Technology Commercialization

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Nanotech: Next Tech-transfer Task?

NNI research needs to translate into products

Beneath the enthusiasm of this month's National Nanotechnology Initiative (NNI) meeting was concern that the US may not be paying sufficient attention to translating NNI research results into new products or processes.

"It's not enough for [the United States] to be spending more than the Europeans or the Japanese," one industry delegate said. "We've got to ensure the technology gets patented and rights transferred promptly to a US company that can make and sell it."

Some attendees also worried that nanotech research at federal or national labs might not get patent protection because of labs' money worries.

"If the [US] fees go up, labs will likely seek fewer patents," a civilian agency official agreed.

"Deciding which [ideas] get patented will become a gamble because few labs have money to assess the market potential of their inventions," he said.

About 500 people from federal agencies, industry, and academia took part the April 3-4 conference in Washington DC.

PRE-TAX LOSS OF $61-MILLION EXPECTED BY BTG

Licensing firm's results in line with earlier expectations

BTG plc anticipates its results for the financial year ended March 31 2003 will be "broadly in line" with expectations—total and net revenues of $48.67-million and $26.69-million, respectively—while pre-tax losses may exceed $61.25-million.

"The reorganization of our business announced in December has been implemented successfully," CEO Ian Harvey said on April 3. "We expect, as previously stated, to see resumption in revenue growth from this financial year as our business progresses."

Preliminary BTG results for the financial year will be released on May 29.

BTG still expects to achieve its goal of being profitable by March 2006, excluding any impact from Provensis Ltd, a subsidiary that's developing a varicose vein treatment.

The bigger pre-tax loss is blamed on a "higher than normal" patent amortization charge, and write-down of equity investments.

UK CLARIFIES PATENTING OF STEM CELLS

Practice Notice issued by the UK Patent Office

"On balance," the UK Patent Office says, "the commercial exploitation of inventions concerning certain types of human embryonic stem cells (*pluripotent cells*) would not be contrary to public policy or morality in the United Kingdom." as a result, it says, they should not be excluded from patentability.

The April 11 practice notice by the UK Patent Office, which clarifies the UK position on inventions relating to human embryonic stem cells, was widely welcomed.

Instances where the UK Patent Office would not grant or consider inventions that involved human stem cells are also explained in the notice.

[Continued, page 8]

COMMERCIAL LICENSING & AGREEMENTS

- **Flamel Technologies S.A.** and GlaxoSmithKline plc (GSK) announced that Flamel has licensed its *"Micropump"* controlled-release technology to GSK, which is to develop a new formulation for an undisclosed existing product. Flamel will get an upfront payment of $2-million, and milestone and royalty payments from GSK based on sales of the product. The companies estimate, based on continued successful development and commercialization of the formulation, that payments to Flamel could be up to $45-million by the end of the first year, following launch. Of this figure, $25-million would be due to reaching certain milestones. Flamel might also participate in manufacturing the product. "We're confident of the potential of *Micropump* technology for these large and still growing markets," Flamel president & CEO Gerard Soula said. "This additional agreement further demonstrates the interest of major worldwide pharmaceutical companies in our versatile technology platforms." Soula noted that this was Flamel's second license agreement with GSK on the *Micropump* in the past 9 months. GSK officials said the collaboration with Flamel will enable the company to maintain its leadership in product r&d, especially within the therapeutics area.
- **UTEK Corporation** and GloTech Industries Inc. signed a strategic alliance agreement that tasks UTEK with identifying unique technology acquisition opportunities for GloTech and, where appropriate use its *USB* model to enable GloTech to acquire licenses to these technologies. "GloTech has built an innovative, electro-luminescent safety product business based on technology developed at the University of Florida, and UTEK helped us identify and license our core technology," GloTech Industries' president & CEO Heinz Fraunhoffer said. "Potential expansion of our product line through UTEK's established relationships with research organizations and universities offers [us] exciting growth potential." The agreement was signed on April 15.
- **Dow Chemical Co.** is transferring its *"Intacta"* Performance Polymers polyurethane gloves business to YTY Industry Sdn Bh of Malaysia. Dow developed the *"Intacta"* latex-free gloves in response to growing concerns about natural rubber latex (NRL) allergies. The gloves, which are used typically for medical and dental examinations, have become a success because of a proprietary aqueous-based polyurethane dispersion chemistry that's used in the manufacturing process. "We're very pleased with this agreement and see it as a logical evolution of Dow's gloves business," Dow Polyurethane's new business development director Greg McDaniel said on April 10. "Dow will now focus on its core strengths and continue to supply YTY with the polyurethane polymers and technology required to make the gloves," he said, "while YTY leverages its expertise in manufacturing and marketing to further grow the business globally." YTY was formed in Malaysia in 1988 and has become of the leading makers of a range of disposable examination gloves, exporting to North America, Europe, and Japan. YTY had contract manufactured the gloves for Dow since 2000. Terms of the arrangement were not disclosed by the companies.
- **Monsanto Company** has licensed its *"YieldGard"* Rootworm corn technology to DuPont's subsidiary, Pioneer Hi-Bred International Inc. "This furthers our commitment to broadly license our biotechnology traits so that growers have access to traits they want in the seed brands of their choice for use on their farms," Monsanto's chief operating officer Hugh Grant said April 15. Although few details of the agreement were disclosed, the license is a worldwide one and Pioneer will pay royalties to Monsanto, while DuPont is to make other unspecified payments in connection with the license. "This licensing agreement allows us to provide our customers with additional new corn technology in Pioneer brand hybrids," Pioneer president Rick McConnell said. The technology, which received EPA registration recently, allows commercialization this planting season of the first biotech corn to control the corn rootworm pest. [More items, page 7]

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The iNSIDe tRACk

Flat revenues for the year are forecast by Scipher plc, the UK technology development and licensing company.

