

**DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
2016-2017 ANNUAL REPORT**

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**DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
FACULTY AND TRAINEE ROSTER
2016-2017**

Chair

J. Charles Jennette, M.D., Brinkhous Distinguished Professor and Chair

Vice Chair

Joan M. Taylor, Ph.D., Professor, Vice Chair for Research, Associate Director of the McAllister Heart Institute

Herbert C. Whinna, M.D., Ph.D., Associate Professor, Vice Chair for Clinical Services, Director of McLendon Laboratories and Coagulation Laboratories

Monte S. Willis, M.D., Ph.D., MBA, Professor, Vice Chair for Academic Affairs (Promoted September 11, 2016)

Associate Chair for Administration

Susan P. Evers, M.P.H.

Distinguished Professors

Dwight A. Bellinger, D.V.M., Ph.D. (Fred C. and Lelia B. Owen Distinguished Professor)

Joe W. Grisham, M.D. (Kenan Distinguished Professor, Emeritus)

Nobuyo N. Maeda, Ph.D. (Robert H. Wagner Distinguished Professor)

Marjorie S. Read, Ph.D. (Fred C. & Lelia B. Owen Professor, Emeritus)

Oliver Smithies, D.Phil. (Kay M. & Van L. Weatherspoon Eminent Distinguished Professor) (Deceased January 10, 2017)

Richard R. Tidwell, Ph.D. (Kenan Distinguished Professor) (Retired June 30, 2017)

Professors

Thomas W. Bouldin, M.D.

Frank C. Church, Ph.D.

William B. Coleman, Ph.D.

Leslie G. Dodd, M.D.

Rosann A. Farber, Ph.D.

Craig A. Fletcher, D.V.M, Ph.D. (Promoted November 9, 2016)

William K. Funkhouser, M.D., Ph.D.

Peter H. Gilligan, Ph.D.

Virginia L. Godfrey, D.V.M., Ph.D.

Pamela A. Groben, M.D. (Joined October 12, 2016; Separated June 30, 2017)

Margaret L. Gulley, M.D.

Tracy M. Heenan, D.V.M (Promoted November 1, 2016)

Kathleen A. Kaiser-Rogers, Ph.D.

David G. Kaufman, M.D., Ph.D.

William K. Kaufmann, Ph.D. (Retired June 30, 2017)

Hyung-Suk Kim, Ph.D. (Retired November 30, 2017)

Thomas J. Lawton, M.D. (Separated February 9, 2017)

Christopher P. Mack, Ph.D. (Promoted July 1, 2016)

Susan J. Maygarden, M.D.

Melissa B. Miller, Ph.D.

Shanmugam Nagarajan, Ph.D. (Joined April 17, 2017)
Volker R. Nickleit, M.D., Ph.D.
Judith N. Nielsen, D.V.M.
Howard M. Reisner, Ph.D.
John L. Schmitz, Ph.D.
Harsharan K. Singh, M.D.
Scott V. Smith, M.D.
Leigh B. Thorne, M.D., M.H.S. (Promoted November 9, 2016)
Michael D. Topal, Ph.D.
Cyrus Vaziri, Ph.D.
Karen E. Weck, M.D.
Bernard E. Weissman, Ph.D.
Alisa S. Wolberg, Ph.D. (Promoted July 1, 2016)
John T. Woosley, M.D., Ph.D.
Maimoona A. Zariwala, Ph.D. (Promoted November 9, 2016)

Associate Professors

Jessica K. Booker, Ph.D.
Brian C. Cooley, Ph.D.
Georgette A. Dent, M.D.
George Fedoriw, M.D.
Kevin E. Greene, M.D. (Promoted November 1, 2016)
Susan C. Hadler, M.D., M.S.
Jonathon W. Homeister, M.D., Ph.D.
Peiqi Hu, M.D.
Masao Kakoki, M.D., Ph.D.
Daniel Kenan, M.D., Ph.D. (Separated December 31, 2016)
Mehmet Kesimer, Ph.D.
Ruth A. Lininger, M.D. (Separated September 30, 2016)
C. Ryan Miller, M.D., Ph.D.
Yara A. Park, M.D.
Eizaburo Sasatomi, M.D., Ph.D.
Steven Shipley, D.V.M.
Dimitri G. Trembath, M.D., Ph.D.
Julia W. Whitaker, D.V.M.
David C. Williams, Jr., M.D., Ph.D.
Hong Xiao, M.D.

