

PATHways

NEWS & NOTES ■ FALL 2015

DEPARTMENT OF PATHOLOGY & LABORATORY MEDICINE

The University of Vermont College of Medicine ■ The University of Vermont Medical Center



Russell Tracy, Ph.D. and research on risk factors for myocardial infarction and atherosclerosis

ALSO FEATURED: GI Pathologists ■ Microscopy Outreach ■ Publications & Grants ■ Clinical News



The University of Vermont
COLLEGE OF MEDICINE

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University of Vermont
MEDICAL CENTER

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PATHways

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Letter from the chair

The members of our Department of Pathology and Laboratory Medicine have had a great year. We are moving forward with our Strategic Plan with initiatives across Our People, High Value Patient Care, Living Our Academic Mission, and Supporting the Mission. We are active in clinical care, teaching, research, and local, national and international service. One of the most exciting advances over the past several years has been to coalesce as one Department, which has been evidenced by our Grand Rounds combining research and clinical talks attended by all faculty and trainees, and by the growing number of collaborative research projects between our clinical and research faculty. This inaugural issue of our newsletter, PATHways, highlights many of our accomplishments over the past year, a few longstanding projects, such as Project MICRO and the translational research of our Laboratory for Clinical Biochemistry Research, as well as updates on some of our new projects, such as our Genomic Medicine Program and our Pathology Student Fellowship Endowment. I am very proud of all our accomplishments, and very pleased to share some of these through this Newsletter.



Debra G.B. Leonard, M.D., Ph.D.
Chair and Professor of Pathology & Laboratory Medicine

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PATHOLOGY & LABORATORY MEDICINE at-a-glance

46 Faculty	14 Volunteer Faculty
32 Clinical Scholar Pathway	15 Residents
6 Tenure Pathway	3 Fellows
7 Research Scholar Pathway	418 Staff
1 Education Scholar Pathway	\$9,385,604 Total Grant Support Awarded in FY '14



The Department of Pathology & Laboratory Medicine, 2015 faculty, residents, and clinical fellows.

Bench to Bedside: Translational Research at the LCBR

BY MARGARET DOYLE, PH.D.

Bench to bedside is the catchphrase frequently used in research to justify the ultimate goal of basic research, which is to improve the health of the people we serve. But in the Department of Pathology and Laboratory Medicine at the University of Vermont, these are more than just words. Translating research findings to clinical practice is central to the goal of the Laboratory of Clinical Biochemistry Research, or LCBR, led by **RUSSELL TRACY, Ph.D.** Located in UVM research facilities in Colchester, VT, the LCBR

group of over 30 people serves as a core laboratory for national clinical population-based studies. The function of the laboratory is not just to perform assays for these studies, but to offer the expertise required to implement these studies from inception through analysis and publication. From this collaborative work over decades, the LCBR is home to a biorepository of more than two million samples from over 60,000 research participants. The LCBR research focuses on chronic diseases including cardiovascular disease,

lung diseases, aging, diabetes, HIV, and trauma.

How does research translate from bench to bedside?

One of the main goals of the LCBR is biomarker discovery. Working with large cohort studies, samples (blood, urine, and/or tissues) are collected and stored over time from volunteers, as well as demographic and pertinent medical information (depending on study protocols). These samples are analyzed for



Greg Sharp, M.D., Director of Chemistry in the Department of Pathology and Laboratory Medicine at the UVM Medical Center.



Russell Tracy, Ph.D., Laboratory of Clinical Biochemistry Research, talking with LCBR staff member Cheryl Powden.

potential biomarkers that may be better for prediction, diagnosis or staging of disease compared to standard methods. The options for potential biomarkers are extensive and continuously growing, and many biomarkers are discovered by the basic science research performed in the LCBR. For example, recent work on the role of adaptive immune cells in preclinical atherosclerosis evolved from basic mouse model research performed in the laboratory of Dr. Sally Huber in the LCBR.


