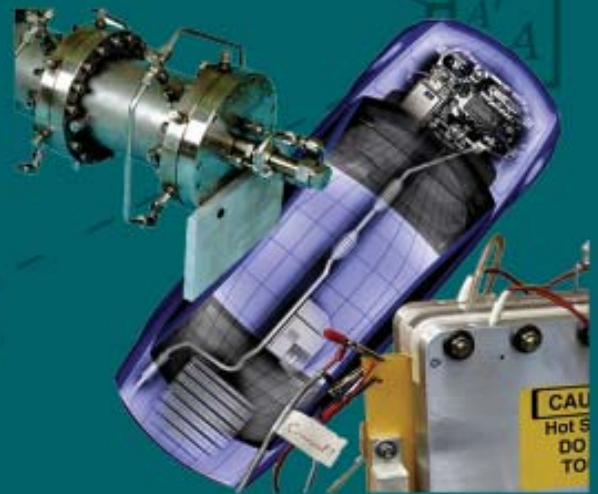
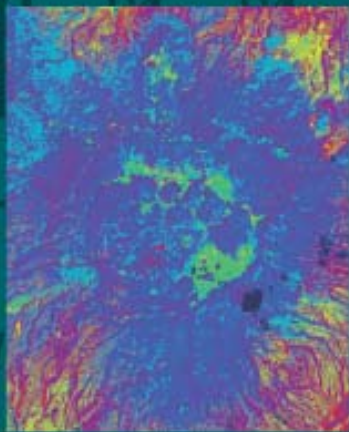


# Industrial Business Development Division FY 2002





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## Los Alamos National Laboratory—A National Resource



Los Alamos National Laboratory, a Department of Energy (DOE) laboratory, managed by the University of California, is one of the largest multidisciplinary research institutions in the world. The Laboratory is the largest institution and the largest employer in northern New Mexico, with approximately 7,500 University of California employees plus 3,200 contractor personnel. The Laboratory's annual budget is about \$2 billion.

Approximately one-third of the Laboratory's technical staff members are physicists, one-fourth are engineers, one-sixth are chemists and materials scientists, and the remainder work in mathematics and computational science, biological science, geoscience, and other disciplines. Professional scientists and students come to Los Alamos from all over the world as visitors to participate in scientific projects. Laboratory staff collaborate with universities and industry in both basic and applied research to develop resources for the future and to achieve the Laboratory's mission of applying the best science and technology to make the world a better and safer place. The Laboratory is well known as a major national resource for the development and integration of leading-edge science and technology to solve problems of national and global security.





## A Message from the Industrial Business Development Division Leader

### In Retrospect

We concluded our first full year of doing business as the Industrial Business Development Division of Los Alamos National Laboratory (formerly the Industrial Business Development Program Office) confident that we will continue to play a major role in helping the Laboratory retain a positive relationship with the private sector by facilitating the successful transfer of leading-edge Laboratory technologies to U.S. industry and startup businesses.



*Donna M. Smith,  
IBD Division Leader*

The number of new sponsored-research agreements between the Laboratory and industry grew last year by 133% to 112. This represents the third busiest year for industry partnerships since the inception of the program. And, while the growth in the number of agreements is encouraging, the real benefits of these collaborations and licenses are the technical achievements. Most recently, industrial partnerships in the form of cooperative research and development agreements (CRADAs) and commercial license agreements have focused on technology application areas that include homeland security (homeland defense), high-temperature superconductivity, and polymer electrolyte membrane fuel cell technologies. Industrial partners working with the Laboratory in these technical areas include Procter & Gamble, DuPont, General Electric, American Superconductor, Motorola, and Interferometrics Inc.

Our efforts to protect and manage the Laboratory's intellectual property through patents and copyrights pave the way for the transfer of technology to industry, the springboard for technology commercialization. This first step allows us to negotiate licenses and other agreements for the transfer of technologies to the private sector and to positively impact both regional and national economies. In FY 2002, our licensing program held its own by maintaining license income in the face of a reorganization with staff changes and, most significantly, a downturn in the economy. The licenses and other agreements that we negotiate generate revenues that can fund additional research and development at the Laboratory.

### Focus

We have continued to direct our efforts toward three key areas of technology transfer and commercialization:

- Managing the Laboratory's intellectual property through patents and copyrights and executing licenses and partnership agreements;
- Building strategic partnerships with private industries; and
- Nurturing new high-tech businesses and attracting entrepreneurs and capital to northern New Mexico.

### Copyrights, Patents and Licenses

IBD worked hand-in-hand with inventors/authors and the Laboratory Counsel's Intellectual Property Office to identify, protect, and manage the Laboratory's intellectual property. We partnered with key technical divisions to educate the technical staff and management about the importance and benefits of disclosing intellectual property—inventions, discoveries, software, drawings, and technical know-how. We sponsored and organized a patent and licensing award ceremony—an event designed to encourage increased participation in patent, copyrighting, and licensing activities at the Laboratory.

In FY 2002, IBD received 130 invention disclosures, 43 copyright disclosures, and 5 copyright assertions; 101 patent applications were filed, 75 patents were issued, and 30 new commercial licenses were negotiated. IBD generates significant increases in licensing income annually as Laboratory staff work to supply a steady increase in the number of quality and commercially valuable disclosures.

### Partnerships

We have successfully nurtured strategic partnerships with Motorola and Proctor & Gamble. Through CRADAs, Los Alamos is partnering with these companies to develop such technologies as fuel cells and the modeling of complex manufacturing systems. Our goal is to grow these partnerships into multi-disciplinary, multi-divisional efforts.

In FY 2002, we amended 6 existing CRADAs and negotiated 15 new CRADAs and 50 new, nonfederal, Work-for-Others agreements.

### Regional Development

IBD has been actively involved with the Los Alamos Commerce and Development Corporation in bringing new businesses to the region as residents of the Los Alamos Research Park, adjacent to the Laboratory's main administrative facilities (Technical Area 3). We have been successful in attracting tenants for the first building, dedicated in March 2001. Several startup businesses that have licensed Laboratory technologies together with established businesses with developed Laboratory partnerships now reside in the Research Park.

Through our Technology Commercialization Office, we have offered a broad range of services to help regional businesses and entrepreneurs, including business counseling, networking, and funding opportunities. Our efforts earned us recognition in FY 2002 by the Department of Commerce, which selected the Laboratory as one of the nation's top ten best for "Exemplary Practices in Federal Laboratory-Based Economic Development." In addition, our implementation of the technology commercialization strategies identified in Appendix M to the University of California Prime Contract drew an "outstanding" rating for the fifth consecutive year.

### Summary

In summary, we continue to make notable progress in technology transfer and commercialization on behalf of the Laboratory. We will continue to protect and manage the Laboratory's intellectual property, to establish channels for collaborations in the external sector, to foster commercialization and business development in the region, and to generate revenues for the Laboratory's research initiatives.

Donna M. Smith



Division Leader

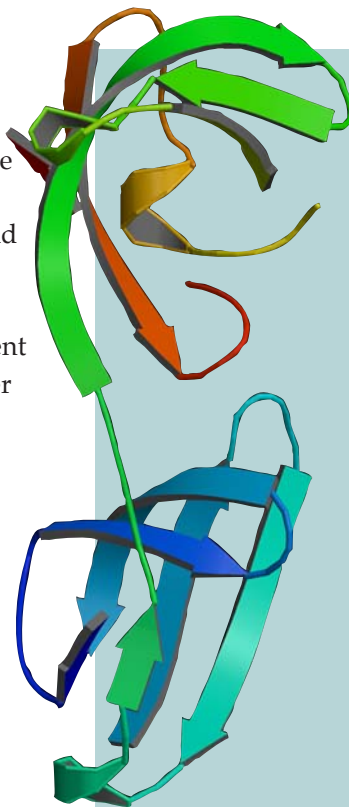
## Overview of the Industrial Business Development Division

Today, more than ever before in our nation's history, the keys to solving problems that impact global security reside in our ability to communicate and collaborate with other institutions whose capabilities and expertise intersect with and expand the unique capabilities available at Los Alamos National Laboratory (LANL, the Laboratory). The primary role of the Industrial Business Development (IBD) Division is to serve as the link for the transfer of Laboratory technologies to the private sector through productive collaborations with private industry, universities, government agencies, and other national laboratories. IBD orchestrates successful matches of LANL's scientific and technical talent, expertise, and facilities with research and development endeavors in external sectors for the advancement of national security, technological innovation, and economic competitiveness. In this endeavor, IBD sustains its role as a vital part of the institution, helping the Laboratory comply with the mandate for DOE to transfer technologies from its laboratories to the private sector. The partnerships IBD develops and fosters serve to enhance the dissemination of the scientific research and technology developed at the Laboratory.