In a statement released on April 1, Scipher officials said revenues for the company's financial year ended March 31 2003 will be "flat compared to last year," and below market expectations. "Order books have strengthened during the 2nd half, [but] sales from several high-value contracts that were expected [in this period] have slipped into the next financial year."

In prior years, it was explained, over 25% of the annual sales came in the last month of the financial year. That's not been the case in the current year.

"The effect of lower [sales] in the year, combined with a lower gross margin compared to last year, will result in a loss... that's greater than market expectations," the statement said.

Scipher acquired the Internet-based business yet2.com in December, and this has extended Scipher's expertise into all phases of intellectual property management and licensing. The purchase also offered opportunities to expand services in the US, Japan, and Europe.

Excellent market prospects are forecast for licensing, but completion of a number of new high-value licensing deals have been delayed and will not now occur until later in this year, Scipher admits.

Secure Identification has seen growth in sales of fingerprint readers and other systems, while the Communications business made a profit.

Scipher's 3-D sound systems business has strengthened, but delays in two licensing deals have resulted in lower sales. Sales of displays are up 40%.

Sensors exhibited substantial revenue growth with first commercial sales of the CO2 sensor and detector products;

Directors of Scipher warn that results for the financial just ended will be disappointing, but they see "good prospects" for renewed growth with particular benefits being derived from the patent licensing and secure ID operations.

Four scientists were named as recipients of the prestigious Lavoisier Medals of Achievement this month.

The highest honor for science excellence awarded by DuPont, the four 2003 medalists are:

—***L. John Hoffbeck***, considered one of the most successful corn breeders at Pioneer Hi-Bred International, the world's largest seed company;

—***Richard W. Rees,*** who discovered a unique family of tough, clear plastics now sold as DuPont's *Surlyn* ionomer resins that are used to protect food in packages with air-tight seals to tough coverings for golf balls and bowling pins;

—***Rolando Pagilagan***, who used fundamental chemical principles to develop and guide DuPont's engineering polymers business; and

—***Rudolph Pariser***, who contributed to polymer chemistry and enhanced understanding of colors and dyes, and was involved in the development of several key DuPont elastomers.

The awards will be made on June 16 in Wilmington.

With the exception of Pagilagan, who continues with research at the Washington Works site in Parkersburg, W.Va., all the medalists have retired.

Named after Antoine Lavoisier, who served as a mentor to the founder of DuPont, the medal of achievement has only been awarded to 65 scientists.

Preclinical studies of using chimeric natriuretic peptides to treat congestive heart failure show promising results, according to Research Corporation Technologies Inc.

The studies, which were supported by RCT, found

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the lead candidates were non-immunogenic and extremely potent during repeated dosings in studies with primates.

Tucson, Ariz.-based RCT has an exclusive worldwide license on the technology, and now seeks a licensee to continue developing the technology for CHF and other conditions.

Developed by Drs. John Burnett and Ondrej Lisy of the Mayo Clinic, the chimeric natriuretic peptide technology is protected by US patent No. 6,407,211.

A progressive disease in which the heart gradually fails to deliver adequate blood, about 4.7 million Americans suffer from CHF and over 275,000 people die each year from the disease.

Further details of the technology from Bennett Cohen of RCT at (520) 748-4400.

A strategic alliance agreement to evaluate new university and federal laboratory technologies that complement G-TEC's business strategy was signed recently by UTEK Corp. and Graphco Technologies Inc.

A wholly-owned unit of RCM Interests Inc., G-TEC is a technology, software, and systems development and licensing company specializing in law enforcement information sharing, and biometric ID and security systems.

"We look forward to working with G-TEC again to identify new technology acquisition opportunities that are synergistic with their business development strategy," UTEK CEO Clifford Gross said.

G-TEC chairman Christian Ivanescu was equally enthusiastic. "We believe [they] can help us accelerate the discovery and acquisition process for new technology opportunities," he said.

On April 16, Pfizer Inc. became the world's largest research-based pharmaceutical company when it combined operations with Pharmacia Corp.

"Today, we go forward as a single company, providing more products to help more patients than any other pharmaceutical company has ever done before," Pfizer chairman & CEO Hank McKinnell said.

"On any given day, we estimate that nearly 40 million people around the world are treated with a Pfizer medicine," he said.

Pfizer's Global R&D (PGRD) is the largest privately-funded biomedical organization in the world, and has over 200 projects in the development pipeline, including 100 distinct new molecular entities and 100 projects to evaluate new indications or delivery systems for currently marketed medicines. There are over 400 projects in PGRD's discovery pipeline.

During the five-year period through 2006, PGRD expects to submit 20 new major medicines for regulatory approval.

"Our industry is entering a period of momentous change and opportunity," Pfizer senior vice president for s&t Peter Corr said. "An era when sequencing of the human genome combined with new technologies holds great promise for developing new medicines."

Corr explained that the integration of Pharmacia into PGRD will "enhance our ability to turn scientific advances into products that both extend lives and also improve the quality of life for patients worldwide."

Only a small percentage of compounds ever become a new medicine, but Corr said PGRD's goal is to boost that rate through "targeted applications of new technologies, both in discovery and early clinical development, as well as utilizing disciplined resource allocation."

Financial results for UTEK Corp. for the year ended Dec.31 2002, show decreased revenues and net income from its operations.

"2002 was a challenging

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year," UTEK CEO Clifford Gross admitted. "Never-the-less, we completed six technology transfers, consummated eight strategic alliances which have provided cash or unregistered common stock compensation."

In addition, he noted, UTEK had expanded its university supplier network, acquired the Intellectual Property Technology Exchange Inc., and its TechEx.com website.

