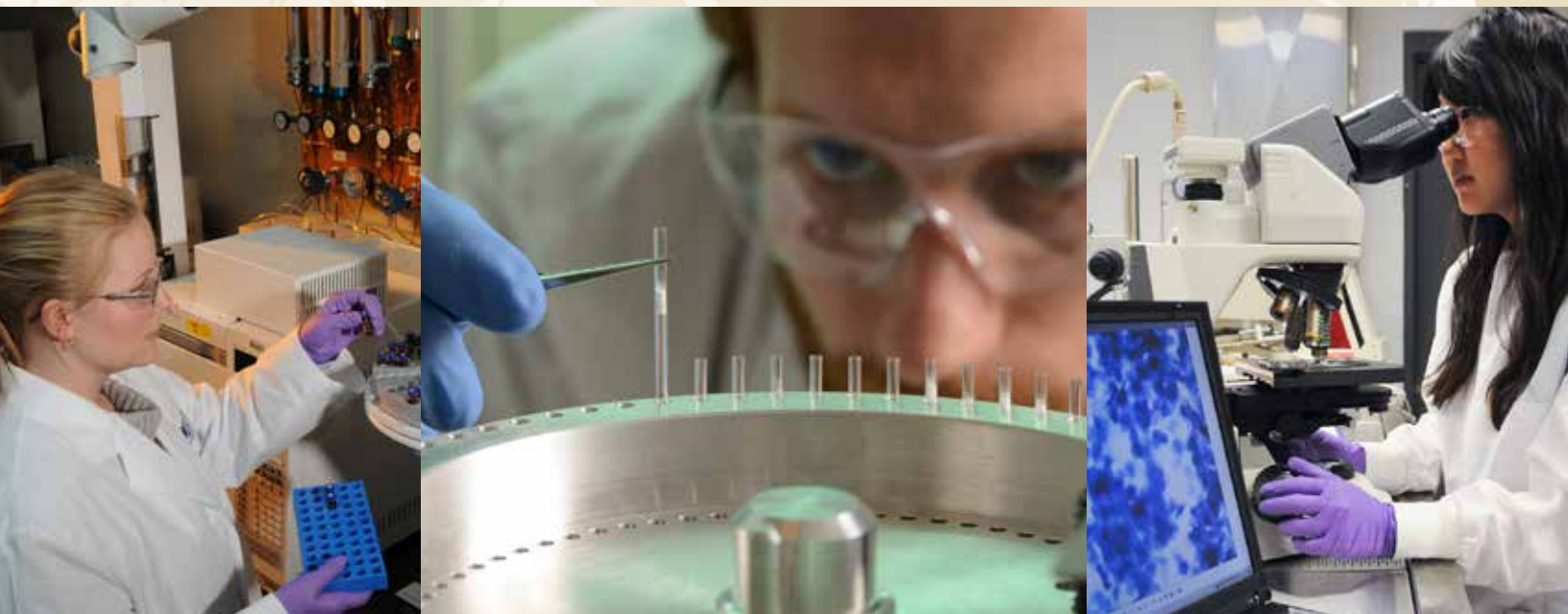


# Analytical Sciences at RTI International



RTI International offers a comprehensive suite of capabilities that can be leveraged to solve your most challenging analytical problems. Examples include measurements of chemical composition, structure, and morphology; identification of unknowns; and trace analyses. Our experts have decades of experience developing novel and unique methods that can also be brought to bear when new method development and validation are required. We have successfully supported and collaborated with hundreds of public- and private-sector clients, including those in the pharmaceutical and life sciences, personal care, food and beverage, environmental, and oil and gas industries.

## **The RTI Advantage**

RTI has a team of more than 100 analytical scientists equipped with extensive capabilities built over 5 decades. Areas of expertise include separations, spectroscopy, microscopy, and physical testing. In addition, we understand your need for response within budget constraints and timelines.

## Analytical Sciences: Custom Solutions to Real-World Challenges

### Bioanalytical Method Development, Validation, and Application



Our scientists develop, validate, and apply GLP methods for bioanalysis of foods, cosmetics, and pharmaceuticals.

