

Objectivity

Responsiveness

Collaboration

Knowledge

Innovation

annual report 2002



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About the cover:

In this annual report, we take you inside RTI International to learn more about the qualities that make RTI a great place to work and a great firm to hire. One of these is collaboration, which is encouraged by the interconnectivity among buildings on the RTI campus. Staff members shown in the walkway that connects the Cox Building with the Hobbs Building are (first floor) survey researcher Allen Duffer and (second floor) health analyst Jennifer Schoden and statistician Vijaya Rao.

At right:

RTI HIV researchers discuss different methods for communicating the relative risks of specific sexual practices in HIV prevention materials. From left: Bill Zule, Sheryl Crabtree, Jen Uhrig, Grace Hall, Sean Squire, and Elizabeth Jaël.


RTI International is a trade name of Research Triangle Institute.

“Objectivity, responsiveness, and collaboration, built on a foundation of knowledge and innovation, are the qualities that set RTI International apart. Combined, these attributes give us the agility to adapt to new challenges and the ability to respond rapidly. In 2002 we continued to be a valuable resource for our clients, providing them with research and development and a full spectrum of multidisciplinary services in health and pharmaceuticals, advanced technology, survey and statistics, education and training, economic and social development, and environmental protection.”

— Victoria Franchetti Haynes

RTI President and Chief Executive Officer



A photograph of two people in an office environment. On the left, a man with glasses and a goatee, wearing a light blue button-down shirt and a colorful patterned tie, looks towards the camera. On the right, a woman with short dark hair, wearing a light blue V-neck sweater, looks towards the camera while holding a document. They are surrounded by large stacks of papers on shelves in the background.

A nonprofit institute not affiliated with any special interest group, RTI International is well known for its independence and objectivity. Clients who want high-quality research that can withstand intense scrutiny turn to us.



TOBACCO USE

Matthew Farrelly, PhD

Despite warning labels and widespread publication about the perils of smoking, tobacco use remains high in the United States. The American Legacy Foundation (Legacy) and the Centers for Disease Control and Prevention (CDC) have contracted with RTI International during the past year to provide the objective, accurate data they need to measure the extent of the problems caused by tobacco use and to find ways to lessen use of this harmful substance. Matthew Farrelly, PhD, leads this effort. Legacy was formed as a result of the Master Settlement Agreement between states and the tobacco industry to curb youth and adult smoking.

RTI is serving as Legacy's Coordinating Center for Evaluation and Applied Research to evaluate its \$100 million "truth" youth smoking prevention campaign. During the past year, RTI and Legacy produced five research reports on youth smoking and two nationally representative surveys of youth.

In other tobacco-related research, led by survey researcher Donald Smith, RTI has assisted CDC with the state-based Youth Tobacco Survey (YTS) since 1998. In total, over 40 states have participated in the YTS. RTI has also assisted CDC and the World Health Organization (WHO) since 1999 with the Global Youth Tobacco Survey (GYTS), the largest youth public health surveillance system ever developed. Over 1 million students have participated in the YTS and GYTS. "CDC and WHO have been able to count on RTI to provide high quality data management for both the YTS and GYTS. Over 140 countries are active in the GYTS, and the support provided by RTI has been essential for maintaining a high degree of quality in this work. CDC and WHO appreciate the work and commitment RTI has given this project," said Wick Warren, PhD, coordinator of GYTS at CDC.

Project director Donald Smith and data preparation supervisor Patricia Brunson review survey instruments received from Croatia for the Global Youth Tobacco Survey. To date, RTI has scanned and processed more than 1 million forms completed by teens throughout the world.

The national and international research agendas are constantly changing. Over the years, we have become exceptionally good at mobilizing our expertise and our research tools to respond quickly to our clients' needs. We are poised to help.



PSYCHOLOGICAL RESPONSES TO TERRORIST ATTACKS

William Schlenger, PhD

Within a month after the September 11, 2001, attacks on the World Trade Center, RTI researchers were measuring the levels of Post-Traumatic Stress Disorder (PTSD) in the New York City metropolitan area; in the Washington, DC, area; and in the rest of the nation. We found that people in the New York metropolitan area were 2.9 times more likely than those in other areas to have PTSD. PTSD is a psychiatric disorder that can develop after an individual experiences or witnesses a life-threatening event. Individuals with PTSD relive the experience and also develop other anxiety symptoms.

Led by RTI psychologist William Schlenger, PhD, the RTI team was able to field a study quickly by using a web-enabled panel of respondents who had been recruited for other research investigations before September 11 by RTI's data collection partner, Knowledge Networks. RTI and the American Legacy Foundation jointly sponsored this survey to provide empirical data to help inform public health policy in the aftermath of the September 11 attacks.

“The study by Schlenger et al. of U.S. populations within two months of the September 11 terrorist attacks breaks new ground in providing early post-disaster data,” wrote Carol S. North, MD, MPE, and Betty Pfefferbaum, MD, JD, in an editorial in the August 7, 2002, issue of *The Journal of the American Medical Association*.

“PTSD can be a long-term problem for individuals,” Dr. Schlenger said. “That is why mental health service providers, especially in New York, needed to know how many people were burdened by the trauma of September 11. Early help translates to lower costs in terms of human suffering and in terms of dollars spent on public health services.”



In 2002 we teamed with 290 organizations on projects that aim to improve the human condition. Some of our regular collaborators are researchers at our three founding universities: Duke University, North Carolina State University, and the University of North Carolina at Chapel Hill.