Founded by Yale University, TechEx is used now by many tech-transfer and research professionals to exchange licensing opportunities and seek innovation partners, Gross explained.

Income from operations in 2002 was $3,385,335 (2001:$4,075,248) of which sales of technology rights were $2,088,254 ($3,419,653), consulting fees were $1,264,249 (534,782), and net income from investments was $32,832 ($120,813).

Expenses in 2002 were $3,140,151 (2,611,970).

Pretax income was $245,184 ($1,463,278) and net income operations was $153,643 ($907,980).

UTEK's investments of dropped 38% in value between 2001 and 2002, from $9.99 million to $6.21million, and its total assets fell 37% in the same period.

The net asset value of a UTEK share dropped 26% from $2.53 to $1.87 during the same period.

WIPO, the World Intellectual Property Organization, made two awards to inventors at this month's Geneva International Exhibition of Inventions.

Liz Williams of the UK received the "best invention by a woman" award for an alarm that deters muggers can assist in identifying them.

Jose Sangiovanni of Uruguay received the "best invention by a national from a developing country" award for a safety device to collect blood.

The awards are part of WIPO's outreach mission to promote innovation and recognize inventors.

Awards consist of a gold-plated medal, a certificate signed by the WIPO Director General, and $2,000 in cash.

Massachusetts Institute of Technology (MIT) granted 125 licenses in fiscal year 2002, according to its Technology Licensing Office (TLO).

The statistics show that of these 112 were invention licenses and 13 were for trademarks. Forty-one software end-user licenses were signed in the period.

Some 31 license options (not including ones that are part of research agreements) were granted by MIT.

Gross revenues from licensing were $33.52-million with TLO royalties of $28.05-million.

Twenty-four companies were started (venture capitalized and/or with a minimum of $500,000 of other funding) by MIT during the fiscal year, according to TLO.

Total invention disclosures in FY-2002 were 484. Of these 434 were from on campus sources, and the remainder from Lincoln Labs.

MIT filed 245 US patent applications and was issued 126 US patents in the year.

TLO spent $9.1-million on patents in FY-2002m, but it received $4.54-million in patent cost reimbursement.

Other revenues included $240,000 interest, and $66,000 of equity cash-ins.

Fred Hassan didn't move to Pfizer Inc. when it merged with Pharmacia Corp. earlier this month.

The former chairman & CEO of Pharmacia, Hassan has been a widely respected figure in the global pharma industry, and he will now "pursue other career opportunities," according to a statement released on April 14.

"I'm proud to have been associated with Pharmacia, its predecessors and its people," he said.

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Recent Federal Licensing

• **Department of the Navy's Naval Research Laboratory** is considering grant of a revocable, non-assignable, exclusive license in the US & certain foreign countries to Second Sight LLC for 5 inventions: Nanochannel glass matrix used in making mesoscopic structures; Nano-post arrays and process for making them; Micro-electronic stimulator array; Permanent retinal implant device; and Fabrication of microelectronic array having high aspect ratio microwires. The field-of-use may be limited to retinal implants

• **National Institutes of Health** is considering:
— grant of an exclusive worldwide license to Vaccinex Inc. (Rochester, N.Y.) for several immunologically active fusion protein inventions covered by US and PCT patent applications. The field-of-use may be limited to development of human therapeutics for cancer & other infectious diseases.
—grant of an exclusive, royalty-bearing license to Research Institute for Genetic & Human Therapy (Washington DC) for 8 inventions: Procedure to block the replication of reverse transcriptase dependent viruses using inhibitors of deoxynucleo-tides synthesis; Mixtures of dideoxynucleosides and hydroxycarbamide for inhibiting retroviral spread; Mixtures of DDI & D4T with hydroxycarbamide for inhibiting retroviral replication; Method of treating HIV in humans by administration of ddI and hydroxycarba-mide; Procedure to block replication of reverse transcriptase dependent viruses by use of inhibitors of deoxynucleotides synthesis; Method of treating HIV in humans by administration of ddi and hydroxycarbamide. NIH may limit the license's field-of-use to development of drugs of hydroxyurea alone and in combination with dNTP competitors for blocking reverse transcriptase dependent viruses, including HIV.

• **NASA Marshall Space Flight Center, Huntsville, Ala.,** is considering grant of an exclusive license to Bombardier Motor Corporation of America (Delaware) for three inventions: Aluminum alloy and articles cast therefrom; Process for producing a cast article from hypereutectic aluminum-silicon alloy; and High strength aluminum alloy for high temperature applications. US patent applications have been filed for some of these inventions.

• **NASA Langley Research Center, Hampton, Va.,** is contemplating grant of a partially-exclusive license to Automated Control Technologies Inc. (Fairmont, W.Va.) for several of its inventions. These include: Reactivation of a tin oxide-containing catalyst; Process for making a noble metal on tin oxide catalyst; Catalyst for carbon monoxide; Catalyst for carbon monoxide oxidation; Catalytic process for formaldehyde oxidation; Catalyst for oxidation of volatile organic compounds; and Process for coating substrates with catalyst materials Several of the inventions are subjects of patent applications.

