

# Commitment to Excellence

Annual Report 2006







At RTI International, we are committed to excellence in all that we do. In our research and technical services, we draw on the qualities that have long contributed to our success: our objectivity, our ability to innovate, our commitment to quality, our integrity, and our scientific and technical expertise. We apply these qualities to our research in health and pharmaceuticals, energy and the environment, democratic governance, advanced technology, and education and training.

We are also committed to understanding and meeting the needs of our clients, exceeding their expectations, and developing strong and lasting partnerships. At the same time, we are committed to making RTI an excellent place to work by creating an environment that encourages superior performance and scientific achievement.

Our 2006 annual report weaves together examples of our commitment to our mission, our clients, our staff members, and our community.





#### PRESIDENT'S MESSAGE

For more than 48 years, RTI International has been committed to making a positive impact in the world by conducting social and scientific research that improves the human condition. This year, we continued that tradition though our implementation of projects in more than 40 countries and in the United States, along with social and economic policy research that allows federal officials to better serve our nation and its citizens.

Our researchers continue to be a source of positive change in the world—working in our laboratories to develop clean renewable fuels, conducting surveys to help governments better allocate scarce health and education resources, and working in developing nations to combat the spread of infectious diseases and enable stable democratic institutions.

Along with the success of our research operations, RTI enjoyed a successful business year in fiscal year 2006, with revenue of more than \$546 million. This amount reflects a 17 percent increase over FY2005 revenue, which represents growth across all research groups and business units.

As always, we reinvested net revenue to modernize and improve our facilities and provide staff members with the resources and tools they need to excel in their research fields. In September, we dedicated the new Earl Johnson Jr. Science and Engineering Building on our main campus. This state-of-the-art facility represents a major investment in the future of our science and engineering research programs.

We remain optimistic about continued growth in the coming year as we continue to focus on our commitment to excellence in all that we do—commitment to our mission, to good science, and to our dedicated staff members, who are the key to our continued success.

Most important, we will continue our long-held dedication to *improving the human* condition by turning knowledge into practice.

President and CEO, RTI International

Victoria Franchitis Haynes





#### **Tapping Into the Promise of Metabolomics**

A newly christened field with roots in old-fashioned biochemistry, metabolomics is the study of substances generated by the body through metabolic processes—specifically, how disease and exposure to drugs or chemicals can change those substances. Present in bodily fluids and tissues, metabolites like amino acids, sugars, and lipids contain important information about a person's health. In fact, for years physicians have measured levels of metabolites such as glucose and cholesterol to assess a patient's risk for conditions such as diabetes and heart disease.

Today, metabolomics researchers like RTI's Susan Sumner, Ph.D., are sorting through thousands of metabolites to identify just a few that constitute a meaningful pattern, or biomarker.

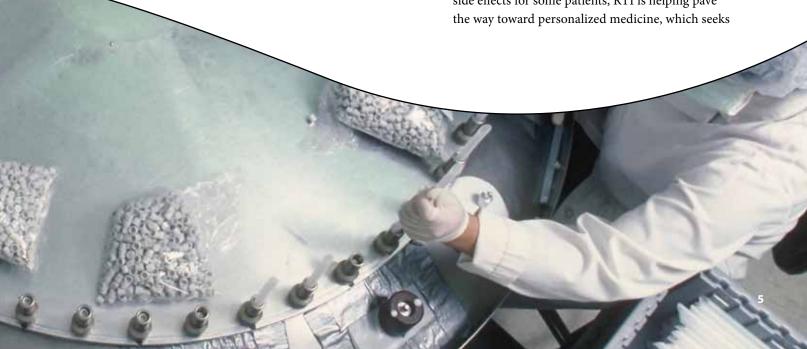
"The analytical and data reduction methods we use are not new," said Sumner. "The innovation in this

field is the understanding of how to design studies to uncover relevant biomarkers and understand the etiology of disease. One of RTI's goals is to integrate our expertise in environmental science with our programs in health sciences to understand the effect of exposure on the onset and progression of disease."

To that end, in FY2006 RTI funded an effort to determine the utility of metabolomics in reproductive toxicology studies and demonstrated that metabolomic testing of offspring can determine whether their mothers were exposed to low levels of an environmental contaminant.

This year we also launched a four-year effort to develop biomarkers that can predict the onset of drug-induced liver injury, a major cause of drug failure during clinical trials or after a drug is on the market. Sponsored by a National Institutes of Health (NIH) Roadmap grant, this study focuses on drugs used to treat tuberculosis, epilepsy, and pain and lipid disorders—drugs that are also known to cause catastrophic liver failure in some individuals.

By working to understand why drugs have adverse side effects for some patients, RTI is helping pave the way toward personalized medicine, which seeks



to provide treatments particularly suited to each individual patient. Other promising applications of metabolomics include diagnosing early-stage disease, determining susceptibility to certain diseases, and monitoring the effectiveness of a given therapeutic treatment. Metabolomics could also enable doctors to replace invasive diagnostic tests such as biopsies with noninvasive analyses of urine or other samples.

#### **Enabling Vaccine Research Through New Methods** in Proteomics

Vaccines are not 100 percent effective, and public health researchers, including those at RTI, want to understand why.

Working on behalf of the National Institute of Allergy and Infectious Diseases, RTI is developing new methods in proteomics research to support a study of the effects of genetics on a person's immune response to vaccines. Launched in 2005, the project is part of a national research effort to improve defenses against bioterrorism and infectious diseases.

This year, study researchers immunized 1,000 residents of India against typhoid and collected some 6,000 blood and saliva samples, which are being analyzed by RTI proteomics experts. As the project progresses, another 1,000 people will be vaccinated against cholera and another 6,000 samples will be similarly gathered and analyzed.

To enable this research, RTI's proteomics experts have developed two novel methods. Both have

One method enables the study of two proteins found in saliva that are the body's first line of defense against infection. These proteins are extremely sticky, which enables them to bind to and kill bacteria but also makes them very hard to measure and analyze.

Jim Stephenson, Ph.D., RTI director of mass spectrometry research, explained, "RTI's new method for preparing saliva samples enables us to fragment the peptides, which in turn enables us to identify, quantify, and characterize their properties and functions."

RTI's second new method is a novel platform for what is known as "shotgun proteomics," a technique for simultaneously analyzing thousands of proteins in complex biological fluids such as saliva. Because large molecules like proteins are difficult to measure, scientists must be able to break the proteins down into smaller pieces in order to identify and determine the concentration of the original proteins in the sample. RTI's new protocol is based on isoelectric focusing of the peptides—separating the protein fragments by their net charge for analysis via liquid chromatography/mass spectrometry.

In addition to our contributions in the area of proteomics, RTI is also supporting the vaccine study by conducting genetic testing and statistical analyses. Our goal is to answer fundamental questions about how genetic differences relate to proteins that are key to imparting human immune response.



#### **Considering Patient Risk-Benefit Preferences**

RTI Health Solutions (RTI-HS), a business unit of RTI International, performs health economic, psychometric, epidemiologic, health outcome, clinical, statistical, pharmacovigilance, and pricing and reimbursement studies for pharmaceutical companies. Since its inception in 2001, RTI-HS has grown steadily and often provides a multidisciplinary approach to issues facing its clients.

One of these issues involved the drug Tysabri, which was approved to treat multiple sclerosis in 2004. Clinical trials demonstrated excellent efficacy and did not reveal any serious side effects. However, once the drug was released into the general population, it was associated with rare incidences of a brain infection that usually causes death or severe disability. Three deaths were attributed to the drug, and its manufacturers withdrew Tysabri from the market.

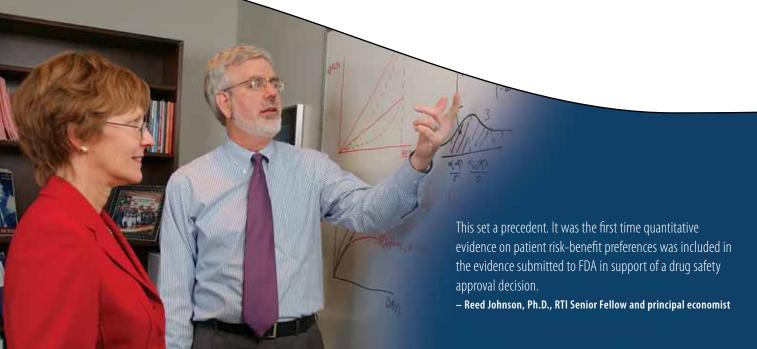
However, patients whose lives had been dramatically changed by the drug wanted it back, and individuals and advocacy groups began petitioning the Food and Drug Administration (FDA).

"It was hard to listen to stories of the people with MS who no longer had access to the drug. After years of frustration, many had experienced dramatic improvement in their condition while taking Tysabri, and then, all of a sudden, the drug was no longer available," explained Reed Johnson, Ph.D., RTI Senior Fellow and principal economist. "It was a complicated situation, though, because while Tysabri provided dramatic benefits to many patients, it could seriously harm a very small minority, who could not be identified in advance."

Quantifying the risks that people are willing to accept is exactly the type of work at which Johnson and his RTI-HS colleagues excel. Biogen Idec and Elan Pharmaceuticals, who jointly produce and market the drug, hired RTI-HS to estimate MS patients' willingness to accept the risk of serious side effects in return for specific improvements in their condition. FDA allowed submission of RTI-HS's report "Measuring Benefit-Risk Tradeoffs for Multiple Sclerosis Treatments" as part of Biogen Idec's submission to an FDA advisory committee.

The RTI-HS report found that patients were willing to accept 10-year mortality risks of 3 to 4 percent, compared to actual risks of about 0.7 percent, for typical symptom improvements. The report was submitted to the FDA advisory committee, which recommended that FDA reapprove the drug. Tysabri was reintroduced in June 2006, complete with a detailed risk-management program.

"This set a precedent," Johnson said. "It was the first time quantitative evidence on patient risk-benefit preferences was included in the evidence submitted to FDA in support of a drug safety approval decision."







#### Preparing for a Potential Influenza Pandemic

Throughout 2006, RTI researchers worked to evaluate our nation's plans for dealing with a potential influenza pandemic and to provide policymakers with information that will improve our nation's preparedness.

In the spring of 2006, RTI researchers Phil Cooley and Jamie Cajka were coauthors of a paper published in *Nature* that reported that the best strategy for responding to an avian flu pandemic would combine school closures, antiviral treatment, and household isolation. RTI researchers collaborated with researchers at Imperial College London and the Johns Hopkins Bloomberg School of Public Health to develop a simulation model to predict how various interventions would affect the spread of flu in the

United States and Great Britain if a pandemic were to occur. The model depended on extensive national data prepared, in part, by RTI that indicates where people commute and where they congregate in houses, schools, and workplaces.