Working closely with the Laboratory Counsel's Intellectual Property Office to manage and protect the Laboratory's intellectual property, IBD enhances the development of science and technology at the Laboratory by enabling the transfer of new and emerging technologies to private industry and stimulating regional business development by encouraging the commercialization of Laboratory technologies through spinoff, high-tech, startup businesses.

### IBD Accessibility

IBD maintains an open, easily accessible presence on the Laboratory's Web site to keep both Laboratory staff and external customers informed about technol-



### Licensing Success

*SOLVE is LANL's greatest licensing success to date. The application, which allows scientists to create 3-D images of protein molecules, is in high demand in the biotech and health care fields because of the importance of these models in the design of new drugs and the engineering of new enzymes for commercial use. Licenses granted for SOLVE include*

- *more than 40 government-use licenses,*
- *350 noncommercial licenses to educational and nonprofit institutions worldwide, and*
- *23 commercial licenses for use in the biotech and pharmaceutical fields.*

*SOLVE has generated nearly \$1 million in royalty income for the Laboratory in the last four years while supporting a strong educational component.*

ogy licensing opportunities, mechanisms for partnering with the Laboratory, and related technology commercialization opportunities and resources. IBD's Intellectual Property Management Web pages provide detailed information and forms to assist Laboratory staff with their efforts to understand and comply with the policies and procedures for patenting and copyrighting their Laboratory technologies. By providing clear, concise instructions to Laboratory innovators and authors, IBD seeks to facilitate the protection of the Laboratory's wealth of intellectual property so that it can be effectively and efficiently transferred to the private sector for the benefit of all.

## Industrial Partnerships Office



**Jerome Garcia,**  
Program Manager

*The Industrial Partnerships (IBD-IP) Office enjoyed great success in FY 2002. The program's efforts to restructure the Licensing Team following IBD's reorganization revitalized the entire IBD-IP Office. The Agreements and Intellectual Property Management Teams continued to develop value-added services that positively impact the commercialization of Laboratory technologies. Despite the decline in the economy—particularly the downward spiral in the high technology sector—the staff was able to generate nearly \$20 million in funding received directly from industry under various research and licensing agreements. Total value received from these agreements during the fiscal year, including government and company in-kind contributions, exceeded \$40 million. Considering the Laboratory's technical talent and the dedicated and competent IBD staff, these results, while impressive, are not surprising. And this is just the beginning...*

The IBD-IP Program Office comprises four teams: the Licensing Team, the Agreements Team, the Intellectual Property Management Team, and the Information Technology (database) Team. These teams work together and with the two other programs in IBD to carry out the technology transfer mission of the Laboratory: To transfer Laboratory technology and intellectual property rights to companies with the objective of enhancing U.S. competitiveness in the global economy while supporting the Laboratory's mission-specific programs. IBD-IP has the primary responsibility for negotiating all technology transfer agreements. These agreements include license agreements, research agreements, nondisclosure agreements, and a host of other cost-shared agreements such as staff exchange and user facility agreements.

Additionally, IBD-IP is responsible for working closely with technical and IBD staff to develop intellectual property strategies that support the objectives of Laboratory research and development programs such as fuel cells, superconductivity, and biosensors. This effort includes establishing and participating in intellectual property portfolio management teams. These teams work together to make strategic decisions about collaborative- and sponsored-research partners, licensees, and intellectual property positions that will

produce positive results for all stakeholders. As these decisions are made, IBD-IP negotiates, drafts, and manages sponsored research agreements and technology license agreements that cover Laboratory-developed intellectual property (patents and copyrights). These activities help the Laboratory expand its research opportunities and enhance U.S. economic competitiveness by allowing research dollars from industry to help mature Laboratory technologies for commercialization.

### Intellectual Property Management

The Laboratory's ability to use the results of its own scientific research and to effectively meet its technology transfer mission depend on the protection of its intellectual property. Intellectual property includes the inventions, discoveries, software, drawings, and technical know-how of the Laboratory's staff. IBD-IP works with innovators/authors, the Laboratory Counsel (LC)-Intellectual Property Office, and the two other IBD program offices to identify, legally protect, and manage the Laboratory's intellectual property through patents and copyrights so that technologies can be commercialized and partnerships developed with industry. These partnerships have a positive impact on both the regional and the national economies while



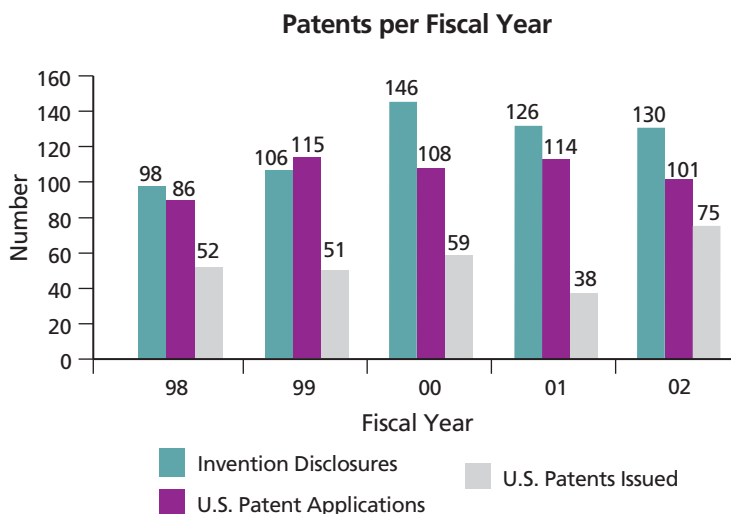
simultaneously expanding the Laboratory’s intellectual property portfolio and generating resources for Laboratory research programs.

During FY 2002, IBD-IP participated in the Intellectual Property Coordinator Council comprising a diverse selection of respected Laboratory scientists. This committee directs its efforts toward understanding the principal investigator (technical staff) perspective on technology transfer and on working collaboratively with research staff to address issues and implement changes that will have a positive impact on the Laboratory with an emphasis on retaining technical talent and ensuring that commercially valuable inventions are disclosed.

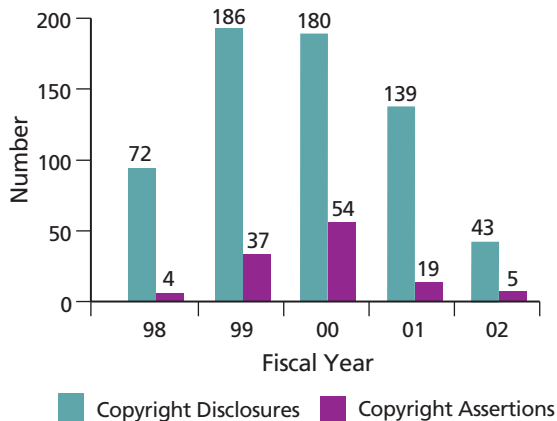
**Training**—During FY 2002, IBD-IP collaborated with the LC-Intellectual Property Office and IBD’s Technology Commercialization and Strategic Partnerships Offices to develop the Intellectual Property Management Training Class. The class is designed to train division and group managers about intellectual property, its effective management, and its importance to the Laboratory’s technical groups and programs. IBD-IP also developed a brochure, “Intellectual Property: A Laboratory Asset,” that briefly outlines why intellectual property is a valuable asset to the Laboratory (available in print and through the IBD Web site). These

training materials provide a foundation for enhancing Laboratory staff and management awareness of intellectual property management. IBD plans to offer a Lab-wide intellectual property training program for technical staff during the coming fiscal year.

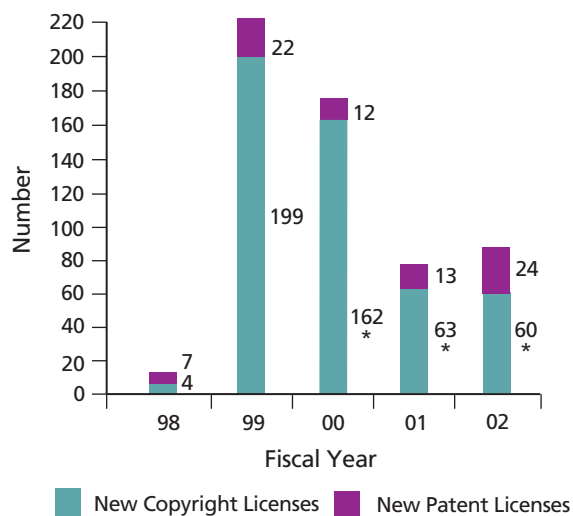
**Patent and Copyright Disclosures**—The Intellectual Property Management Team processes and tracks incoming patent and copyright disclosures and provides a number of value-added services, including Background Intellectual Property Reviews and Intellectual Property Analyses. The number of invention disclosures reported for FY 2002 was 130—a small (2.4 percent) increase over the previous year’s 126 disclosures. In FY 2002, the Laboratory filed a total of 101 patent applications and had 75 patents issue. This is a 55 percent increase over the average number of patents issued per year during the previous two fiscal years. IBD received 43 software copyright disclosures and obtained 5 copyright assertions during this same time period. The number of copyright disclosures and assertions has fallen significantly compared to the previous two years. This is due, in part, to software authors exercising a preference for using open source (i.e., licensees may access and modify source code) software licensing as a means for accelerating code development.



