

Curriculum Vitae
Sarah Brown Riley, PhD, DABCC, FACB

Personal Information

Saint Louis University School of Medicine
Department of Pathology
Phone: 314-615-0821
Fax: 314-521-1478
Email: rileys@slu.edu

Current Position, Institution and start date

Associate Professor of Pathology
Director, Forensic Toxicology Laboratory
Saint Louis University School of Medicine

2017-present

Education

Postgraduate training:

Postdoctoral Research in Anesthesiology,
Washington University School of Medicine

2009-2011

Clinical Chemistry Fellowship,
Washington University School of Medicine

2009-2011

PhD, Biochemistry and Molecular Biology,
Saint Louis University

2004-2009

Dissertation Title: NADPH in the Stress Response of
Cryptococcus neoformans; defense date 12/18/2008

Mentor: Jennifer Lodge, PhD

BS, Chemistry, University of South Carolina

1999-2003

Previous Professional experience

Assistant Professor of Pediatrics

2013-2016

Assistant Professor of Pathology and Immunology

Instructor of Anesthesiology

Faculty Scholar, Institute of Public Health

Washington University School of Medicine

Medical Director of Ancillary Services and Point of Care

Co-Medical Director of Core Laboratory: Clinical Chemistry

St. Louis Children's Hospital

Instructor of Pediatrics, Washington University School of Medicine

2011-2013

Instructor of Pathology and Immunology,

2011-2013

Washington University School of Medicine

Hospital and Clinical Staff appointments

Director, Clinical Laboratories Quality Program, St. Louis Children's
Hospital

2012-Present

Medical Director, Ancillary Services and Point of Care

St. Louis Children's Hospital

2011-Present

Co-Medical Director, Core Laboratory, St. Louis Children's Hospital

2011-Present

Board Certification and Licensure

American Board of Toxicological Chemistry – Board Eligible

2014

American Board of Clinical Chemistry – Diplomate

2012

Professional Society memberships

American Association of Clinical Chemistry

National Academy of Clinical Biochemistry
Academy of Clinical Laboratory Physicians and Scientists

Honorary Societies, Honors and Awards

The Association for Mass Spectrometry: Applications for the Clinical Laboratory, Laboratory Director Travel Grant (competitive application)	2015
Fellow of the National Academy of Clinical Biochemistry	2013
American Association of Clinical Chemistry Outstanding Speaker Award	2012
Early Career Women Faculty in Medicine and Science Leadership Seminar (competitive application)	2012
Paul E. Strandjord Young Investigator Award, With Distinction Academy of Clinical Laboratory Physicians and Scientists	2011
Chief Fellow in Clinical Chemistry, Department of Pathology and Immunology, Washington University School of Medicine	2010-2011
Alpha Sigma Nu, Saint Louis University	2008
Presidential Graduate Research Assistantship, Saint Louis University	2005

Professional Services

Pediatric Laboratory Utilization Guidance Service (PLUGS) Summit 2017, Continuing Education Committee	2016-Present
American Association of Clinical Chemistry, Critical and Point of Care Testing (AACC CPOCT) Division – Treasurer	2013-2016
Critical and Point of Care Testing (CPOCT) 25 th International Symposium 2014 Planning Committee	2013-2014
American Association of Clinical Chemistry, Critical and Point of Care Testing (AACC CPOCT) Division – Member at Large	2013-2014
WUSM/SLCH Blood Management Working Group	2013-Present
Laboratory Utilization Committee, CHAIR. St. Louis Children's Hospital Go-Team, St. Louis Children's Hospital	2012-Present
Quality and Safety Coordinating Subcommittee, St. Louis Children's Hospital	2012-2015
Pharmaceutical, Diagnostics, and Therapeutics Committee, St. Louis Children's Hospital	2011-Present
<i>Journal of Applied Laboratory Medicine</i> , ad hoc reviewer	
<i>Journal of Cystic Fibrosis</i> , ad hoc reviewer	
<i>Clinical Biochemistry</i> , ad hoc reviewer	
<i>Clinical Chemistry</i> , ad hoc reviewer	
<i>Drug Metabolism and Distribution</i> , ad hoc reviewer	