The study was one of several that have resulted from the National Institute of General Medical Sciences' MIDAS project, through which researchers are collaborating to improve infectious disease models using new and emerging computer modeling techniques. MIDAS, an acronym for Models of Infectious Disease Agent Study, is designed to provide policy-makers, public health officials, and others within the scientific community with the analytical tools and computer models required to respond effectively to infectious disease outbreaks. RTI, as the MIDAS core informatics group, is working with experts from SAS and IBM to develop a wide array of computational and analytic tools and data sources tailor-made to model emerging infectious diseases and public health responses.



In other research on influenza funded under MIDAS, RTI evaluated 49 state pandemic plans as they existed in March 2006. The RTI team found that the states were in need of additional guidance from federal health officials and that they needed answers to epidemiological questions to develop their pandemic flu plans. Although the report found widespread disparities among the state plans, all states agreed to prioritize flu vaccine distribution during a pandemic to healthcare workers, people with chronic high-risk medical conditions, and the elderly. In about one-third of the state plans, young children were also included as a priority to receive the vaccine.

"The control of future pandemic or interpandemic influenza will necessarily rely on each individual state's plan to vaccinate persons and detect and contain this disease," said Scott Holmberg, M.D., RTI's lead author on the report.

"There is no single, best solution for all states," added Diane Wagener, Ph.D., RTI's principal investigator for MIDAS. "But there is need for active communication and collaboration between federal, state, and local health departments to advance these plans and come up with an effective, coordinated, multilayered approach to pandemic influenza."

#### Working to Control the Spread of Malaria

Our work in controlling the spread of malaria continued in 2006, first in Angola and then in Zanzibar and Uganda. In southern Angola, with funding from the U.S. Agency for International Development (USAID) and assistance from the Angola Ministry of Health and the Christian Children's Fund of Angola, the homes of approximately 760,000 people were treated to repel or kill mosquitoes prior to the 2006 malaria transmission season. Malaria causes more than 300 million acute illnesses and at least 1 million deaths annually, and it is the leading cause of morbidity and mortality in Angola.

"This was an extremely ambitious and very necessary project to reduce the number of deaths from this infectious disease," said Gene Brantly, RTI project director. "We worked closely with the Ministry of Health and local community leaders and organizations to ensure residents understood the need to support this effort prior to, during, and after the actual spraying."

The spraying project is one component of President Bush's Malaria Initiative, which aims to reduce malaria-related deaths by 50 percent in selected sub-Saharan African countries by 2010. Angola was among the first countries chosen by the U.S. administration to benefit from this initiative. RTI also conducted spraying projects in Zanzibar and Uganda in 2006, treating the homes of more than a million people in Zanzibar and of more than 480,000



people in Uganda. In another effort to control the spread of malaria, RTI conducted an effort in northern Uganda to improve the use of insecticidetreated sleeping nets to help reduce exposure to malaria-carrying mosquitoes.

At the end of FY2006, RTI was awarded a fiveyear contract to support indoor residual spraying programs in as many as 15 countries designated under the President's Malaria Initiative, as well as in a few other countries to which USAID provides malaria control support. This coming year, the spraying program in Zanzibar will continue, programs in Angola and Uganda will expand, and new programs will start in Kenya, Malawi, Mozambique, Rwanda, Senegal, and mainland Tanzania.

#### HIV/AIDS

RTI researchers have been working for more than 20 years on projects that aim to control the spread of HIV/AIDS. In FY2006, RTI researchers from many different disciplines began meeting on a regular basis to focus RTI's resources on the various issues surrounding the HIV/AIDS epidemic. RTI's HIV/ AIDS research continues to grow in scope and depth.

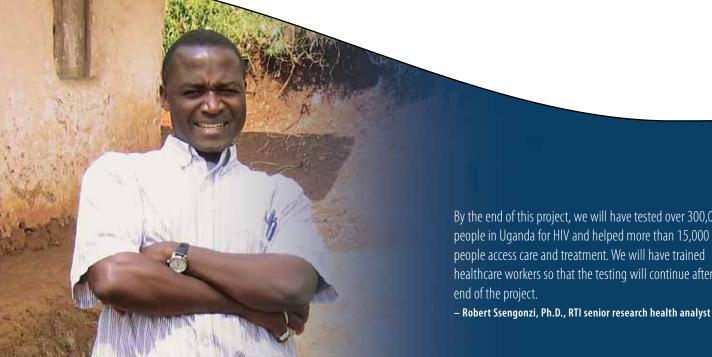
#### HIV Counseling, Testing, and Basic Care in Uganda

RTI's efforts to curb the spread of HIV/AIDS and to attend to those who have the virus spans the globe. RTI senior research health analyst Robert Ssengonzi, Ph.D., heads two RTI projects in his native Uganda, one of the countries hardest hit by HIV/AIDS.

The first, funded by the Centers for Disease Control and Prevention (CDC), supports Uganda's Ministry of Health in providing HIV counseling and testing and basic care services as part of routine healthcare to patients in district health facilities where these services have not been widely available.

"By the end of this project in 2009, we will have tested over 300,000 people and helped more than 15,000 people access care and treatment," Ssengonzi said. "We will have trained healthcare workers and worked to integrate this program into rural healthcare clinical settings in Uganda so that it will continue after the end of the project."

RTI is also conducting a workplace HIV prevention initiative that began in 2003 and runs through 2007. During the past three years, RTI has reached nearly a quarter of a million informal sector workers and family members through project-supported HIV/AIDS education and awareness campaigns. The program has also strengthened the capacity of 45 local community-based organizations to better implement HIV/AIDS prevention programs.



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#### Woman-Focused HIV/AIDS Prevention Initiative

With funding from the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism, RTI researchers have developed, implemented, and evaluated innovative interventions that target hard-to-reach populations, such as crack-using urban African-American women in North Carolina and Black African and Coloured women in South Africa. These interventions have led to positive changes in sexual risk behavior, substance use, and experiences with victimization.

In the Women's CoOp II study, which runs through 2008, Wendee Wechsberg, Ph.D., director of RTI's Substance Abuse Treatment Evaluations and Interventions Program, and her colleagues are working to determine the long-term effects of their original, very successful woman-focused intervention, which was hailed by CDC as a best-evidence HIV behavioral intervention.

In September 2006, Wechsberg was awarded a NIDA grant to modify and test the intervention with pregnant African-American women who are currently in substance abuse treatment and are at risk for HIV or are HIV positive. Her research group also began the Latina Health Project, which will adapt the Women's CoOp intervention to Spanish-speaking women in North Carolina.

"Because the woman-focused intervention has been so successful in North Carolina and South Africa, we hope to adapt, translate, and tailor it to a variety of settings and populations," Wechsberg said.

### Topical Microbicides: Accelerating Their Development

Topical microbicides are a promising potential tool for protecting people from HIV and some sexually transmitted infections (STIs). Since 2000, RTI staff have been involved in a wide range of research efforts that aim to accelerate the development of microbicides. Although no product is yet available, the microbicidal potential of more than 30 experimental drug products is being investigated in clinical trials throughout the world. Studies are investigating various topical gel products, with different application methods and mechanisms of action.

"Topical microbicides could offer protection against HIV and STIs for individuals who have difficulty using a condom correctly and consistently," said Cynthia Woodsong, Ph.D., of RTI's Global Health Technologies program.

In FY2006, RTI staff collaborated with the International Partnership for Microbicides (IPM) on the development of safe, acceptable microbicides for use by women in developing countries. RTI staff also collaborated with two pharmaceutical companies on development of their microbicide products.

"At present, the only HIV/AIDS prevention tools are condoms, abstinence, and mutual monogamy," explained Woodsong. "Microbicides will probably



become available before an HIV/AIDS vaccine, so they are likely to become a very critical element of the HIV/AIDS prevention toolkit."

#### Working with Pharmaceutical Companies

Researchers in RTI Health Solutions (RTI-HS) worked with pharmaceutical companies in FY2006 on several AIDS-related issues. For one company, RTI-HS developed a product value assessment dossier that summarized the existing evidence demonstrating the value of a new drug for the management of HIV and AIDS. As part of this document, the RTI team developed messages about the impact of the new drug on symptoms, quality of life, and cost of care that formed the basis of company communications about the drug. The document also served as a tool for pricing and reimbursement negotiations and technical document submissions.

In addition, RTI-HS is designing a costeffectiveness model for HIV treatments for a major pharmaceutical company. The model is being built to estimate the long-term cost-effectiveness and cost-utility of different HIV drugs and treatment pathways. The objectives of the model are to estimate the economic impact of existing and future treatments for HIV; to predict advances in HIV treatment patterns; to model changes in HIV resistance to specific drugs, drug classes, and combinations of anti-HIV drugs; and to describe how a patient's compliance with HIV drug therapy regimens affects drug resistance and health outcomes.

#### New Areas of RTI HIV/AIDS Research

In 2006 RTI ventured into new areas of AIDS research. We began a project in a country—Pakistan—where we had not previously worked on AIDS prevention activities. The three-year project, which is funded by USAID, is designed to increase public awareness and support the adoption of preventive measures needed to reduce the risks of HIV infection.

In another new area of HIV/AIDS research for RTI, William Zule, DrPH, and his RTI colleagues are developing and pilot testing an intervention for reducing sexual risk among methamphetamineusing men who have sex with men. The intervention the RTI team is developing and testing consists of a single session based on motivational interviewing. CDC is funding the two-year project.

In another new project for CDC that began in September 2006, Victoria Albright is leading an RTI team working to increase community-based survey capabilities in state and local public health departments so the health departments can learn more about the racial and ethnic minority transgender populations they serve.



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During the past year, RTI researchers studied how media campaigns and government policies, such as where tobacco can be sold, influence tobacco use.

"Our evidence suggests that a media campaign highlighting the health risks posed by secondhand smoke would likely be a very effective tool in reducing exposure to secondhand smoke in American households," said Doug Evans, Ph.D., RTI's principal investigator for the study.

In another study, RTI researchers found that smoking rates decreased significantly faster in states with antismoking campaigns targeting tobacco industry practices than in other states.

"Our research provides evidence that well-funded antismoking campaigns make an important contribution to the reduction of youth smoking rates," said James Hersey, Ph.D., RTI's principal investigator for the study.

Carolina at Chapel Hill Evidence-based Practice Center (EPC) addressed the issue of how to help smokers quit. Their report, published in the September 2006 issue of the *Annals of Internal Medicine*, found that people who wish to stop smoking can significantly increase their chances of success by using medications such as bupropion or a nicotine patch, gum, or inhaler. The RTI–UNC EPC team found that self-help smoking cessation strategies alone are often ineffective.

Also in FY2006, RTI researchers published a study in the *American Journal of Public Health* suggesting that decreasing the number of retail outlets licensed to sell tobacco products may reduce smoking among adolescents and young adults.