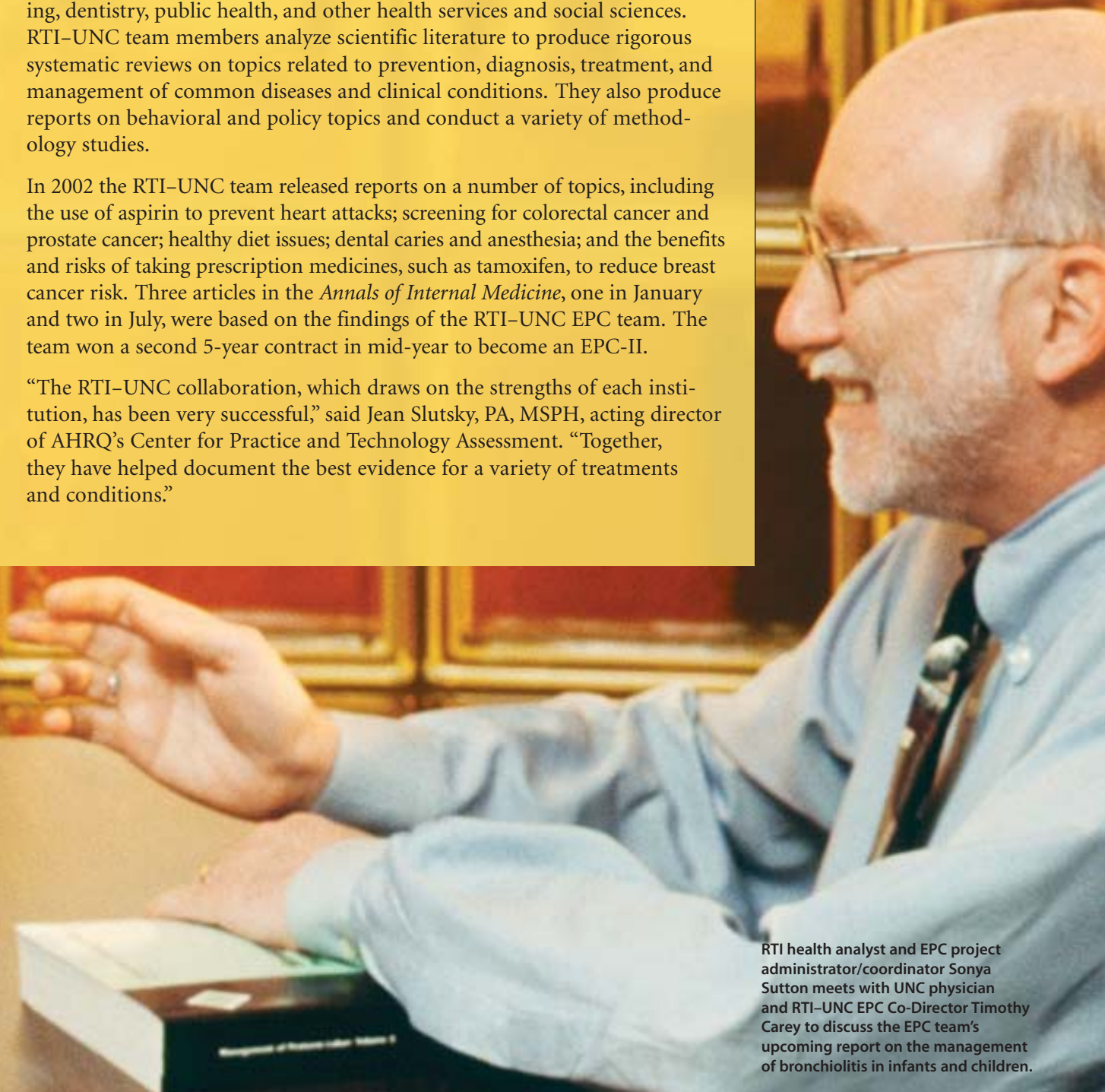
RTI-UNC EVIDENCE-BASED PRACTICE CENTER

Kathleen Lohr, PhD

In 1997, RTI International teamed with UNC-Chapel Hill to become an Evidence-based Practice Center (EPC) for the U.S. Agency for Healthcare Research and Quality (AHRQ). The team includes researchers at RTI, led by Kathleen Lohr, PhD, who specialize in numerous health services research fields and health policy. The team also includes clinicians and researchers at UNC, led by Timothy Carey, MD, MPH, who provide expertise in medicine, nursing, dentistry, public health, and other health services and social sciences. RTI-UNC team members analyze scientific literature to produce rigorous systematic reviews on topics related to prevention, diagnosis, treatment, and management of common diseases and clinical conditions. They also produce reports on behavioral and policy topics and conduct a variety of methodology studies.

In 2002 the RTI-UNC team released reports on a number of topics, including the use of aspirin to prevent heart attacks; screening for colorectal cancer and prostate cancer; healthy diet issues; dental caries and anesthesia; and the benefits and risks of taking prescription medicines, such as tamoxifen, to reduce breast cancer risk. Three articles in the *Annals of Internal Medicine*, one in January and two in July, were based on the findings of the RTI-UNC EPC team. The team won a second 5-year contract in mid-year to become an EPC-II.

“The RTI-UNC collaboration, which draws on the strengths of each institution, has been very successful,” said Jean Slutsky, PA, MSPH, acting director of AHRQ’s Center for Practice and Technology Assessment. “Together, they have helped document the best evidence for a variety of treatments and conditions.”



RTI health analyst and EPC project administrator/coordinator Sonya Sutton meets with UNC physician and RTI-UNC EPC Co-Director Timothy Carey to discuss the EPC team’s upcoming report on the management of bronchiolitis in infants and children.

At RTI International, where researchers hold degrees in more than 130 disciplines, it is easy to find just the right combination of knowledge and expertise to tackle some of the world's toughest problems.





CHILDREN'S HEALTH STUDY


Jerry Rench, PhD

Epidemiologists, statisticians, chemists, and behavioral scientists—these are some of the many disciplines that will be represented on an RTI International team providing technical support for a longitudinal study of environmental factors in children's health. The U.S.

Environmental Protection Agency (EPA) is funding the 5-year study, which could include as many as 5,000 children. The study, potentially based in central North Carolina, will seek to determine if there is any association between environmental pollution and selected health outcomes. Children's environmental exposures and possible health effects will be measured for several years, starting during pregnancy. Researchers will pay extra attention to children who are at increased risk for asthma or who have had exposure to environmental chemicals and physical agents.

RTI's bid for the EPA study received support from local health professionals, hospitals, and health organizations, as well as from government officials. North Carolina Governor Mike Easley said, "A study based in North Carolina that assesses the impact of the environment on children's health is a timely and important research endeavor. RTI is very well qualified to conduct this research program, given the organization's strong relationship with health providers and professional organizations in the state and its successful history in conducting research in the environmental sciences and in the children's health and wellness fields."

RTI epidemiologist Jerry Rench, PhD, describes the study as having far-reaching implications for children, as well as for adults. "As with many of the studies we work on, this one has the potential to make a difference in people's lives, particularly in children's lives," he said. "It could have impacts on the health of both children and adults for generations to come."

A photograph of a laboratory setting. In the foreground, a person's hands are visible, wearing gloves and working with a piece of equipment. The background shows a laboratory bench with various instruments and equipment. The lighting is bright and clinical.

RTI chemist Linda Ellis analyzes samples for pesticides in support of research under way at RTI on children's exposure to chemicals.

RTI researchers are always looking for new ways to apply emerging technology to the wide range of challenges our clients bring us. This creates the ideal atmosphere for innovation.





WEB-BASED TRAINING SIMULATIONS

Brooke Whiteford

Traditionally, soldiers learning how to operate complex equipment begin their training by studying huge manuals filled with diagrams and schematics. Then they go into the field for hands-on training in real vehicles. The U.S. Army, however, had visions of a better training program. Army leaders wanted the types of interactive, 3-D simulation training pioneered by RTI (and now being adopted by industry) to be available over the Internet—something that had never been done for a large-scale training problem.

In 2002 RTI researchers turned that vision into reality with an innovative web-deployed training simulation. The simulation provides soldiers with instruction on how to operate digital communications equipment in Army vehicles, such as cell and landline phones, video teleconferencing, and interactive satellite television. “We wanted to make the technical manuals come alive,” said computer graphics specialist Kevin Merino. Soldiers can download the simulation, which demonstrates how the equipment works, in about 10 minutes. Benefits include self-paced instruction, customized preferences, the ability to train in the field, reduced costs of training facilities and equipment, and the ability to train more students in less time.

“Since the collapse of the Soviet Union, the Army has been facing a new set of missions related to peacekeeping and humanitarian aid. Its role is often focused on logistical support and providing communications in areas where the communication infrastructure, such as electrical power, water, and roads, is absent,” explained project manager Brooke Whiteford. “The training is preparing the soldiers to help those in need.”

RTI graphic model specialist Pamela Woodard and web specialist Noah Evens discuss one of several web-deployed training simulations their group is developing for the U.S. Army.

PRESIDENT'S MESSAGE

RTI International's strong foundation of knowledge and innovation, strengthened by our responsiveness, objectivity, and collaboration, resulted in another year of growth. In 2002, our 44th year of operation, our revenue grew by 8 percent to \$286 million, which represents growth of 70 percent over a 5-year period beginning in 1998. In 2003 we anticipate another year of increased revenue.

Our staff grew in 2002, increasing by 5.8 percent to 2,066 at year end. Part of this growth was due to two acquisitions that complement our current programs: Health Economics Research, Inc., a public health research group in Massachusetts, and the North Carolina-based environmental research operations of Midwest Research Institute.

Our global reach increased in 2002 as well. We opened two new research organizations: RTI Polska in Poland and the Sizanang Centre for Research and Development in South Africa. These operations are part of a large-scale effort to expand RTI's assistance to developing countries.

And, as always, our work to improve the human condition continued. In 2002 we helped more than 100,000 residents of Nespruit, South Africa, gain access to potable water, and we helped to improve the water service to 800,000 low-income residents of Maluti a Phofung, South Africa. Also this past year, we collaborated with the Centers for Disease Control and Prevention to prevent the spread of HIV/AIDS, hepatitis,



RTI's senior management team (standing, from left) Edo Pellizzari, Ronald Johnson, John Crites, Sally Johnson, James Gibson, Satinder Sethi, RTI president Victoria Franchetti Haynes, Dennis Naugle, Richard Kulka, Walter E. Goodlett, Jr., Lon E. Maggart, Donald Camburn, and (seated, from left) Jesko von Windheim, Lisa Gilliland, Allen Miedema, Elizabeth Andrews, Scott Merrell, and Judy Lessler.

sexually transmitted diseases, and drug abuse. In addition, our epidemiologists, statisticians, chemists, and other researchers began a study for the Environmental Protection Agency aimed at understanding how environmental factors affect children's health.

This past year also saw growth in our research services for the commercial sector. We began working with ChevronTexaco on a project that aims to make synthesis gas derived from coal an economically viable and environmentally clean fuel. Also, we worked with pharmaceutical companies to determine if the benefits to patients of taking medications outweigh safety concerns. In addition, we conducted several toxicology studies for private sector clients and industry associations.

These are only a few examples of RTI staff using their expertise to tackle complex national and global problems. Throughout 2002, our researchers, who represent over 130 disciplines, turned knowledge into practice for more than 400 clients. This annual report highlights our 2002 research accomplishments and the awards our staff members have received for professional excellence.