**Copyrights per Fiscal Year**

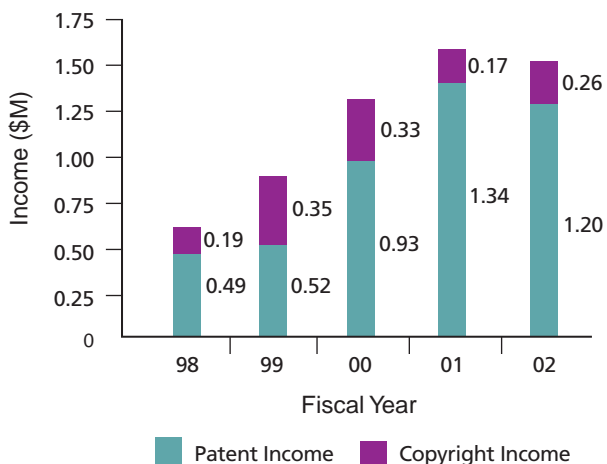


**New Licenses**



\* Includes noncommercial licenses

**Annual Licensing Income**



**Invention Disclosure Review**—During FY 2000, IBD-IP, in cooperation with the LC-Intellectual Property Office, overhauled the Laboratory’s patent filing system. The purpose of this effort was to create a system that efficiently uses the Laboratory’s limited patent filing resources to produce a reasonable number of commercially valuable patent applications within a relatively acceptable time frame. The result was establishment of the Patent Review Committee (PRC). The PRC, charged with making patent application filing decisions, includes IBD staff who provide commercialization assessments on invention disclosures; the LC-Intellectual Property Office staff who provide patentability assessments; and respected technical staff members who provide scientific and programmatic assessments. While IBD-IP and the LC-Intellectual Property Office continue to work on process improvement, the new approach appears to have significantly improved the filing process.

**Licensing**—As a result of the IBD administration transition and other staff changes that occurred during the beginning of FY 2002, IBD-IP focused its efforts on assigning new responsibilities to various staff members as well as filling vacant staff positions and rebuilding the Licensing and Information Technology Teams. IBD-IP made four strategic staff hires during FY 2002: two Licensing Associates to support the Licensing Executives, one Licensing Executive specializing in bioscience, and an Information Technology specialist to support the ongoing development and maintenance of the database that tracks all agreements and intellectual property. Additionally, one of the senior Licensing Executives was appointed Team Leader of the Licensing Team. The result of these appointments is a staff of highly skilled, legal and technical professionals who negotiate licenses for Laboratory technologies.

The Licensing income goal for FY 2002 was \$1.5 million. The Licensing Team generated \$1.46 million during the year. Even with the dull economic climate, the horrific events of September 11, 2001, and the reorganization of licensing personnel, the Laboratory’s License Program stayed on course with only a 2.7 percent decrease over the previous year’s total license

income. The Licensing Program negotiated and the Laboratory Director executed 30 commercial licenses (23 patent and 7 copyright), 53 noncommercial copyright licenses, 19 bailment or material transfer agreements, and one patent option agreement.

**Laboratory Portfolio**—In addition to the new licenses executed in FY 2002, the Laboratory's license portfolio now contains more than 600 noncommercial licenses with academia, government entities, and other nonprofit organizations, and more than 170 active commercial licenses. Since its inception in 1988, the Licensing Program has generated more than \$7.5 million in license fees and royalties and granted more than 700 licenses for commercializing Laboratory technologies. License income is shared between inventors, authors and their divisions; a small percentage is retained by IBD to help support its licensing activities. Approximately two-thirds of this income funds research, education, and technology transfer activities at the Laboratory. A portion of IBD's share of license income is allocated to the Technology Maturation Fund, which focuses on providing up to \$50 thousand in bridge funding for technologies that demonstrate a high potential for commercial value. The Technology Maturation Program plan was partially developed during FY 2002 with final development and implementation planned for FY 2003.

**Honoring Innovators**—On February 13, 2003, IBD sponsored the Annual Patent and Licensing Awards Ceremony, an event to honor and recognize Laboratory researchers who received patents or copyrights during 2002. This event also honored employees whose inventions generated license income in FY 2002. Laboratory employees received awards in two categories: Distinguished Patent and Distinguished Licensing. This event honored approximately 350 current and former employees.

**Distinguished Patent Award**—The 2002 Distinguished Patent Award was shared by Basil Swanson and former Los Alamos staff member Xuedong Song of the Bioscience Division for their patent of the Triggered Optical Biosensor. Song and Swanson's biosensor can be used to detect protein toxins, viruses,

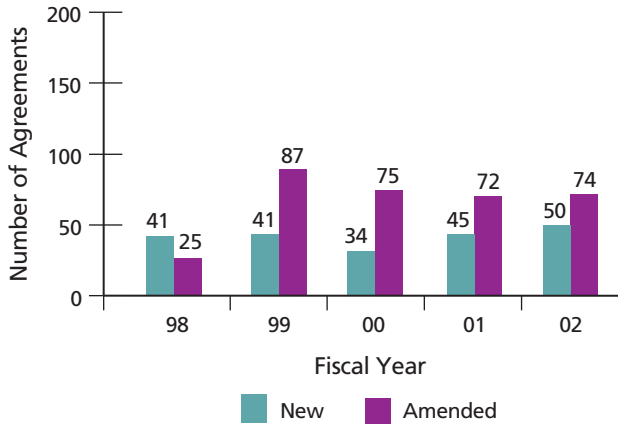


**Distinguished Patent Award winner Basil Swanson (l) converses with Distinguished Licensing Award winner Ben Warner following the awards presentation .**

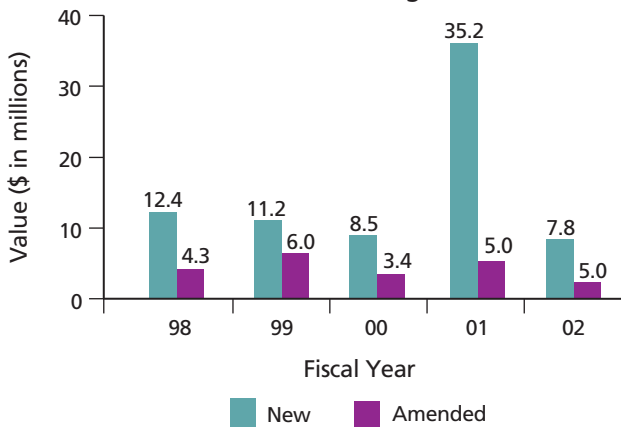
antibodies, and other biomolecules. Such sensor technology is critical to defending against threats of bioterrorism and has applications in medical diagnostics, such as in the diagnosis of respiratory diseases. This award-winning technology is a critical step in the final development—together with other technological developments—of a generic sensor system. The Distinguished Patent Award recognizes inventors whose work constitutes a major technical advance, is adaptable to public use, or significantly advances Lab missions.

**Distinguished Licensing Award**—The 2002 Distinguished Licensing Award went to Benjamin Warner of the Chemistry Division. Warner's work on radiation dosimeters, electrochromic (tinting) windows, and micro-x-ray fluorescence for drug discovery has led to numerous commercialization ventures for the Laboratory. Warner has eleven patent disclosures and five pending patent applications, most of which were submitted in the past two years. He has actively pursued licensing opportunities, researching markets for his varied innovations, learning about technology transfer policies, and promoting collaboration with potential licensees. The Distinguished Licensing Award recognizes inventors for outstanding

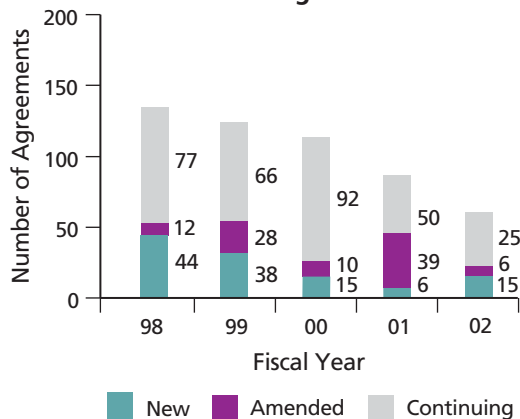
**Work for Others Agreements (Non-Federal)**



**Value of Work for Others Agreements**



**CRADA Agreements**



success in transferring Lab technologies to the public and private sectors.