"Areas with a higher density of retail tobacco outlets encourage tobacco use by providing more opportunities to purchase cigarettes and by increasing levels of exposure to point-of-sale advertising," said RTI's Scott Novak, Ph.D., lead author on the study.



New York's Clean Indoor Air Act, celebrating its third anniversary, has also had an effect on smoking: it has reduced secondhand smoke exposure without financially straining bars and restaurants. According to an RTI report funded by the New York State Department of Health's Tobacco Control Program, exposure to secondhand smoke declined by 50 percent among nonsmokers in New York in the year following the implementation of the law.

"New York's Clean Indoor Air Act has demonstrated the profound impact that policy changes can have on public health," said Matthew Farrelly, Ph.D., RTI's senior author for the study.

#### **Monitoring and Treating Substance Abuse**

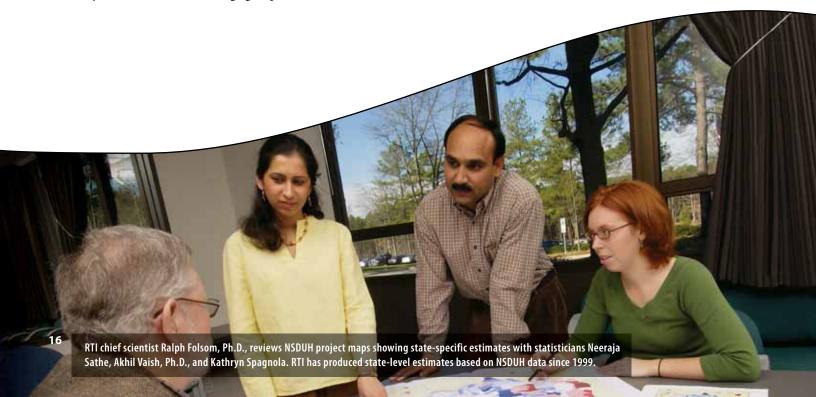
RTI has a long and distinguished history in conducting substance abuse studies. Since 1988, RTI has provided information for policy-makers by conducting the National Survey on Drug Use and Health (NSDUH; formerly the National Household Survey on Drug Abuse) for the Substance Abuse and Mental Health Services Administration. The results of the 2005 survey, released in September 2006, show that drug, alcohol, and tobacco use among youths ages 12 to 17 continues to decline. The Baby Boomer generation, however, presents a different story. Among adults ages 50 to 59, the rate of current illicit drug use increased from 2.7 percent to 4.4 percent between 2002 and 2005, reflecting the entry of the Baby Boom cohort into this age group.

Also in FY2006, we began analyzing data collected via the Drug Abuse Warning Network (DAWN) to detect and identify emerging trends in the United States. We are compiling estimates for the nation, as well as for major metropolitan areas, of emergency department visits associated with suicide attempts, adverse drug reactions, overmedication, malicious poisoning, and accidental ingestion, as well as drug misuse and abuse.

"The information gathered through DAWN allows us to detect emerging trends in specific types of drug abuse at their very early stages, as well as indicate whether drug-related projects and intervention programs are working," said Victoria Albright, RTI's project director for the study.

In another study, RTI researchers reported that the misuse of prescription stimulants, particularly those prescribed for the treatment of attention-deficit hyperactivity disorder (ADHD), is a significant problem among Americans. Funded by Eli Lilly and Company, the study was based on a secondary analysis of data collected during 2002 for the NSDUH. According to the study's findings, 7.3 million Americans have misused stimulant drugs meant to treat ADHD, and a substantial number of teenagers and young adults show signs of addiction.

"This is the first national study we know of that has looked specifically at the misuse of stimulant



medications being prescribed to treat ADHD," said RTI's Larry Kroutil, the study's lead author.

Studies have shown that these medications are effective for treating people with ADHD, especially children, and also that they reduce the risk of substance abuse among those correctly diagnosed with psychiatric disorders for which the medications are suitable.

"Balancing the benefits of these medications with their potential for misuse and addiction is a significant challenge for parents, educators, and healthcare professionals," said Wayne Holden, Ph.D., executive vice president, Social and Statistical Sciences, and an expert in childhood and adolescent mental health. "There are indications that people may be misusing these medications to enhance their academic or professional performance and ignoring the significant risks related to misuse of these drugs—which is shortsighted and dangerous."

Also in FY2006, RTI economists examined the costs and benefits associated with drug use and treatment. In one study, they concluded that methadone treatment for heroin users generates seven times more economic benefits than previously thought. Earlier studies typically focused on a single treatment episode, treating drug abuse as an acute problem.

"Drug abuse is a chronic, recurring condition that leads many drug users to enter treatment throughout their lifetime," said Gary Zarkin, Ph.D., vice president

of RTI's Behavioral Health and Criminal Justice Research division and RTI's principal investigator for the study. "Our goal was to develop a lifetime simulation model that represents a realistic view of the recurring episodes of drug use and treatment so that we could obtain a more accurate picture of the social and economic consequences of heroin use."

In a separate study, Zarkin and his RTI colleagues found that a program that diverted felony drug offenders to a substance abuse treatment program rather than prison saved the criminal justice system more than \$47,000 per offender over a six-year period and reduced recidivism.

#### **Preventing and Treating Diabetes**

In FY2006 RTI researchers began a six-year effort to evaluate intervention programs for patients with diabetes that focus on nutrition and lifestyle counseling, disease management education, and wellness activities. Also during FY2006, RTI researchers found that providing a diabetes prevention program to adults who have prediabetes at age 50 could significantly reduce the onset of diabetes for older adults, and the program would be cost-effective for insurance companies and Medicare.

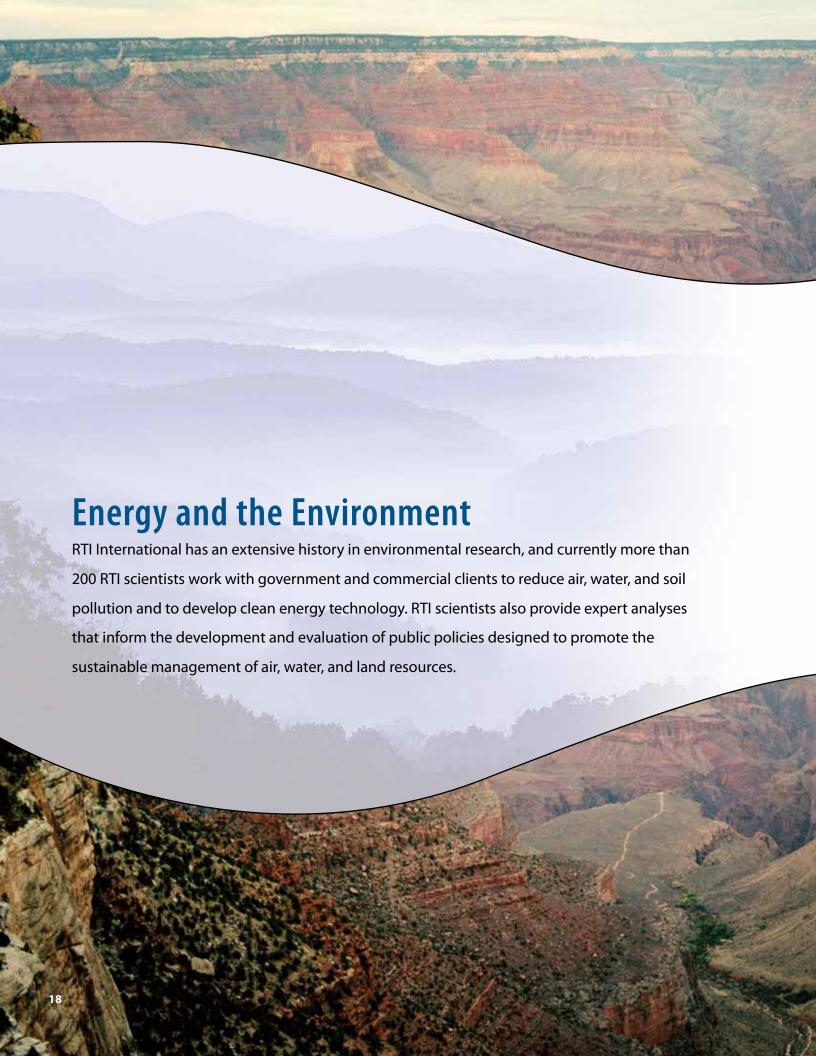
"We found that bearing a share of the costs of efforts to help Americans with prediabetes alter their lifestyles would save private insurance companies and Medicare more than they would eventually pay to treat persons who will develop diabetes without preventive treatment," said RTI senior health economics researcher Tom Hoerger, Ph.D., who coauthored the study with his RTI colleague Katherine Hicks.

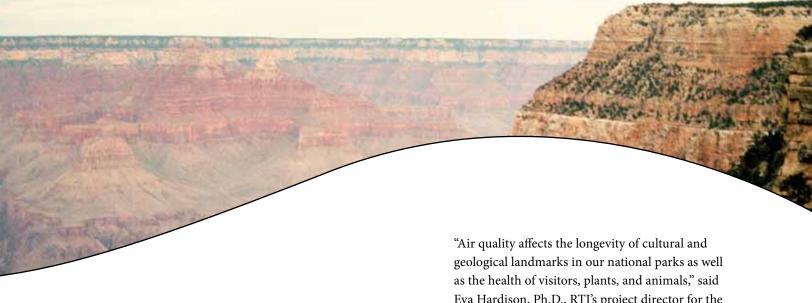


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#### **Improving Air Quality in Our National Parks**

For more than 20 years, RTI has analyzed air samples collected through a nationwide network of monitoring devices to protect and enhance the scenic beauty and air quality of U.S. national parks. That effort is part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) program, begun in 1985, which implemented an extensive long-term monitoring program designed to establish the current visibility conditions, track changes in visibility, and determine causes of visibility impairment in the national parks and wilderness areas.

geological landmarks in our national parks as well as the health of visitors, plants, and animals," said Eva Hardison, Ph.D., RTI's project director for the program. "Most people assume the air quality in national parks is much better than in other areas, but actually the pollution levels in national parks often rival those of urban areas. Conducting these analyses provides us with a better understanding of pollutants in the air so policy-makers can best determine regulations needed to preserve our natural resources and our health."

RTI scientists analyze air samples for chloride and for sulfur and nitrogen compounds that indicate acid in the atmosphere in more than 150 U.S. national parks and wilderness areas including the Grand Canyon, Yosemite, and Great Smoky Mountains national parks. They also monitor the air for harmful ozone levels that damage vegetation and ecosystems and can trigger a variety of health problems including chest pain, congestion, and reduced lung function.