One Success Story

One success story for bench to bedside translation is C-reactive protein (CRP). CRP is an acute phase reactant protein, whose levels increase substantially in response to infection or tissue injury. Laboratory tests for CRP have been in clinical use for

years, but CRP values for healthy individuals were not available. This lack of normal values was because the early methods for measuring CRP were not sensitive enough to detect the low CRP levels in healthy individuals. The development of a highly sensitive CRP assay by the LCBR in the late 1990s allowed measurement of CRP levels in a healthy population. As part of the assay validation process, biovariability studies included repeated CRP measurements on the same individuals over months which demonstrated that although an individual's CRP level may vary over time, the average levels between individuals was quite different. This sensitive assay (hs-CRP) was used in population studies to examine its predictive ability alone, or in addition to current risk predictors, in a wide array of clinical and preclinical

disease states, such as coronary heart disease, atherosclerosis, stroke, cognitive disorders, and HIV.

Into the Clinic

Today, the hs-CRP is available in most clinical laboratories. According to **GREG SHARP, M.D.**, Director of Chemistry in the Department of Pathology and Laboratory Medicine at the UVM Medical Center, the assay is routinely and generally used to assess risk of future cardiovascular disease in those populations that are borderline with current risk predictors. The addition of hs-CRP can lead to more aggressive treatment for individuals with higher cardiovascular disease risk, who traditionally would have been followed with a "wait and see" approach. This is just one story of the bench to bedside successes of the LCBR research team. 

Division Highlights


Our GI Pathologists: Advancing Cancer Screening

By REBECCA WILCOX, M.D.

Lynch Syndrome, also known as hereditary non-polyposis colorectal cancer or HNPCC, is the most common hereditary colon cancer syndrome, accounting for 3-6% of the total colorectal cancer burden. According to international criteria and recent guidelines for HNPCC diagnosis, screening for Lynch Syndrome should be performed in all newly diagnosed colorectal cancer patients to ensure the proper medical management for the individual patient as well as their relatives.

Microsatellite instability (MSI) is a hallmark of HNPCC, and results from the loss of DNA mismatch repair protein function in the cancer cells, which allows the size of DNA microsatellite

repeats to change with DNA replication. Patients with MSI have lost the DNA mismatch repair function either due to a germline mutation in one of several DNA mismatch repair genes (e.g., *MLH1*, *MSH2*, *PMS2*, or *MSH6*), or silencing of one of these genes through hypermethylation of the gene promoter. Patients with MSI due to a germline mutation in one of the DNA mismatch repair genes have Lynch Syndrome. Therefore, to screen for loss of one of the DNA mismatch repair proteins in a patient's colon cancer, we look for loss of mismatch repair protein expression in the tumor by immunohistochemistry compared to the expression in the adjacent normal epithelium.

Effective October 2014, the GI Pathology team at the University of Vermont Medical Center began performing Universal Screening for Lynch Syndrome on all colon biopsy specimens with colorectal cancer. Although Universal Screening was established at our institution in 2012, we only tested colon cancer resection specimens, and not biopsy specimens. This change to broader screening allows for important clinical decisions to be made prior to surgical resection of the colon cancer. Universal Lynch Screening is a direct partnership with **WENDY MCKINNON, M.S.**, genetic counselor for the University of Vermont Cancer Center Familial Cancer Program. 



Medical students helping kids during Reunion 2015 using Microscopy Imaging Center materials.

Welcomes & Farewells

WELCOME

Eric Barker-Rowe – Cytology Prep Tech
Amy Bourgeois – Resident Program Administrator
Alexandra Cline – Laboratory Assistant
Kristin Day – Pathologist Assistant
Victoria Greenough – Medical Lab Scientist I
Gopal Gurung – Histology Lab Assistant
Ashley Newell, M.L.S. (ASCP) CM – Point of Care Testing Specialist
Joseph Young, B.S. – Cytology Per Diem Lab Assistant

FACULTY

Juli-Anne Gardner, M.D. – Cytogenetics Pathologist
Laura Schneid, M.D. – Per Diem Pathologist
Michelle Yang, M.D. – G.I. Pathologist
Katie Devitt, M.D. – Hematopathologist
Christina Wassel, Ph.D. – Molecular Epidemiologist

MICROBIOLOGY

Anthony Macuga, M.L.S.
Tyler Sanville, M.L.S.

