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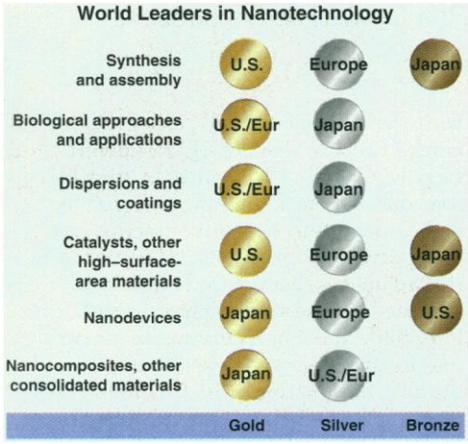

SOURCE: WTEC

Nanotech Gold

If nanotechnology were an Olympic event, the United States would take home the gold, Europe the silver, and Japan the bronze. These three competitors appear to be far ahead of the rest of the world in this burgeoning field, according to researchers who met last week in Arlington, Virginia, to finalize a study sponsored by the U.S. government.

The study, being conducted by the World Technology Evaluation Center (WTEC) at Loyola College in Baltimore, defines nanotechnology as any product that uses a material in which at least one dimension—height, length, or width—is measured in nanometers, or billionths of a meter. Sales of materials with nanoscale components—everything from computer hard disks to catalysts and coatings—already amount to tens of billions of dollars a year, the study says. Over the next decade, the study's authors predict, new nanotech markets will emerge in areas such as chemical sensors, high-strength ceramics, and devices that blend biological and electronic components. "Work is clearly exploding worldwide," says materials expert Richard Siegel of Rensselaer Polytechnic Institute in Troy, New York, who is leading the study.

Governments around the world currently spend about $430 million a year on nanotechnology and engineering, the researchers found, with the United States, Europe, and Japan each accounting for roughly $120 million each. Despite what appears to be an equal playing field for the big three, the U.S. leads in fields such as synthesizing new nanomaterials and Japan in making nanoscale electronic devices, while Europe and the U.S. tie in crafting novel coatings (see chart). The study's final report is due out this spring.

But public spending doesn't tell the whole story. True R&D figures for each country are undoubtedly much higher, as companies support a "tremendous amount" of nanotech research but rarely publish their findings or reveal how much they spend on nanotech R&D, says Larry Kabacoff, a nanotech expert at the Office of Naval Research in Washington, D.C. For that reason, the ultimate medal winners will be decided in the marketplace.

NIH Prepares to Revamp Peer Review

Seeking to improve the overall quality of science it funds, the National Institutes of Health (NIH) has created a blue-ribbon panel to help redraw the turf boundaries of panels that review grants. The 15-member group includes such distinguished researchers as Bruce Alberts, president of the National Academy of Sciences, David Botstein of Stanford University, Philippa Marrack of the University of Colorado, and Harvard's Stuart Orkin.

The panel hasn't yet elected a chair or drawn up an agenda. But Alberts, for one, says he has been "worried for a long time" that outdated boundaries between NIH's roughly 100 study sections, which cover topics ranging from radiation therapy to cell biology, are making it difficult for young scientists to get ahead (*Science*, 9 May 1997, p. 889). "Our most talented young scientists have been competing with each other" in the hottest areas, Alberts says, while some other areas seem to have become quiescent. He hopes it will be possible to restructure the system to distribute the competition evenly.

The move is strongly supported by cell biologist Keith Yamamoto of the University of California, San Francisco, who advises NIH on peer review. Yamamoto encourages the experts to "turn loose" their imaginations and come up with good ideas.

Digital Libraries Put to Work

Efforts to make the Internet's digital flood as useful and easy to navigate as bookstacks in a good old-fashioned library will get a big boost sometime in the next few weeks. Officials at the National Science Foundation (NSF) are about to announce a 5-year, $40 million to $50 million program called Digital Libraries 2.

The program will build on a smaller one that over 4 years has funded the development of technologies to, for example, catalog and search large sets of images, and glean information from data banks scattered across cyberspace (*Science*, 7 October 1994, p. 20). Now it's time "to go beyond technology to usability," says NSF's Stephen Griffin.

By turning large, widely used collections of information into digital libraries, the program "will field really big test-beds of what scientists will use 5 years from now," says Bruce Schatz of the University of Illinois, Urbana-Champaign. It has attracted other sponsoring agencies, including the National Library of Medicine and NASA. And grant winners—likely to be announced this fall—will probably include industrial partners.

Legislator and EPA Critic Team Up on New Science Bill

An Environmental Protection Agency scientist who landed in hot water after publicly criticizing EPA science has now achieved a measure of revenge: He has helped write a proposed law that would make sweeping changes in how federal agencies use scientific data to craft new regulations.

Microbiologist David Lewis of EPA's ecosystems lab in Athens, Georgia, took the agency to court last year over what he claimed was an effort to quash his public criticism of how EPA uses science (*Science*, 12 September 1997, p. 1595). Meanwhile, Lewis had found an ally in Representative Richard Pombo (R–CA), who has long called for better science behind such laws as the Endangered Species Act. Working in his spare time from Georgia, Lewis last year helped Pombo draft the Science Integrity Act, which Pombo introduced in the House last week. The bill would mandate that outside scientific panels review all proposed federal rules with a science component, and it would set up at each regulatory agency a new entity—an "Office of Regulations Integrity"— headed by an appointed scientist who would have final say on whether the regs should move forward. The bill would also require that raw data used to develop new regs—including studies by nonagency scientists—be made publicly available.

"It's exactly what I've wanted for a long time," says Lewis, who isn't the first to complain that EPA sometimes applies science unevenly. However, some observers see the bill as an attempt to block regs with new costs and mountains of red tape: "Frankly, [it's] ludicrous," says one Democratic staffer. But the bill could get considerable Republican support, as did legislation last year that would have required the release of public data from federally funded studies (*Science*, 8 August 1997, p. 758). Pombo's bill (HR 3234) has been referred to the government oversight committee and the science committee, which expects to hold a hearing on it later this year.

Lewis's public campaign has paid off in another way, as well. A judge is now considering a settlement under which EPA would apologize to Lewis and compensate him for legal fees and other expenses.