Victoria Fraudette Haynes

2002

RESEARCH HIGHLIGHTS

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RTI International's collaboration in 2002 with public and private organizations, and with local universities, resulted in new approaches for responding to the diverse challenges our clients face. For example, our studies addressed needs to combat terrorism, created technology that helps pilots avoid hazards, evaluated the metabolic effects of multiple drugs, developed interventions to prevent HIV/AIDS among the children of crack-abusing mothers, and helped create processes that improve the economics of power generation. The brief sampling of research described here speaks to our commitment to use our multidisciplinary expertise to meet the goals of our clients and to contribute our knowledge and skills to help solve many of the most demanding issues of our time.



RESEARCH FOR U.S. GOVERNMENT AGENCIES

Since RTI's founding 44 years ago, the U.S. government has been our largest customer. This past year was no exception. Contracts and grants with the federal government accounted for 85 percent of our revenue—\$238 million—in FY2002, compared with 87 percent in FY2001. The Centers for Disease Control and Prevention (CDC) was our fastest growing government client in FY2002. CDC awarded us 92 contracts, for a total of \$49.8 million. Selected 2002 projects funded by CDC and other government agencies are described below.

Public Health Response to Anthrax

In 2002 RTI examined the public health response to the anthrax attacks in late 2001. RTI interviewed over 6,000 postal, government, and media workers in New York, Washington, DC, Connecticut, Florida, and New Jersey who were potentially exposed to anthrax. All workers were advised to take a full course of antibiotic therapy for 60 days. Our analysis showed, however, that 56 percent of the workers did not complete the regimen. This evaluation suggests that a more complete communication strategy, involving health-care providers and the media, may increase the likelihood that exposed individuals will take action to decrease their risks from exposure to biochemical agents.

Ventilation Testing for Biochemical Threats

As part of its antiterrorism research, RTI established a program to identify products that filter ventilated air for harmful biological and chemical substances. The aim of the Safe Buildings Environmental Technology Verification Program is to examine devices such as particulate air cleaners, ultraviolet radiation, carbon and other chemical filters, and stand-alone units. This program is funded by the Environmental Protection Agency under its National Homeland Security Center. Stakeholders from government, industry, and academia agreed that the top priority for testing is the removal of biological agents from heating, ventilation, and air-conditioning systems of commercial buildings.

Homeland Security

RTI has the technical and scientific knowledge—and the contacts—to facilitate effective outcomes among the diverse agencies responsible for recognizing and responding to threats to national security.

In 2002 RTI brought together a wide range of federal agencies to address the unprecedented challenge of terrorist threats. For example, the national surveillance systems supported by CDC form an emerging infrastructure for the early detection of attacks. Other agencies are augmenting that infrastructure with their own information, such as data from environmental monitoring. With our help, these agencies are beginning to collaborate and identify strategies for combining their capabilities to best meet public needs.

In a 2002 CDC-funded effort through the Association of Public Health Laboratories, RTI evaluated the capability and capacity of state public health laboratories to respond to chemical terrorism. We conducted a literature review, visited five sites, and designed, administered, and analyzed a five-state web survey. The project culminated in RTI's coordination of a 50-state consensus-building workshop in which we brought together representatives of the state public health laboratories, the Department of Defense, the Federal Bureau of Investigation, and the Environmental Protection Agency. This team discussed the survey results and developed policy recommendations to strengthen the public health laboratories' ability to respond to chemical attacks.



RTI evaluated the ability of state public health laboratories to respond to chemical terrorism in part by developing an inventory of analytic equipment in each state laboratory, such as the high-performance liquid chromatograph that RTI chemist Brenda Fletcher is using.



RTI's VirtualClinic is a scenario-based program that trains medical professionals to diagnose exposure to biological and chemical agents.

Technology-Assisted Learning

RTI expanded its technology-assisted training for trauma cases to include instruction for bioterrorist and chemical agent events. Our advanced, 3-D, on-screen virtual reality applications provide simulation, medical protocols, and dialogue in real time to help medical delivery personnel respond to bioterrorist attacks and attacks using weapons of mass destruction. Simulations and protocols teach clinicians to recognize anthrax symptoms, respond to explosions and chemical exposure, and administer appropriate medical responses for multiple injuries. RTI's digital systems engineering professionals are providing this cutting-edge interactive technology to the U.S. military and other agencies that train first responders in the event of an attack.

Women-Focused HIV Prevention in South Africa

RTI continues to demonstrate its ability to adapt research for global disease interventions. A 2002 project to prevent HIV/AIDS among crack-abusing black South African women grew from an earlier, similar project in the United States. The South African study, funded by the National Institute on Drug Abuse, provided the women, who were sex workers, with culture-relevant prevention strategies. Earlier HIV/AIDS research in South Africa has focused on epidemiology and education rather than on the effectiveness of direct interventions.

Our results showed that the woman-focused prevention program did encourage safer behaviors among the participants, including more frequent use of the female condom and a reduction in the daily use of alcohol and crack cocaine. This groundbreaking work led to RTI's collaboration with South African government, health, and research officials to identify additional intervention opportunities.

Disease Prevention Research

RTI began AIDS-related research in 1984, and this past year we continued our CDC-sponsored efforts to prevent the spread of HIV/AIDS, hepatitis, and sexually transmitted diseases (STDs). In 2002 we launched a 3-year effort to evaluate the HIV-preventive effects of living in public housing. Our goal is to determine if housing and associated community support reduce behavioral risks and increase the likelihood that infected individuals take their prescribed medications. We were also awarded a project to determine if locating HIV/AIDS and hepatitis clinics near each other helps prevent these two diseases that affect individuals with similar risk factors.

RTI also initiated a CDC-sponsored assessment of messages that aim to prevent HIV/AIDS and drug abuse. Currently, these messages are often graphic and explicit. We are now examining the effects of more subtle approaches to reach the target populations.

In another project, RTI launched a CDC-funded study of STDs, hepatitis B and C, and HIV/AIDS reporting practices among clinics that support Native Americans. The goal of our research, which also receives support from the Indian Health Service, is to ensure that cases of these diseases among Native Americans are reported to the public health system regardless of where the individuals reside.

We were awarded a CDC project to mobilize resources for a community-level HIV prevention intervention for adolescent children, ages 12–17 years, of crack-abusing African-American mothers. Although they face multiple risk factors, these adolescents often do not receive community-level HIV prevention services that promote their healthy development into young adults. RTI's goal is to identify specific parent, peer, school, and community influences on these children to develop interventions that prevent HIV risk behaviors.

Kava Interactions

The herb kava, often used to relieve anxiety, has been associated with a number of drug interactions. In a project sponsored by the National Institute of Environmental Health Sciences, RTI's research showed that an extract of kava inhibits the enzymes that break down most drugs in the human liver. This diminution of drug metabolism could explain the reported interactions of kava with other drugs. If the liver cannot break down drugs, their concentration in plasma can reach unsafe levels. In response to concerns about the safety of kava, the U.S. Food and Drug Administration and similar regulatory agencies in Europe have banned, or are considering banning, over-the-counter sales of this product.

Education Surveys

We continued our relationship with the Department of Education's National Center for Education Statistics by beginning work on the 2004 National Study of Faculty and Students. The study consists of two major components, which will be conducted in the first 5 years: the National Postsecondary Student Aid Study (NPSAS) and the National Study of Postsecondary Faculty (NSOPF). In addition, during a subsequent 5-year optional period, the contract provides for two longitudinal follow-up studies of NPSAS sample members who were beginning postsecondary students in 2004. In 2002 we designed a field test study and developed field test survey materials and websites for postsecondary institution staff, faculty, and students. Over the course of the study, RTI will develop web-based survey instruments for self-administration and conduct telephone interviews with national samples of about 120,000 students and 35,000 faculty and instructional staff.

Annual Snapshot of Drug Abuse

The current National Survey on Drug Use and Health (NSDUH) is a 7-year contract, totaling over \$200 million, with the Substance Abuse and Mental Health Services Administration (SAMHSA) of the Department of Health and Human Services. The survey, administered by RTI since 1988, provides a comprehensive annual snapshot of tobacco, alcohol, and drug use and abuse in America. The survey was formerly named the National Household Survey on Drug Abuse (NHSDA).