PHLEBOTOMISTS

Alex Bowen
Ajila Fajic
Armin Harambasic
Whitney Fenton
Hannah Smith
Jed Tague
Logan Volpe

RESEARCH TECHNICIANS

Brian Lynch
Megan McGill
Rebecca Mulheron
Julia Slessova

SPECIMEN RECEIVING

Zac Brown
Cristine Lanoue
Megan Mitchell

FAREWELL

DEPARTURES

Rebecca Merriam-Stelfox – Cytopathology Prep Tech

Specimen Receiving

Hayley Contois
Vanessa Crain
Paulina Mei
Sam Parker
Dayna Randall

RETIREMENTS

Abdel Elhosseiny, M.D.
Wendy Haput – Microbiology Assistant
Laura Fleming – Pathologist Assistant
Jane Murray – Resident Program Coordinator
Sue O'Brien – Chemistry Technician
Anthony Quinn – Research Technician

UVM Microscopy Imaging Center Outreach

By DOUGLAS TAATJES, Ph.D.


“Project MICRO was wicked awesome!” exclaims one of the students participating in a Project MICRO event held by **JAN SCHWARZ** from the Department of Pathology and Laboratory Medicine at the University of Vermont. In 1999, Jan Schwarz and **DOUG TAATJES, Ph.D.**, from the UVM Microscopy Imaging Center (MIC) got one of the early Project MICRO Program Kits to “try out” in Vermont, and over the past 16 years, have shared microscopic wonders with over 7,000 children and hundreds of adults.

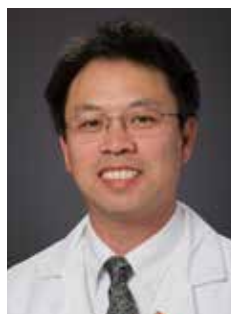
Project MICRO was developed by the Microscopy Society of America

in collaboration with experienced science educators at the Lawrence Hall of Science at the University of California at Berkeley. The goal was to bring microscopes and teaching materials to middle school students nationwide.

For a Project MICRO event, the UVM MIC team sets up a series of activity stations that draw the intrigue and interest of students. The different stations allow students to compare sand samples from different geographic locations, observe a variety of fabrics to determine how each has been made, compare shapes, textures, and colors of flowers and leaves, study structures of dried

insects, and explore the minute inhabitants of pond water. “Who knew that all those tiny animals could live inside a few drops of water?” At the conclusion of each microscopic festival, the teachers are given activities for their classes to continue their explorations.

We are opening the door to science through visually exciting exploration of the microscopic world. Many thanks to Jan and her team for developing our future scientists in Vermont! If you are interested in having Project MICRO at your child's school, contact Jan Schwarz at janet.schwarz@med.uvm.edu. 



Mark Fung, M.D., Ph.D.



Michael Lewis, M.D.

Promotions

MARLEM AYALA to Laboratory Assistant II

MARK FUNG, M.D., Ph.D., to Professor

ANDREW GOODWIN, M.D., to Associate Professor

MICHAEL LEWIS, M.D., to Laboratory Medicine Division Chief as of October 1, 2015

LISA MALLABAR went through basic Specimen Receiving Training Program and was promoted to Laboratory Assistant II.

REBECCA WILCOX, M.D., to Associate Professor



Rebecca Wilcox, M.D.



Deborah Cook, M.D.

Awards/Recognition

DEBORAH COOK, M.D., was appointed Connections Course Director

DON DUKETTE received the UVMVC Vision Award

LIN KRISTIENSEN, M.T. (ASCP) received the Mary Breen Award

DEBRA LEONARD, M.D., Ph.D., will receive the College of American Pathologists' Lifetime Achievement Award at the annual meeting in Nashville, Tenn., in October 2015

REBECCA WILCOX, M.D., and **TAMARA WILLIAMS, Ph.D.**, were named UVM College of Medicine 2015 Frymoyer Scholars

CHRISTINA WOJEWODA, M.D., was chosen as one of ASCP's 40 Under 40

WHO KNEW?

