through a specially designed container at room temperature. "We are completely confident that it will work, but we still have to do some work to establish the real lifetime of the target," says Broome. For example, the team has yet to investigate whether pressure waves created in the mercury by the extremely short, high-power proton pulses would damage the container.

Although ESS still has a long way to go before it produces its first neutrons, researchers are already looking forward to the science that its intense beams would make possible. "We can use it to look at processes in shorter times, we can use it to look at much smaller samples and dilute samples, and we can look at much more subtle effects," says ESS science coordinator John Finney of University College London. For example, researchers would be able to study the folding and denaturation of proteins in solutions and how the interactions between nonpolar groups are modulated by adding particular ions. "This is the kind of thing we cannot even dream of getting a proper answer to now," Finney says.

But before that dream comes true, the participating laboratories—in France, Germany, Switzerland, Denmark, and the United Kingdom—must still secure funding for the next R&D phase from their own governments and the European Union. If they clear that hurdle, the next step would be a 2-year engineering phase, followed by a 6-year construction phase starting in 2002, and a 2-year commissioning phase from 2008. "We have to improve confidence and reduce costs," says Taylor. "We have [technical] solutions, but we have to seek more cost-effective solutions in the long run."

U.S. researchers are looking on with interest. "I think it is an extremely important project for the world, not just for Europe," says Bill Appleton at Oak Ridge National Laboratory. "The total availability of neutron sources is going down, and most sources don't have enough intensity to do the kind of new science that is possible. This source addresses both of these things."

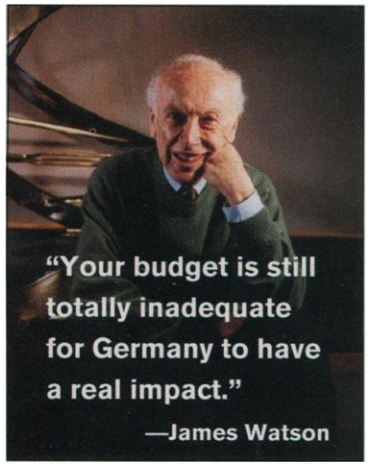
–Alexander Hellemans

Alexander Hellemans is a science writer in Paris.

GENOME RESEARCH

Watson Urges 'Put Hitler Behind Us'

BERLIN—In a keynote speech to a molecular medicine congress here last weekend, one of the world's foremost geneticists—Nobel Prize–winner James D. Watson, co-discoverer of the structure of DNA and a founder of the Human Genome Project—stepped carefully into the ethical minefield of German genetic research and the legacy of Nazi eugenics policies. The time has come, he said, to "put Hitler behind us." He urged Germany to focus on the great benefits that applying genome research can offer humankind, and to put more resources into genetic research. At the same time, Watson warned that geneticists should try to keep decisions about genetic testing and related matters "in the hands of the people" and away from state control. "Genetics as a discipline must strive to be the servant of the people, as opposed to our governments," he told the 1000 delegates. "Never again must geneticists be seen as the servants of political and social masters" who use pseudoscience for despicable ends.



MARGOT BENNETT

In the name of the pseudoscience of eugenics, Adolf Hitler's Nazi regime exterminated millions of Jews, Gypsies, mental patients, and disabled people between 1933 and 1945, and carried out experiments on concentration-camp prisoners. The guilt and horror at that grotesque misuse of science was a major factor in transforming Germany—once a leader in genetics—into one of the most hostile environments for such research and the scientists who do it. In recent years, Germany has begun to emerge from its withdrawal—loosening some strict regulations and slowly rebuilding its genetic research.

Nevertheless, in his speech and at a related news conference, Watson—president of Cold Spring Harbor Laboratory in New York—told German scientists that their nation's genetic research is not moving fast enough. Watson said he was "very happy that Germany has now finally chosen to join" the genome project, but he added: "Your budget is still totally inadequate for Germany to have a real impact. You are putting money in to use the genome, not to get it." Watson also attacked Germany's restrictive laws governing genetic research. "Your regulation of biotechnology has been counterproductive," Watson said, asserting that overregulation had threatened to make Germany "a second-rate nation as far as biotechnology is concerned."

Watson, who is famous for his outspokenness, stepped even further into delicate territory: One reason German genetics has taken so long to recover, he said, is that "Germany never purged itself" completely of the scientists whose work was misused by the Nazis. Watson—who conceded that some Americans, including scientists at Cold Spring Harbor, carried out eugenics research before the Nazi era—said that while some German researchers were punished after World War II, a number of discredited geneticists retained influential university posts. "You never came out and said the bad guys" were bad geneticists, he said, and that failure has hurt later researchers.

Watson's remarks were loudly applauded by many German scientists at the meeting. Detlev Ganten, head of Berlin's Max Delbrück Center for Molecular Medicine, which co-organized the conference, told *Science* he agreed that Germany "never fully purged itself" of the sins of some Nazi-era geneticists and is still "psychologically not well prepared" for such research. He added: "We are grateful that Jim Watson came here with this message. It is very hard for Germans to say it."

But Watson's jabs at Germany's fledgling genome project and the nation's research regulations ruffled some feathers at the Ministry of Education, Science, Research and Technology. Elke Wülfing, the ministry's representative at the conference, told *Science* that the genome project, started 2 years ago (*Science*, 16 June 1995, p. 1556), "is getting an adequate share of the German research budget." Germany now spends about $24 million a year on its genome project, a small fraction of the estimated $3 billion total cost of the entire Human Genome Project. Wülfing said the delay in establishing Germany's project related to "extensive discussions about ethics," and she defended Germany's stance on regulating genetic engineering. "Despite all the known opportunities inherent in biotechnology and genetic engineering, we must not lose sight of the concerns of the general population in the face of the inherent risks," she said.

Watson said he hoped German science will make significant contributions to the genome project: "The gene is still regarded by much of the German population as a bad thing. The time has come to end this." He then added: "Genetics per se can never be evil. It is only when we use or misuse it that morality comes in."

–Robert Koenig

Robert Koenig is a writer in Berlin.