**Agreements**

Through the IBD-IP Agreements Team, the Laboratory negotiates and maintains a variety of mechanisms that enable industry, academia, and other research institutions to establish partnerships and collaborations with the Laboratory. These mechanisms include agreements for non-disclosure of proprietary information (NDA), cooperative research and development (CRADA), non-federal work for others (WFO), personnel exchange, and user facilities (UFA). During FY 2002, IBD-IP published a brochure, "Technology Transfer Mechanisms," describing the various ways the private and public sector can work with the Laboratory through IBD. The Agreements Team generated \$26.4 million in new CRADA contributions, which includes nearly \$7 million in federal contributions and \$20 million in funds-in and in-kind (non-cash contributions provided by the participant or contractor) contributions. The team executed 15 new CRADAs, amended 6 others for either additional time and/or funding, and continued to maintain another 25. IBD-IP also generated \$12.8 million through 50 newly executed WFO Agreements together with 74 amended agreements. Nearly 60 percent of the total value of all newly executed WFO agreements was carry-on work from previously negotiated agreements. UFAs showed an increased value of 39 percent in FY 2002 represented by \$744 thousand in total agreement value. This increase, in part, reflects IBD's commitment to assist with the growth of the UFA program. The Agreements Team also negotiated and executed over 400 NDAs, representing interactions with nearly 400 companies. Altogether, the value of agreements executed between the Laboratory and the private sector in FY 2002 was \$40 million .

**CRADA Process Improvements**—As more CRADAs are based on market demand, the Laboratory is beginning to see an increase in Subject Inventions— inventions that are first conceived or reduced to practice in the performance of work—under these agreements. In FY 2002, IBD-IP began examining the

process for managing these inventions (whether jointly or solely owned by the Laboratory or the participating company) in order to satisfy all Laboratory requirements and to start license option clocks. This process is important for (1) ensuring that the Laboratory either licenses Laboratory-owned Subject Inventions to the participating company, or (2) should the option expire, that it moves the Subject Invention, unencumbered, into the Laboratory's intellectual property portfolio for future partnering and licensing. The draft work on streamlining this process was completed during FY 2002; the process will be finalized in FY 2003.

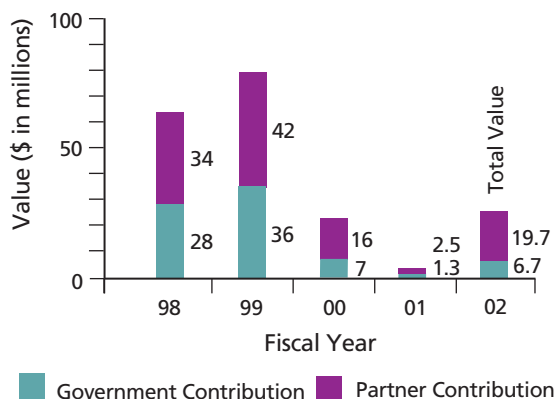
### Information Technology

IBD uses PartnerWorks™, a Microsoft SQL-based application, which includes over twenty individual database modules to manage and track all business activities, agreements, intellectual property, and day-to-day processes within the division. The Information Technology (IT) Team consists of a group of dedicated IT professionals who manage the technical development, system maintenance, and ongoing training and technical assistance for the division. The IT Team develops and documents all IBD report requests from requestors such as DOE, DOC, Laboratory management and technical divisions, and congressional offices. In FY 2002, the IT Team collaborated with the Licensing Team to develop a new licensing module to support the Licensing Team and the Licensing Compliance Officer. The license module is scheduled for final release before the end of FY 2003.

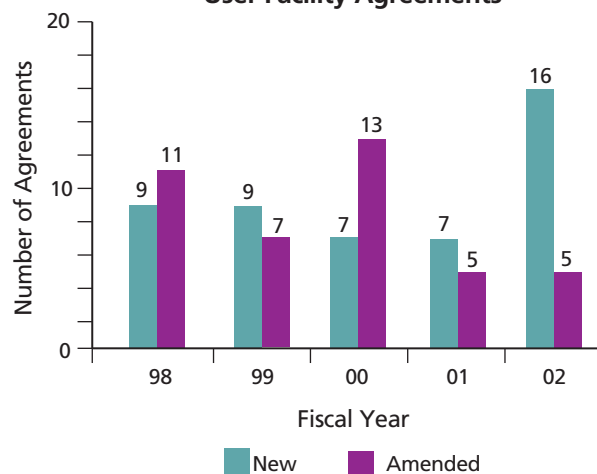
### Success Stories

**Direct Methanol Fuel Cells**—Over the last three years, the Laboratory has developed a portfolio of Direct Methanol Fuel Cell (DMFC)-related patents and has been a leader in hydrogen fuel development for clean power applications such as vehicle power, stationary power, and portable power applications. Over the last five years, LANL has pioneered DMFC technology for applications requiring a power source that provides relatively low power but high energy density over a prolonged period of time. These applications include portable power for cellular phones, radio-communication equipment, personal

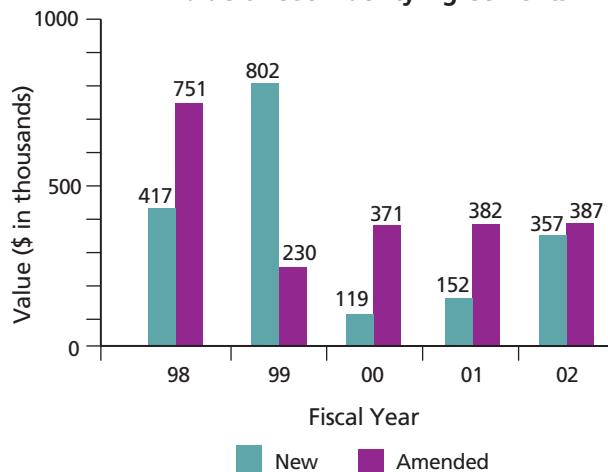
Value of Newly Executed CRADAs



User Facility Agreements



Value of User Facility Agreements





## Fuel Cell Technology

*The Laboratory has worked with industry on fuel cell and related technology since the mid 1970s, through both the government-funded core research program and through CRADA and licensing agreements. Intellectual property available for licensing ranges from techniques for cost reduction, to performance improvement, to innovative system approaches. The Laboratory's fuel cell intellectual property is at the heart of several products under commercial development. Licensing opportunities for LANL's fuel cell portfolio may be found at <http://www.lanl.gov/partnerships>.*

digital assistants (PDAs), pocket PCs, and other small electronic devices. With today's market seriously examining DMFC technology as a power source candidate for low-power applications and a desirable substitute for high-end, lithium-ion batteries, several companies in this market have expressed an interest in licensing LANL's DMFC fuel-cell patents.

During FY 2002, LANL executed a nonexclusive license covering its entire DMFC portfolio. The license was originally granted to Mechanical Technologies, Inc., a company that subsequently spun off a new startup company, MTI MicroFuel Cells, Inc., to commercialize the technology. LANL also intends to license these technologies to other companies. As the portfolio matures, additional patents are expected to issue within the next two years covering fuel efficiency, water management, and power output. LANL anticipates the first commercial sales of DMFC products by LANL licensees to occur by 2005.

### **Atmospheric-Pressure Plasma Jet Technology—**

In FY 2002, the Laboratory signed an exclusive license agreement with APJeT, Inc., a northern New Mexico startup and Laboratory spinoff company, for the

Laboratory-developed, atmospheric-pressure plasma jet technology. This technology provides a revolutionary advance in materials processing to produce a gas stream of reactive chemicals capable of cleaning, decontaminating, etching, or coating surfaces at atmospheric pressure and low temperatures. Heretofore, such plasma treatments could take place only in a vacuum, a process that is considerably slower and more costly than the APJeT solution. Benefits of the new technology include treating synthetic fibers to make them absorb or repel water, removing photo-sensitive material from silicon wafers, depositing thin films, and decontaminating surfaces exposed to chemical and biological warfare agents, such as anthrax spores. It could also benefit the healthcare industry by sterilizing medical products. The company, founded by two LANL scientists on Entrepreneurial Leave of Absence and a LANL consultant, has been made possible through a \$3 million investment by two strategic investors. The founders and investors anticipate that the APJeT technology will revolutionize the world of plasma processing by replacing older, vacuum-type plasma systems used in computer-chip manufacturing with their more advanced, low-cost, atmospheric-pressure plasma jet process.