MISS VERMONT, **ALAYNA WESTCOM**, is a Medical Laboratory Scientist in the Department of Pathology and Laboratory Medicine at the University of Vermont Medical Center. Her platform is success through science, technology, engineering and mathematics (STEM) and she brought that all the way to the Miss America pageant, a leading national scholarship program for young women. In her spare time, between two jobs and representing Vermont, Miss Westcom is planning to deliver STEM presentations, like how to make elephant toothpaste, to 251 Vermont cities and towns. Her goal is to show children at an early age that science is fun. She loves to garden, but growing and canning her own food is more than a hobby. "It's important to know where your food comes from," she explains. No coffee for her; ice water is what keeps her going. A self-described nerdy child who loved middle school science class and the physics of amusement park rides, Miss Vermont is using her prize money to prepare for medical school to become a medical examiner.



Publication Highlights

KELLY BUTNOR, M.D.

Squamous Cell Carcinoma, in: *WHO Classification of Tumours of the Lung, Pleura, Thymus and Heart, 4th ed.*, (Travis WD, Brambilla E, Burke AL, Marx A, Nicholson AG, eds.). Tsao M-S, Brambilla E, Nicholson AG, Butnor KJ, Caporaso NE, Chen G, Chou T-Y, Devesa SS, Hainaut P, Jen J, Jett J, Ladanyi M, Meyerson M, Naidich D, Noguchi M, Powell CA, Rami-Porta R, Rekhman N, Roggli V, Takano A, Thunnissen E, Travis WD, van Schil P, Wistuba II.

Basaloid squamous cell carcinoma, in: *WHO Classification of Tumours of the Lung, Pleura, Thymus and Heart, 4th ed.*, (Travis WD, Brambilla E, Burke AL, Marx A, Nicholson AG, eds.). Brambilla E, Lantuejoul S, Nicholson AG, Butnor KJ, Caporaso NE, Chen G, Chou T-Y, Devesa SS, Geisinger K, Hainaut P, Jen J, Jett J, Ladanyi M, Meyerson M, Naidich D, Powell CA, Rami-Porta R, Roggli V, Takano A, Tsao M-S, van Schil P, Wistuba II.

DEBORAH COOK, M.D.

Immunofluorescence, in: *Histopathology: Methods and Protocols (Methods in Molecular Biology)*, Christina E. Day, ed. Humana Press, USA (Springer publishing group).

JAMES DEKAY, M.D. AND MARYAM ZENALI, M.D.

Molecular analysis of c-Met gene mutations and the correlation with medical status among different cancer patients. *Oncoscience*. 2015 May 14;2(5):533-41.

MARGARET DOYLE, PH.D.

Recent findings of long-chain n-3 polyunsaturated fatty acids (LCn-3 PUFAs) on atherosclerosis and coronary heart disease (CHD) contrasting studies in Western countries to Japan. Sekikawa A, Doyle MF, Kuller LH. *Trends Cardiovasc Med*. 2015 Mar 6. pii: S1050-1738(15)00074-2. doi: 10.1016/j.tcm.2015.03.001.

MARK EVANS, PH.D.

Human papillomavirus type distribution in invasive cervical cancers from Madhya Pradesh: implications for vaccination programs in central India. Munjal K, Adamson CS, Rajendran V, Nandedkar S, Cooper K, Evans MF. *Int J Gynecol Pathol*. 2014 Sep; 33(5):531-6.

MARK FUNG, M.D., PH.D.

Using HLA typing to support patients with cancer. Fung MK, and Benson K. 2015 *Cancer Control* 22:79-86.

Platelet transfusion: a clinical practice guideline from the AABB. Kaufman RM, Djulbegovic B, Gernsheimer T, Kleinman S, Tinmouth AT, Capocelli KE, Cipolle MD, Cohn CS, Fung MK, Grossman BJ, Mintz PD, Sesok-Pizzini DA, Shander A, Stack GE, Webert KE, Weinstein R, Welch BG, Whitman GJ, Wong EC, Tobian AR. 2015. *Annals of Internal Medicine* 162: 205-13.

DEBRA LEONARD, M.D., PH.D.

The Cancer Genomics Resource List 2014. Zutter M, Bloom KE, Cheng L, Hagemann IS, Kaufman JH, Krasinskas AM, Lazar AJ, Leonard DG, Lindeman NI, Moyer AM, Nikiforova MN, Nowak JA, Pfeifer JD, Sepulveda AR, Willis JE, Yohe SL. *Arch Pathol Lab Med* Dec 01 2015; 139(8): 989-1008.