In 2002 SAMHSA reported that drug usage rates in 2001 increased significantly over those reported in 2000. Over 4.6 million American drug users met the criteria for treatment, and many did not recognize that they had a problem. Analyses of the survey data indicated that increasing drug usage rates were a particular problem among youths ages 12–17 and young adults 18–25. The use of alcohol, marijuana, and Ecstasy, and of OxyContin™ for nonmedical purposes, increased. However, cigarette use among Americans 12 years and older continued a downward trend that started in 1999.

In the 2002 survey, RTI initiated an incentive payment for NSDUH respondents. A survey of this magnitude is a complex and expensive undertaking. RTI has implemented methodologies that increase response rates while decreasing our costs for administering the survey. With the incentive, more respondents have agreed to complete the interview during our initial contact, so fewer callbacks are required.



RTI uses advanced interviewing technology to ensure that data collected during the annual National Survey on Drug Use and Health are accurate and confidential.



Paula Davis-Searles and David Kroll joined RTI's Natural Products Laboratory in 2002. Here they are testing extracts and pure compounds from natural products for their ability to selectively kill cancer cells.

Natural Products

In 2002 our natural products research scientists continued the search for anticancer compounds in North American mushrooms under an American Cancer Society grant. We tested 1,500 mushroom specimens, and 3 percent were found to be bioactive. These leads are now being pursued to determine the specific chemicals within the mushrooms that cause the observed anticancer activity. In addition, other organisms, such as plants, microscopic fungi, and predator bacteria (bacteria that kill other bacteria), were tested for anticancer, antimicrobial, and other important medical activities. We also continued working toward development of reference standards for herbal drugs and of second-generation analogs of the anticancer compound Camptothecin™, discovered by RTI natural products forefathers Dr. Monroe Wall, who passed away in 2002, and Dr. Mansukh Wani.

Bioinformatics

RTI won its first major contract in 2002 to conduct Phase I of the Bioinformatics Integration Support Contract, a project funded by the National Institute of Allergy and Infectious Diseases that will provide a computer-based system to manage scientific data in the area of immunology. Defined as the application of computer science, mathematics, and statistics to manage and interpret data for genomic studies, bioinformatics is profoundly affecting the way scientists conduct health research, enabling them to deepen their understanding of mechanisms such as the immune response. Benefits of the computer system will include increased accessibility and comparability of data and the ability to identify more relevant gene patterns than is possible manually. RTI is collaborating with Duke University, IBM, SAS Institute, and Alpha-Gamma Technologies, a small business in Raleigh, NC, that specializes in eBusiness solutions and database design.

Testing for Asbestos

Correctly assessing that a building contains asbestos, a known human carcinogen, requires the skills of a qualified laboratory. RTI has been conducting programs that test laboratory proficiency in this capacity for more than 20 years. In conducting these programs for the Environmental Protection Agency, U.S. Navy, and National Institute of Standards and Technology in 2002, we validated and distributed approximately 5,000 test samples to nearly 600 commercial, medical, military, and industrial hygiene laboratories in 46 states and 13 countries. The work we conducted in 2002 brings the total number of test samples validated and distributed over the past 20 years to more than 115,000, which were sent to thousands of labs in all 50 states and more than two dozen countries. Our scientists also developed standard reference materials and authored nationally recognized analysis test methods in support of the laboratory community.

RESEARCH SERVICES FOR THE PRIVATE SECTOR

Our work for the private sector grew slightly in FY2002, up from \$16 million to over \$18.5 million. Our goal is to continue to increase our work for industry, to provide diversity in our client base, and to get the results of our research into the marketplace. We provided research and solutions for many industries last year, including pharmaceuticals, plastics, electronics, carpeting, and fuel.

Drug Discovery

The study of the absorption, distribution, metabolism, and excretion (ADME) of drugs in animal models is a crucial first step in selecting new chemical entities that have the best potential to become promising therapeutics. Successful drug candidates must be sufficiently absorbed into the bloodstream, reach target site(s) in the body, maintain therapeutically effective levels using a reasonable regimen, and eventually be excreted rather than accumulated in the body. During 2002 RTI scientists conducted ADME studies for large pharmaceutical companies, smaller biotechnology companies, and a nascent sector striving to bring safe, efficacious herbal products to market with the same rigorous standards typical of classical pharmaceutical development.

Through their support of regulations that call for more knowledge of potential interactions among drugs, RTI researchers play a crucial role in making effective new drugs available for the treatment of AIDS and other diseases. For example, protease inhibitors used for treating AIDS can inhibit enzymes that are critical to the metabolism of common pharmaceuticals, causing the levels of other prescribed drugs to get too high—even to toxic levels. Since AIDS-infected individuals are immunocompromised, they can more easily get infections that require additional drug treatment, creating a “polypharmacy” drug interaction problem. Our scientists have investigated the interplay among multiple drugs and human enzymes and have demonstrated clear advantages of specific drugs that do not affect metabolism.



Pharmaceutical Research

RTI Health Solutions (RTI-HS) continues to provide assistance to pharmaceutical companies and regulators to better understand the impact of new therapies on patients and populations. This work includes patient-reported outcome studies that address the implications of treatment and epidemiology studies that help to interpret signals of drug safety problems. In 2002 RTI-HS worked with two pharmaceutical companies on products for which safe use by patients required additional therapeutic risk management activities, such as special physician education and patient safety monitoring. RTI-HS is assessing these programs to determine if these medications provide patients with benefits that outweigh safety concerns.

Deirdre Neighbors, Director of Business Strategies and Health Outcomes Applications, meets with a team of RTI-HS researchers to discuss the development of a new drug value dossier. Every RTI-HS project team is handpicked from an expert staff of epidemiologists, health economists, statisticians, psychometricians, and data collection specialists to best suit client needs.



Jenni Elion folds a cleanroom coverall garment for the Helmke drum test, which measures airborne particle shedding.

Cleanrooms

RTI continued to provide contamination control services for industries such as electronics, pharmaceuticals, medical devices, disk drives, and manufacturers of other precision components. This program specializes in testing all elements used in cleanrooms where critical environmental manufacturing or handling is performed. RTI identifies potential and existing contaminants and works with manufacturers to adjust their manufacturing processes and reduce or eliminate contaminants.

For example, our scientists evaluated the cleanliness of gloves, swabs, wipers, and garments used in cleanrooms and medical applications. We also analyzed the effects of airborne environmental matter such as construction debris and wood burning on cleanrooms and the products produced in them. In addition, we were active in the area of automotive parts production, where we helped to identify contaminants on surfaces and in wipers used to wipe automobiles before painting. RTI ensures confidentiality, and our work is reviewed by our independent quality assurance department.

Biocontaminants in Schools

RTI microbiologists completed a study in 2002 for the Carpet and Rug Institute to compare levels of biocontaminants in schools that primarily used either carpet or tile flooring. The two schools that we examined were similar in age, student loads, and ventilation systems. There were no known indoor air quality problems or complaints at either school.

The carefully designed study yielded interesting results. Carpet held more biocontaminants than an equal area of tiled flooring. However, airborne levels of spores, fungi, beta 1,3 glucan, dust mass, and endotoxins were higher in the tiled school than in the carpeted school. The results suggest that carpet floor covering, in general, is not the major contributor to airborne levels of biocontaminants in schools and that it actually offers an opportunity to improve air quality.

Reproductive Toxicology

In 2002 RTI concluded one of the most comprehensive and definitive reproductive toxicology studies of Bisphenol A (BPA), an intermediate in the manufacture of chemical products, including polycarbonate plastics and epoxy resins. BPA is known to have weak estrogen-like activity in the test tube and at high doses in laboratory animals with non-oral exposure. Scientists were concerned about problems that could arise if BPA migrated from polycarbonate- or epoxy-lined food and beverage containers into food and drink. To learn more about the effects of this compound, an industry trade group contracted with RTI to conduct a comprehensive reproductive toxicity assessment of BPA.

In animal studies that involved three generations of offspring and a variety of concentrations, RTI toxicologists determined that BPA should not be considered a reproductive toxicant. They found that BPA did not affect reproduction except at doses hundreds of times higher than the generally recognized safe levels. An independent panel of scientists from government, academia, and industry reviewed the data and confirmed RTI's findings. The study was published in *Toxicological Sciences* in July 2002, and Rochelle Tyl, PhD, the study director, was invited to present the results to the Food and Drug Administration staff in Washington, DC, to German regulators in Berlin, at the Society of Toxicology annual meeting, and to Japanese scientists and regulators in Tokyo and Yokohama.