## Analytical Instrumentation

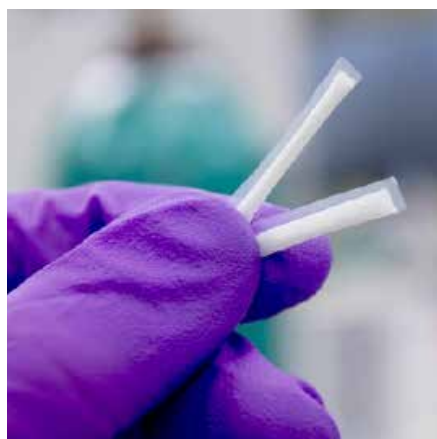
- Chromatography and separations (HPLC, UPLC, GC, IC, CE) with various detectors
- GC-MS (standard, MS/MS)
- LC-MS (MS/MS, high-resolution, ion mobility)
- Phase imaging and identification by optical microscopy (stereomicroscopy and PLM), electron microscopy (ESEM, TEM), AFM, and XRD
- Elemental analysis (ICP-OES, ICP-MS, SF-ICP-MS, EDXRF, EDX)
- Physicochemical characterization (particle counting, DSC and MDSC, TGA)
- Spectroscopy (NMR, FTIR, Raman, CD, fluorescence, energy dispersive, polarimetry, refractometry)
- Particle sizing (SEC, laser light diffraction, DLS, MALS, optical and electron microscopy)
- Moisture analysis (Karl Fischer, GC-MA)
- Dissolution and disintegration testing
- Sample preparation (class 100 clean hoods, contamination-controlled facilities)
- Monitored cold storage and environmental stability and photostability chambers

### Analytical Support for Clinical Trials



RTI routinely develops, validates, and applies analytical methods to support clinical trials.

### Medical Device Development



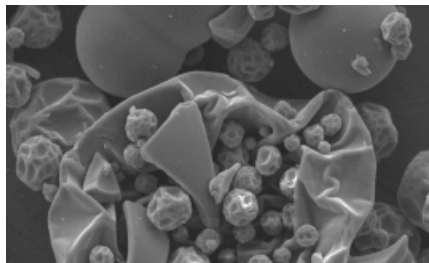
RTI provides comprehensive analytical support to the development of sustained-release delivery systems of antiretrovirals in support of women's health.

## Proficiency Testing and Industrial Hygiene



We ensure the competence of other laboratories through RTI-administered programs such as the AIHA Beryllium Proficiency Analytical Testing Program.

## Contamination Control



RTI routinely provides measurements to control contamination in the automotive, semiconductor, and pharmaceutical industries.

## Synthesis and Characterization of Metabolites



RTI regularly synthesizes and characterizes metabolite standards required for metabolomics analysis and utilizes broad-spectrum and targeted methods to analyze metabolites.

## Vaccine Characterization



RTI provides analytical services to determine various constituents in vaccines in support of Investigational New Drug (IND) applications.

## USP Elemental Impurity Analysis



Our scientists work with industry collaborators to address analytical challenges around metal contaminants in drug products and ensure regulatory compliance with USP <232>/<233>.

## Complex Chemical Characterization



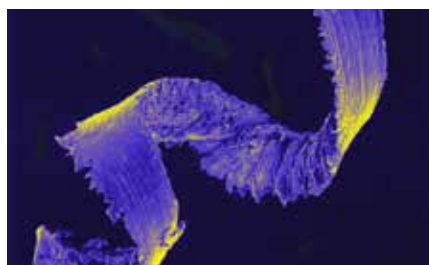
RTI provides time-critical support for multiple product safety studies for commercial clients in compliance with GLP and EPA FIFRA regulations.

## Novel Biopesticides



RTI collaborates with agricultural researchers to discover novel biopesticides for sustainable agriculture through advanced analytical characterization.

## Industrial Troubleshooting



RTI determines the source of visible contamination in pharmaceuticals and other products.

## Specialty Formulation



RTI's Materials Handling Facility serves as a GLP chemical repository to aliquot and ship samples worldwide. The facility also provides support for GLP toxicology studies with feed diet, gavage, drinking water, and IV formulations.

RTI's numerous accreditations are evidence of our robust quality systems and adherence to established U.S. and international quality standards.

### Sample Accreditations



Accredited for analysis of IH metals, environmental lead, respirable silica, and asbestos.