ARTI SHUKLA, PH.D.

CREB-induced inflammation is important for malignant mesothelioma growth. Westbom C, Shukla A, Macpherson M, Yasewicz EC, Miller JM, Beuschel SL, Steel C, Pass HI, Vacek PM, Shukla A. *American Journal of Pathology* 2014; 184: 2816-27.

NIKOLETTA SIDIROPOULOS, M.D., PH.D.

Circulating tumor cells in hepatocellular carcinoma: a pilot study of detection, enumeration, and next-generation sequencing in cases and controls. Kelley RK, Magbanua MJM, Butler TM, Collisson EA, Hwang J, Sidirooulos N, Evason K, McWhirter RM, Hameed B, Wayne EM, Yao FY, Venook AP, Park JW. *BMC Cancer*. 2015; 15: 206. doi: 10.1186/s12885-015-1195-z.

NANCY SWORDS-JENNY, PH.D.

Metabolic syndrome, C-reactive protein, and mortality in U.S. Blacks and Whites: The Reasons for Geographic and Racial Differences in Stroke (REGARDS) Study. Suzuki T, Voeks J, Zakai NA, Jenny NS, Brown TM, Safford MM, LeWinter M, Howard G, Cushman M. *Diabetes Care*. 2014; 37:2284-2290.

Lipoprotein-associated phospholipase A2 and risk of incident cardiovascular disease in a multi-ethnic cohort: The Multi-Ethnic Study of Atherosclerosis. Garg PK, McClelland RL, Jenny NS, Criqui MH, Greenland P, Rosenson RS, Siscovick DS, Jorgensen N, Cushman M. *Atherosclerosis*. 2015;241:176-182.

DOUGLAS TAATJES, PH.D.

NanoCellBiology – Multimodal Imaging in Biology & Medicine, Jena B, Taatjes DJ. (2014) Pan Stanford Publishing Ltd., Singapore.

RUSSELL TRACY, PH.D.

Loss-of-function mutations in apoc3, triglycerides, and coronary disease. Triglyceride and Hdl. Working Group of the Exome Sequencing Project NHLBI. *New England Journal of Medicine* 2014;371(1):22-31.

Inactivating mutations in npc111 and protection from coronary heart disease. Myocardial Infarction Genetics Consortium I. *New England Journal of Medicine* 2014;371:2072-2082.

SUZANNE TUCKER, M.D.

Hyaline droplets in kupffer cells: a novel diagnostic clue for autoimmune hepatitis. Tucker SM, Jonas MM, Perez-Atayde AR. *American Journal of Surgical Pathology*. 2015;39(6):772-8.

Research News

Publication Highlights (continued)

BRENDA WATERS, M.D.

Delayed HHV-6 encephalitis in an allogeneic stem cell transplant patient. O'Toole J, Ades S, Waters B, Agarwal Z, Lamba G. *Leukemia and Lymphoma* 2015;Feb 11:1-2.

DONALD WEAVER, M.D.

Diagnostic Concordance Among Pathologists Interpreting Breast Biopsy Specimens. Elmore JG, Longton GM, Carney PA, Geller BM, Onega T, Tosteson ANA, Nelson HD, Pepe MS, Allison KH, Schnitt SJ, O'Malley FP, Weaver DL. *Journal of the American Medical Association* 2015;313:1122-1132.

Trends in breast biopsy pathology diagnoses among women undergoing mammography in the United States: a report from the Breast Cancer Surveillance Consortium. Allison KH, Abraham LA, Weaver DL, Tosteson ANA, Nelson HD, Onega T, Geller BM, Kerlikowske K, Carney PA, Ichikawa LE, Buist DSM, Elmore JG. *Cancer* 2015; 121:1369-78. Epub 2015 Jan 20.