RTI toxicologists are also performing a large reproductive toxicity study in mice of a natural estrogen for a chemical company consortium. In addition, they are conducting toxicology studies for several major chemical companies, including reproductive, developmental, and neurobehavioral studies.

COMMERCIALIZATION

RTI's intellectual property assets are significant, and we are beginning to make a concerted effort to commercialize some of our most promising technologies and discoveries. Besides fulfilling our mission of improving the human condition, success in the marketplace will generate funds for reinvestment in RTI research and development, leading to even more discoveries that can improve the lives of people around the world.

Thermoelectrics

RTI continued to develop and invest in our groundbreaking thermoelectric technology, which was described in the October 2001 issue of *Nature*. This past year our technology garnered one of *R&D Magazine's* prestigious R&D 100 Awards. The technology we developed is a thin-film superlattice thermoelectric material that is 2.4 times more efficient and 23,000 times faster than existing materials. It has been cited as the most significant advance in thermoelectrics in decades. Rama Venkatasubramanian, PhD, and colleagues Edward Siivola, Tom Colpitts, and Brooks O'Quinn were members of the research team that made this discovery and initiated the Advanced Nano-Systems for Electronic Refrigeration, Energy Recovery, and Enhanced Reconnaissance (ANSER) technologies.

Potential commercial applications for our thermoelectric materials include cooling microelectronic chips, speeding fiber optic switches, and converting automobile waste heat into electricity. In 2002 we continued to position this emerging technology for commercialization.

Clean, Affordable Synthesis Gas

For over 15 years, RTI has been developing ways to remove sulfur and other contaminants from synthesis gases derived from coal. We have developed a number of processes to do so. ChevronTexaco (CVX) is using our processes and our expertise in its quest to improve the economics of coal gasification-based power generation systems. CVX's goal is to make synthesis gas derived from coal an economically viable and environmentally clean fuel. RTI holds eight U.S. patents related to synthesis gas cleaning technologies. The Department of Energy has funded the majority of our work in this field. Some of the technologies that we intend to demonstrate in Southern California include removal of hydrogen sulfide from synthesis gas using RTI sorbent RTI-3 and demonstration of RTI's Direct Sulfur Recovery Process.

Hormone Replacement Therapy and Male Contraceptives

In 2002 RTI chemists patented potent androgenic compounds that could be used in hormone replacement therapy and for male contraception. Although testosterone itself is now used for these indications, its low potency and rapid removal through metabolism have limited its acceptability. In addition, concerns have arisen about its effect on the prostate. The RTI compounds are more potent and are not as rapidly metabolized. Also, they can be administered orally, by injection, by inhalation, or by absorption through the skin. The market in the United States for hormone replacement therapy and male contraceptives is estimated to be much greater than \$1 billion per year. RTI chemists are continuing to study the compounds they have developed, and they are exploring licensing agreements.



The pilot-scale Direct Sulfur Recovery Process skid and accompanying mobile laboratory, shown in this photo during a field test at the Department of Energy's Power System Development Facility in Wilsonville, Alabama, will be part of the ChevronTexaco project in Southern California.



COLLABORATION WITH TRIANGLE UNIVERSITIES

RTI's history of collaboration began with its founding in 1958 by three universities: Duke University, North Carolina State University, and the University of North Carolina at Chapel Hill. Today, we participate in cooperative research programs and collaborate in other ways with these institutions and with scientists at more than 60 other universities around the world. Selected 2002 projects on which we collaborated with area universities are described in more detail below.



RTI collaborated with NC State University and industry researchers to develop new ultrapermeable, reverse-selective, nanocomposite membranes.

Nano-Engineered Membranes

Nano-engineered membranes could enable a new generation of highly energy-efficient, highly selective separation devices for applications in petroleum, chemicals, fuel production, environmental cleanup, and perhaps even biomolecule purification. The new ultrapermeable, reverse-selective nanocomposite membranes were reported by RTI, NC State University, and industry scientists in the April 19 issue of *Science*.

The research team, led by RTI, found a way to make membranes that permeate large molecules faster than smaller molecules. They achieved this counterintuitive result by using nanoparticles, about 10 billionths of a meter in diameter, to modify the molecular structure of polymeric membranes. The first applications, already under development, include producing purified hydrogen for uses such as fuel cells and cleaning pollution-causing chemicals out of fossil fuels. While the basic research on these nanocomposite membranes offers tantalizing possibilities, the RTI-NC State team emphasizes the more immediate promise of a cheaper way to purify hydrogen. These membranes could provide a low-energy, environmentally friendly route for removing gaseous impurities and pollutants such as carbon dioxide and hydrogen sulfide from industrially generated, raw hydrogen steams. Cheap hydrogen could also diversify the sources from which the U.S. makes gasoline and diesel fuel and, at the same time, provide a relatively inexpensive method to capture carbon dioxide, a known greenhouse gas.

St. John's Wort

In a study funded jointly by the National Center for Complementary and Alternative Medicine, the National Institute of Mental Health (NIMH), and the Office of Dietary Supplements, RTI researchers teamed with Duke University Medical Center (DUMC) and Duke Clinical Research Institute (DCRI) to study the widely used herbal remedy St. John's wort. DUMC and DCRI served as the coordinating center, and RTI provided data management support and conducted the statistical analysis. The RTI-Duke team compared an extract of St. John's wort, *Hypericum perforatum*, with an antidepressant drug and a placebo. They found that St. John's wort was no more effective than a placebo in relieving major depression of moderate severity and published their findings in the April 10 issue of *The Journal of the American Medical Association*.

This study—the first large-scale, multisite clinical trial of St. John's wort in the United States—was launched in response to the growing use of St. John's wort in this country and a need for more definitive data on its use for different types of depression. Although several smaller European studies have suggested that St. John's wort is useful in treating mildly to moderately severe depression, experts who reviewed those studies concluded that they had limitations and that more rigorous trials were needed before firm conclusions could be reached.

Secondary analyses continue among the researchers from NIMH, DUMC, and RTI. Sertraline, a proven antidepressant, did not differentiate from placebo on the primary efficacy measure. This might indicate low assay sensitivity. The investigators are probing for more answers from the database.

Speech Processors for Cochlear Implants

In 2002 we continued our highly recognized work on cochlear implants, electronic devices that restore useful hearing to the deaf through direct electrical stimulation of surviving nerve cells in the inner ear. The devices include a miniature microphone, a microelectronic speech processor, and an implanted array of electrodes. New processor designs developed by RTI's auditory prosthesis research scientists have significantly improved speech reception for implant users.

We collaborate with all three major worldwide manufacturers of cochlear implants. In a continuing collaboration with Duke University Medical Center, we are launching a study in which several patients who would not have been able to obtain cochlear implants will receive them free in return for evaluating the potential of a new electrode array recently introduced by one of the manufacturers.

While research to date has enormously improved typical results with cochlear implants, the range of results remains large. Even people with the best speech reception results may have to devote a great deal of conscious effort to the task, and they may encounter severe problems in the presence of noise.

In 2002 RTI completed 20 continuous years of cochlear implant research funded by the National Institutes of Health (NIH) and initiated a 3-year NIH-funded effort. Our new research aims to improve speech understanding with cochlear implants in the presence of noise—especially speech. We will examine the effects of the simultaneous use of implants in both ears, as well as the simultaneous use of electrical stimulation and any residual acoustic hearing, whether in the same or the opposite ear.



Small Aircraft Transportation System

RTI is working with The Kenan Institute at UNC-Chapel Hill, NC State University, and several other collaborators to make NASA's Small Aircraft Transportation System (SATS) a reality. SATS' objective is to enable operation of underused airports and airspace. Researchers in North Carolina are among those who are working to develop the technologies needed to provide safe operations at airports too small to afford today's instrument landing systems and radar surveillance. Other collaborators on this NASA-funded project, which we are leading with the Aviation Division of the NC Department of Transportation, include five NC airports, three air transportation companies operating in NC, and eight aerospace companies.

As part of our effort to advance the technology needed to support SATS, RTI conducted flight demonstrations in 2002 of innovative new data link communications and surveillance and landing navigation system capabilities for NASA and the Federal Aviation Administration. Also, RTI led a team of seven companies to develop and commercialize synthetic vision for general aviation. Synthetic vision is a display system that shows pilots an electronic picture of what currently exists outside their windows, regardless of the weather, terrain, or time of day. Scientists at NASA's Langley Research Center in Hampton, VA, say that limited visibility is the greatest factor in most fatal aircraft accidents. The synthetic vision system combines Global Positioning System signals with terrain displays to provide real-time, 3-D scenes of earth-bound elements such as horizons, mountains, and rivers. By drawing a "highway in the sky," synthetic vision gives pilots a flight path that avoids obstacles such as hazardous terrain and hazardous weather.