- Accredited air emissions laboratory—Louisiana Environmental Laboratory Accreditation Program/ National Environmental Laboratory Accreditation Program (LELAP/NELAP) accreditation for the

determination of particulate matter and trace metals in ambient air. LELAP Certificate #04017

- Accredited reference materials producer—ANSI-ASQ National Accreditation Board (ANAB) accreditation as a reference material producer under ISO Guide 34:2009 for drugs in urine, oral fluid, and serum.
- ANAB Certificate #AR-1984
- In addition, our familiarity and compliance with regulatory requirements, such as GLP and cGMP/GMP, engenders confidence in our analytical data.

### More Information

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## Selected Clients

### Industry and Commercial Clients

- Abbott Laboratories
- Ardelyx, Inc.
- Aronora, Inc.
- Ascend Performance Materials
- Aurecon AMEI Limited
- Biogen
- Boston Scientific Corporation
- Bruce Power – Canada
- Chevron Energy Technology
- Gardenia Blue Interest
- Nestec, Ltd. Switzerland
- Newell Rubbermaid
- Nielsen
- PTC Therapeutics, Inc.
- San-Ei Gen F.F.I., Inc.
- Syngenta Crop Protection
- Talisman Environmental
- The Hershey Company
- U.S. News & World Report

### Colleges and Universities

- Arapahoe Community College
- Colorado State University
- Columbia University
- Duke University
- Georgia Institute of Technology
- Harvard University
- Icahn School of Medicine at Mount Sinai
- Iowa State University
- Johns Hopkins University
- Mississippi State University
- Montana State University
- North Carolina Central University

- North Carolina State University
- NC State Industry Expansion Solutions
- Princeton University
- Purdue University
- Queens College
- St. John's University
- Stanford University
- University of Chicago
- University of Michigan
- University of North Carolina at Chapel Hill
- University of North Carolina System
- University of Nebraska Omaha
- University of Pittsburgh
- University of Southern California
- Virginia Tech
- Wake Forest University

### U.S. Government

- Consumer Financial Protection Bureau
- Department of Agriculture
- Department of Commerce
- Department of Education
- Department of Energy
- Department of Defense
- Department of Health and Human Services
- Department of Homeland Security
- Department of Justice
- Department of State
- Department of the Interior
- Department of Transportation
- U.S. Agency for International Development

### Foundations and Associations

- AANA Foundation
- American Beverage Association
- American Board of Pediatrics
- American Industrial Hygiene Association
- Bill & Melinda Gates Foundation
- CDC Foundation
- Children's Investment Fund Foundation – UK
- Citi Foundation
- City Year, Inc.
- ConnectEd
- Duke University Health System
- Evidence Action
- Fairbanks Foundation
- George Lucas Education Foundation
- Global Alliance for TB Drug Development
- Gordon & Betty Moore Foundation
- Kansas Health Foundation
- Living Cities
- MacArthur Foundation
- MassMEP
- Medtronic Global Health
- NAPE Education Foundation
- National Council on Aging
- North Carolina Chamber
- Patient Teacher Home Visit
- PCORI
- REDF
- Robert Wood Johnson Foundation
- Rockefeller Foundation
- Share Our Strength (SOS)
- The Aspen Institute
- The College Board

- The Education Trust
- The John Merck Fund
- The MITRE Corporation
- The Water Research Foundation
- Walton Family Foundation

### State and Local Governments

- California Governor's Office of Planning and Research
- Florida Department of Health
- North Carolina Division of Adult Correction and Juvenile Justice
- New York City Department of Health
- New York State Department of Environmental Conservation
- State of Louisiana
- State of New York
- Wyoming Water Development Commission

### Multilateral Donors

### and International

### Government Agencies

- Daegu Catholic University Foundation
- Dubai Health Authority
- Department of Foreign Affairs and Trade – Australia
- Environmental Agency – Abu Dhabi
- Imam Abdulrahman Bin Faisal
- Inter-American Development Bank
- The World Bank
- UNICEF – Tanzania

RTI International is an independent, nonprofit research institute dedicated to improving the human condition. Clients rely on us to answer questions that demand an objective and multidisciplinary approach—one that integrates expertise across the social and laboratory sciences, engineering, and international development. We believe in the promise of science, and we are inspired every day to deliver on that promise for the good of people, communities, and businesses around the world. For more information, visit [www.rti.org](http://www.rti.org).



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