• **Centers for Disease Control and Prevention, Atlanta, Ga.,** is contemplating grant of a worldwide, limited field–of-use, royalty-bearing, exclusive license to Transgenomic Inc. (Omaha, Neb.) for 12 CDC inventions. They are: Rapid and sensitive method for detecting Histoplasma capsulatum; Nucleic acids for detecting Aspergillus species and other filamentous fungi;Molecular identification of Aspergillus species; Nucleic acids for the identification of fungi and methods of using same; Nucleic acids of the M Antigen of Histoplasma capsulatum, antigens, vaccines, and antibodies; Nucleic acids for detecting Fusarium species and other filamentous fungi; Nucleic acid probes for detecting Candida species; Nucleic acid probes for Candida Parapsilosis methods for detecting Candidiasis in blood; Nucleic acid probes for detecting Candida tropicalis in blood; Nucleic acid probes for detecting Candida krusei cells in blood; and Nucleic acid probes for detecting Candida glabrata DNA in blood; Nucleic acid probes and methods for detecting Candida DNA cells in blood. CDC's field-of-use restrictions on Transgenomic's possible license, means the probes can only be used for rapid identification of fungal pathogens and diagnosis of mycotic diseases.

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COMMERCIAL LICENSING & AGREEMENTS (Continued from page 2)

- **Competitive Technologies Inc.** (CTT) is adding a vehicle rollover warning technology that uses micro-electromechanical systems (MEMS) to its portfolio for licensing. National Highway Traffic Safety statistics indicate that about 10,000 roll over deaths occurred in 2001, accounting for about one-third of passenger vehicle occupant fatalities. "We believe our technology—designed by Craig Carlson—will help reduce this staggering number of deaths each year," CTT vice president Scott Bechtel said. The Carlson system, which is claimed to be low-cost and would fit inside a rear-view mirror, senses dangerous driving conditions and warns the driver. In off-road settings, the system will warn of dangerous tilts and inclines that risk rollover. CTT also plans to commercialize another Carlson technology, an emergency-stop warning system that can be built into a vehicle's rear center high mounted stop lamp. "We selected Carlson's rollover warning technology because it was the most reliable, safest, and most cost-effective solution available, CTT president & CEO John Nano said on April 7.
- **Brookhaven National Laboratory** (BNL) has licensed exclusively to UTEK Corp., a patent-pending technology for chemical detection developed at the US Department of Energy laboratory. Known as *"Mini-Kaman Lidar,"* the technology is described as a short-range tool to screen for unknown chemical, narcotic, and hazardous substances without needing to come into contact with them. UTEK has assigned the patent to Circle Group Holdings Inc., in exchange for a stock transaction. "When fully developed, this tool will give first responders the ability to detect substances on surfaces as well as in bulk quantities from a distance of three to fifteen feet," BNL chemist and co-inventor Arthur Sedlacek III said. "Working in partnership with Circle Group, we look forward to completing the development of this new, non-contact detection system." Located at Upton, N.Y., BNL is managed for DOE by Brookhaven Science Associates, a limited liability company formed by Stony Brook University and Battelle. "The technology is a terrific opportunity," Circle Group CEO Gregory Halpern said. "It's one of the most timely security detection technologies that we've seen to date and I'm very excited about its potential and the need in the marketplace."
- **GlaxoSmithKline plc** (GSK) and Germany's Merck KGaA agreed to end their joint development of *"Vilazodone"* because results from a Phase IIB program do not justify proceeding to Phase III trials. Under the terms of their agreement, GSK will return all rights to *"Vilazodone"* to Merck KGaA. Also known as EMD 68843 and SB 659746-A, the compound was discovered and transferred into early development by Merck, which is now considering various future options. The compound, which combines properties of a selective serotonin-reuptake inhibitor with that of a partial agonist, was being tested as a treatment for depression. Founded in 1668, Merck KGaA is based in Darmstadt, Germany, and is 74% owned by the Merck family. Its former US subsidiary, Merck & Co., has been an independent company since 1917.
- **Daiichi Pharmaceutical Co. Ltd** (DK) licensed exclusively a potential new anti-infective agent, known as DK-507k, to Pfizer Inc. The agent—a novel extended-spectrum quinolone—has been shown in pre-clinical tests to be active against several drug-resistant strains of bacteria, and is in development for both oral and intravenous treatments for respiratory tract and other infections. Pfizer will, under terms of the agreement, gets an exclusive license to DK-507k to fund, develop, and conduct ongoing development, and market it in all major markets except for Japan, China, and other Asian countries. Daiichi can jointly market the treatment with Pfizer in the US. No financial terms of the arrangement were given.

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HEADLINES

Stem cells *(from page 1)*

Human embryonic pluri-potent stem cells don't have potential to develop into entire human bodies, the notice says, and numerous reports by different scientific, medical, and political entities have indicated that stem cells have "enormous potential" to deliver new treatments for a wide range of serious diseases.

Patents should provide an incentive to innovate, the Patent Office says.

Without the protection of offered by patents, it says, industry and other inventors might not "undertake the risk, investment and necessary research to make the advances that we hope for in this area, such as improved health care products."

But the Patent Office will not grant patents for:
—Processes for obtaining stem cells from human embryos because under the amended 1977 UK Patents Act, uses of human embryos for industrial or commercial purposes are not patentable inventions;
—Human totipotent cells, which have the potential to develop into an entire human body, because the human body at various stages of formation and development is excluded from patentability under the 1977 law.

However, it will grant patents for inventions involving human embryonic pluripotent stem cells if they satisfy the normal requirements for patentability.

An EU Directive on patenting "bioinventions" offers a useful framework, and is incorporated into the UK law.

The UK Patent Office notice can be found at http://www.patent.gov.uk/patent/notices/practice/stemcells.htm

The EU Directive is at: http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=guichett

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FEDERAL TECHNOLOGY WATCH

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WEEKLY REPORT ON FEDERAL TECHNOLOGY NEWS AND POLICIES

SBIR funds hit $1.6 billion

Thousands of the nation's small businesses and entrepreneurs each year discover the Small Business Innovation Research (SBIR) program and the opportunities it offers to launch new products.

