a 5-year plan for Japanese R&D to the Council for Science and Technology, an advisory body to the prime minister. The plan, which is eagerly awaited by Japan's scientific community, is expected to lay the groundwork for a major expansion of government support for R&D. Even before the document is finished, however, some researchers are worrying that it will not do enough to bolster basic research.

The council established the working group—composed of scientific and industrial leaders—to help implement a Science and Technology Basic Law passed last fall by the Diet. The working group's report will describe the policy initiatives needed to permit what the law terms a "radical expansion of the nation's investment in research and development." The law does not define "radical expansion," but the most frequently mentioned target is a boost in governmental spending on research to 1% of the country's gross national product from the current level of 0.53%. (The U.S. figure is approximately 1%.) The plan is also supposed to spell out nonbudgetary measures that would facilitate research efforts and identify steps to stimulate research in the private sector.



D. NORMILE

Big picture. Osawa says report will look at the country's overall research needs.

Hiroyuki Osawa, the head of the working group and a former vice minister of the Science and Technology Agency, says the group's recommendations will not focus on specific fields, nor will they differentiate basic and applied research. "Rather, they concern the overall research environment," says Osawa. One priority will be refurbishing cramped and outdated laboratory facilities in the country's 100 national universities. "It's the biggest problem," he says. Among nonbudgetary issues, the group is looking at laws affecting public servants that bar professors from consulting or participating in start-up businesses and make it difficult for universities to create postdoctoral positions.

That even-handed strategy doesn't surprise physicist Akito Arima, president of the Institute of Physical and Chemical Research (RIKEN) and a member of the working group. "That is the usual way in Japan," he says. But Arima believes that awarding across-the-board increases will not correct the existing imbalance between basic science and engineering. He says the disparity is visible on campus, where engineering departments dwarf their basic science counterparts, as well as in the equal representation of industry and academia on the committee drafting the 5-year plan.

"I don't want to be misunderstood," says Arima, who stresses his support for the budget increases. "Both [applied and basic research] are important. But applied science in Japan is relatively strong. We need more support for pure science." In particular, he cites astrophysics and mathematics as two fields that need additional support precisely because the chances of economic return are remote. At the same time, Arima admits that his is a minority opinion on the panel and that "I don't have any good ideas" on how to focus more attention on basic science.

Shinya Ono, a Diet member who is vice chair of the Liberal Democratic Party (LDP) committee that initiated the bill creating the basic law, says he does not see a sharp distinction between basic and applied work. "I think the emphasis should be on originality, regardless of whether it is in basic research or applied research," he says.

The basic law itself reflects the growing role of the legislature in shaping the direction of Japanese science. (The vast majority of bills in Japan are proposed by the administration.) Ono, formerly an aerospace engineer at the government's Institute of Space and Astronautical Science, says many Diet members believe the rapid growth of the government's research budget and the importance of science to the nation require that the "objectives, progress, and achievements should be reviewed by the Diet, especially for big projects." Already under discussion in the same LDP committee that generated the basic law is the creation of some mechanism, perhaps modeled on the now-defunct U.S. congressional Office of Technology Assessment, that would help the Diet with such reviews.

"Diet members used to tell me, 'I know [science policy] is important, but I don't know anything about it,' " says Masao Ito, a RIKEN neuroscientist who is president of the Science Council of Japan, an influential association of scientists. Now, he says, a number of Diet members do have a background and interest in science. And as Japan's science budgets grow, he says, "they expect their [political] power could expand as well."

–Dennis Normile