RTI has conducted analyses for the National Park Service since the IMPROVE program began,

expanding the number of parks monitored from 20 to more than 150 today. The data supplied by RTI researchers continues to help improve air quality policies in those areas.

#### **Determining Health Effects of Chemicals**

Coherent and reliable environmental policies are possible only when supported by comprehensive analyses and predictions of risk. RTI has decades of experience and the necessary multidisciplinary approach to perform both human health and ecological risk assessments.

Since 2001, when the U.S. Environmental Protection Agency (EPA) launched the Endocrine Disruptor Screening Program, RTI scientists have supported EPA's efforts to develop and standardize tests to screen pesticides and environmental contaminants for their potential to cause developmental and reproductive problems in humans and animals.

"Appropriate scientific data have not been generated to assess the effects that each of the thousands of chemicals currently in production today might have on human and animal endocrine systems," said Julia George, Ph.D., RTI senior toxicologist and principal investigator for the project. "We are validating testing methods that will standardize accurate testing measures so that EPA can better determine the safety profile of chemicals that may come in contact with people, terrestrial mammals, birds, fish, and amphibians."

The Endocrine Disruptor Screening Program was launched in response to the Food Quality Protection Act and the Safe Drinking Water Act, which directed EPA to develop a screening program that used appropriate validated test systems and other scientifically relevant information to determine whether certain substances may have adverse hormonal effects in humans and other species.

RTI has provided support to EPA and its predecessor organizations for more than 35 years and has projects supporting all EPA program offices.

#### **Developing Alternative Energy Sources**

As part of our efforts to sustain a safe and healthy environment, RTI is developing innovative technologies related to the production and utilization of clean energy alternatives.

In the February 3, 2006, issue of *Science*, a team of engineers and scientists at RTI and the University of Texas at Austin reported the development of new polymer membranes for producing hydrogen that bring an energy-efficient, low-cost hydrogen purification process a step closer to reality—an important stride toward making hydrogen a viable energy alternative.



Because hydrogen is pollution-free and can be produced from abundant domestic energy resources, including fossil fuel, nuclear power, and renewable energy, it has been considered a leading choice in the search for alternative energy sources.

"One of the major barriers to hydrogen as an alternative motor fuel has been the cost of purifying it," said Lora Toy, Ph.D., an RTI research chemical engineer. "Because hydrogen is produced in high volumes, even a small improvement in purification efficiency could substantially reduce costs. These next-generation membranes could be a huge step in forming the basis of a purification process that makes hydrogen an affordable energy alternative."

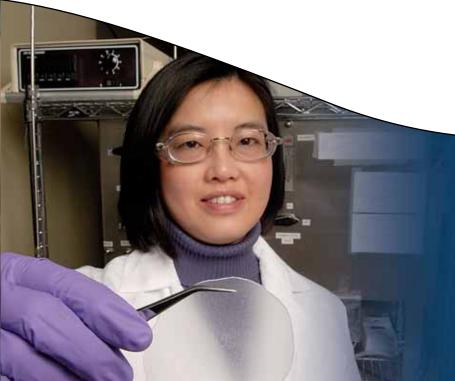
With funding from the U.S. Department of Energy (DOE) and the National Science Foundation, the research team developed a family of molecularly engineered, polar, rubbery copolymer membranes that selectively remove larger gases such as carbon dioxide and hydrogen sulfide from the smaller hydrogen. These reverse-selective materials purify hydrogen more efficiently than existing methods, producing hydrogen at high pressures without requiring expensive recompression.

Although plasticization has traditionally been thought of as having a detrimental effect on membrane selectivity, the separation performance of the new membranes is enhanced by their being plasticized by gases such as carbon dioxide and water vapor.

Through other funding from DOE, RTI scientists are also developing non-polymer-based methods to purify hydrogen. One technique uses palladium-alloy-based composite membranes developed by RTI. Because these metal membranes operate at higher-temperature process gas streams than do the copolymer membranes, they avoid thermal penalties associated with cooling gas streams down to temperatures suitable for separating polymer membranes. The palladium membranes generate a higher purity of hydrogen than that of the method previously described, but their material and manufacturing costs are much higher.

RTI scientists are also creating a lithium-based sorbent separation process that effectively removes carbon dioxide from hydrogen, thereby purifying the hydrogen. The novel sorbent is regenerable, allowing it to be used again and again. Like the palladium membrane, it operates at high temperatures.

These research projects are part of President Bush's 2003 Hydrogen Fuel Initiative, which dedicated \$1.2 billion to reversing America's growing dependence on imported oil by developing the technology needed to make hydrogen cost-competitive with gasoline by 2010.



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- Lora Toy, Ph.D., RTI research chemical engineer





In 2006, we marked our third year leading USAID's Iraq Local Governance Program (LGP), a year of historic progress in this new society.

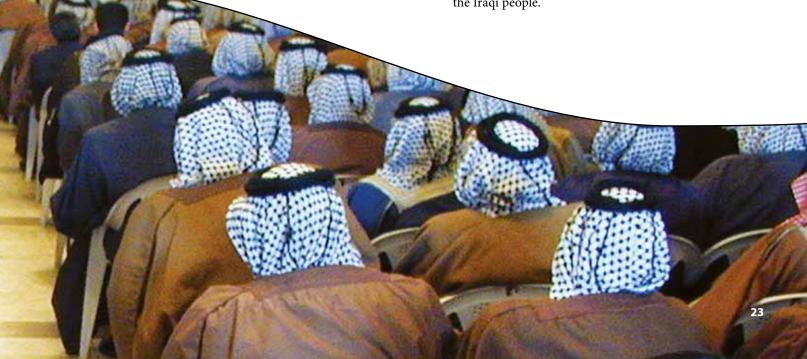
Key to our accomplishments was supporting elected provincial and local council members in meeting the needs of their citizens. RTI continues to train newly elected council members and other local officials in the fundamentals of local leadership, and we continue to help improve the capacity of local institutions to manage and deliver public services.

At a national conference hosted by LGP in June of 2006, provincial leaders—including, for the first time, members of the three Kurdish provincial councils—met with representatives from the Ministry of Finance and the Ministry of Electricity to discuss a program to allocate some \$2 billion to Iraq's provinces.

infrastructure, and training. This allocation is a dramatic departure from the control exerted in the past by the Iraqi central government over fiscal resources and a critical step toward the decentralized government mandated in Iraq's new constitution.

Conference participants developed recommendations designed to streamline the process by which provinces will be able to secure funds from the federal government. This successful outcome is a direct result of the commitment of provincial officials to effect local governance in Iraq, a commitment shared by RTI's many international experts who support the LGP.

In August, RTI witnessed what may be its most important accomplishment of this project to date, when provincial council representatives from each of Iraq's 18 provinces unanimously ratified a draft local government code. This vote marked the end of a historic conference held at Lake Dokan, at which all proceedings were held in public, fully transparent to the Iraqi people.



Ultimately destined for consideration as a bill by the National Assembly, this code creates, for the first time in Iraq's history, a legal framework and constitutional protection for local government and mandates the authority of provincial councils throughout the country.

RTI's extensive support of the conference began more than a year earlier with several regional meetings and a preliminary national meeting hosted by LGP. At these meetings, provincial leaders discussed the draft code and fleshed out the provisions for local government, setting the stage for the August ratification at Lake Dokan.

### Helping South African Municipalities Boost Revenues and Improve Services

Since the early 1990s, RTI has been helping South Africa's government become more effective and democratic. Our advisors have provided pivotal assistance to the national government, which has undertaken major policy and legislative reform. Today, drawing on our long-standing relationships with key stakeholders in South Africa and on the resources of our Pretoria office, RTI is continuing this work under the Local Governance Support Program (LGSP), sponsored by USAID.

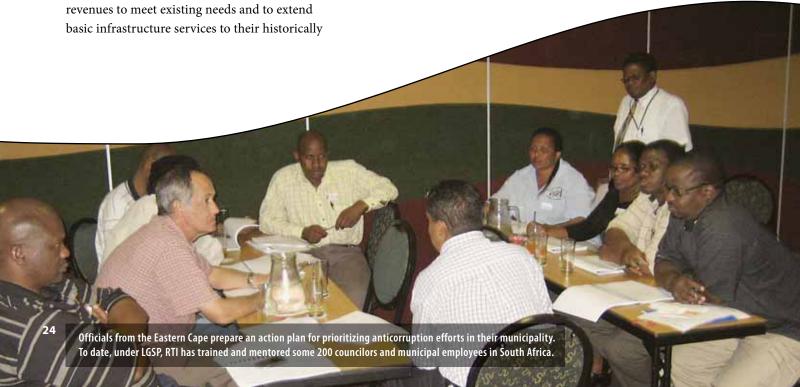
Under LGSP, RTI is providing advice and hands-on mentoring and training to councilors and officials in 23 municipalities. Like others throughout the country, these cities are faced with insufficient revenues to meet existing needs and to extend

underserved constituents. The program's goals are to help the municipalities improve their performance, enhance revenue streams, and protect citizens' rights.

Peter Vaz, Ph.D., RTI's chief of party for the project, noted that in FY2006 LGSP focused on providing training and hands-on mentoring in strategic planning, procurement, local economic development, and financial management. "To date," he said, "RTI has helped train some 200 councilors and officials in these areas. We also trained 150 municipal employees and politicians, who will then train members of the ward committees. We are pleased to note that all 23 municipalities made progress toward their goals for improving performance and enhancing revenues."

To ensure that these improvements are maintained and expanded, RTI is partnering with the national Department of Provincial and Local Government, the National Treasury, and the South African Local Government Association. We are also working closely with recognized experts in the areas of performance improvement and revenue enhancement from local nongovernmental organizations and consulting firms who will continue to support the municipalities in the future.

In the year to come, LGSP will broaden its activities to include anticorruption and HIV/AIDS prevention. RTI will help the municipalities establish policies and procedures to combat fraud in the areas of



procurement, housing allocation, and hiring. In addition, with new funding from President Bush's Emergency Plan for AIDS Relief, RTI staff will support 10 centers across South Africa that provide care for rape victims and will assist four district and 15 local municipalities in initiating or strengthening workplace programs that focus on HIV/AIDS prevention.

#### Reforming Municipal Budgeting in Ukraine

Since gaining independence in 1991, Ukraine has been steadily transitioning to a democratic system of government and a free market economy. One of the nation's most pressing problems, however, remains the public budgeting process. To help resolve problems such as poor estimation of revenues and unfunded mandates, RTI is implementing the Municipal Budget Reform (MBR) project on behalf of USAID. This project builds on RTI's decadelong history of support for local government and democratization in Ukraine.

The cornerstone of the project is a method known as performance program budgeting, or PPB.