## Agreement Types, Definitions, and Conditions

Agreement	Rights in Intellectual Property	Laboratory Resource Commitment	Industry Resource Commitment
<p><b>Cooperative Research and Development Agreement (CRADA):</b> Enables industry, academia, and non-profit entities to collaborate with the Laboratory for the purpose of joint R&amp;D activities.</p>	Each party may take title to its own CRADA-generated intellectual property. Partners have first rights to an exclusive license in a designated field of use. The U.S. Government retains a nonexclusive, royalty-free, irrevocable license to every subject invention under a CRADA.	Cost-shared through contributions of personnel, equipment, services, and facilities.	Cost-shared through contributions of personnel, equipment, services, materials, facilities, and funds.
<p><b>Non-Federal Work for Others (WFO) Agreement:</b> Enables a non-federal partner to ask the Laboratory to perform a defined scope of work or list of tasks that draws upon the unique capabilities of the Laboratory. It may not place the Laboratory in competition with the private sector. (Also known as a funds-in agreement or a sponsored research and development agreement.)</p>	Rights to Laboratory inventions generated under a WFO Agreement may be available to a sponsor under DOE's Class Waiver.	Personnel, equipment, materials, and facilities are used.	Sponsor covers the cost of all Laboratory work (including personnel and materials) to be completed under the Statement of Work signed by both parties.
<p><b>Personnel Exchange Agreements: Industrial Fellow Agreements</b> allow Laboratory staff members to work at a partner company.</p> <p><b>Industrial Assignment Agreements</b> allow Laboratory staff members to work in the private sector.</p> <p><b>Industrial Staff Member Agreements</b> allow private-sector staff to work at the Laboratory.</p>	All are subject to negotiation.	<p>The Laboratory and partner cost-share the Industrial Fellow.</p> <p>Loan of Laboratory personnel (subject matter expert).</p> <p>Office space, laboratory, and support costs for Industrial Staff Members assigned to the Laboratory.</p>	<p>Partner pays percentage of salary; provides office space, laboratory, and associated support costs.</p> <p>Company pays costs (salary and benefits) for Laboratory staff on assignment to company.</p> <p>Company pays costs for Industrial Staff Member assigned to the Laboratory.</p>
<p><b>User Facility Agreement:</b> Permits outside users from industry, universities, and other governmental agencies, to conduct research using the Laboratory's unique experimental research equipment and facilities.</p>	User retains rights.	None	Partner covers all costs associated with using the facility for the tasks defined in the scope of work.
<p><b>Non-Disclosure Agreement (NDA):</b> Protects proprietary information exchanged between parties during initial interactions and discussions between the Laboratory and another party on specific technical areas.</p>	None—no IP is generated by either party under an NDA.	None	None
<p><b>Memorandum of Intent (MOI)</b> Nonbinding document signed by parties interested in pursuing a comprehensive agreement for the transfer of technology which defines specific technical areas of interest and the ground rules for interactions and discussions between the parties.</p>	None—no IP is generated under an MOI.	None	None

## Strategic Partnerships Office



**Ken Freese,**  
**Program Manager**

*The Strategic Partnerships (IBD-SP) Program enjoyed continued growth and stabilization during FY 2002. Initiated in 1999, the IBD-SP Program seeks to identify and develop industrial partnerships that create strategic advantages for both the Laboratory and its industry partners and to cultivate opportunities for bi-directional technology transfer and sponsored research in strategic technology focus areas. Collaborations with strategic partners provided over \$15 million in value to the Laboratory and its programs in FY 2002. We look forward to continued growth and development of strategic partnerships during the coming year and expect to see increasing value to the Laboratory accruing from these important relationships.*

The Laboratory needs strategic partners in industry to complement its science and technology capabilities and to commercialize the results of its research and development (R&D). The Strategic Partnerships Office seeks to develop mutually strategic partnerships with companies built on mutual trust, common goals, and shared risk. These partnerships seek to achieve goals that may be difficult or impossible for either party to accomplish alone. They are designed to benefit all parties while ensuring the necessary technological capabilities to assist the Laboratory in meeting its programmatic responsibilities. Strategic partnerships are generally broad-based and long-term and have strong support from senior management on both sides.

### Ongoing Relationships

Strategic partnerships, by their nature, take time to develop. For example, the Laboratory has been working with Procter & Gamble (P&G) for 10 years, developing both experience and trust in the relationship.

**The P&G/LANL Partnership**—The Laboratory's 10-year partnership with P&G began with a single project designed to develop a reliability prediction model to streamline P&G's manufacturing efficiency. Software resulting from this project was licensed to P&G and is currently being sublicensed by P&G and its marketing partner to other commercial entities. The resulting product, PowerFactoRE, is now being

used in 200 manufacturing plants worldwide. From this beginning, the P&G/LANL relationship blossomed into a truly strategic partnership that is mutually beneficial and crosses multiple divisions in both institutions. The partnership has evolved to comprise five projects under one master CRADA. During FY 2002, the Laboratory's partnership with P&G attained the strategic level by engaging senior management in both organizations in a dialog about common goals and vision for the partnership. The relationship was further enhanced by placement of a LANL Industrial Fellow at P&G's Cincinnati, OH, site. Deb Summa, an engineer from the Engineering Sciences and Applications (ESA) Division, serves as a liaison to mine and secure further technical collaborations while adding value to existing projects and establishing new contacts. To date, projects with P&G are ongoing in areas of sensor development, bio-informatics systems, material modeling and simulation, computational chemistry, and decision making for knowledge management. As the Laboratory's relationship with P&G continues to grow, opportunities for collaborative R&D and technology commercialization proliferate.

**The Motorola/LANL Partnership**—The eight-year relationship between Motorola and the Laboratory began with a single project in the area of modeling and simulation of semiconductor processing technologies. As the partnership expanded into other areas,



such as enterprise modeling, image processing, and fuel cell technologies, it has shown clear benefit to the Laboratory's threat reduction, energy, and weapons programs. During FY 2000, one of the positive results of the strategic relationship between the Laboratory and Motorola was the company's commitment to occupy 11,000 square feet within the newly constructed Los Alamos Research Park. The Laboratory, DOE, and the Los Alamos Commerce and Development Corporation (LACDC) are jointly developing this project with support from the County of Los Alamos. In FY 2002, three major new project initiatives were launched. Motorola and the Laboratory began a collaboration to benefit the Lab's Structural Health Monitoring project, a major program within the weapons arena. Motorola brings expertise in self-assembling communication networks to the table. In Threat Reduction Programs, collaborations were initiated in two areas: (a) data mining from disparate databases using Motorola's InfoSleuth™ software, and (b) unattended monitoring and data communication for concerns such as wildfire and pipeline safety using Motorola's ACORN™ system, which was developed for precision agriculture applications (an area in which future collaborations are planned). During FY 2002, the Laboratory had two Industrial Fellows assigned to Motorola developing additional ways to strengthen the partnership with the Laboratory.

**The PPG Industries/LANL Partnership**—In 1995, PPG Industries began its relationship with the Laboratory by requesting an Industrial Fellow. PPG continues to fund the Industrial Fellow part time and has invested several million dollars in Los Alamos and other national laboratories as a result of Industrial Fellow activities. Major areas of collaboration have included (1) the use of excimer laser technology to improve glass manufacturing; (2) computer modeling of heat transfer in fiberglass production; (3) the application of shock waves to produce better paints; (4) plasma-produced coatings and materials; (5) and surface modifications by ion implantation.

**Partnership with 3M Corporation and DOE "Award of Excellence"**—In September 2001, the 3M Corporation informed the Laboratory that production of Kel-F 800 would cease due to environmental factors and its recent agreement with the Environmental Protection Agency. The polymer Kel-F 800 is the binder in the insensitive, high-explosive formulations PBX9502 (Los Alamos) and LX-17 (Livermore), a critical component of the DOE's stockpile stewardship mission. Fortunately for the DOE complex, 3M proved extremely cooperative in handling the transition. The company sent two executives to Los Alamos to work out a way to minimize disruption to the nation's defense needs. A special *ad hoc* team at LANL estimated the amount of Kel-F 800 the labs would need before a new binder could be developed and certified—a process estimated to require approximately 25 years. 3M agreed to produce the requisite amount in a final series of production runs. The Laboratory and 3M also signed a very special non-disclosure agreement whereby the company shared "the crown jewels" (the legacy data) on the production and properties of Kel-F 800 with LANL. This information is crucial for understanding potential material anomalies and for solving problems that may arise over the next several decades in the effort to produce a replacement material. DOE awarded the Los Alamos team a Defense Programs "Award of Excellence" for its timely effort and special contribution to the Laboratory mission.