Current and Past Teaching Responsibilities

Neonatal Pharmacology	2013-Present
Established and directed International Rotation in Laboratory Medicine in Resource Poor Environments, including support for trainee travel and other associated costs	2012-Present
Laboratory Medicine in Resource Poor Environments	2012-Present
Pediatric Clinical Chemistry	2011-Present
Pediatric Toxicology	2011-Present
Mass Spectrometry in the Clinical Laboratory	2011-Present
Cystic Fibrosis	2011-Present

Protégé

Merih Tesfazghi, Clinical Chemistry Fellow

Dr. Tesfazghi is validating point of care tests for use in a mobile lab kit, and the use of drones for specimen transport from remote areas

Mitch McGill, PhD, Clinical Chemistry Fellow

Dr. McGill validated the use of dried blood spots as sample type for therapeutic drug monitoring. This work was presented at the AACC 2016 Annual Meeting.

Khushbu Patel, PhD, Clinical Chemistry Fellow

Dr. Patel validated a mass spectrometric assay for voriconazole for clinical use. She also evaluated an algorithm for genetic testing for cystic fibrosis, work that received the 2015 Richard Marshall Education Award.

Mari DeMarco, PhD, Clinical Chemistry Fellow

Dr. DeMarco evaluated volumes of sweat required for accurate chloride measurement. This work was published in *Clinical Biochemistry*, and received the 2014 Richard Marshall Education Award.

Bridgit Crews, PhD, Clinical Chemistry Fellow

Dr. Crews developed a mass spectrometry assay for measurement of vancomycin measurement for research purposes. This assay was used to evaluate tissue distribution of vancomycin, results of which were presented in several abstracts.

John Mitsios, PhD, Clinical Chemistry Fellow

Dr. Mitsios validated CSF as a sample type of hCH and AFP. This work was published in *Clinical Chemistry*.

Rob Nerenz, PhD, Clinical Chemistry Fellow

Dr. Nerenz assisted with a pilot study evaluating the utility of doctoral-level review of reference lab testing. The study demonstrated a \$4000/week savings and was used as the basis for a hospital-wide reference lab testing policy.

Vanderlene Kung, MD, PhD, Anatomic Pathology Fellow

Dr. Kung participated in a 2-week International Rotation in Laboratory Medicine in Resource Poor Environments. Dr. Kung traveled to Port Plume, Haiti, and studied the prevalence of GI parasites in the community.

Craig Wilen, MD, PhD, Clinical Pathology Fellow

Dr. Wilen participated in a 2-week International Rotation in Laboratory Medicine in Resource Poor Environments. Dr. Wilen established HIV and malaria screening in a community outpatient facility in Jimani, Dominican Republic. This was presented at the 2014 Washington University Global Health Symposium.

Jonna Kemper, PharmD, Pharmacy Resident

Dr. Kemper evaluated a pharmacy in an outpatient facility in Jimani, Dominican Republic. This was presented at the 2014 Washington University Global Health Symposium.

Michael Hsu, MD, PhD, Clinical Pathology Resident

Dr. Hsu participated in a 2-week International Rotation in Laboratory Medicine in Resource Poor Environments. Dr. Hsu established PT, PTT and INR testing at Hospital Bernard Mevs, Port-au-Prince, Haiti.

Laura Hallas, undergraduate student, University of Texas - Austin

Ms. Hallas was part of the 2016 Washington University Institute of Public Health Summer Research in Global Health Program. Ms. Hallas spent the summer of 2016 validating inexpensive rapid tests for inclusion in a mobile laboratory kit to be used by community health workers in Haiti.

Caila Brander, undergraduate student, Washington University in St. Louis

Ms. Brander was a student in the 2014 Washington University Institute of Public Health Summer Research in Global Health Program. Ms. Brander spent 6 weeks in Port Plume, Haiti, collecting demographic and anthropometric data to provide baseline information for a malnutrition and feeding program.

Research Support

Current funding:

Establishment of Anatomic Pathology Services, General Hospital, 2016-2020
Port-au-Prince, Haiti. Funded by the Merieux Foundation, to
Pathologists Overseas. Award Total: \$40,000 USD.

Development of LabPack Mobile Lab Kit for Community Health Workers. 2011
Funded by Washington University School of Medicine, Department
of Pediatrics. Award Total: \$25,000 USD (awarded 2011).