Artist's illustration of the Small Aircraft Transportation System, courtesy of NASA.



RTI chemist Sherri Brown analyzes samples for genistein and daidzein, potential chemopreventive agents that RTI researchers are studying in collaboration with scientists at UNC-Chapel Hill.

CHEMOPREVENTIVE AGENTS

Genistein and daidzein, chemicals in soy that are members of a class of chemicals called isoflavones, are being considered as potential chemopreventive agents to combat breast and prostate cancers. RTI chemists and statisticians, in collaboration with researchers at UNC-Chapel Hill, are studying the safety and pharmacokinetics of several formulations of these chemicals in healthy men, healthy postmenopausal women, and men with prostate cancer. These clinical studies are supported by the National Cancer Institute and are required before more extensive clinical trials can be conducted to determine the therapeutic value of these isoflavones. Researchers in the Department of Nutrition at UNC's School of Public Health handle all subject-related aspects of the studies, including testing for toxic effects. We are responsible for measuring genistein and daidzein in plasma and urine, for determining how rapidly they appear and then disappear from plasma, and for providing part of the statistical analysis of data obtained by the UNC-CH team.

The RTI-UNC studies have shown that single doses of the isoflavones at up to 16 mg/kg body weight produce minimal clinical toxicity. When different doses of the isoflavones are given, concentrations of both genistein and daidzein in plasma are proportional to the dose. Both genistein and daidzein disappear from plasma rapidly enough that repeated doses once or twice a day do not lead to accumulation of these isoflavones.

2002

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PRIVATE SECTOR CLIENTS

3M Company
Amgen
Ardent Pharmaceuticals
ARONEX Pharmaceuticals
Astec Industries, Inc.
Bayer CropScience
Becton, Dickinson & Co.
Boehringer Ingelheim, Ltd.
Bristol-Myers Squibb Co.
The CIIT Centers for Health Research
Closure Medical Corp.
Dominion Resources Inc.
E.I. duPont de Nemours & Co., Inc.
Electric Power Research Institute
Eli Lilly and Company
Flanders Filters, Inc.
Gas Technology Institute
GlaxoSmithKline
Janssen-Ortho, Inc.
The Johnson & Johnson Family of Companies
Mayo Medical Ventures
Merck & Co., Inc.
New York State Electric & Gas
Niagara Mohawk Power Corp.
Nielsen Media Research
Novartis AG
Pharmacia (formerly G.D. Searle & Co.)
Progress Energy
Purdue Pharma LP
Sigma-Tau HealthScience, Inc.
Smith and Nephew, Inc.
The Society of the Plastics Industry
Sumitomo
Syva Company
Triangle Pharmaceuticals, Inc.

GLOBAL PRESENCE

During 2002, RTI International's global presence continued to expand. We added to our international offices—Manchester, England; Jakarta, Indonesia; and Pretoria, South Africa—by opening a new subsidiary and office in Warsaw, Poland: RTI Polska. We also created an independent organization in South Africa called the Sizanang Centre for Research and Development. In addition, we worked around the world to improve global health, education, and the environment. We also continued our international work of the past 30 years to build human and institutional capacity and to promote sustainable economic and social development throughout the world.

RTI Polska

RTI's first foreign limited liability company (LLC), RTI Polska is able to compete in the open market for internationally financed projects in Poland, creating many opportunities for RTI to assist Poland's development efforts. The subsidiary's first project, financed by the World Bank, involves training rural communities on planning and managing projects to develop public infrastructure. The training is part of the Government of Poland's overall effort to ensure that the enormous amount of support funds it is slated to receive from the European Union will be used effectively.

Poland has the largest population of any of the Central European, former Soviet-bloc countries, and it is recognized as a leader in the region. There are expectations that Poland will be one of the first Central European countries to join the European Union. When it does, RTI will have an established subsidiary able to work in Europe.

Sizanang Centre for Research and Development

The Sizanang (pronounced "see-za-'näng") Centre for Research and Development was officially registered in August 2002 of this year as an independent legal entity. Sizanang, which is the Zulu word for "helping others," aims to be the premier independent research institute in sub-Saharan Africa. It is modeled on RTI's multidisciplinary organization. Sizanang shares the RTI mission to improve the human condition through multidisciplinary research, development, and technical services. Sizanang's initial technical direction is focused on health and HIV/AIDS, education, poverty, democracy and governance, and workforce development. Like RTI, Sizanang will offer a range of policy support, applied research and analysis, and other technical expertise in strategic planning, institutional development, performance management, information systems, and training.

From left, Martin Gustafsson, Peter Vaz, Matthew Glasser, and Richard Cartier, RTI staff based in South Africa, provide a briefing on their project work to Ronald Johnson and RTI president Victoria Franchetti Haynes, who were in South Africa to dedicate the Sizanang Centre for Research and Development.



AWARDS AND RECOGNITION

The professional accomplishments of RTI International staff members were recognized by their peers in a number of ways during 2002. RTI staff received prestigious awards, authored articles in leading scientific journals, and were invited to make presentations at meetings around the world. Selected 2002 highlights are featured below.

2002 R&D 100 Award

RTI International was awarded a 2002 R&D 100 award for our groundbreaking work in thermoelectrics technology. The R&D 100 Award is a 40-year-old program sponsored by *R&D Magazine*. RTI's thin-film superlattice technology was cited as the most significant advance in thermoelectrics in decades. **Rama Venkatasubramanian**, PhD, and colleagues **Edward Siivola**, **Tom Colpitts**, and **Brooks O'Quinn** were members of the research team cited for their innovative research.

2002 Medicinal Chemistry Award

Ivy Carroll, PhD, received the 2002 Medicinal Chemistry Award from the American Chemical Society during the 28th National Medicinal Chemistry Symposium. The award, one of the most important for applied research on pharmaceuticals, honors Dr. Carroll's numerous accomplishments in the field. Dr. Carroll's distinguished contributions span many research areas, most recently the development of a class of compounds as potential pharmaceuticals to treat cocaine addiction. Dr. Carroll's research has, so far, resulted in more than 350 scientific papers and 18 patents. Dr. Carroll has also trained more than 80 postdoctoral fellows, many of whom have gone on to distinguished careers of their own at RTI.

American Statistical Association Fellow

Also recognized for his professional accomplishments was RTI Senior Vice President **Richard A. Kulka**, PhD, who was named a Fellow of the American Statistical Association in June. This designation recognized his "outstanding professional contribution to leadership in the field of statistical science," including "innovative efforts in designing and managing path-breaking national surveys, leadership roles at two major survey research organizations, and numerous contributions to survey methodology literature." Criteria used to select ASA Fellows include publications, positions held by the candidates in the organizations where they are employed, activities within the ASA, membership and accomplishments in other societies, and other professional activities. Dr. Kulka was one of 48 members selected in 2002, bringing to eight the number of RTI staff members who have been named ASA Fellows.

2002 NC State Distinguished Alumnus

Alvin M. Cruze, PhD, RTI International Distinguished Vice President of Special Programs, was selected as the NC State University College of Management's 2002 Distinguished Alumnus. He earned a PhD in economics from NC State in 1972. The College of Management selected Dr. Cruze from a group of alumni nominees representing all curriculum areas of the college. The award recognizes his achievements in economic research and research administration, as well as his support of the NC State Department of Economics by serving as a class speaker, recruiting students to the graduate program, and contributing to the Graduate Economics Fellowship Fund.