Glutaredoxin Patents for Treatment of Pulmonary Fibrosis

In 2014, **YVONNE JANSEN-HEININGER, Ph.D.**, a Professor in the Department who works in the area of Redox Biology and Pathology, received two patents developed through her research on glutaredoxin. Dr. Janssen-Heininger and her team, including Assistant Professor **VIKAS ANATHY, Ph.D.**, discovered and patented the use of this oxidant-controlling enzyme as a treatment for patients with lung fibrosis and other diseases. The second patent covers a new method to detect certain forms of oxidized proteins in tissues, which has potential diagnostic utility. These patented discoveries are being further developed for clinical use through a new R43/44 SBIR Fast Track I/II grant in collaboration with Celdara Medical entitled: "Preclinical development of inhalable glutaredoxin-1 for the treatment of IPF." The goals of this study are to develop a dry powder formulation of mammalian glutaredoxin-1 (Grx1), an enzyme implicated in pulmonary fibrosis; to confirm the efficacy of the murine variant in murine models of pulmonary fibrosis; and to complete IND-enabling GLP safety and toxicity studies for the human Grx1 dry powder particles (ultimate clinical product) in rats and monkeys.



Yvonne Janssen-Heininger, Ph.D.



Vikas Anathy, Ph.D.

New Grants in 2014 – 2015

Principal Investigator	Project Title	Sponsor Name
Vikas Anathy, Ph.D.	Endoplasmic Reticulum Stress Signaling in Allergen-induced Airway Remodeling	Asthma and Allergy Foundation of America
Vikas Anathy, Ph.D.	Endoplasmic Reticulum Stress Signaling in Allergen-induced Airway Remodeling	National Heart, Lung, and Blood Institute/NIH/DHHS
Vikas Anathy, Ph.D.	Influenza Virus Hijacks Host Cell Unfolded Protein Response	Francis (Parker B.) Foundation
Mark Evans, Ph.D.	In Situ Hybridization Signal Patterns as Markers of Cervical Neoplasia Grade and Lesion Progression	VCC/LCCRO Pilot Award
Yvonne Janssen-Heininger, Ph.D.	Evaluation of the Impact of 9, 10-Mixed Isomer of CXA-10 on Existing Pulmonary Fibrosis	Complexa, Inc.
Nancy Jenny, Ph.D.	Defining a Comprehensive Reference Profile of Circulating Human Extracellular DNA	University of California, San Francisco
Nancy Jenny, Ph.D.	Mediators of Atherosclerosis in South Asians in America	University of California, San Francisco
David McMillan, Ph.D.	GSTP1-Mediated Fas S-Glutathionylation, Apoptosis and Lung Fibrosis	National Heart, Lung, and Blood Institute/NIH/DHHS
Arti Shukla, Ph.D.	Exosomes in Development and Therapy of Malignant Mesothelioma	Department of Defense
Russell Tracy, Ph.D.	Cardiovascular Health Study (CHS) – Core Support Renewal	University of Washington
Russell Tracy, Ph.D.	Immune Function and the Risk of CVD among HIV Infected and Uninfected Veterans	Vanderbilt University
Russell Tracy, Ph.D.	JHS/AHA Cardiovascular Genome Phenome Study	University of Mississippi Medical Center
Russell Tracy, Ph.D.	Role of Innate Immunity in HIV Related Vascular Disease: Biomarkers and Mechanisms	Albert Einstein College of Medicine at Yeshiva University
Russell Tracy, Ph.D.	T-cell Subsets as Risk Factors for CVD in CHS and Mesa	University of Washington
Russell Tracy, Ph.D.	Targeting Hypercoagulation to Reduce Inflammation in Treated HIV Disease	Minneapolis Foundation
Adrianus van der Velden, Ph.D.	Investigation of the Pathophysiologic Associations of GSTP1 in Emphysema and Lung Cancer	VCC/LCCRO Pilot Award
Jill Warrington, M.D., Ph.D.	Reducing Unnecessary Laboratory Testing in Low-risk Surgical Candidates	Vermont Medical Society (VMS) Education and Research Foundation, Inc.



The Future of Medicine: How Precision Medicine is Revolutionizing Healthcare

Less than a decade ago, Genomic Medicine was an aspirational concept in the health care community. Today, we are planning a Genomic Medicine Program at the University of Vermont Medical Center. While there has been an explosion of genomics in the research realm, genomic technologies are crossing over into clinical applications. Next generation sequencing (NGS) technology can be considered a fundamental technology permitting scalable genomic testing in the clinical laboratory. While the Department is awaiting submission and approval of a Certificate of Need for the proposed Genomic Medicine Program, the Molecular Pathology Laboratory of the Department is validating a custom-designed targeted gene panel for solid tumors that will be performed using NGS technology. The molecular pathology team is diligently working on building and instituting this new technology and the cancer care pathway to ensure the appropriate use of this new testing by the Fall of 2015.