Bibliography

Peer-Reviewed Publications

1. Brown SM, Smith DM, Alt N, Thorpe SR, Baynes JW. Tissue-specific variation in glycation of proteins in diabetes: evidence for a functional role of amadoriase enzymes. *Ann N Y Acad Sci*. 2005;1043:817-23. doi:[10.1196/annals.1333.094](https://doi.org/10.1196/annals.1333.094) PMID:[16037309](https://pubmed.ncbi.nlm.nih.gov/16037309/)
2. Brown SM, Upadhy R, Shoemaker JD, Lodge JK. Isocitrate dehydrogenase is important for nitrosative stress resistance in *Cryptococcus neoformans*, but oxidative stress resistance is not dependent on glucose-6-phosphate dehydrogenase. *Eukaryot Cell*. 2010;9(6):971-80. doi:[10.1128/EC.00271-09](https://doi.org/10.1128/EC.00271-09) PMCID:[PMC2901651](https://pubmed.ncbi.nlm.nih.gov/pmc/PMC2901651/) PMID:[20400467](https://pubmed.ncbi.nlm.nih.gov/20400467/)
3. Dallas J, Brown SM, Hock K, Scott MG, Skrupky LP, Boyle WA 3rd, Kollef MH. Diagnostic utility of plasma procalcitonin for nosocomial pneumonia in the intensive care unit setting. *Respir Care*. 2011;56(4):412-9. doi:[10.4187/respcare.00979](https://doi.org/10.4187/respcare.00979) PMID:[21255510](https://pubmed.ncbi.nlm.nih.gov/21255510/)
4. Fan J, Brown SM, Tu Z, Kharasch ED. Chemical and enzyme-assisted syntheses of norbuprenorphine-3- β -D-glucuronide. *Bioconjug Chem*. 2011;22(4):752-8. doi:[10.1021/bc100550u](https://doi.org/10.1021/bc100550u) PMCID:[PMC3091394](https://pubmed.ncbi.nlm.nih.gov/pmc/PMC3091394/) PMID:[21434652](https://pubmed.ncbi.nlm.nih.gov/21434652/)
5. Brown SM, Holtzman M, Kim T, Kharasch ED. Buprenorphine metabolites, buprenorphine-3-glucuronide and norbuprenorphine-3-glucuronide, are biologically active. *Anesthesiology*. 2011;115(6):1251-60. doi:[10.1097/ALN.0b013e318238fea0](https://doi.org/10.1097/ALN.0b013e318238fea0) PMCID:[PMC3560935](https://pubmed.ncbi.nlm.nih.gov/pmc/PMC3560935/) PMID:[22037640](https://pubmed.ncbi.nlm.nih.gov/22037640/)
6. Brown SM, Campbell SD, Crafford A, Regina KJ, Holtzman MJ, Kharasch ED. P-glycoprotein is a major determinant of norbuprenorphine brain exposure and antinociception. *J Pharmacol Exp Ther*. 2012;343(1):53-61. doi:[10.1124/jpet.112.193433](https://doi.org/10.1124/jpet.112.193433) PMCID:[PMC3464040](https://pubmed.ncbi.nlm.nih.gov/pmc/PMC3464040/) PMID:[22739506](https://pubmed.ncbi.nlm.nih.gov/22739506/)
7. Mitsios JV, McClellan A, Brown S, Gronowski AM. Human chorionic gonadotropin and α -fetoprotein in cerebral spinal fluid: method validation and retrospective review. *Clin Biochem*. 2014;47(7-8):632-5. doi:[10.1016/j.clinbiochem.2014.01.008](https://doi.org/10.1016/j.clinbiochem.2014.01.008) PMID:[24462967](https://pubmed.ncbi.nlm.nih.gov/24462967/)
8. Li F, Guo CJ, Huang CC, Yu G, Brown SM, Xu S, Liu Q. Transient receptor potential A1 activation prolongs isoflurane induction latency and impairs respiratory function in mice. *Anesthesiology*. 2015;122(4):768-75. doi:[10.1097/ALN.0000000000000607](https://doi.org/10.1097/ALN.0000000000000607) PMID:[25646842](https://pubmed.ncbi.nlm.nih.gov/25646842/)
9. DeMarco, ML, Dietzen, DJ, Brown, SM. Sweating the small stuff: adequacy and accuracy in sweat chloride determination. *Clin Biochem*. 2015;48(6):443-448. doi:[10.1016/j.clinbiochem.2014.12.011](https://doi.org/10.1016/j.clinbiochem.2014.12.011) PMID:[25530017](https://pubmed.ncbi.nlm.nih.gov/25530017/)