Robert Bodo, RTI's chief of party for the project, explained, "PPB specifies how monies are to be spent, helps municipalities set their spending priorities, and identifies criteria for evaluating the effectiveness of spending. Most importantly, the PPB approach calls for citizen participation in the budgetary

process. In this way, PPB is more transparent than line-item budgeting, the historical method used by Ukrainian municipalities."

To help Ukraine's cities make the switch to PPB, RTI is fostering change from both the bottom up and the top down—that is, working at both the municipal and national levels.

At the municipal level, RTI developed a customized software package that helps officials produce a budget plan based on a three-year forecast of revenues and expenditures, supports budget implementation, and enables cities to systematically evaluate the efficiency of local spending. RTI is also training municipal officials in PPB concepts and the new software tool. In FY2006, RTI made great strides toward the project's goal of providing this type of intensive technical assistance to 140 Ukrainian cities.

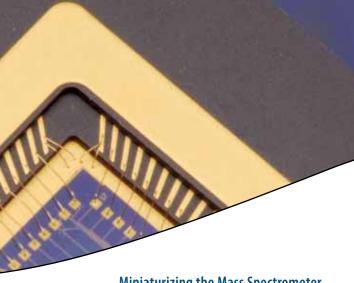
At the national level, RTI worked through the Association of Ukrainian Cities and Communities with the Verkhovna Rada (Ukraine's national legislative body) and other national officials to prepare and strengthen laws and regulations aimed at increasing local governments' fiscal autonomy. In this way RTI is helping sustain the new, transparent approach to budgeting into the future.

This past year also saw the start of an initiative that teams MBR's resources with those provided by a Slovak Aid–funded program. As the project moves forward in FY2007, MBR and Slovak Aid will continue to facilitate national-level dialogue as a step toward furthering administrative and fiscal decentralization in Ukraine.



Most importantly, the new approach to budgeting calls for citizen participation in the budgetary process. In this way, it is more transparent than the historical method used by Ukrainian municipalities.





#### Miniaturizing the Mass Spectrometer

With funding from the National Science Foundation and the National Aeronautics and Space Administration (NASA), RTI is collaborating with scientists at Duke University to advance the science of mass spectrometry.

The project focuses on developing and testing a miniature mass spectrometer that can analyze air and other gases and identify chemicals present, even at concentrations of less than one part per billion.

Ultimately, the device would be incorporated into a distributed network of sensors designed to detect gaseous environmental toxicants. Other possible applications include detection of chemical warfare agents and medical diagnostics. NASA also envisions using lightweight mass spectrometers in future missions to Mars to help search for water and facilitate isotope dating of materials.

RTI's focus has been on developing two crucial components of the device: the ion source and the ion detector. The ion source combines stateof-the-art micromachining techniques with a carbon nanotube electron source that ionizes the gas molecules. In FY2006 we demonstrated a micromachined ion source that can operate at high gas pressures and deliver up to one microampere of ion current. The ion detector consists of a linear array of microfabricated Faraday cups that collect the ion current.

"The advantages of a microfabricated mass spectrometer are its very small size, low power demand, and lower production cost," noted Chris Bower, RTI's principal investigator on the project. The RTI technology could conceivably be fabricated and even packaged at the wafer scale, leading to significantly lower development and manufacturing costs and making it ideal for applications that call for a large number of networked chemical sensors.

"However," Bower said, "our goal is not simply to develop an end product but to advance our understanding of microscale gas phase ionization, reaction kinetics, and ion measurement. Our research could launch a new paradigm for analyzing and detecting chemical species in gaseous environments."

#### **Spinning Nanofibers Into Novel Structures**

The properties of nanofibers—greater strength, elasticity, and surface area, as well as small physical size in two dimensions—have drawn considerable attention from a wide variety of industries. One traditional application of nanofibers has been in high-performance barrier filters used to remove particulate matter from gas streams. Many researchers see nanofibers as ideal building blocks for devices that can perform unique new functions.

At RTI, our emphasis is on exploring functionalized nanofibers, including novel structures and nanocomposites that could drive revolutionary improvements in air filtration and photonic systems. In FY2006, our efforts yielded progress toward applications that could one day help protect people from exposure to chemical or biological agents and reduce energy consumption and pollution around the world. In each case, RTI has dedicated our own funds to advance the state of the science.

In an effort initially funded by the U.S. Department of Defense, RTI is developing an air filter that can remove particles without the typical drop in air pressure that is characteristic of current filter technology. Our researchers have discovered a process for reducing the size of nanofibers while maintaining suitable structure and support for the resulting filter.

RTI's prototype filters have shown a threefold reduction in pressure drop when compared to the wearer to breathe. When applied to industrial processes that require filtration of air or water, our nanofiber filters could result in significant energy savings worldwide.

In another example, RTI is developing an "electronic nose" that could ultimately support a portable device for detecting chemical or biological agents. Such a device could one day be embedded in the fibers of disposable clothing for military and homeland security personnel or be used to measure a person's exposure to environmental contaminants. Although RTI's technology is yet to be optimized, it has already proven to be twice as sensitive as previously reported technology.

Finally, RTI is using nanofiber technology to develop materials and structures that emit white light efficiently. Known as solid-state lighting, RTI's technology utilizes a novel nanocomposite structure—a nanofiber made of a material that does not absorb visible light combined with quantum dots or other nanoparticles that will luminesce. By varying the properties of the nanofiber and the types of nanoparticles, we are able to elicit the full visible spectrum of light and improve the efficiency of the light emission process.

In FY2006, RTI demonstrated a proof-of-concept prototype and applied for a patent; we also received funding from the U.S. Department of Energy



under its Solid-State Lighting Core Technology program to further develop this promising technology in FY2007.

Taken together, RTI's developments in nanofiber filters, sensors, and photonic systems—and the many other applications for nanofibers we are exploring today—give us a strong foothold in this rapidly growing field. With recent investments in our facilities, our research capabilities, and our intellectual property, RTI is well-positioned to accelerate our work in nanofibers.

## Expanding Our Capabilities in Nanosafety, Efficacy, and Toxicity

Many researchers believe that nanotechnology, implemented correctly, may enable us to make headway against worldwide problems like hunger, disease, pollution, and energy inefficiency. However, the scientific, regulatory, and public health communities are also mindful of the potential threats nanoparticles pose to human health and the environment.

To help identify and protect against these risks, RTI researchers are working together to develop new methods that will contribute to the growing field of nanotoxicology. In FY2006 we completed two internal research and development projects that will enhance our capabilities to conduct nanotoxicology studies. Our goal is to help guide the development

and use of nanotechnology while protecting the health of consumers, patients, researchers, and others who may encounter nanoparticles.

Perhaps our most exciting achievement in this area involved the development of a method for synthesizing radiolabeled carbon nanoparticles. Lead investigator Anita Lewin, Ph.D., explained, "To carry out meaningful toxicological studies, you must have well-characterized materials so you know exactly what you are using. You also need to tag those materials so you can follow their fate throughout the experiment."

RTI's method involves impregnating graphite rods with radioactive carbon-14 and then using a plasma arc to create radiolabeled nanotubes or buckyballs. This type of radioactive tag is particularly well-suited for detection of substances present in minute amounts within a test sample.

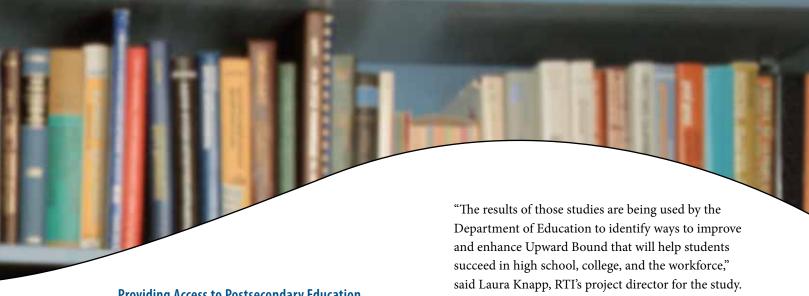
In another research effort funded by RTI, our scientists have developed methods to deliver nanoparticles for the study of nanotoxicology. By developing such methods, RTI is enabling the future study of the metabolism and distribution of nanomaterials in the body. These and future efforts will integrate many of RTI's capabilities, including our growing research in metabolomics, proteomics, and biosensors.

Our goal is to identify very sensitive biomarkers to help understand the dose-response relationship associated with exposure to nanomaterials. Such studies can provide information for use in assessing potential risks from occupational or environmental exposure to nanoparticles and in testing the safety and efficacy of drugs.



To carry out meaningful toxicological studies, you must have well-characterized materials so you know exactly what you are using. You also need to tag those materials so you can follow their fate throughout the experiment.





### **Providing Access to Postsecondary Education**

RTI has a long history with the U.S. Department of Education, supporting many programs that help to ensure that all students have the opportunity for a quality education.

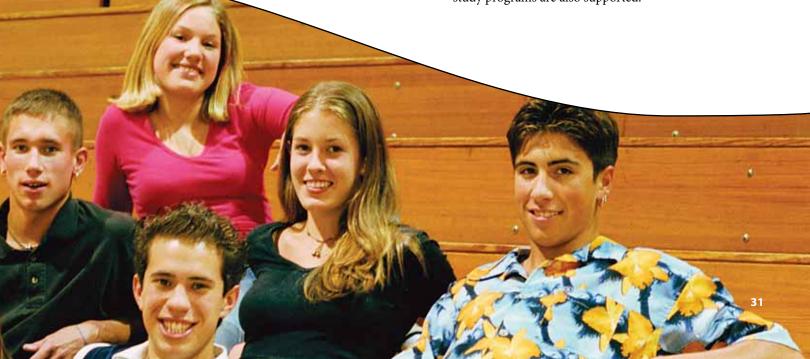
As part of that process, RTI is working with the Department of Education to identify ways to enhance the Upward Bound program. Upward Bound provides low-income and potentially first-generation high school students and veterans with the necessary skills to attend and succeed in college.

RTI analyzed data from the Department of Education on more than 100,000 participants enrolled in more than 900 Upward Bound projects across the country. RTI researchers assessed data on students enrolled in all three Upward Bound programs—classic Upward Bound, Upward Bound Math-Science, and Veterans Upward Bound—between the 1999–2001 and 2004–2005 school years.

The research team found that the longer students are involved in the Upward Bound program, the more likely they are to finish high school and attend college. As a result of those findings, the Department of Education is adjusting the requirements for classic Upward Bound and Upward Bound Math-Science. Entry into these programs is currently open to all high school students, but beginning in fall 2007, entry will be restricted to high school freshmen and sophomores, who will have more time to benefit from the program and, ultimately, be more likely to succeed in college.

RTI researchers are continuing to assess additional trends in the Upward Bound program to determine what aspects of the program are most effective in helping students to achieve academically.