### The Industrial Fellows Program

The Laboratory's Industrial Fellows Program, managed by IBD-SP, assigns experienced Laboratory professionals to work with senior managers at a host company for at least one year and preferably longer. The Industrial Fellow assignment provides an ideal opportunity for Laboratory staff members to work for carefully selected companies with the goal of building strategic technical alliances. Such alliances tend to evolve when researchers from very different backgrounds work together on projects of mutual interest. As noted above, during FY 2002, Laboratory Industrial Fellows were working with Motorola (Tempe, AZ), P&G (Cincinnati, OH), and PPG Industries (Pittsburgh, PA).

## Los Alamos Research Park

The Laboratory, DOE, and LACDC, with support from the County of Los Alamos, are steering the development of the Los Alamos Research Park. IBD played a major role in negotiating the site lease and continues to coordinate Laboratory interactions with LACDC, manager of the park. The 44-acre park, located directly across from the Laboratory's main technical area, provides space for housing collaborative efforts among Los Alamos researchers and corporate, academic, and institutional research and development staff. Motorola and many other companies, the University of California, and members of the Laboratory's technical directorates have been tenants in the first of five planned buildings. Construction began in the spring of 2000; the first building was dedicated on March 24, 2001. Future expansion calls for a total of 300,000 square feet of office and light laboratory space for 1,500 researchers

As of October 2002, 90 percent of Building 1 of the Los Alamos Research Park was leased. This space absorption is well ahead of the initial projections for the Research Park. The construction loans for Building 1 are currently being shopped for permanent financing in today's favorable interest rate environment. Planning for the second building has begun. LACDC, the building owner, is developing a prospective tenant list for the second building and has worked with LANL to house several programs that feature strong external collaborations.

**Laboratory-of-the-Year Award**—In FY 2002, the Mid-Continent Federal Laboratory Consortium (FLC) recognized LANL with its "Laboratory-of-the-Year" award for the Laboratory's visionary and critical support of the Los Alamos Research Park. The Research Park will play a significant role in facilitating the transfer of new Laboratory technologies to the private sector by providing (leasing) office space to industry partners and conference facilities that are not part of the Laboratory, making them more accessible to potential industry partners. When the Laboratory committed to an anchor tenant role, it attracted corporate partners to also commit to become tenants. This support of the Research Park by the Laboratory

shows its recognition for the importance of the private sector to the strategic mission of the Laboratory and visibly demonstrates its support for technology transfer and regional economic development.

**Industry Forum**—In 2002, LACDC and IBD-SP cosponsored and launched the Industrial Forum series at the Research Park. The Industrial Forum is a series of presentations intended to provide a picture of the state of technology development in a broad variety of industry areas. The Forum brings together industry, LANL scientists and technologists, and the local investment community to discuss market opportunities that can be realized and challenges that need to be addressed through technology development. These forums provide the opportunity for networking with others interested in the topics presented.

The Forum, which draws speakers from leading local and national technology businesses, kicked off with a program on "Imaging Technology for Mass Customization and Reverse Engineering: What are the Trends and the Challenges?" The speaker was Tim Thompson, president of HYTEC Inc., a Los Alamos company that provides engineering services as well as sensors and imaging products for a variety of markets throughout the world. The series followed



**Left, Susan Sprake of IBD (LANL's FLC representative) joins Tom Meyer, LANL Associate Director for Strategic Research, to accept the FLC's Large Lab "Laboratory-of-the-Year" award in November 2002. Also shown are the joint recipients of the Small Lab award.**

with “Stable Isotope Biochemicals: Applications for Drug Discovery,” presented by Dr. Jonathan Miles Brown, the CEO of Prospect Pharma, Inc. Prospect Pharma is a business partner of Spectra Gases, a New Jersey-based industry leader in supplying rare gases to medical device and scientific markets.

**ICON Facility Leased to LACDC**—Following the Research Park land-lease model, the second lease of DOE property to LACDC was concluded last year for the “Isotopes of Carbon, Oxygen and Nitrogen” (ICON) facility located at LANL’s Technical Area 46. This mothballed facility on Lab property was subsequently subleased to Spectra Gases, a for-profit company that makes and sells isotopes to the medical industry through its subsidiary Spectra Stable Isotopes. Spectra refurbished the facility and began production of stable isotopes for commercial use in September 2002.

With the ICON facility back on-line, the production of high purity stable isotopes for nuclear medicine and biomedical research is expected to minimize U.S. dependency on foreign sources. The need for these gases has become so acute that the National Institutes of Health have been deferring or canceling research projects that used these isotopes. The availability of stable isotopes also strengthens the Lab’s ability to maintain its existing isotope-related projects and bid on future scientific research proposals.

On October 17, 2002, LACDC, IBD Division, and Spectra Stable Isotopes hosted a celebration at the Research Park in recognition of the ICON facility’s return to production. Dignitaries and business leaders from across the country and throughout New Mexico attended this event. This endeavor has been acclaimed as a wonderful example of how the DOE, Los Alamos County, and industry working together can achieve a common strategic goal.

### R&D 100 Awards Sponsorship

IBD-SP sponsors Laboratory participation in *R&D* magazine’s annual R&D 100 Awards competition by submitting the Laboratory’s most innovative technologies, available for commercialization during the past calendar year, to *R&D* magazine. The competition, which celebrated its 40th year during 2002, is designed to recognize the 100 most technologically significant new products or processes developed by the international R&D community. The competition is unique in its recognition of technological advances across multiple industries, government agencies, and universities. Winning technologies must be available for purchase or license in the year before they are entered. Entries are strengthened when private-sector interests, such as CRADA, joint venture, license or other contractual industrial arrangements exist. The R&D 100 Awards competition is the only industry-wide competition recognizing the practical applications of science.

Technologies are nominated in open competition and judged by technical experts selected by the Illinois-based *R&D* magazine. The magazine uses technical criteria to select the 100 most significant, unique, or promising entries from the nominations received. The projects span a diverse range of scientific and technical areas—from innovative computing techniques to revolutionary engine technology and plasma physics. The Laboratory has been competing successfully since 1978 with many of its winning technologies developed in collaboration with private-sector companies and other scientific institutions. LANL won two awards in 2002 and has received 80 awards since it began competing in 1978.

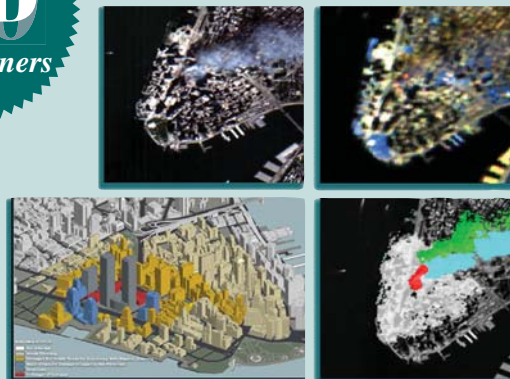
## R&D 100 Awards



### GENIE—Evolving Feature Algorithms for Image Analysis

*Producing and analyzing images from satellites and aircraft is a complicated process. This is because, for accurate analysis, massive quantities of data must be identified either by people, which is an arduous process, or by computers. The problem that arises with automation is that there still must be a scientist who can write and refine computer procedures specific to each image.*

*To solve this problem of varying environments and conditions the LANL R&D 100 award winning team developed the GENIE (GENetic Imagery Exploitation) software package, which mimics evolution in order to create more effective algorithms for detecting features in digital images produced by a variety of remote-sensing techniques. GENIE assembles an initial set of low-level, image-processing algorithms (e.g., edge detectors, texture measures, and spectral*

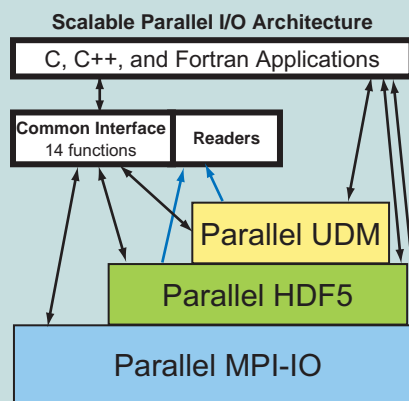


*operators) and then tests each algorithm's ability to find the feature of interest. The "less fit" algorithms are discarded; the "more fit" ones are combined to produce superior ones. After several generations of survival of the fittest, the resulting algorithm is highly optimized. Although features and imagery constantly change, GENIE's ability to evolve superior algorithms allows it to find the features of interest in nearly any set of images.*