Assistant Professors

Silvio Antoniak, Ph.D.
Pablo Ariel, Ph.D.
J. Todd Auman, Ph.D.
Victoria Baxter, Ph.D., D.V.M. (Joined October 17, 2016)
Claudia M. Brady, M.H.S.
Johann D. Hertel, M.D.
Nichole L. Korpi-Steiner, Ph.D.
Feng Li, Ph.D.
Jiandong Liu, Ph.D.

Stephanie P. Mathews, M.D.
Marshall A. Mazepa, M.D. (Separated September 30, 2016)
Stephanie Montgomery, D.V.M., Ph.D.
Vincent J. Moylan, Jr., M.S.
Siobhan M. O'Connor, M.D.
Nirali M. Patel, M.D. (Separated June 30, 2017)
Li Qian, Ph.D.
Jay S. Raval, M.D.
Allison Rogala, D.V.M. (Joined August 29, 2016)
Marian A. Rollins-Raval, M.D., M.P.H.
Lori R. Scanga, M.D., Ph.D.
Eric Weimer, Ph.D.
Scott Williams, Ph.D.
Sara Wobker, M.P.H., M.D. (Joined July 1, 2016)
Yang Yang, Ph.D.
Jing Zhang, Ph.D. (Joined May 1, 2017)
Qing Zhang, Ph.D.

Lecturer

Gayle C. McGhee

Instructor

Steven C. Holmes, B.S., M.H.S.
April E. Kemper, M.S., M.H.S.
Tracie L. Massey, P.A.
Andre Phelan, P.A

Clinical Faculty (Medical Examiners)

Michelle Aurelius, M.D.
Sandra C. Bishop-Freeman, Ph.D.
Justin O. Brower, Ph.D.
Nabila Haikal, M.D.
Craig Nelson, M.D.
Deborah L. Radisch, M.D.
Lauren Scott, M.D.
Susan E. Venuti, M.D.
Ruth E. Winecker, Ph.D.

Locum Tenens Faculty

Sue Ann Berend, Ph.D. (Joined 2016)
Grace Lee, MD (Joined October 1, 2016)

Faculty Emeritus

C. Robert Bagnell, Jr., Ph.D.
Stuart A. Bentley, M.D.
John D. Butts, M.D.
John F. Chapman, Dr.P.H.
Myra L. Collins, M.D., Ph.D.

Marila Cordeiro-Stone, Ph.D.
Robert E. Cross, Ph.D.
Frederic G. Dalldorf, M.D.
Cora-Jean S. Edgell, Ph.D.
James D. Folds, Ph.D.
Donald T. Forman, Ph.D.
Joe W. Grisham, M.D.
J. Ed Hall, Ph.D.
Catherine A. Hammett-Stabler, Ph.D.
John E. Hammond, Ph.D.
Susan T. Lord, Ph.D.
Nadia N. Malouf, M.D.
William W. McLendon, M.D.
Nancy H. Nye
James R. Pick, D.V.M.
Marjorie S. Read, Ph.D.
Kinuko I. Suzuki, M.D.

Jointly Appointed Faculty

Diane Armao, M.D. (Radiology)
Gregory Bianchi, M.D. (Urology)
Claire M. Doerschuk, M.D. (Medicine)
Ronald J. Falk, M.D. (Medicine)
Paul Googe, MD (Dermatology) (Joined October 17, 2016)
Ajay Gulati, M.D. (Pediatrics)
Nigel S. Key, M.D., Ch.B. (Medicine)
Nigel Mackman, Ph.D. (Medicine)
Valerie A. Murrach, D.M.D., M.S. (Dentistry)
Timothy C. Nichols, M.D. (Medicine)
Charles M. Perou, Ph.D. (Genetics)
Jonathan Schisler, Ph.D. (Pharmacology)
Darrel W. Stafford, Ph.D. (Biology)
James A. Swenberg, D.V.M., Ph.D. (Environmental Sciences and Engineering)
Melissa Troester, Ph.D., M.P.H. (Epidemiology)
Young E. Whang, M.D., Ph.D. (Medicine)

Adjunct Faculty

Araba N. Afenyi-Annan, M.D., M.P.H.
Edwrd Bahnson, Ph.D. UNC-CH Surgery (Joined August 1, 2016)
Peter M. Banks, M.D. (Carolinas Medical Center, Charlotte)
Jared G. Block, M.D.
Mark E. Brecher, M.D. (Laboratory Corporation of America)
Paul Chastain., Ph.D. (University of Illinois)
Bal Dhungel, M.D.
Jason Doherty (Kenan Institute of Private Enterprise) (Separated September 14, 2016)
Jeffrey Everitt, D.V.M. (GlaxoSmithKline) (Separated January 31, 2017)
Thomas H. Fischer, Ph.D. (Separated March 13, 2017)
M. David Goodman, M.D.