Upward Bound projects provide academic instruction in mathematics, laboratory sciences, composition, literature, and foreign languages. Tutoring, counseling, cultural enrichment, and workstudy programs are also supported.



#### **Improving Education for Cambodian Children**

Through our projects across Africa, Asia, Central Asia, Europe, Latin America and the Caribbean, and the Middle East, RTI is supporting education reform around the world.

Since 2004, RTI has been working with Cambodia's Ministry of Education, Youth, and Sport (MoEYS) to improve the quality of basic education by modernizing the education curriculum and increasing collaboration between schools and communities.

"When parents, students, and teachers share understanding of the value and relevance of improved education, students will stay in school longer and learn more," said George Taylor, RTI's project director in Cambodia.

The project, funded by the U.S. Agency for International Development (USAID), is being conducted by MoEYS and RTI in collaboration with other donors and nongovernmental organizations, including the United Nations Children's Fund (UNICEF), the World Bank, Handicap International, and World Education.

In 2006, RTI helped to complete new curriculum standards that set literacy, numeracy, life skills, and other basic education goals to be reached by all students in four core subjects: Khmer (Cambodian language), mathematics, science, and social studies. The project is now supporting the Ministry in introducing these national standards into schools.

RTI and our partners (Overseas Projects Corporation of Victoria Pty Ltd/Sinclair Knight Merz and the Cooperation for a Sustainable Cambodian Society) have introduced the new policy on curriculum development in all 24 Cambodian provinces and are conducting workshops and helping communities in eight priority provinces take more responsibility for achievement in their schools.

At the heart of the new curriculum is a focus on participatory learning that encourages demonstration of knowledge and skills in different contexts.

"The instructional method underlying the curriculum and the training are more effective and practical than the old passive learning approach," Taylor said. "The revised curriculum builds competencies relevant to the everyday life of students and the world in which they live and will work."

The new curriculum also integrates life skills that are complemented by a community-supported local life-skills program, which helps students develop practical skills and knowledge as well as generic competencies such as planning and problem solving.

"Cambodia is moving toward demand-based commercial development of textbooks, school-based training initiatives, and increased openness between schools and communities," Taylor said. "We are helping stimulate initiatives that improve education in all parts of the country, including the least developed provinces."



### Simulation Program Preparing Medical Personnel for Disasters

When dealing with a mass casualty event such as a terrorist attack, a disease outbreak, or a large-scale natural disaster, emergency service personnel play a critical role in saving lives, restoring order, and securing safety. Effective delivery of those services requires first responders to be able to triage patients, quickly establishing a priority of care during a mass casualty incident. However, many medical personnel lack those necessary skills.

At RTI, we are working to make mass casualty triage training more readily available to medical personnel around the world through the use of a simulation program developed by our researchers.

"While working on developing disaster preparedness training for Duke University, we recognized the value of integrating simulation programs with triage training," said Robert Furberg, an RTI health analyst, a paramedic, and one of the project's leaders.

The simulation system presents students with virtual patients who are suffering from a variety of casualties that escalate in real time, tracks the students' actions, and compares those actions against the correct protocol path. That technology was used in June 2006 to train students at Duke University's medical school, as well as those attending its nursing, physician assistant, and physical therapy programs, as part of a disaster preparedness program.

The success of the simulation program led to its integration into our USAID-funded health training project to enhance medical training in Iraq, where the need for medical care continually exceeds resources and the need for triage is all too common.

"We were surprised to learn that most healthcare providers in Iraq have never received formal training in dealing with mass casualty situations," Furberg said. "Most Iraqi ambulance services are merely 'load and go.' They have no equipment or provisions for lifesaving care and no triage tagging system."

RTI trainers delivered the simulation-based triage training to 31 physicians in residential hospitals and clinics in Iraq during a two-day training session. The physicians were equipped with laptops and simulation systems that they are using to educate other medical providers throughout the country on proper triage methods for mass casualty situations.

"The Iraqi physicians told us that making this training more widely available would make a significant difference in the number of lives saved during mass casualty events," said Paul Kizakevich, RTI's principal investigator for the project.

RTI plans to work with other universities and medical centers as well as other countries with developing medical response systems to expand the triage training program. RTI researchers are also customizing the training program to meet the needs of all first responders, including security personnel, firefighters, and medical workers.



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– Robert Furberg, RTI health analyst and paramedic



# **COMMITMENT TO OUR CLIENTS**

At RTI, our dedication to developing strong and lasting relationships with clients has long been a hallmark of our approach to research.

We work hard to understand the scientific and policy research needs of the many agencies, universities, and private companies whose projects we undertake. From the outset, our singular focus is to provide them with an independent, objective analysis upon which to base their decisions and, in the case of federal clients, public policy.

Our unique combination of cutting-edge capabilities and decades of experience often prompt clients to select RTI for the most complex and scientifically challenging projects. For example, we are one of the only labs in the United States capable of meeting EPA's stringent standards for chemical speciation of PM<sub>2.5</sub>, so we are the sole contractor selected to do this work. In another example, RTI's field experience and understanding of malaria control programs earned us a contract to help launch the President's Malaria Initiative, which aims to reduce malaria-related deaths in sub-Saharan African countries.

Owing to RTI's dedication to scientific excellence and sound fiscal management, RTI is successful with follow-on contracts. One prominent example of this is the National Survey on Drug Use and Health (NSDUH), which we have conducted on behalf of the Substance Abuse and Mental Health Services Administration since 1988. RTI also has nearly 30 years of history as the leader of several programs—operated on behalf of the National Institute of Standards and Technology, American Industrial Hygiene Association, and the U.S. Navy—that test the proficiency of asbestos laboratories in the United States and around the world.

Clients rely on RTI not only to implement their research projects but also to help design the studies that serve their project goals. Just this year, RTI responded to one agency's request for proposals with an alternative study design that was more rigorous. Our goal is always to ensure that the results are scientifically valid—sound enough to serve as the basis for far-reaching policy decisions or to advance the state of science itself.

Never content to rest on our past performance, RTI constantly seeks to improve our operations, our business practices, and our client relations. For example, this year we invested in LabLogic's Debra, the industry standard software system for managing data collected in drug metabolism studies. With Debra in place, we can eliminate errors in data transcription and calculation and deliver study results faster and at a lower cost to our clients, while also complying with Food and Drug Administration regulations governing electronic records.

Also in FY2006, RTI solicited direct feedback from 300 active clients through a Web-based survey. Insights we gain from the survey will help us broaden and deepen the bonds we have created and ensure that we maintain our focus on client expectations.





# COMMITMENT TO OUR PEOPLE

RTI International staff members are working to improve the lives of people around the world, and RTI, as an organization, is working to make RTI a great place to work. Our staff members are our greatest strength and most prized asset, and we continue to work to enhance our facilities and to provide advancement and professional development opportunities for them.

# Providing Resources to Make Cutting-Edge Discoveries

In late September 2006, RTI dedicated the new Earl Johnson Jr. Science and Engineering Building, a \$20 million state-of-the-art laboratory and office facility. The new 78,000-square-foot facility was named in honor of the chairman of RTI's Board of Governors.

The building represents RTI's largest construction project to date in terms of both square footage and overall investment. It will house research programs in high-growth fields such as nanotechnology, energy technology, and environmental technology, as well as projects related to homeland security in such areas as aerosol technologies and analytical chemistry. Consisting of two wings, the building was planned with future growth in mind. One wing will be occupied by current programs, and the other will be outfitted as needed to accommodate new or expanded programs.

# Providing Professional and Efficient Working Environments

As part of our investment in our people, RTI upgraded and enhanced facilities at several of our domestic regional offices during FY2006. In an effort to create working environments in which our staff members can continue to excel, we increased our regional office space by 50 percent and made significant upgrades in building security, audio visual capabilities, office furnishings, and other amenities to create a better working environment.

"Our business success is allowing us to catch up in providing the kinds of environments we have always wanted for our staff members," said RTI President and CEO Victoria Franchetti Haynes, Ph.D.

RTI moved and updated regional offices in Washington, DC, Chicago, Waltham, MA, and Atlanta during FY2006, and plans are in place to further expand many of those offices during FY2007.

Washington, DC, is RTI's largest regional office, in terms of both staff and square footage. In February 2006, RTI's 100 DC staff members moved to a 28,000-square-foot office space on the seventh floor of One Metro Center, located above the area's largest metro station, giving RTI more visibility near our many federal government clients.

In November 2005, RTI's 20 Chicago staff members moved to a new, 7,800-square-foot downtown office space, providing a 28 percent increase in space.

The office's continued success in conducting survey.



research in health, education, substance abuse, and environmental quality assurance has led to plans to increase the office space by an additional 4,600 square feet.

In May 2006, RTI's 50 Waltham staff members moved to a 17,400-square-foot office suite that will be expanded to more than 20,000 square feet during 2007. Among other projects, members of the Waltham team are helping the Centers for Medicare and Medicaid Services implement the landmark Medicare Prescription Drug Improvement and Modernization Act of 2003 legislation.

In July, RTI's Atlanta office, which supports many research projects funded by the Centers for Disease Control and Prevention, doubled its existing office space to more than 11,000 square feet to accommodate the increasing number of projects and staff members.

## Committed to Staff Members' Health and Well-Being

To provide our staff members with resources that enhance wellness through recreation, clubs, and other community activities, RTI opened a 5,000-square-foot fitness center on its main campus in Research Triangle Park, NC, in July 2006.

"We have been extremely fortunate to attract some of the world's best, brightest, and most dedicated staff members to RTI, and their health and well-being are always a priority for us," said Haynes. "We are continuing to look for opportunities to enhance the wellness of all our staff members and to improve their work-life balance." The facility features state-of-the-art cardiovascular, weight-lifting, and other exercise equipment and a mirrored, hardwood-floored studio for classes such as aerobics, dance, yoga, and Pilates.

"The fitness center is one of the anchors for employee wellness at RTI," said Lorena Clark, RTI's senior vice president of Human Resources and Corporate Affairs. "It builds on previous efforts—ranging from recreational and club activities in the Research Triangle Park and regional offices to our smoking cessation program—and will serve as the foundation for future fitness and wellness efforts at RTI."

In addition to the facilities and programs available to staff members on our main campus, each RTI regional office coordinates activities to promote wellness among staff members.

# Offering Opportunities for Staff Members

Because our staff members are the foundation of our success, RTI continues to establish and improve programs such as the RTI Fellow Program, the RTI Visiting Fellow Program, and the Professional Development Program, which now includes sabbatical leaves. Together, these programs offer our staff members the opportunity to enhance their skills, broaden their knowledge, and further their research.

The highest scientific honor and responsibility bestowed by RTI to its researchers is the designation of RTI Fellow. Designed for RTI's leading scientists,



the RTI Fellow Program fosters scientific originality and innovation. RTI relies on its Fellows to serve as leaders, influencing our scientific direction and business strategies. We also look to the Fellows to represent RTI and their respective fields within the scientific community.