U.S. GOVERNMENT CLIENTS

U.S. Department of Health and Human Services, including:

- Agency for Healthcare Research and Quality
- Agency for Toxic Substances and Disease Registry
- Centers for Disease Control and Prevention
- Centers for Medicare and Medicaid Services (CMS)
- Food and Drug Administration
- Health Resources and Services Administration
- National Cancer Institute
- National Heart, Lung, and Blood Institute
- National Institute of Alcohol Abuse and Alcoholism
- National Institute of Allergy and Infectious Diseases
- National Institute of Child Health and Human Development
- National Institute of Dental and Craniofacial Research
- National Institute of Environmental Health Sciences
- National Institute of Mental Health
- National Institute of Neurological Disorders and Stroke
- National Institute on Aging
- National Institute on Deafness and Other Communication Disorders
- National Institute on Drug Abuse
- National Toxicology Program
- Substance Abuse and Mental Health Services Administration

2002 Moyer D. Thomas Award

RTI environmental chemist **Michael E. Beard** was the 2002 recipient of the Moyer D. Thomas Award, given by a committee of the American Society for Testing Materials (ASTM) in recognition of outstanding achievement in the standardization of the sampling and analysis of atmospheres. A specialist in the development and evaluation of analytical methods for monitoring chemical and physical characteristics of water, air, and waste, Mr. Beard has helped develop methods and quality assurance procedures for asbestos in the environment. In addition, he was co-editor on a major ASTM publication on asbestos analysis, a book that included contributions from three of his research colleagues at RTI.

Sheldon K. Friedlander Award

Research engineer **Chris Noble**, PhD, received the Sheldon K. Friedlander Award at the American Association for Aerosol Research conference in 2002. The award recognizes an outstanding dissertation in aerosol science and technology by an individual who has earned a doctoral degree. Dr. Noble was selected for his assistance in developing a mass spectrometer that sizes and chemically analyzes single airborne particles in real time. To date, the instrument has been commercialized and seven instruments have been sold.

2002 California State University Distinguished Alumnus

Edo D. Pellizzari, PhD, RTI Vice President for Analytical and Chemical Sciences, was selected as the California State University College of Natural Sciences' 2002 Distinguished Alumnus. He earned his BS in biology and chemistry from California State, Chico in 1963. The College of Natural Sciences selected Dr. Pellizzari for the award to recognize his achievements in environmental health and exposure. He has provided support and guidance to the Dean of the College of Natural Sciences on student training, facilities, and job opportunities.

Innovation in Survey Research

RTI was recognized at the 57th Annual Conference of the American Association for Public Opinion Research with the Innovators Award for pioneering work with audio computer-assisted self-interviewing. **Judy Lessler**, PhD, and **Charles Turner**, PhD, were listed on the award, as were former RTI employees **James O'Reilly** and **David Celentano** of The Johns Hopkins University and **Jerome Johnston** of the University of Michigan. The award recognizes work in what has been a problematic area in social and survey research: obtaining accurate information on sensitive, stigmatized, and illegal behaviors during interviews in settings where information might be revealed to others nearby.

PUBLICATIONS

The results of RTI research appeared in numerous scientific journals and other publications in 2002. Highlights, listed below, include several articles in *The Journal of the American Medical Association*, one in the *Annals of Internal Medicine*, and one in *Science*.

- Psychological Reactions to Terrorist Attacks: Findings from the National Study of Americans' Reactions to September 11, *Journal of the American Medical Association*, August 7, 2002. **William E. Schlenger**, PhD; **Juesta M. Caddell**, PhD; **Lori Ebert**, PhD; **B. Kathleen Jordan**, PhD; **Kathryn M. Rourke**, MPE; **David Wilson**, MS; **Lisa Thalji**, MA; **J. Michael Dennis**, PhD; **John A. Fairbank**, PhD; **Richard A. Kulka**, PhD.
- Cost-Effectiveness of Intensive Glycemic Control, Intensified Hypertension Control, and Serum Cholesterol Level Reduction for Type 2 Diabetes, *The Journal of the American Medical Association*, May 15, 2002. The CDC Diabetes Cost-Effectiveness Group, including RTI authors **Thomas J. Hoerger**, PhD, **Albert D. Bethke**, PhD, and **Anke Richter**, PhD.
- Untreated Gonococcal and Chlamydial Infection in a Probability Sample of Adults, *Journal of the American Medical Association*, February 2002. **Charles F. Turner**, PhD; **Susan M. Rogers**, PhD; **Heather G. Miller**, PhD; **William C. Miller**, MD, PhD; **James N. Gribble**, ScD; **James R. Chromy**, PhD; **Peter A. Leone**, MD; **Phillip C. Cooley**, MS; **Thomas C. Quinn**, MD; **Jonathan M. Zenilman**, MD.
- Effect of *Hypericum perforatum* (St. John's Wort) in Major Depressive Disorder: A Randomized Controlled Trial, *Journal of the American Medical Association*, April 10, 2002. Hypericum Depression Trial Study Group, including RTI staff members **Corette B. Parker**, DrPH, **Norma Pugh**, MS, and **Tyler D. Hartwell**, PhD.
- Ultrapermeable, Reverse-Selective Nanocomposite Membranes, *Science*, April 19, 2002. **Tim C. Merkel** et al.
- *Pharmacovigilance*. **Ronald D. Mann**, MD, and **Elizabeth B. Andrews**, PhD, MPH. Chichester: John Wiley & Sons, 2002.

RTI FELLOWS

We established the RTI Fellows program in August 2001, and in March 2002 we named the first four RTI Fellows: **Blake Wilson** of Auditory Prosthesis Research, **David Ensor**, PhD, of Aerosols in Nanotechnology Research, **F. Reed Johnson**, PhD, of RTI Health Solutions, and **Jerry Cromwell**, PhD, of Health, Social, and Economics Research. Also in 2002, RTI named two distinguished RTI Fellows: statistician **Paul Biemer**, PhD, of Statistics, Survey, and Computing Sciences, and chemist **Ivy Carroll**, PhD, Organic and Medicinal Chemistry. The RTI Fellows program was created to provide professional opportunities for exceptionally talented staff committed to science in support of RTI's mission to improve the human condition. Fellows are active in research projects and serve as RTI-wide consultants in key areas of scientific accomplishment. They serve on RTI President Victoria Haynes' Scientific Advisory Committee and provide strategic technical and scientific leadership to RTI.

**U.S. GOVERNMENT CLIENTS
(Continued)**

**Agency for International
Development**

Department of Agriculture

Department of Commerce

Department of Defense

Department of Education

Department of Energy

**Department of Housing and
Urban Development**

Department of Justice

Department of the Interior

Department of Transportation

Department of Veterans Affairs

**Environmental Protection
Agency**

**National Aeronautics and Space
Administration**

National Science Foundation

**Office of National Drug Control
Policy**

NEW STAFF MEMBERS

In 2002 we added over 100 new staff members, including:

- **John Crites**—Vice President and Chief Information Officer. Before joining RTI, Mr. Crites worked in information technology management at Rockwell International for nearly 20 years.
- **Craig Hill, PhD**—Research Director, Survey Research. Dr. Hill previously worked at RTI (1998 to 2000), Medrock, Inc., and the National Opinion Research Center at the University of Chicago.
- **Doug Kamerow, MD**—Chief Scientist for Health, Social, and Economics Research. Dr. Kamerow was an Assistant Surgeon General in the U.S. Public Health Service before joining RTI. He works in RTI's Washington, DC, office and retains an adjunct faculty position as a clinical professor in Georgetown University's Department of Family Medicine.
- **Barbara Kennedy**—Director, Center for International Health. Ms. Kennedy was formerly with the U.S. Agency for International Development, and her last position was Mission Director for Paraguay. She is a public health specialist.
- **John Miller**—Manager, Advanced Imaging Systems. Mr. Miller heads our aerospace technology office near Portland, OR. He has worked at Palomar Observatory, Rockwell International, NASA's Infrared Telescope Facility on Mauna Kea, and Martin Marietta. He comes to RTI from FLIR Systems.
- **Janet Mitchell, PhD**—Director, Division for Health Economics Research. Dr. Mitchell was Senior Vice President at Health Economics Research, Inc., which was acquired by RTI in 2002. She is located in Waltham, MA.
- **Satinder K. Sethi, PhD**—Senior Research Vice President of Chemistry and Life Sciences. Before joining RTI, Dr. Sethi's most recent position was Vice President, Inhaled Product Strategy, for GlaxoSmithKline.
- **Aaron Williams**—Vice President for International Business Development in the Center for International Development. Mr. Williams is based in RTI's Washington, DC, office. He was Executive Vice President of the International Youth Foundation and was Career Minister in the U.S. Senior Foreign Service for the U.S. Agency for International Development.
- **Jean Williams, PhD**—Director, Center for Research in Education. An educational consultant, Dr. Williams has played a major role in a number of education projects. She also worked for SERVE, a research and development center associated with UNC-Greensboro and PRC, affiliated with Black and Decker.