Delores J. Grant, Ph.D. (North Carolina Central University)
Susan Hester, Ph.D. (EPA National Health Environmental Effects Research Laboratory)
W. Carl Jacobs, M.D. (Carolinas Medical Center, Charlotte)
Harvey Michael Jones, M.D.
John P. Hunt, M.D. (Baystate Medical Center)
Wendell D. Jones, Ph.D. (Expression Analysis/Quintiles)
Michael Kamionek, M.D. (Carolinas Pathology Group)
Daniel Kenan, M.D., Ph.D. (Arkansas) (Joined January 2017)
Joe N. Kornegay, D.V.M., Ph.D. (Texas A&M University)
Myla Lai-Goldman, M.D. (GeneCentric Diagnostics, Inc.)
Thomas G. Lightfoot, M.D. (American Red Cross Blood Services)
Rugh Lininger, M.D., M.P.H. (Joined October 2016)
Chad A. Livasy, M.D. (Carolinas Pathology Group)
Roger L. Lundblad, Ph.D.
Emily Maambo, M.D. (Carolinas Pathology Group, Charlotte) (Joined November 2016)
Anil E. Mandal, M.D. (Medical Specialists of St. Augustine) (Deceased August 14, 2017)
Christopher McKinney, M.D. (New Hanover Regional Medical Center) (Joined September 2016)
Keith V. Nance, M.D. (Rex Hospital)
Ann Oaks, M.D. (Highpoint Regional Health System)
Thomas M. O'Connell, Ph.D. (LipoScience)
William R. Oliver, M.D. (East Carolina University)
Richard S. Paules, Ph.D. (NIEHS)
Xinchun Pi, Ph.D. (Baylor University) (Separated 8/31/16)
Sharon Presnell, Ph.D. (Organovo Inc.)
Ashley G. Rivenbark, Ph.D. (UNC Lineberger Comprehensive Cancer Center, UNC Center for Women's Health, Oxford Science Editing, American Society for Investigative Pathology)
Tara C. Rubinas, M.D. (Laboratory Corporation of America)
W. Eugene Sanders, M.D., MBA (FDA/CDRH)
Gary J. Smith, Ph.D. (Roswell Park Cancer Institute)
Nobuyuki Takahashi, M.D., Ph.D. (Tohoku University, Sendai, Japan)
Ruth F. Walters, M.D. (Laboratory Corporation of America)
Carol J. Weida, M.D. (Carolinas Medical Center, Charlotte)
Mark Weiss, MD (New Hanover Regional Medical Center) (Joined September 2016)

Clinical Fellows

Christine Bookhout, M.D. (Surgical Pathology)
Alexandra Arreola, Ph.D. (Cytogenetics)
Steven Ellsworth, M.D. (Hematopathology)
Francois Gougeon, M.D. (Nephropathology & Gynecology/Oncology)
Julie Hull, M.D. (Forensic Pathology)
Natasha Strande, Ph.D. (Clinical Molecular Genetics)
Alexei Mikhailov, M.D. (Nephropathology)
Nathan D. Montgomery, M.D., Ph.D. (Molecular Genetic Pathology)
Lindsey Matthews, M.D., M.P.H. (Cytopathology)
Kara Levinson, Ph.D. (Clinical Microbiology)
Eric Cochran, M.D. (Cytopathology)
Avani Pendse, MD, Ph.D. (Surgical Pathology)
Alan M. Sanfilippo, Ph.D. (Clinical Immunology)

Alexis Peedin, MD (Transfusion Medicine)
Andrea Lightle, MD (Nephropathology)

Visiting Scholar

Diego Rubio, M.D. (Breast Pathology)

Co-Chief Residents

Claire Edgerly, M.D. (PGY IV)
Jonathan Hollyfield, M.D. (PGY IV)
Hugh Stoddard, M.D. (PGY IV)

Residents

Renee L. Betancourt, M.D. (PGY 2)
Cori A. Breslauer, M.D. (PGY 2)
Leah Commander, M.D. (PGY 1)
Cody J. Craige, M.D. (PGY 1)
Claire H. Edgerly, M.D. (PGY 4)
Jennifer Crimmins, M.D. (PGY 1)
Adil H. Gasim, M.D. (PGY3)
Jonathan M. Hollyfield, M.D. (PGY 4)
Julie A. Hull, M.D. (PGY 4)
Stephen M. Johnson, M.D. (PGY 2)
Sixto M. Leal, M.D., Ph.D. (PGY 3)
Tian W. Li, M.D. (PGY 3)
Irina Perjar, M.D. (PGY 3)
Cara D. Randall, M.D. (PGY 2)
Hugh T. Stoddard, M.D. (PGY 4)
Dustin Syverston, M.D. (PGY 1)
Jessica P. Vanleer, M.D. (PGY 3)