Invited Publications and Review Articles

CVFormat: Revised 11/08/2011, 3/7/12

(Modified based on input from Credentials Committee, Dean's Staff, Chairs Committee and Faculty Affairs Committee)

1. Brown SM, Campbell LT, Lodge JK. *Cryptococcus neoformans*, a fungus under stress. *Curr Opin Microbiol*. 2007;10(4):320-5. PMID: [PMC2570326](#) PMID: [17707685](#)
2. Andrews D, Brown SM. After the disaster: Sustaining point-of-care testing in a resource-poor environment. *Point of Care*. 2013;12:23-26.
3. Brown SM, Dickerson J. The struggle is real: lab leaders discuss utilization challenges during a 2-day summit *J Am Lab Med*. 2016;1(3):306-309.
4. Brown SM. Monthly Contributor *Lab Med Global Health*. 2016.
5. Patel K, Brown SM, Dietzen DJ. Listening Closely when the Volume is Turned Down: Challenges to Small Volume Testing *Clin Lab News*. 2016.
6. Brown SM, Haymond, S. To fight Zika and other global diseases, developing countries need better clinical laboratories: Editorial <https://222.statnews.com/2016/09/29/global-disease-better-clinical-laboratories/>. 2016.
7. Brown SM. Preventing the next Flint: Interviewed by Julie Kirkwood *Clin Lab News*. 2016;43(11):12-15.

Book Chapters

1. Brown SM. Gamma-glutamyl-transferase. In: Dazmierczak S and Azzazy H, eds. *Diagnostic Enzymology* Berlin/Boston: Walter de Gruyter GmbH; 2014:121-134.
2. Wilen CB, Orner CS, Brown SM. Sustaining point-of-care testing in a resource-limited environment: Experiences in Hispaniola. In: Corbin C and Kost G, eds. *Global Point of Care: Strategies for Disasters, Emergencies, and Public Health Resilience* Washington, DC: AACC Press; 2015:439-443.
3. Brown SM. Public Health and Prevention: Spotlight on Pediatric Laboratory Medicine In: *Advancing Children's Health Through Pediatric Laboratory Medicine: The Unique Healthcare Needs of Children* First ed. Washington, DC: AACC; 2016:pp. 4-5.
4. Brown, SM. Inborn Errors of Metabolism In: Clarke W, eds. *Contemporary Practice in Clinical Chemistry* 3rd ed. Washington, DC: AACC Press; 2016:Chapter 42 pp. 651-663 .
5. Brown, SM, Dickerson J. Pediatric Laboratory Medicine In: Clarke W, eds. *Contemporary Practice in Clinical Chemistry* 3rd ed. Washington, DC: AACC Press; 2016:Chapter 50, pp. 763-769.
6. Jones P, Brown SM. Day to Day Pediatric Clinical Chemistry In: Jones P, Bennett MB, eds. *Pediatric Laboratory Medicine* Columbus, OH: McGraw-Hill; 2016:(in press).
7. Patel K and Brown SM. Point of Care Testing in Pediatrics In: Jones P & Bennett M, eds. *Pediatric Laboratory Medicine* Columbus, OH: McGraw-Hill; 2016:(in press).
8. Schindler EM, Brown SM, Scott M. Blood Gases and Electrolytes In: Brutis, Ashwood, Bruns, eds. *Tietz Textbook of Clinical Chemistry and Molecular Diagnostics* 6th ed. Washington, DC: AACC Press; 2017:(in press).