"I can't believe this program existed and we didn't know about it,"a first-time attendee from Michigan at last week's *National SBIR Spring Conference* in Arlington, Va., told *FTW*. "If the project doesn't work we don't have to pay the money back, and the government doesn't own the patent rights. It seems too good to be true," he said.

Launched in the early 1980s, SBIR is a highly-competitive program for small businesses to engage in federal r&d with commercialization potential. The program's funding is based on 2.5% set-aside of the extramural research spend of federal agencies with r&d budgets of $100-million or more.

Having three distinct phases, SBIR offers funding of up to $100,000 for a six-month feasibility study (Phase I), and up to $750,000 over two-years for research to demonstrate proof-of-concept (Phase II) of the project. No federal funding is given for Phase III because that's when most SBIR projects are expected to be commercialized by leveraging private funding.

"Commercialization is the new imperative," Department of Education SBIR coordinator Lee Eiden reminded delegates.

The size of awards varies from agency to agency, but typically about 3,500 Phase I and 1,500 Phase II awards are made each year.

Funding by the 10 federal departments and agencies that participate in SBIR will exceed $1.6-billion this year, with $832-million from Department of Defense programs and $566-million from Health & Human Services.

Inside:

In 2000, Congress reauthorized the program until 2008, and required the Small Business Administration to set up new award databases, standardize agency procedures and nomenclature, and commission a new National Research Council study of SBIR.

Last week's conference was organized by BRTRC Inc. under contract from DOD, and included presentations by officials of SBA and all the SBIR agencies, speakers from 3M and Boeing, and past award recipients who have become SBIR "success" stories.

The Department of Homeland Security may become a participant in SBIR in FY-04, but a decision is not expected until summer.

Last week's conference was organized by BRTRC Inc. under contract from DOD, and included presentations by officials of SBA and all the SBIR agencies, speakers from 3M and Boeing, and past award recipients who have become SBIR "success" stories.

Getting nano's measure

When he undertook a research project for IBM on toner used in photocopy machines in the early 1980s, Professor Mihail Roco had no idea it would lead to nanotechnology or give him a front seat in the development of this important field.

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"I discovered that the properties of a particle—as it gets smaller—behave very differently," he recalled in an interview with *FTW* on April 17 at the National Science Foundation. "It wasn't extrapolation."

Roco's interest was further piqued by a separate experiment that involved reverse coating between two cylinders, also related to photocopiers. "I found that if you changed the size of the gap by one molecule—or one or two nanometers—the particles could behave like a superfluid," he said

Although Roco found this behavior very intriguing, few others were interested in his results. Some people even thought he had made some errors during the research.

Today, as senior advisor on nanotechnology at NSF, Roco rarely has the luxury to look backward because almost everyone wants to know where nano developments are headed!

Also a key figure in the National Nanotechnology Initiative (NNI), where he is chair of the Nanoscale Engineering, Science, and Technology (NSET) subcommittee of the National S&T Council, Roco has exchanged his workbench for the meeting room and podium to become a well-respected advocate for nano in the United States and overseas.

While many of his counterparts in the US research community like to focus on exciting future applications of nano, Roco is much more interested in discussing the potential that nano offers for the environment.

He enjoys describing its likely impact on industrial processes, energy production, and the remediation of toxic waste sites, and is a strong believer in public examination of the societal issues that get raised about nanotech.

One group has proposed that all nano research should be regulated—in an FDA-type fashion—by the United Nations to ensure it poses no threat to humans. While sympathetic to concerns about potential adverse impacts, Roco feels they need to be examined by the different types of societal implications projects already underway.

[*Continued page 6*]

LANL is dilemma for UC

The University of California's management of the Los Alamos National Laboratory continues to exercise many on Capitol Hill, and the latest hearing to examine UC's contract for the lab is scheduled this week.

Congressman James Greenwood, R-Pa., chairman of the House Energy & Commerce Oversight and Investigations Subcommittee, has set a hearing for May 1 to review UC's management contract for Los Alamos.

No witness list was available as this issue went to press, but the hearing is expected to provide an opportunity for panel members to explore whether UC's contract for LANL should be terminated and reassigned. Energy officials admit privately that few other organizations are likely to be interested or qualified to take over the LANL contract, but they believe a change has become inevitable. Energy Secretary Abraham is thought to share this view.

A Hill staffer told *FTW* on Friday that the continuing management problems at Los Alamos had "exhausted" lawmakers' faith in UC being capable of resolving the situation. "A final decision, albeit it a painful one, will have to be made very soon," he said.

Among those considered potential candidates for the LANL contract are the University of Texas, and the University of Chicago, which already operates Argonne National Laboratory.

Several lawmakers have in recent months urged that UC's role at Los Alamos should end, but few have been as well-positioned to comment as Senator Pete Domenici, R-N.M., who spoke last week at the lab.

"I've been proud of the University of California under whose management the laboratory has largely flourished for 60 years," he said on April 22. "But, we all know that the present manner in which the laboratory is managed must change in ways that are inevitable..."

Serious mistakes and poor management in key areas of LANL had gone uncorrected for too long, he said.

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"While critics have carped, I've worked to ensure that none of the attacks harmed the laboratory," Sen. Domenici said. "But I worry that the attacks on Los Alamos will only intensify if we don't take dramatic action to improve the lab's management and reputation."

The senator revealed he has told Secretary Abraham that "at the end of the current [UC] contract, I will support an effort by [him] to conduct a competition to solicit the very best proposals on how the laboratory could be managed."

However, Sen. Domenici's support for a competitive process was contingent on the current LANL contract [which expires in Sept. 2005] not being canceled, but continuing unabated through its full term.

"I'll meet with Secretary Abraham later this week to discuss the impending review of the Los Alamos contract," Sen. Domenici said, adding that he hoped the DOE Secretary would join in "guaranteeing that whatever management regime we develop, UC will be able to compete and compete well."