Nikoletta Sidiropoulos, M.D.
Director of Molecular Pathology



From the Lab: the UVM Medical Center Clinical Laboratory Receives Accreditation from College of American Pathologists

We are proud to share that the Department of Pathology and Laboratory Medicine received re-accreditation in September 2014 from the College of American Pathologists (CAP). CAP accreditation is considered one of the best and most rigorous CLIA accreditation pathways. Twelve inspectors spent two days performing the inspection, and in their summary, they offered many positive comments about our clinical laboratories. Seventy to eighty percent of all diagnoses and decisions in medicine rely on laboratory results. Approximately 2.7 million clinical laboratory tests are performed at the University of Vermont Medical Center each year. From the time a medical provider orders a test, many steps must occur quickly and properly to ensure the result is accurate and timely. Our Laboratory exceeds the standards set by numerous accrediting agencies. Our committed staff members are dedicated to providing accurate and timely test results that contribute to the health and well-being of all the patients our laboratory serves.

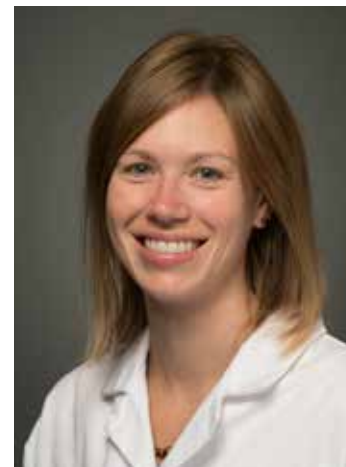
Andrew Goodwin, M.D.
Director of Coagulation



Nonconforming Event Management at UVM Medical Center—January 2015

What is a nonconforming event (NCE)? As the phrase suggests, NCEs are events that do not follow established procedures or applicable regulatory requirements. NCEs have the potential to affect patient safety or the efficiency and effectiveness of workflow or operations. In February 2014, we established an NCE management program as part of our Quality Management System. Any event that deviates from established protocols is documented electronically. Entries are categorized by event location, type of event, and severity. Tracking and reviewing NCEs allows us to focus our resources on issues that have the greatest impact on improving patient care. Process improvement to remove the cause of NCEs leads to improved quality and patient safety.

Nicole Carney, M.T., (ASCP) M.S.
Clinical Laboratory Quality Officer



Test Utilization Review Update

As of September 2014, Pathology and Laboratory Medicine residents began reviewing orders for referral tests that cost more than \$500 per test. Previously, these expensive tests have not been reviewed. The new review process will support resident education as well as optimize test utilization efforts within the UVM Medical Center. Residents may contact the ordering provider with questions on the purpose of the ordered test or suggestions for alternative testing algorithms. This initiative will encourage referral laboratory testing in an outpatient setting. Testing of unstable specimens will not be delayed by this process.

Christina Wojewoda, M.D.
Director of Microbiology

Education News

Graduating Residents and Fellows

Congratulations to our graduating class of residents and fellows. All six of our graduating residents are pursuing subspecialty fellowships.

Residents

KOSSIVI DANTEY, M.D., Soft Tissue Fellowship and Cytopathology Fellowship, University of Pittsburgh Medical Center

JAMES DEKAY, M.D., Dermatopathology Fellowship, University of Vermont Medical Center

TRICIA MURDOCK, M.D., Gynecologic Pathology Fellowship, Johns Hopkins University

DANIEL OLSEN, M.D., Molecular Genetic Pathology Fellowship and Breast Pathology Fellowship, Mayo Clinic

KANAYO TATSUMI, M.D., Forensic Pathology Fellowship, Office of Chief Medical Examiner (OCME), City of New York Department of Health and Mental Hygiene

KIRSTEN THRELKELD, M.D., Cytopathology Fellowship, University of Vermont Medical Center