During FY2006 we named five new RTI Fellows, bringing the total number of RTI Fellows to 19. New members are Don Bailey, Ph.D., RTI Distinguished Fellow; Diane Fishbein, Ph.D., RTI Senior Fellow; R.K.M. Jayanty, Ph.D., RTI Senior Fellow; Paul Levy, Sc.D., RTI Senior Fellow; and Rochelle Tyl, Ph.D., DABT, RTI Senior Fellow.

The RTI Fellows also strive to share RTI's research with the scientific community. During April 2006, they hosted an RTI Fellows Symposium titled "Exploring Frontiers in Science: Implications for Research and Policy" in Chapel Hill, NC, to explore emerging issues with our staff members and our academic, government, and industry partners. Topic areas included infectious diseases, nanotechnology, alternative medicine, chronic health disorders, the environment, energy sustainability, international health, and democratic governance.

"The symposium made us think beyond what we do from day to day and showed us that so many issues have cross-cutting implications," said symposium chair and RTI Senior Fellow Edo Pellizzari, Ph.D. "It provided insight about future research challenges."

During FY2006, RTI also introduced the RTI Visiting Fellow Program, which selects individuals to serve as senior advocates in Washington, DC, for RTI's research capabilities and policy expertise. The Visiting Fellow will also advise the RTI president on matters of high-level government policy as it affects RTI. The Honorable John D. Ong, former U.S. Ambassador to Norway, was named RTI's inaugural Senior Visiting Policy Fellow.

RTI also began offering a sabbatical leave during FY2006 as part of our Professional Development Program. The sabbatical leave allows senior research professionals who have demonstrated scientific stature in their field up to 12 weeks off with pay to pursue initiatives tied to their research agenda. The program provides the opportunity for RTI scientists to expand their research into new markets, advance the state of RTI's core research areas, and develop a new client base.

Wendee Wechsberg, Ph.D., director of RTI's Substance Abuse Treatment Evaluation and Interventions program, was awarded the first sabbatical. She traveled abroad during her sabbatical, conducting lectures and grand rounds and learning how to expand RTI's collaborations in new cultures. Her research in South Africa expanded to include younger women, and government and nongovernmental agencies in South Africa became interested in her research. They are now helping to find solutions for disempowered women





# **COMMITMENT TO OUR COMMUNITY**

Improving the human condition is a mission that RTI takes to heart—not only in our daily work, but also through involvement in our communities. RTI is committed to bettering our communities through various community initiatives and activities.

Through the FY2006 RTI Community Partnerships Program, for example, we contributed \$140,000 to 62 organizations in multiple locations: the Research Triangle Park (RTP) area of North Carolina, Atlanta, GA, Cocoa Beach, FL, Hampton, VA, San Francisco, CA, Washington, DC, Waltham, MA, El Salvador, and Indonesia. The organizations funded cover a broad range of community service areas, such as health, seniors, disability assistance, basic needs, children's programs, domestic violence, and the environment.

In addition, through this program, RTI contributed \$10,000 to the International Federation of Red Cross and Red Crescent Societies to aid relief efforts for the victims of the earthquake that struck the Indonesian island of Java on May 27. RTI also contributed \$5,000 each to the Triangle United Way and the United Way of the National Capital Area, which serves the community around RTI's Washington, DC, office. We pitched in an extra \$75,000 contribution to help Triangle United Way reduce a projected shortfall in its Community Care Fund. The special contribution

was in addition to the approximately \$212,000 donated by our staff members in the FY2006 United Way campaign.

Many of our staff members also demonstrated their commitment to our mission in their personal time, through various volunteer efforts. One such individual is Mariel Christian, who underwent a bone marrow donation procedure and potentially saved a life. Another example is Edie Walsh, a registered nurse, who spent two weeks in Louisiana as a Red Cross volunteer, bringing aid and comfort to people suffering from the devastation of Hurricane Katrina. In addition, our staff members frequently came together in groups to make a difference in our communities, such as our Statistics and Epidemiology organization's volunteer club, which adopted a North Carolina Highway and wrote a cookbook to raise funds for charity this year.

RTI also gives back to the community through the Community Supported Agriculture Program in RTP, which we have hosted since 2002. In supporting this program, we are helping to ensure the success of participating local farmers by making healthful farm products available for easy pick-up on our main campus by staff members and others in the RTP area. RTI also is a corporate participant in the RTP area's SmartCommute program, which encourages alternate commuting practices to reduce air pollution and traffic congestion on roadways, as well as staff members' stress and expenses. Our commuter benefits have made us a Best Workplace for Commuters employer, a designation provided by the



# AWARDS, HONORS, AND PUBLICATIONS

Through their work at RTI, our researchers consistently distinguish themselves as leaders in their respective fields. In many cases, individual contributions to the advancement of science have been recognized by their peers. A sample of FY2006 awards to RTI and to individual staff members are listed below.

## **RTI International**

RTI was recognized as the second-fastest growing company in the Triangle area as part of Triangle Business Journal's 2005 Fast 50 Awards program. RTI was also selected for the U.S. Environmental Protection Agency's Administrator's Award for Outstanding Accomplishments by a Prime Contractor for our outreach to all classifications of small businesses and our supplier diversity program.

#### **Don Bailey**

Don Bailey, Ph.D., RTI Distinguished Fellow and director of the Frank Porter Graham Child Development Institute at the University of North Carolina at Chapel Hill, earned the Research Career Scientist Award from the Academy on Mental Retardation. The award honors a distinguished person whose professional career has significantly advanced the field of developmental disabilities.

#### Robert Beach

A study led by Robert Beach, Ph.D., concerning agricultural management practices that can reduce global greenhouse gas emissions, was awarded the T.W. Schultz Best Contributed Paper Prize at the International Conference of Agricultural Economists. The prize honors an outstanding paper in the field presented by an author younger than age 38.

## Ivy Carroll

F. Ivy Carroll, Ph.D., RTI Distinguished Fellow and director of RTI's Center for Organic and Medicinal Chemistry, 2006 Nathan B. Eddy Memorial Award for outstanding

## **David Kroll**

David Kroll, Ph.D., RTI senior research pharmacologist, has been appointed as a subject matter expert on a federal advisory committee that evaluates the scientific merit of research to develop new anticancer drugs. As a member of the Basic Mechanisms of Cancer Therapeutics Study Section of the National Institutes of Health's Center for Scientific Review, he will review NIH grant applications, make recommendations concerning those applications, and survey the status of oncology drug discovery research.

## Josephine Mauskopf

Josephine Mauskopf, Ph.D., RTI Health Solutions, health economics researcher, received the International Society for Pharmacoeconomics & Outcomes Research (ISPOR) Research Excellence Award for Practical Application Excellence, which recognizes a peer-reviewed research paper that is likely to have practical consequences for healthcare decision-makers.

## Sally Morton

RTI vice president of Statistics and Epidemiology Sally Morton, Ph.D., was named a Fellow of the American Association for the Advancement of Science (AAAS). Morton was elected by her peers as an AAAS Fellow in the statistical science category for her many innovative applications of meta-analysis to public policy decision-making and for her years of valuable service to professional societies. She also was chosen to serve on an Institute of Medicine review committee that will evaluate the clinical value of a variety of healthcare services.



## Diglio Simoni

Diglio Simoni, RTI computational scientist, was a grand prize winner of a research poster at TeraGrid '06. Simoni's poster, "TeraGrid Support for Multiscale Models of Infectious Disease," proposes the use of the NSF TeraGrid computational resources to combine simulations of infectious disease models that span many orders of magnitude in biological spatiotemporal resolution into a single unified modeling framework.

## Laura Strange

After a 30-year military career, Laura Strange, director of clinical studies in RTI's Atlanta office, became the first woman in the Georgia National Guard ever promoted to the rank of colonel.

#### Mansukh Wani

Mansukh Wani, Ph.D., RTI Principal Scientist, was among six distinguished North Carolinians honored with the North Carolina Award, the state's highest award, for scientific achievement. In partnership with the late Monroe Wall, Ph.D., Wani discovered two compounds—camptothecin™ and Taxol®—which since 1992 have been instrumental in the fight against cancer.

## Blake Wilson

Blake Wilson, RTI Senior Fellow and adjunct professor at Duke University Medical Center, was honored at the 9th International Conference on Cochlear Implants for his many scientific contributions to hearing research. He is credited with inventing most of the processing strategies used in present-day cochlear implant systems, devices implanted in the inner ear to restore speech comprehension to the deaf.

## **Publications**

During FY2006, RTI researchers published numerous articles in prestigious scientific peer-reviewed journals including *Science*, *Nature*, *The Journal of the American Medical Association*, *The Lancet*, *Annals of Internal Medicine*, and *Pediatrics*. The significant contributions of RTI researchers also earned them invitations to write editorials in *The Journal of the American Medical Association*, *The Lancet*, and *Annals of American Medicine*. For a complete list of publications by RTI researchers, visit *www.rti.org/publications*. To receive periodic updates of new RTI publications, sign up at *www.rti.org/subscribe*.

## **Books**

RTI researchers also published books in FY2006 based on their research and expertise.

Incidence and Economic Burden of Injuries in the United States, by RTI researchers Eric Finkelstein, Ph.D., and Ian Fiebelkorn, Ph.D., in collaboration with others, provides the first comprehensive estimates in more than 15 years of the economic impact of injuries across the country.

Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis, by Colleen McCue, Ph.D., RTI senior research scientist, demonstrates how data mining and predictive analytics have helped identify crime trends, anticipate hotspots in the community, and help law enforcement officials refine resource deployment decisions to better protect citizens.

Innovation in the US Service Sector, by RTI researchers Michael Gallaher, Ph.D., and Jeffrey Petrusa and Albert Link, Ph.D., a professor at the University of North Carolina at Greensboro, helps readers to understand the role of innovation and the distinct nature of research and development in the U.S. service sector and the global economy.