Later that day, UC president Richard Atkinson took the unusual step of issuing a statement on Sen. Domenici's remarks.

"We agree with his criticisms of the management problems at Los Alamos, and we are gratified to receive his strong support for the corrective actions we have taken," the statement said.

"On the issue of competition, if Secretary Abraham's decision is to compete the LANL contract, then our instinct is to compete, and to compete hard. However, any final decision regarding UC's participation in such a process rests with the UC Board of Regents. Until the Secretary announces his decision and terms of any competition, further comment ... would be inappropriate."

UC may revamp its labs

But a review of LANL given to the regents by UC's interim vice president for laboratory management Bruce Darling earlier this month offered a bleak picture.

"To date, 18 laboratory senior managers and employees have been terminated, removed from management positions and/or reassigned to new positions," he told them.

A team of 30 Ernst & Young consultants has been at Los Alamos for several weeks to review the lab's financial processes and other functions, and is due to report back to top UC officials in May, Darling revealed.

But his most interesting disclosure was that UC is working on a "larger revamping" of its governance structure for the three national labs—Los Alamos, Lawrence Livermore, and Lawrence Berkeley—it runs for DOE/NNSA.

"We're examining various national [and federal] laboratory management models for elements that we can draw upon to improve our own oversight," Darling said on April 3.

Those examined are: Sandia National Laboratories, Argonne National Laboratory, Oak Ridge National Laboratory, Brookhaven National Laboratory, DOD's Draper Laboratory, and NASA's Jet Propulsion Laboratory.

"Our goal is stronger oversight by people with expertise in science and weapons, technology businesses, and corporate governance, who will hold the labs and the university accountable," he told the regents.

Costs deter foreign patents

Small US firms are not protecting their inventions through the filing of foreign patents as often as large companies, a study released last week by the Small Business Administration's Advocacy Office finds.

This lower rate of patenting likely results in fewer commercial opportunities being realized by small firms and lost revenues, officials said.

"Small firms are incredibly inventive, but many times they are unable to protect their inventions in the global marketplace due to their inability to secure foreign patents,"said Chief Advocacy Counsel Thomas Sullivan.

"If small firms are unable to protect the results of their hard work, our country could

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lose its most valuable source of new ideas and innovations," he claimed.

Smaller firms are seeking to protect their inventions more than before, the study finds, but they still patent abroad less frequently than large companies and also allow their patents to lapse.

The high cost of filing foreign patents and the resource limitations of small firms seem the most likely reasons for this situation.

Performed under contract by Mary Ellen Mogee, PhD, the study updates a 1995 examination of foreign patenting practices, and was released on April 23.

"Foreign Patenting Behavior of Small and Large Firms: An Update," can be found at: http://www.sba.gov/advo/research or ordered in hard copy from NTIS on (800) 553-6847, quoting ref: PB2-003-101302..

FLC signs MOU with NIJ

A memorandum of understanding (MOU) has been signed by the Federal Laboratory Consortium (FLC) for Technology Transfer and the National Institute of Justice (NIJ), *FTW* has learned.

FLC serves as a national network for over 700 federal laboratories and research centers that work on tech-transfer activities with the private sector, while NIJ is the Justice Department's principal research agency.

Officials hope the MOU will help transition to the private and public sector technologies developed by federal labs that can improve the effectiveness and safety of law enforcement, corrections, and related activities. Also, in the event of a crisis or major incident, FLC will coordinate with NIJ to help identify and deploy appropriate technologies, resources, and expertise.

Recognizing needs of the "first responder" community, FLC and NIJ also will employ the MOU to coordinate with other federal agencies and professional organizations on topics such as communications equipment interoperability, less-than-lethal and critical incident technologies, and investigative and forensic sciences.

The MOU was signed on March 23 by FLC chair Ann Rydalch and NIJ Office of S&T Director David Boyd.

[Boyd has since moved to a new position in the S&T Directorate's Office of R&D at the Department of Homeland Security.]

The initial term of the MOU is two years, but it can be extended by mutual agreement of the parties. A review will be made after a year to ensure the MOU is meeting the intended purpose and to make any revisions.

FLC expects to sign an extension to an existing Metro Fire Chiefs MOU soon, and. an MOU with the US Fire Administration may be signed by FLC in May.

DOE's new King Coal?

The Department of Energy wants comments on its plans to implement a $1-billion, 10-year demonstration project for the world's first coal-based, zero-emission pilot plant to produce electricity and hydrogen.

DOE announced last week that it is seeking public comment on the "FutureGen" project, which is expected to establish the technical and economic feasibility of producing electricity and hydrogen from coal while capturing and sequestering the carbon dioxide created during the process. Coal is the nation's lowest cost and most abundant domestic energy resource..

But the ultimate success of FutureGen will, DOE officials concede, depend on acceptance of the sequestration process by the industries likely to be most impacted by future limits on carbon emissions.

To help advance this activity, DOE plans to "non-competitively enter into a cooperative agreement" with a consortium led by the coal-fired electric power industry, and the coal production industry.

This consortium, operating under the guidance of a federal steering committee, will be responsible for the design, construction, and operation of the FutureGen plant, and for monitoring, measuring, and verifying the carbon dioxide sequestration.

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DOE says members of the consortium shall collectively own and produce at least one-third of the nation's coal, and at least one-fifth of its coal-fueled electricity.

Consortium members are expected to: (a) Be geographically diverse and represent both eastern and western domestic coal producers and generators of coal-fueled electricity; and (b) Be resource diverse by representing the full range of producers and users of coal types.