Fellows

MARY GUPTA, M.D., Surgical Pathology, Assistant Professor of Medical Education, University of Tennessee Health Science Center College of Medicine in Memphis, TN

SARA BROWNSCHIDLE, M.D., Cytopathology Fellow, Eastern Great Lakes Pathology in Buffalo, NY

GRETCHEN FRIELING, M.D., Dermatopathology Fellow in Boston, MA

New Residents

Our new residents are joining our department from across the country. A special welcome to:

PRAJESH ADHIKARI, M.D., University of Cincinnati College of Medicine

ELAINE AMORESANO, M.D., Rutgers New Jersey Medical School

RYAN COATES, M.D., University of Utah School of Medicine

ANDREW LAMAR, M.D., University of Oklahoma College of Medicine



UVM Pathology Student Fellowship

The pathology student fellowship program is entering its 59th year. **IAN MCDANIELS** recently completed his fellowship year and **LAURIE GRIESINGER** and **RICHARD SMITH** are our two new student fellows.

Graduate Students

JAMES D. NOLIN completed his Ph.D. degree with **YVONNE JANSSEN-HEININGER, Ph.D.** He will be starting his post-doctoral fellowship at the University of Washington, Seattle.

VIKAS ANATHY, Ph.D.

Nicolas Chamberlain (1st year)

YVONNE JANSSEN-HEININGER, Ph.D.

Shi Biao Chia (Wyatt) (1st year)

ARTI SHUKLA, Ph.D.

Phillip Munson (1st year)

Joyce Thompson (4th year)

ALBERT VAN DER VLIET, Ph.D.

Christopher Dustin (1st year)

Robert Bauer (3rd year)

Andrew Little (3rd year)

Faculty Continuing Education

ANDREW GOODWIN, M.D., successfully completed the MBP Advanced Practical Breast Pathology Program sponsored by the CAP.

VALERIE ROGERS, M.T. (ASCP) received her MS in Healthcare Management from Champlain College in May 2015.

◀ Department of Pathology and Laboratory Medicine residents and fellows, 2014-2015.

Pathology Student Fellowship Endowment



Left to Right: Laurie Greisinger (current student fellow), Debra Leonard, M.D., Ph.D. (chair), Rich Smith (current student fellow), William Pendlebury, M.D. (Professor Emeritus), and John Lunde, M.D. (Professor and Director of the Pathology Student Fellowship).

The University of Vermont Pathology Student Fellowship has a very long and rich history. The fellowship was started in 1956 by the Department Chair, Robert Coon, M.D., and has had over 120 fellows in the past 59 years. With the changing economics of healthcare and medical schools, we wanted to assure the sustainability of our Pathology Student Fellowship Program for years to come. Working closely with Meredyth Armitage from the University of Vermont Foundation, we have established the Pathology Student Fellowship Endowment fund to support two to three student fellows for years to come. One very generous gift of \$200K was from our own Emeritus Professor, William Pendlebury, M.D., and one of the student fellows each year will be named the William Ward Pendlebury Fellow. With the gifts to date, the endowment is over \$500,000 and continuing to grow with a goal of \$2M total endowment.



John Lunde, M.D. (left) and William Pendlebury, M.D. (right) at the Pathology Student Fellowship Endowment kickoff celebration.



Meet the **PHYSICIAN-SCIENTIST**

In March 2015, a study by **DONALD WEAVER, M.D.**, entitled “Diagnostic Concordance Among Pathologists Interpreting Breast Biopsy Specimens,” was published in *The Journal of American Medical Association* and was a featured topic on WCAX’s program “The :30.” The study, comparing the consensus diagnosis of a panel of expert breast pathologists to that of 115 pathologists around the country, demonstrated that pathologists who review the same breast biopsy provide different diagnoses in certain cases. While the accuracy of an invasive carcinoma diagnosis is around 97% and accuracy of breast biopsies overall is 93%, in cases of atypical hyperplasia the agreement was only 48%, and the reproducibility of ductal carcinoma in situ was around 80%. This study highlights the need for more research on mechanisms to improve the consensus diagnosis of atypical hyperplasia, and cautions against pursuing aggressive treatment for atypical hyperplasia without a second opinion.