# RTI LEADERSHIP

# Victoria Franchetti Haynes

RTI President and Chief Executive Officer

## **RTI Research Organization**

#### E. Wayne Holden

Executive Vice President, Social and Statistical Sciences

- Allen K. Miedema, Vice President, Health, Social, and Economics Research
- Timothy J. Gabel, Vice President, Survey and Computing Sciences
- Sally C. Morton, Vice President, Statistics and Epidemiology
- Claude L. Hughes, Vice President, Partnership for Genomics and Molecular Epidemiology

## Ronald W. Johnson

Executive Vice President, International Development

- Lisa J. Gilliland, Vice President and Chief Operating Officer
- Luis A. Crouch, Vice President, Finance, Education, and Information Technology
- Aaron S. Williams, Vice President, International Business Development

## Satinder K. Sethi

Executive Vice President, Science and Engineering

- Terrence K. Pierson, Vice President, Environmental Sciences
- Alan H. Staple, Vice President, Health Sciences
- David F. Myers, Vice President, Engineering and Technology
- Samuel S. Field, Vice President, Digital Solutions

## Allen W. Mangel

Senior Vice President, RTI Health Solutions

## **RTI Administrative Organization**

## Lon E. Maggart

Senior Vice President, Operations

 Allwyne L. Richards, Vice President, Facility Strategic Services

## James J. Gibson

**Executive Vice President and Chief Financial Officer** 

- David E. Roseberry, Vice President and Chief Information Officer
- Stephen P. Snyder, Vice President and Corporate Controller
- E. Ward Sax, Vice President, Treasurer, and Chief Risk Officer
- G. Edward Story, Vice President, Contracts and Legal Affairs

## J. Scott Merrell

Senior Vice President, Secretary, and Chief Legal Officer

#### Lorena K. Clark

Senior Vice President, Human Resources and Corporate Affairs

- Martin J.J. Ratelband, Vice President, Compensation and Human Resources Information Services
- Sally S. Johnson, Vice President, Corporate Affairs



# **BOARD OF GOVERNORS**

The governing structure of RTI International comprises the members of the corporation, the board of governors, and the corporate officers. The primary governing body of RTI, the governors are elected by the members of the corporation and represent the University of North Carolina campuses, Duke University, and the business and scientific communities. The board of governors meets at least bimonthly and formulates policy consistent with RTI's mission to improve the human condition by turning knowledge into practice.

## **Board of Governors**

## Earl Johnson Jr. (Chairman)

Chairman, Southern Industrial Constructors, Inc.

#### Molly Corbett Broad

President Emerita, The University of North Carolina

## Thomas F. Darden

Chief Executive Officer, Cherokee Investment Partners, LLC

## John G. Gilligan

Vice Chancellor for Research and Graduate Studies, North Carolina State University

## Victoria Franchetti Haynes

President and Chief Executive Officer, RTI International

#### Peter M. Lange

Provost, Duke University

#### William F. Little

Retired Senior Vice President and University Distinguished Professor of Chemistry, The University of North Carolina

## William M. Moore Jr.

Partner, Franklin Street Partners, Inc.

## H. Troy Nagle

Professor and Founding Chair, Joint Department of Biomedical Engineering, University of North Carolina at Chapel Hill and North Carolina State University

## Paul J. Rizzo

Chairman of the Board and Partner, Franklin Street Partners, Inc.

#### Peter M. Scott III

President and CEO, Progress Energy Service Co., LLC

#### James N. Siedow

Vice Provost for Research, Duke University

## Tony G. Waldrop

Vice Chancellor for Research and Economic Development, University of North Carolina at Chapel Hill

#### Phail Wynn Jr.

President, Durham Technical Community College



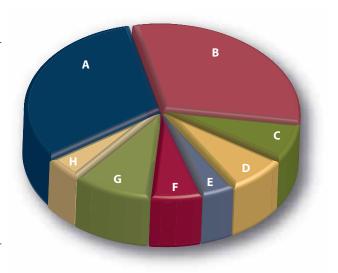
# **FINANCIAL SUMMARY**

RTI enjoyed a successful business year, with annual revenue from contracts and grants totaling \$546.3 million for the fiscal year ending September 30, 2006. This amount represents a 16.8 percent increase over FY2005 revenue, reflecting growth across all research groups and business units.

RTI Health Solutions, a business unit created in FY2002, continues to thrive financially and is rapidly becoming a market leader for drug safety and efficacy research for the commercial pharmaceutical sector. The acquisition of Integrated Safety Solutions in FY2006 further strengthened our position in this sector.

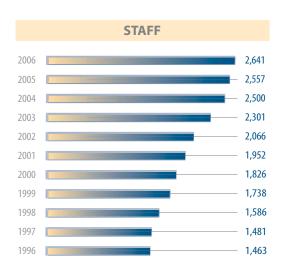
RTI's financial position and outlook remain strong, with equity increasing to \$155.1 million as of the end of FY2006 (a 14.6 percent increase). Net revenue, or the amount of revenue that exceeds expenses, totaled \$19.8 million during FY2006. As a nonprofit corporation, RTI reinvests its net revenue in research, facilities, programs, and other new capabilities to further our mission to improve the human condition.

	Source	Revenue (in millions)	Percentages
Α	Department of Health and Human Services	\$172.6	31.6%
В	U.S. Agency for International Development	\$165.9	30.4%
C	Department of Defense	\$40.1	7.3%
D	Department of Education	\$39.2	7.2%
Ε	Environmental Protection Agency	\$20.9	3.8%
F	Other Federal Agencies	\$33.7	6.2%
G	Commercial	\$49.7	9.1%
Н	Other Nonfederal	\$24.2	4.4%
	TOTAL	\$546.3	100.0%



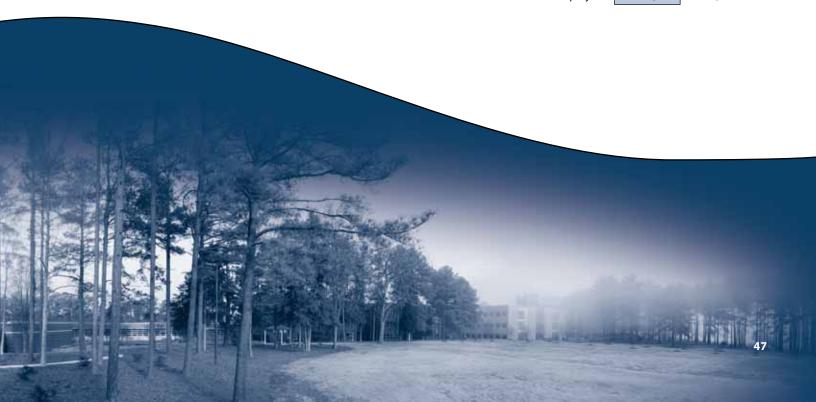






The following financial statements show the results from FY2006 and FY2005.

		1
For the year:	FY2006	FY2005
Income Statement		
(in thousands of dollars)		
Revenue from research operations	\$546,333	\$467,697
Direct and indirect labor	(238,209)	(211,597)
Other direct costs	(222,264)	(186,647)
Other indirect costs	(65,236)	(53,108)
Other income (net of interest expense)	(803)	(1,031)
Net revenue	\$19,821	\$15,314
Balance Sheet		
(in thousands of dollars)		
Assets		
Current assets	\$168,721	\$150,130
Property and equipment, net	87,106	70,931
Other noncurrent assets	4,146	3,383
Total assets	\$259,973	\$224,444
Liabilities and Institute Capital		
Current liabilities	\$99,872	\$84,936
Long-term liabilities	4,977	4,204
Total liabilities	104,849	89,140
Contributed equity (unrestricted)	5,061	5,061
Contributed equity (restricted)	1,865	1,804
Accumulated net revenue	148,198	128,439
Total Institute equity	155,124	135,304
Total Liabilities and Institute Equity	\$259,973	\$224,444



# **CLIENT LIST**

#### Private Sector Clients

Advanced Ceramics Research, Inc.

Amgen

Astec Industries, Inc.

AstraZeneca

Baver

Becton, Dickinson & Co.

Boehringer Ingelheim

Bristol-Myers Squibb Co.

Centocor

The CIIT Centers for Health Research

Cochlear Corporation

CV Therapeutics, Inc.

**Dow Pharmaceutical Sciences** 

E.I. duPont de Nemours & Co., Inc.

Eastman Chemical Co.

Education Assistance Corp.

Elan Pharmaceuticals

Eli Lilly and Company

**EMD Pharmaceuticals** 

Forest Laboratories, Inc.

GlaxoSmithKline

Icagen, Inc.

Inspire Pharmaceuticals

International Resources Group

Jazz Pharmaceuticals

The Johnson & Johnson Family of Companies

Kimberly-Clark Corp.

Lockheed Martin Aero.

Microbia, Inc.

Nielsen Media Research

Novartis

Organon

Pfizer

Pozen, Inc.

**Progress Energy** Purdue Pharma L.P.

Reichhold, Inc.

Rite Aid Corp.

**Roche Laboratories** 

Roth Associates, Inc.

Sanofi-Aventis

Santa Barbara Infrared, Inc.

The Society of the Plastics Industry

Sumitomo Corporation

Syngenta Crop Protection

TransTech Pharma

**Underwriters Laboratories** 

## U.S. Government Clients

Corporation for National & Community

Service

Department of Agriculture

Department of Commerce

Department of Defense Department of Education Department of Energy

Department of Health and Human Services:

- · Administration for Children and Families
- · 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
- Food and Drug Administration
- · Health Resources and Services Administration
- National Institutes of Health:
- · National Cancer Institute
- · National Center for Research Resources
- · National Eye Institute
- · National Heart, Lung, and Blood Institute
- · National Institute on Aging
- · National Institute of Alcohol Abuse and Alcoholism
- National Institute of Allergy and Infectious Diseases
- · National Institute of Child Health and Human Development
- · National Institute on Deafness and Other **Communication Disorders**
- · National Institute of Diabetes and Digestive and Kidney Diseases
- National Institute on Drug Abuse
- · National Institute of Environmental **Health Sciences**
- · National Institute of Mental Health
- National Institute of Neurological Disorders and Stroke
- · National Toxicology Program
- Substance Abuse and Mental Health

Services Administration

Department of Homeland Security

Department of Housing and Urban

Development

Department of the Interior

Department of Justice

Department of Labor

Department of Transportation

Department of Veterans Affairs

Environmental Protection Agency

**National Aeronautics and Space** 

Administration

National Science Foundation Office of National Drug Control Policy U.S. Agency for International Development

## Other Clients

American Boat & Yacht Council

American Cancer Society

American Industrial Hygiene Assoc.

American Legacy Foundation

Asian Development Bank

Asthma and Allergy Foundation

Chinese Research Academy of Environmental

Sciences

Clemson University

The College Board

European Bank for Reconstruction and

Development

Ford Foundation

Georgetown University

Global Alliance for TB Drug Development

The Hashemite Kingdom of Jordan

Inter-American Development Bank

Medicines for Malaria

National Academy of Sciences

National Multiple Sclerosis Society

New York State Energy Research and Development

Authority

North Carolina Utilities Commission

People's Republic of China

Project Bread—The Walk for Hunger

Robert Wood Johnson Foundation Rockefeller Foundation

Samueli Institute

**Smith Family Foundation** 

State of California

State of Florida

State of New York

State of North Carolina

State of Vermont

Department for International

Development (UK)

**United Nations** 

World Bank World Health Organization



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RTI-Polska Sp. z o.o.