DOE believes the public interest will be served by having this broad cross-section of coal producers and electricity generators involved in FutureGen. The project was first revealed by President Bush on Feb.27 2003.

Companies interested in establishing the consortium, and individuals with comments, need to contact DOE by June 16.

More details from Keith Miles, National Energy Technology Laboratory, P.O. Box 10940, MS 921-107, Pittsburgh, Pa. miles@netl.doe.gov

Last week, it was revealed that Battelle is coordinating formation of an alliance to support FutureGen. The nine companies in the working group are: American Electric Power; CONSOL Energy; Kennecott Energy; North American Coal Corp; PacifiCorp; Peabody Energy; RAG American Coal Holding Inc.; Southern Company; and TXU.

Urban S&R panel to meet

Officials from the Federal Emergency Management Agency's (FEMA) Emergency Preparedness & Response Directorate will give updates on the National Urban Search & Rescue Response System (NUSRRS) to an advisory panel this week.

EPR directorate staff are expected to provide the advisory committee with details of ongoing program activities, including recent exercises and training.

The panel plans to review the current and future program requirements and will make recommendations on budget allocations for FY-2004 and FY-2005.

Operational status of NUSSRS and transportation issues will also be discussed by the committee.

The two-day meeting is scheduled to be held April 30-May 1 in Washington DC.

Formerly an independent agency, FEMA is in the Department of Homeland Security.

Further details from Michael Tamillow on (202) 646-3498.

MEP gets renewed support

There has been renewed bipartisan support by lawmakers in recent weeks for continued funding of the Manufacturing Extension Partnership (MEP) program.

Funding for MEP was slated to be cut to $13-million in FY-03 from about $110-million in the previous year. That request by the president was overturned by Congress which restored the funding to $106.6-million. The renewed congressional support for MEP is intended to allocate $110-million in FY-04 for the program, and prevent a rerun of the earlier scenario.

Manufacturing task forces in the Senate and House as well as those representing California and the Hispanic Caucus, have submitted letters supportive of continued MEP funding to budget appropriators.

Senate activity drew support from 58 senators, while combined efforts in the House drew support from 246 Representatives.

"We're very grateful to Congress for its support," Modernization Forum president Michael Wojcicki said last week.

"Quite simply, MEP is a smart investment for the federal government," he said. "It builds the economy, puts more into the [US] treasury than it takes out, and creates a lot of well-paying jobs."

The Modernization Forum is the national association for MEP centers, most run by state, local government or nonprofit entities.

Sens. Olympia Snowe, R-Maine, and Joe Lieberman, D-Conn., co-chair the Senate Task Force while Reps. Jack Quinn, R-N.Y., and Marty Meehan, D-Mass., co-chair its House counterpart.

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Wireless technology event

A two-day wireless technology conference and showcase to highlight new and emerging innovations will be held next month.

Organized by Commerce's National Telecommunications & Information Administration (NTIA) and the Department of State's Office of International Communications & Information Policy, the *"Wireless Innovations Conference"* will be held May 12 & 13 in Washington DC.

The technology showcase, featuring exhibits and demonstrations of the latest wireless technologies and devices, will be held on the first day. A roundtable with panel discussions on unlicensed wireless technologies, will occur on the second day.

Both activities will be held at Commerce's offices at 14th and Pennsylvania Ave. NW.

More details from Joe Gattuso on (202) 4823-1880l; jgattuso@ntia.doc.gov

Joint DOD office for CBD

The first ever Joint Program Executive Office for Chemical and Biological Defense (JPEO-CD) has been formed by the Department of Defense, it was revealed Friday.

Formed from the Army's existing Program Executive Office for Chemical and Biological Defense, as well as current Navy, Air Force, and Marine CBD program offices, Pentagon officials hope the JPEO will "streamline" chemical and biological defense acquisition and leverage the unique capabilities of each of the services.

Also responsible for r&d, acquisition, fielding, and life-cycle support of CBD equipment and medical countermeasures, the JPEO's programs include CBD detection devices, medical vaccines, pre-treatments, therapeutics and diagnostic equipment, individual protective masks and suits, collective protection shelters, and decontamination systems.

The threat of CB weapons being used against the US by terrorists or rogue nations, has heightened the need to better coordinate the nation's CBD efforts.

In accordance with existing legislation, Army remains the executive agent for the Chemical and Biological Defense Program, and JPEO-CBD reports to Army's acquisition executive and defense acquisition executive.

Assistive technology devices

The Interagency Working Group on Assistive Technology Mobility Devices will hold a public forum next month.

Chaired by Secretary of Education Rod Paige, the group was created earlier this year by a presidential executive memorandum, and is charged with two tasks: Identifying existing federal programs and resources designed to help people with disabilities get assistive technology (AT) mobility devices needed for their education and employment; and Working with state, local, and tribal governments to identify their programs for AT mobility devices for disabled individuals.

As a result of these efforts, the working group will prepare a report for the president detailing how each of the agencies that are represented in the working group will: 1. Improve coordination among its existing programs; 2. Train vocational rehabilitation counselors, other service providers, and individuals with disabilities; and, 3. Share these findings with individuals with disabilities.

The group's report also will describe how such individuals can "pool" funding from existing sources to obtain mobility devices, such as various manual and powered wheelchairs, and scooters.

According to the Feb.12 executive memorandum signed by President Bush, the working group shall be terminated 30-days after submitting its report.

Apart from the Education Secretary, members of the working group include the Health & Human Services Secretary, the Labor Secretary, and the Commissioner of Social Security, together with other officials designated by the assistant to the president for domestic policy.

The report is due no later than Aug.12.

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The working group's May 21 forum will be held from 9-a.m. to 5-p.m. in the Barnhard Auditorium of the Department of Education, 400 Maryland Ave. NW, Washington DC.