Web-based Instruction

1. Brown SM: Routine Lipid Testing. Clinical Chemistry Trainee Council – Clinical Pearls of Laboratory Medicine. <http://media.aacc.org/Shows/Pearls/Brown-Lipid1-3-12/player.html> (2012)

Abstracts

1. Brown SM, Smith DM, Bayner J: Tissue specific variation of glycation of proteins in diabetes: evidence for a functional role of amadoriase enzymes. The 8th International Symposium on the Maillard Reaction. August 28 – September 1, 2004, Charleston, SC.
2. Brown SM, Pusateri ME, Missall TM, Lodge JK: Proteomic responses of *Cryptococcus neoformans* to oxidative and nitrosative stresses and identification of post-translational

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- modifications of transaldolase. The 6th International Conference on Cryptococcus and Cryptococcosis, June 24 – 28, 2005, Boston, MA.
3. Brown SM, Shoemaker JD, Lodge JK: Glucose-6-phosphate dehydrogenase and isocitrate dehydrogenase in the oxidative and nitrosative stress defenses of *Cryptococcus neoformans*. The 7th International Conference on Cryptococcus and Cryptococcosis, September 11 – 14, 2008, Nagasaki, Japan.
 4. Dallas JK, Brown SM, Scott MG, Kollef MH: Diagnostic utility of plasma procalcitonin in nosocomial pneumonia in the ICU setting. Annual Meeting of the Association of Clinical Chemistry, July 25 – 29, 2010, Anaheim, CA.
 5. Richards J, York J, Hoerr J, Brown SM, Hansen R, Allen J, Doctor A, Spinella P: Blood conservation – Improving care in pediatric intensive care nursing. Health Sciences Research Day, University of Missouri. November 2012, Columbia, MO. Accepted as poster.
 6. Brown SM: Dissecting buprenorphine pharmacology *in vivo*. First Annual Anesthesia Academic Evening, Washington University School of Medicine, 2013, St. Louis, MO. Accepted as poster.
 7. Hoerr J, York J, Silva M, Proctor E, Richards J, Hansen R, Allen J, Brown SM, Jaffe J, Valentine S, Doctor A, Spinella P: PICU blood conservation program: Implementation planning of practice change. National Association of Pediatric Nurse Practitioners. April 2013, Orlando, FL.
 8. York JL, Hoerr JA, Proctor E, Richards J, Hansen R, Allen J, Brown SM, Jaffe J, Doctor A, Spinella PC: Blood conservation in a pediatric intensive care unit: documenting need, development, and implementation. American Academy of Pediatrics National Conference and Exhibition, October 26-29, 2013, Orlando, FL. Accepted as poster.
 9. DeMarco ML, Dietzen D, Brown SM: Sweating the small stuff: determinants of adequacy and accuracy in sweat chloride determination. Presented at the AACC Annual Meeting, July 28 – August 1, 2013, Houston, TX. Accepted as oral presentation.
 10. Wilen CB, Brown SM: The challenges of establishing a clinical laboratory in Jimani, Dominican Republic. 2nd Annual Global Health and Infectious Disease Conference, March 28, 2014, Washington University School of Medicine, St. Louis, MO. Accepted as poster.
 11. Kemper J, Brown S, Rogers C: Pharmaceutical related challenges in developing countries. 2nd Annual Global Health and Infectious Disease Conference, March 28, 2014, Washington University School of Medicine, St. Louis, MO. Accepted as poster.
 12. Anderson M, Shepard M, Poe J, Moore J, Brown SM: Evaluation of a Point of Care Chemistry Device for Use in Cardiopulmonary Bypass and Extracorporeal Membrane Oxygenation. XXIII International Congress of Pediatric Laboratory Medicine, June 20-22, 2014, Istanbul, Turkey. Accepted as poster.
 13. Gregory J, Smith J, Brown SM, Elward A, Luhman SJ. Vancomycin tissue distribution during posterior spinal fusions in neuromuscular scoliosis. 50th Annual Meeting of the Scoliosis Research Society, September 30-September, 2015, Minneapolis, MN. Accepted as oral presentation.