### HDF5—Hierarchical Data Format

*Flexible data management can chunk, extend, and compress data. It can store, retrieve, exchange, and archive not only large amounts of data— terabytes or petabytes of data—but also any type of data suitable for digital storage. Addressing the results of scientific research in which amounts of data seem to proliferate without limit, a research team at the National Center for Supercomputing Applications in Champaign, Ill., developed the HDF5—Hierarchical Data Format 5—with Lawrence Livermore National Laboratory (CA); Sandia National Laboratories (NM); and Los Alamos National Laboratory (NM).*

*HDF5's flexibility sets it apart from similar applications available today. HDF5 is distributed with C, C++, Java, and Fortran programming interfaces. Its virtual file layer supports different types of input/output, file systems, and data storage media, allowing for flexible storage and data*



*transfer. HDF5 has the ability to store metadata separately from raw data with support for complex metadata structures and with separation of small metadata I/O requests from large-problem-sized I/O requests.*

## Technology Commercialization Office



**Dave Foster,**  
**Program Manager**

*The Technology Commercialization Office (TCO) expanded its focus during FY 2002, applying its unique resources to all aspects of IBD's commercialization activities while also maintaining its commitment to regional business and economic development. TCO leads IBD's efforts to help leverage Laboratory technologies and expertise to stimulate technology business startups, create job opportunities, and attract entrepreneurs, businesses, and capital to northern New Mexico. TCO's expanded focus was an important component of IBD's increased program integration in FY 2002. By combining TCO's expertise in technology scouting, market assessments, and commercialization planning with complementary IBD resources, TCO hopes to effect more strategic commercialization outcomes.*

### Regional Business Stimulation

TCO continues to offer a broad range of services to regional businesses and fledgling entrepreneurs. These services include market assessments, expert business counseling, and access to funding sources, networking events, and professional organizations. Over the last six years, TCO has assisted 149 new clients—68 of these are new startup companies. Product and service offerings of these companies range from production of conductive polymers to non-invasive medical diagnostic tools, design and manufacture of sensors based on superconductors, and radio-controlled electronics. The new startups have brought 260 new jobs and \$56 million dollars in capital investment into the region.

Despite the turbulent economy, 75 percent of these startups remain in business. Since 1997, 22 Laboratory employees have taken Entrepreneurial Leave of Absence from their technical positions to start or participate in new regional companies based on Laboratory technology or expertise. Although five have returned to the Laboratory, 17 are still working in the private sector.

In FY 2002 formal evaluation of IBD's implementation of these regional technology commercialization initiatives (Appendix M to the University of California's Prime Contract) by LANL, UC, and the DOE was

"outstanding" for the fifth consecutive year. Additionally, the Department of Commerce selected the Laboratory as one of the nation's top ten best for "Exemplary Practices in Federal Laboratory-Based Economic Development" following a survey of over 300 federal laboratory programs.

### 2002 Program Highlights

All Laboratory commercialization activities are based on the inventions that result from LANL's highly innovative research. Because many of these inventions are hidden within the technical divisions, technology scouting is required for IBD to identify and assess early stage technologies with commercial potential, thereby increasing the quality and quantity of the Laboratory's intellectual property base.

**Staffing Expanded, Resources Redirected**—In addition to expanding its focus in FY 2002, TCO redirected a large percentage of its resources to technology scouting activities in the belief that LANL can facilitate regional economic development and other commercialization efforts best by increasing access to its cutting-edge technologies. In FY 2002, TCO hired two Technology Commercialization Executives (TCEs) who, together, represent over 25 years of experience in entrepreneurial startups, technology management, and commercialization planning. In coordination with other IBD staff

members and the Laboratory's Intellectual Property Coordinators within the technical divisions, the TCEs have established and are implementing dynamic processes to identify and assess early stage technologies with commercial potential. For example, TCO provides assistance to LANL's patent review committee in the review and assessment of invention disclosures, supplies market information to the IBD-IP Licensing Team, and collaborates with the rest of IBD on optimal commercialization strategy development for portfolio management teams as well as for individual projects.

In addition to the TCEs, TCO also hired three Business Development Executives in FY 2002—all former graduates of its MBA internship program. These additions to the TCO staff represent a transition from reliance on outside, expert consultants to reliance on internal resources to support LANL startups and assist with the additional tech scouting and assessment activities. TCO expects these new resources to enhance IBD's ability to provide more individual, tangible, and focused attention to all of its clients. In addition, this expansion and reprioritization of resources is helping IBD to "prime the pump" with identified, protected, and well-packaged commercialization opportunities.

**MBA Internships**—TCO manages a unique MBA internship program to provide hands-on experience to mid-term MBA candidates. From the initiation of this program in 1997 through FY 2002, 37 MBAs from 13 top-tier business schools have completed internships with IBD. The very successful FY 2001 MBA Tech Scout pilot program was expanded in FY 2002 to include eight new interns dedicated to tech scouting activities. In addition to the traditional MBA Tech Scout intern responsibilities of searching out Laboratory technologies with commercial potential and helping researchers submit their ideas for patenting or copyright, Tech Scouts were tasked to help assess the commercial viability of some of IBD's current thrust areas: biosensors, biothreat reduction, complex biosystems modeling, engineering applications, superconductivity, nanotechnology, and application software. For each thrust area, Tech Scouts initiated an

***"A once in a lifetime experience! From the first day, you know you make a difference for scientists hoping to commercialize their technologies, and the knowledge gained about technology maturation and assessment opens up an array of future opportunities."***

***—Sarah Baer, 2002 MBA,  
San Diego State University***

inventory of technologies and capabilities and drafted an analysis of LANL's competitive strengths and weaknesses relative to the identified commercial opportunities. Some of the FY 2002 MBA interns also participated in the Entrepreneurial Internship program aimed at assisting and providing business expertise to northern New Mexico high-tech startups. In FY2002 the Entrepreneurial Interns provided support to five emerging regional corporations.

***Training Programs Restructured and Expanded***—In order to increase understanding, and participation by LANL employees in the technology commercialization process, IBD must effectively educate its stakeholders and client base regarding its various support programs. To ensure that this audience keeps abreast of current practices, available resources, and evolving IBD policies, TCO manages several education programs related to the technology commercialization process.

In the effort to encourage more active involvement by Laboratory staff in commercialization activities, TCO developed and coordinated a new internal training program in FY 2002: a restructured Commercialization and Entrepreneurship Training course. In addition, TCO collaborated with the two other IBD program teams to develop the Intellectual Property Management Training Class.

TCO's restructured commercialization and entrepreneurship training series targets LANL technical staff members interested in participating in the commercial assessment of their technologies. The workshop provides a context for commercialization activities at LANL, articulates how to assess the

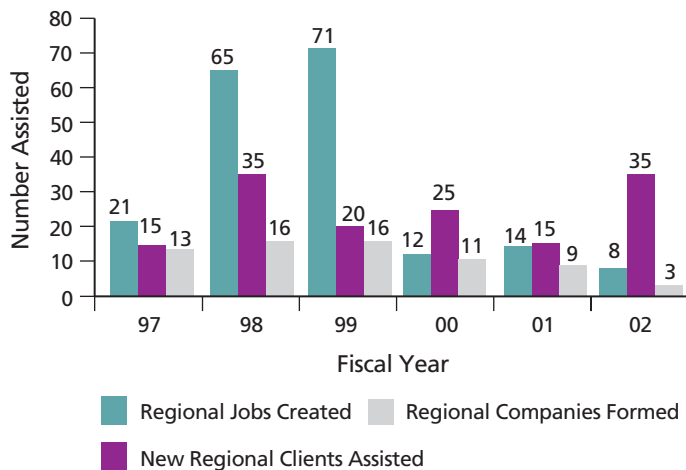
commercial value of an invention, and helps participants evaluate the best channel for commercialization—i.e., licensing, strategic alliance, or startup. Twenty-three Laboratory employees participated in this training in FY 2002. Through this course offering, 14 new technologies were evaluated. Many of these were identified as potential startup or licensing opportunities. The success of this pilot program suggested the need for a bimonthly offering of this course to accommodate increasing demand.