RESOURCES AND FACILITIES

During 2002 we strengthened our investment in our corporate resources. We renovated our facilities, planned for long-term growth, improved our business processes, and redesigned our corporate website and intranet.

The most visible sign of our investment is a major renovation to the George Watts Hill Building on RTI's main campus in Research Triangle Park. Built in 1975, this building is RTI's administrative headquarters, named after RTI's first chairman of the Board of Governors. We also created a long-range facilities master plan that provides information about how facilities should be added to the RTI campus over the next 15 years. Plan highlights include additional security features, a new research and administrative building, interconnectivity between buildings, and incubator buildings. The plan is modular, so individual elements of it can be developed as resources allow.



RTI assistant corporate secretary Suzanne Nash talks with RTI security guard Bill Towner in the recently renovated lobby of the George Watts Hill Building.

Another major investment in corporate resources was an eProcurement system. Implemented in April 2002, the web-based system has eliminated the inefficiencies that existed in the traditional paper-based purchasing process. The system includes online requisitions, automated approvals, order status updates, improved delivery time, access to goods from strategically sourced suppliers, and significantly reduced administrative and inventory costs. When coupled with RTI's strategic sourcing initiative, the new system is estimated to have saved RTI in excess of \$1 million in FY2002.

Also in 2002, we completed a major overhaul of our corporate website (www.rti.org), which now has a new, consistent design; a better search engine; and new, up-to-date content. The new site was built on a database, which makes it much easier to maintain, search, and navigate. A website team was established to maintain the content and to evaluate and add new features to the site, which was recently named "Best in Show" at the Carolina Chapter of the Society for Technical Communication's annual competition.

In addition, we expanded our videoconferencing capability, with videoconference facilities now available at three locations on our main campus and in our offices in Atlanta, GA; Chicago, IL; Rockville, MD; Waltham, MA; and Washington, DC.

OTHER CLIENTS

American Cancer Society
American Industrial Hygiene Association
American Legacy Foundation
Asian Development Bank
Charles Stewart Mott Foundation
City of Durham, NC
The Commonwealth Fund
Cumberland County, NC
European Bank for Reconstruction and Development
Fan Fox & Leslie R. Samuels Foundation
Health Canada
Henry J. Kaiser Family Foundation
InterAmerican Development Bank
Mayo Clinic
National Academy of Sciences
Robert Wood Johnson Foundation
Rockefeller Foundation
State of California
State of Florida
State of North Carolina
United Nations
World Bank
World Health Organization

FINANCIAL SUMMARY

In the past 5 years, RTI International's revenue has grown 70 percent, from \$168 million in 1998 to \$286 million in FY2002. In the past year, our revenue grew 8 percent, up from \$265 million in 2001.

Several factors have contributed to this growth, including our ability to anticipate and meet our customers' needs. Also, in the past year, we grew for the first time through acquisitions, which factored into our 8 percent growth. Our two acquisitions expanded our reach and our research and provided a wider range of services for our clients.

We are also pursuing revenue from the commercial sector. We are doing this by investing in intellectual property we hope to commercialize; by investing in a separate business unit, RTI Health Solutions, focused on providing services to the pharmaceutical industry; and by investing in our spin-off company, Ziptronix.

As we grow, we will continue to invest our earnings in our future, always with an eye toward increasing our resources so we can better meet our clients' needs and, in the process, improve the human condition. We anticipate that our 2002 investments in the endeavors described below, as well as in our core research areas, will result in continued growth in FY2003.

Ziptronix, Inc.

Spun out of RTI in October 2000, Ziptronix now sells single chip parts that are integrated using a proprietary, non-adhesive, room temperature bonding and interconnect process. Ziptronix parts will provide the electronics product market with more integrated, lower cost, higher performance chips that require less power. In January 2002, Doug Milner, formerly president of Invensys Power Systems, was named the new chairman and chief executive officer of Ziptronix. Also in FY2002, Ziptronix achieved its revenue generating milestones and began a second round of financing, in which RTI participated.



Intellectual Property

A major advance in thermoelectric technology, described in *Nature* in 2001, continues to generate much interest. In FY2002, RTI invested in this emerging technology to continue to position it for commercialization. Also during FY2002, RTI invested in two additional promising IP assets: clean fuel technologies and a potential therapeutic compound.

RTI Health Solutions

Formed in 2001, RTI Health Solutions was created as a special business unit to provide a broad range of services to the pharmaceutical industry. RTI-HS provides clients around the world with research and consulting to support product development and marketing, health economics, epidemiology, and therapeutic risk management. During 2002 RTI continued to invest in RTI-HS, which met its financial objectives in FY2002 and gained important new business with pharmaceutical companies.



Health Economics Research, Inc.

On October 1, 2002, RTI completed its acquisition of Health Economics Research, Inc., of Waltham, MA. The integration added 47 social scientists and programmers to RTI and gave RTI a new location in the Northeast. HER, Inc., was started in 1978 with a mission of containing escalating health care costs while improving access for the poor, the elderly, and other vulnerable populations. HER's staff complements ours and expands RTI's core capabilities in public health research. The HER acquisition resulted in the addition of staff members skilled in health economics and health services research, with a special focus on payment and financing, access and quality of care, cost-effectiveness, and program evaluation.

MRI's Cary, NC, Office

On July 1, 2002, RTI acquired Midwest Research Institute's Cary, NC-based operation. MRI's headquarters are located in Kansas City, MO. The acquisition added approximately 20 of MRI's environmental engineering staff to RTI and expanded our core capabilities in environmental research, specifically in the area of emission standards. The former MRI staff joined over 90 people at RTI focused on environmental engineering. They provide additional expertise to address the increasingly critical issues of exposure to harmful substances and the potential impact of these exposures on human health.

FINANCIAL STATEMENT

The following financial statements show the results from the fiscal years ending September 30, 2002, and 2001:

For the year:

Income Statement (in thousands of dollars)

	FY 2002	FY 2001
Revenue from research operations	\$286,292	\$265,039
Direct and indirect labor	(140,382)	(124,001)
Other direct costs	(108,344)	(105,963)
Other variable costs	(16,074)	(16,245)
Fixed costs	(16,053)	(13,644)
Net revenue from operations	5,439	5,186
Other income (net of interest expense)	(1,352)	(569)
Net revenue	<u>\$4,086</u>	<u>\$4,617</u>

Balance Sheet (in thousands of dollars)

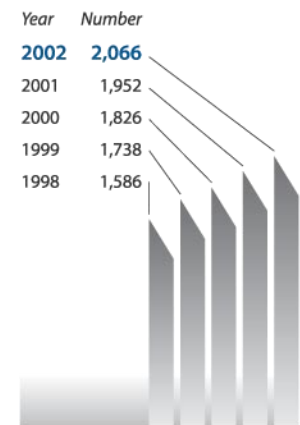
Assets

Current assets	\$75,427	\$73,688
Property and equipment	123,442	117,736
Accumulated depreciation	(61,025)	(58,409)
Other noncurrent assets	4,224	2,661
Total assets	<u>\$142,068</u>	<u>\$135,676</u>

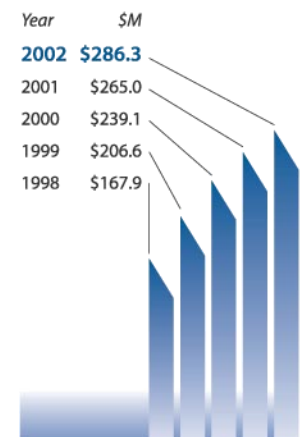
Liabilities and Institute Capital

Current liabilities	\$44,887	\$44,845
Long-term liabilities	3,151	887
Total liabilities	48,038	45,732
Contributed capital (unrestricted)	4,879	4,879
Contributed capital (restricted)	1,330	1,636
Accumulated net revenue invested in research operations	87,821	83,429
Total Institute capital	94,030	89,944
Total liabilities and Institute capital	<u>\$142,068</u>	<u>\$135,676</u>

Employees



Revenue



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RTI's Board of Governors consists of up to 32 governors, five of whom hold the seat by virtue of their positions: the presidents of The University of North Carolina, Duke University, and RTI, and the chancellors of North Carolina State University and the University of North Carolina at Chapel Hill; three are specified in the bylaws: William C. Friday, Marcus E. Hobbs, and William F. Little; nine are appointed annually to represent Duke University, The University of North Carolina general administration, North Carolina State University, and the University of North Carolina at Chapel Hill; and up to 15 are selected from the business and scientific communities.

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