Supplemental Material

Invited Speaker: York Medical Center Grand Rounds, York, PA: “Lab Medicine in Resource Poor Environments” September 22, 2016	2016
Invited Speaker: AACC Capital Section Meeting, Baltimore, MD, “Approaches to Lab Test Utilization, the St. Louis Children’s Hospital Experience” September 21, 2016	2016
Invited Speaker: Southwestern Association of Clinical Microbiology (SWACM) 2016 Annual Meeting, Ft. Worth, TX, “Approached to Lab Test Utilization, the St. Louis Children’s Hospital Experience” September 8, 2016	2016
Moderator: American Association of Clinical Chemistry 68 th Annual Meeting, Philadelphia, PA, “Diagnosing Diarrhea Around the Globe” August 2, 2016	2016
Invited Speaker: American Association of Clinical Chemistry 68 th Annual Meeting, Philadelphia, PA, “Oh Crap! Diarrhea in the Developing World” August 2, 2016	2016

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Invited Speaker: Pediatric Laboratory Utilization Guidance Service (PLUGS) Summit Annual Meeting, Seattle, WA, "Approaches to Lab Test Utilization, the St. Louis Children's Hospital Experience" June 15, 2016	2016
Invited Speaker: American Society of Microbiology 2015 Annual Meeting, New Orleans, LA, "Applications of Mass Spectrometry to Microbiology: Pharmacotherapy and Beyond"	2015
Invited Speaker: Forum for International Health and Tropical Medicine 2015 Hunger Banquet Washington University School of Medicine, "Laboratories in Global Health"	2015
Invited Speaker: "Opportunities for PhD Trainees in Clinical Chemistry", Saint Louis University Department of Pharmacology and Physiology.	2014
Invited Speaker: "Laboratory Medicine and Global Health," Department of Internal Medicine Washington University School of Medicine.	2014
Moderator: American Association of Clinical Chemistry 65 th Annual Meeting, Houston, TX, Symposium "Laboratory Medicine in the Developing World" 2013	2013
AACC Annual Meeting Brown Bag Session "Demystifying Metabolic Testing: Acylcarnitine Screens" (Winner of AACC Outstanding Speaker Award 2012)	2012
Young Investigator: 2011 Meeting of the Academy of Laboratory Physicians and Scientists, St. Louis, MO, "Two Glucuronide Metabolites of Buprenorphine are Biologically Active"	2011
Young Investigator: 2010 Meeting of the Academy of Laboratory Physicians and Scientists, Nashville, TN, "Diagnostic Utility of Plasma Procalcitonin of Nosocomial Pneumonia in the ICU setting".	2010
Invited Speaker: 7 th International Conference of Cryptococcus and Cryptococcosis, Nagasaki, Japan, "The Proteomic Response (or Lack Thereof???) of <i>Cryptococcus neoformans</i> to Oxidative Stress."	2008

Community Service/Civic Activities

Co-Director of Clinical Pathology Programs, Pathologists Overseas, Inc. Pathologists Overseas, Inc. is a non-profit organization dedicated to developing capacity for anatomic pathology and laboratory medicine worldwide.	2014-Present
Tutor, Rebirth St. Louis Tutor members of the East St. Louis High School football team on ACT prep.	2013-Present
Featured in Seattle Children's Hospital/AACC Webinar "Career Essentials: 10 Ways for Chemists, Techs, and Other Laboratory Workers to Increase Their Value." This webinar provided ways for chemists, techs, and other laboratory workers to evaluate themselves and set goals. It also discussed ways in which laboratorians can expand their expertise and increase their visibility within the workplace. Examples of methods used by others in the field were given.	2012
Hospital Bernard Mevs/Project Medishare, Port-au-Prince, Haiti. Made several trips to this hospital in 2012, including a trip with a clinical pathology resident. I was involved in setting up and validating new testing platforms and teaching the Haitian laboratory staff quality management.	2012
Chadasha Hospital, Jimani, Dominican Republic Served as a medical director of the Chadasha Hospital in Jimani, Dominican Republic. In collaboration with the International Children's Heart Foundation, Haitian children with congenital heart defects are treated at Chadasha	2012-2014

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Hospital. I was involved in establishing the laboratory, developed the testing capabilities, and taught the Dominican laboratory staff.

Featured in AACC Society of Young Clinical Laboratorians (SYCL) Podcast "SYCL360 Sharing Your Knowledge: A SYCL Member's Experience Volunteering" October 2012

Consulting

Owner, Laboratory Consultant Solutions, LLC 2014-Present
Laboratory Consultant Solutions, LLC is a company that helps connect laboratories with doctoral-level consultation on method development, method validation, and quality management programs.

Technical Consultant for In-House Labs, LLC 2013-Present
Provide technical oversight of development and validation of customized LC-MS/MS assays for drug monitoring. Provide assistance with interpretation of analytical data when needed.