Persons planning to attend or speak at the forum must register by May 16 with Loretta Petty Chittum, Office of Special Education and Rehabilitative Services, on (202) 205-5465; osers.at@ed.gov

Representatives from all the agencies mentioned above are expected to attend as well as the Department of Veterans Affairs. Participants from the AT mobility device community, AT research and policy officials, and service organizations are also expected.

S&E infrastructure needs

An urgent need exists to increase federal investment in the nation's science and engineering (s&e) research infrastructure to ensure it is the "latest and best," a recent National Science Board report says.

A modern, effective research infrastructure is critical to maintaining US leadership in s&e, according to the 50-page document. Evidence of its central role is suggested by the number Nobel Prizes awarded for development of new instrument technologies—8 in the past 20 years including for electron and scanning tunneling microscopes, laser and neutron spectroscopy, and particle detectors—the report notes.

NSF is a leader among federal agencies in providing the US academic community with access to "forefront" instrumentation and facilitie necessary to "address currently intractable research questions, the answers to which may transform current scientific thinking," the NSB study says.

Five recommendations to tackle these concerns are proposed in the report. They include: Hike the share of NSF's budget for s&e infrastructure from the current 22% to nearer 27%; Give special emphasis to four categories—instrumentation research, midsize infrastructure projects, large facility projects, and advanced cyber infrastructure; Expand education & training opportunities at new and existing facilities; Strengthen the planning and budgeting for new infrastructure; and Develop interagency plans and strategies.

NSB's task force on s&e infrastructure was chaired by John A. White, Jr.

"Science and Engineering Infrastructure for the 21st Century: The Role of the National Science Foundation," was issued as NSB 02-190 on April 9, and can be found at: http://www.nsf.gov/nsb/documents/2003/strat.htm

Getting nano (continued from page 1)

One issue Roco encountered during his early research has made him keenly aware of the different agendas people have for nano.

"Many colleagues in the university community looked [at nano] as speculation or something that was too technology-related," he recalled. "They didn't feel it was an academic research topic."

Industry's response was possibly worse.

"They perceived [nano] as science fiction," Rocco said, "and thought that making things smaller was just an extension of micro-electromechanical systems (MEMS)."

Despite this environment, in 1991 he initiated the first US government program to focus on nanoscale science and engineering.

By 1999, Roco's nano background began to find an outlet at NSF and on March 11 of that year he proposed the NNI to the National Science & Technology Council.

His memory of the event is vivid.

"I was in competition with about 30 other topics that were being considered that day," he said. "Up to that meeting, interest in nano had been quite low, and so I had prepared only a 10-minute presentation. But after my talk there a discussion lasting about two hours! There were concerns about the speculative nature of the subject and some thought [the topic] was too exploratory, while others were afraid of the hype and not being able to deliver on the promises."

Today, NNI is a highly-regarded activity with a budget of $744-million in FY-03 that receives close attention from America's major technological rivals, and Roco is seen

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as its principal architect and conscience.

A survey by *Forbes Nanotech Report"* recently named Roco the No.1 Nanotech Power Broker, and consistent with this perception he continues to be sought out by top industry officials who value his vision of nanotechnology's future. The same survey assigned former Speaker Newt Gingrich an "honorable mention."

Is there a risk US nano r&d efforts will be eclipsed by those of Japan and the EU or that intellectual property rights will be ignored?

Roco is confident that US leadership in nanotech can be maintained, and he sees no evidence of US researchers neglecting to protect their inventions with patents.

To illustrate this point, he pulls out two charts, one showing nanotech spending and the other listing annual nanotech patents by country. As US spending on nanotech rises in the late 1990s through to 2002, patents issued to US inventors leap to levels of 4,000, 5,000, and 6,000 a year, far exceeding those for Japanese and European Union inventors.

" I can see, not too far in the future, where we will create a critical mass of nano knowledge so we can choose a systematic method to design a product," Roco said. "Nano is cross-cutting and you need this systematic approach to get knowledge and create products."

Technology Transfer

• ***National Institutes of Health's Office of Technology Transfer in Rockville, Md.,*** is considering grant of an exclusive, worldwide, royalty-bearing license to OmniViral Therapeutics LLC (Germantown, Md.) for a novel protein that can be used to remove or inactivate HIV in fluid samples. The invention is described in US Patent application 60/359,360, "An obligate domain-swapped dimer of cyanovirin with enhanced anti-viral activity." The license would be limited by field-of-use.

Biosyn Inc. (Philadelphia, Pa.) seeks what seem to be identical rights to this same NIH invention with similar field-of-use limitations.

People

President Bush announced on April 24 his intent to nominate eight individuals to serve as members of the President's National Security Telecommunications Advisory Committee. They are:

—***James Albaugh*** (Boeing Co.);
—***Frank Ianna*** (AT&T);
—***Richard Notebaert*** (Quest Communications);
—***Hector de Jesus Ruiz*** (Advanced Micro Devices Inc.);
—***Patricia Russo*** (Lucent Technologies Inc.);
—***Stratton Sclavos*** (VeriSign Inc.);
—***Susan Spradley*** (Nortel Networks); and
—***John Stanton*** (Western Wireless, T-Mobile).

Secretary of the Army ***Thomas E. White*** submitted his resignation on April 25, but its effective date remains to be determined. In a statement, Defense Secretary Donald Rumsfeld expressed appreciation of White's "long and able service" to the country, first as a career USA officer, and for the past two years as Secretary of the Army.

The National Academy of Sciences' Public Welfare Medal will be presented to ***Shirley Malcom,*** head of AAAS's Directorate for Education and Human Resources, tonight (April 28) at a ceremony in Washington DC.

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