An institution-wide lack of understanding of the value of intellectual property and the process for disclosing and protecting inventions motivated IBD to pilot the intellectual property education course for LANL staff and management. The initial training module, designed for Laboratory managers, enlightens participants about the value of intellectual property, the importance of protecting it, and the processes and resources available at LANL to help manage intellectual property. Three pilot classes were offered to managers in FY 2002. This course offering is now available through LANL's Training and Development Office.

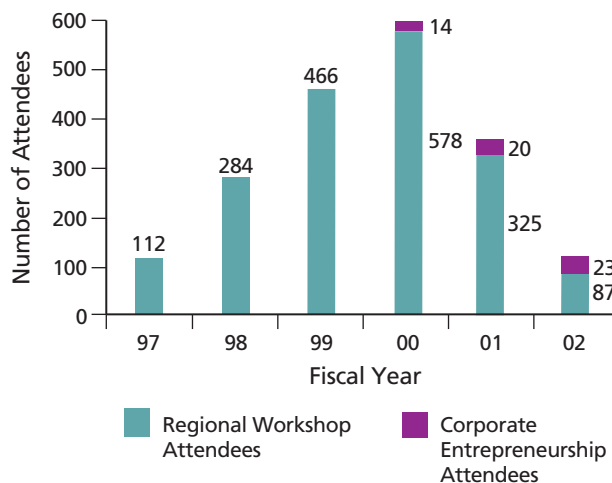
TCO sponsored one regional workshop in FY 2002 aimed at its entrepreneurial audience—"Tough Market Tactics"—that attracted 87 participants. TCO contracted with Guy Kawasaki, CEO of Garage Technology Ventures in Palo Alto, California, for this workshop. The workshop provided entrepreneurs with key insights for survival and success in the current tough economic environment. Speakers from Murphree Venture Partners, Kleiner Perkins, and several regional entrepreneurs shared the podium to communicate strategies and observations from both a national and regional perspective.

Over the last six years, TCO has sponsored 22 internal and external training workshops to educate entrepreneurs and technologists about the basics of launching a business. More than 2300 Laboratory staff and regional entrepreneurs have participated in 17 external workshops and five internal training seminars since 1997. In conjunction with Sandia National Laboratories and the New Mexico Economic Development Department, IBD-TCO continues to support an

### Regional Business Development Assistance



### Entrepreneurial Training



ISO 9000 quality training program. IBD-TCO also co-sponsored Small Business Innovative Research (SBIR) Proposal Writing Workshops and counseling for SBIR candidates through a contract administered by Technology Ventures Corporation in FY 2002.

As the statistics indicate, during FY 2002, TCO's training programs transitioned to a stronger emphasis on LANL staff training in an effort to bring a greater number of Laboratory technologies to commercialization.

**Networking and Marketing Activities Expanded**—Networking has always been a key element of TCO's entrepreneurial support programs. Networks are the single most effective factor

contributing to a strong entrepreneurial region, bringing essential elements together—technology, people, money, public policy, customers, and business services. Networking events sponsored or co-sponsored by TCO include the bimonthly Coronado Ventures Forum, the weekly Safari Club, monthly meetings by the several NM professional technology trade associations (software, internet, biosciences), and the NM Entrepreneurs Association. TCO also actively participates in national networking organizations such as the University of California at San Diego's UCSD CONNECT and the National Association of Seed and Venture Funds.

In FY 2002, TCO continued to assist venture capitalists interested in establishing an office in New Mexico and maintained active relationships with the established, local, seed investment community. In order to broaden the network of potential investors in LANL technology, TCO continued to explore relationships in other entrepreneurial communities to identify new sources of seed capital and entrepreneurial talent.

For instance, TCO established an office at UCSD CONNECT during FY 2002. This office is staffed by a TCO Business Development Executive (who is also a graduate of the MBA internship program). CONNECT has played a key role in stimulating the growth of San Diego as a leading entrepreneurial community. The IBD-TCO presence at UCSD CONNECT enhances LANL's ability to market its life science and information technologies to a broader audience and affords TCO the opportunity to evaluate CONNECT business programs that can be replicated in northern New Mexico. TCO is also exploring similar relationships with other entrepreneurial communities where its current or former MBAs have good contacts such as Tucson, Arizona, and Austin, Texas.

**Support for LANL's Carlsbad Office**—In FY 2002, IBD helped the LANL office at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico, evaluate potential regional economic development programs based on TCO's successful initiatives in northern New

Mexico. During the summer of 2002, a graduate from TCO's MBA internship program was deployed to Carlsbad to help evaluate the current regional economic landscape and define programs that could kick-start a regional economic development initiative in Carlsbad. This effort is extremely important to Carlsbad as the lifetime of the WIPP project is at risk based on a new, accelerated shipment schedule expected to fill WIPP within 15 years as opposed to the originally planned 25 years. This could have significant ramifications for the broader Carlsbad community. With IBD's help, Carlsbad is beginning to take a proactive approach to mitigate this job loss vulnerability by instituting some key economic development programs in the near term.

### **New Initiatives Support Laboratory Program Development Activities**

In FY 2002, TCO participated in several Laboratory program development exploratory projects that relied on the application of TCO's expertise in market assessment and analysis. On behalf of LANL's Bioscience (B) Division, TCO conducted three opportunity assessments for functional genomics, biothreat reduction, and computational biosystems. These assessments provided B Division with information on key market aspects of these areas including market overview, trends, competition, and funding opportunities. In addition, the assessments summarized the division's capabilities, strengths, weaknesses, and recommendations for its strategic plans for each thrust area.

The success of these assessments spawned two additional program development projects: an expanded and in-depth opportunity assessment of complex biosystems' modeling on behalf of four divisions—B, Theoretical, Decision, and Computational and Computer Sciences; and a request to assist the Biothreat Reduction Program with its strategic and operations planning exercises for FY 2002 and 2003, leveraging the biothreat opportunity assessment.



## Strategic Goals and Future Directions

### Vision

The Laboratory's partnerships with industry contribute to its scientific vitality and strength and have become an integral part of many Laboratory programs. These partnerships help the Laboratory achieve its mission objectives, develop strategic advantage for future programs, transfer technology to the private sector for commercialization, and provide regional economic development opportunities.

IBD will continue to provide the Laboratory with effective strategies for partnering with industry to enhance the Laboratory's ability to accomplish its missions, leverage programmatic resources, enrich the core competencies, provide stimulating and challenging research opportunities, and generate programmatic benefits that would not otherwise be available.

### Strategic Focus

External alliances for R&D through universities and government laboratories have become increasingly important to U.S. industry as it continues to reduce its own internal R&D capabilities. For business, strategic partnerships have become a crucial weapon in the battle for competitive advantage. Likewise, major universities have built partnerships with industry to help ensure their future vitality and financial security. The Laboratory cannot afford to be isolated or self-sufficient in today's rapidly advancing world of science and technology. Therefore, the Laboratory must pursue formation of partnerships with other organizations of excellence that will provide appropriate competitive advantage for both

program development and the definition of future missions for the Laboratory. More than 60 percent of the R&D conducted in the U.S. today is funded by the private sector. The Laboratory must continue to aggressively reach out and tap this large and valuable resource for the institution and its programs.

Over the past decade, the Laboratory has participated in partnerships with industry for two primary purposes:

- To strengthen its core competencies, and
- To transfer technologies to the private sector for commercial applications.

IBD will continue to maintain its leadership by helping the Laboratory expand its efforts in these areas as well as guiding it toward

- Designing and implementing a strategy for embedding industrial partnering within all appropriate Laboratory programs. (The goal is to develop and deploy partnerships with industry as tactical tools in achieving programmatic mission deliverables wherever possible. Such partnerships must be mission-driven.)
- Identifying and prioritizing a few strategic thrust areas in which partnerships with industry are essential to realizing the vision of the Laboratory.

The Laboratory must continue to develop and nurture broad-based, multi-disciplinary, multi-program, long-term, strategic industrial alliances for both existing and future missions.

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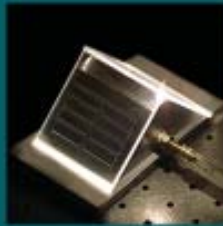
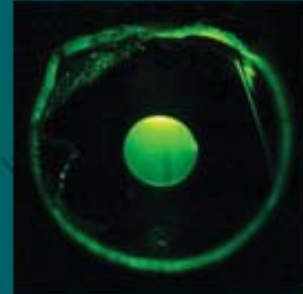
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phone 505-665-9091 or visit the IBD Web Site:  
<http://www.lanl.gov/partnerships>

LALP-03-049



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