Research Associates

Yukako Kayashima, M.D., Ph.D.
Natalia Machanova, Ph.D.
Donald A. Patrick, Ph.D. (Separated May 31, 2017)

Postdoctoral Research Fellows

Xue Bai, Ph.D. – Dr. Joan Taylor
Chitali Basole, Ph.D. – Dr. Nagarajan (Joined June 2017)
Stephanie Bilinovich, Ph.D. – Dr. David Williams
Milton Carpenter, Ph.D. – Dr. Mehmet Kesimer
Yanzhe Gao, Ph.D. – Dr. Cyrus Vaziri
Richa Gupta, Ph.D. – Dr. Mehmet Kesimer
Marlon Lawrence, Ph.D. – Dr. Oliver Smithies (Separated June 30, 2017)
Georgia Radicioni, Ph.D. – Dr. Mehmet Kesimer
Boris Reinhardt-Reidel, Ph.D. – Dr. Mehmet Kesimer
Wei Tang, Ph.D. – Dr. Monte Willis
Anastasia Zlatanou, Ph.D. – Dr. Vaziri (Joined February 2017)

Graduate Students

Sabri Abdelwahab – Dr. Mehmet Kesimer
James Byrnes – Dr. Alisa Wolberg
Johnny Castillo – Dr. Albert Baldwin
Matthew Combs – Dr. Joan Taylor
Rachel Dee – Dr. Joan Taylor
Nicole Fleming – Dr. Jiandong Liu
Ashley Fuller – Dr. Melissa Troester
Michael Henderson – Dr. Nigel Key
Sravya Kattula – Dr. Alisa Wolberg
Jean Marie Mwiza – Dr. Monte Willis
Bethany D. McInturff – Dr. Mehmet Kesimer
Zachary Opheim – Dr. Joan Taylor
Krystal Orlando – Dr. Bernard Weissman
Abigail Shelton – Dr. C. Ryan Miller
Erin Smithberger – Dr. C. Ryan Miller
Katherine G. Stember – Dr. Ronald Falk
Haley R. Vaseghi – Dr. Li Qian
Bethany Wagner – Dr. Scott Williams
Qiang Zhu – Dr. Joan Taylor

RESEARCH AND SCHOLARLY ACCOMPLISHMENTS

Over the past year an excellent record of achievement in research has resulted in publications of original papers and book chapters (abstracts not included). Excellence in research and training has attracted outstanding faculty, residents, postdoctoral fellows, and graduate students, has advanced the understanding of disease, and has enhanced the reputation of the department and institution.

SILVIO ANTONIAK, Ph.D.

Currently, Dr. Antoniak is working in collaboration with Dr. Nigel Mackman (UNC) on the role of PAR-1 dependent signaling in influenza A infection. They have found that lack of PAR-1 increases the expression of CXCL1 in the lung leading to increased neutrophil infiltration and death in infected mice. They propose the possible protective role of activated PC PAR-1 signaling in influenza. They will investigate the biased PAR-1 signaling mediated through thrombin and activated PAR-1. In recent publications, they showed that PAR-1 enhances interferon responses after virus infection and virus-like stimulations. Newer data point to a role of PAR-1 in virus replication by modulating autophagy in MEFs and hepatocytes. Data showed that PAR-1 block autophagic processes in certain cell types, which limit virus replication. Besides PAR-1, he is working on the role of PAR-2 in virus infection. In collaboration with Dr. Rauch in Berlin (Germany) and Dr. Mackman, they showed that activation of PAR-2 reduces innate immune responses in viral myocarditis. He is in the process to prepare a complete NIH/R01 grant proposal for the October 2017 deadline. Besides his interest in virus infections, he is working on the role of PARs in chemotherapy-induced heart failure. He has found that matrix metalloproteinase 13 mediated PAR-1 activation leads to the development of heart failure in mice receiving the anti-cancer drug doxorubicin. This study is supported by a TraCs grant.

PABLO ARIEL, Ph.D.

Dr. Ariel's mission is to provide outstanding support to other researchers at UNC for light microscopy, electron microscopy, and image analysis. To accomplish this, he teaches researchers how to use our systems efficiently, maintain the systems in optimal working conditions, investigate new systems and upgrades to maintain the lab on the cutting edge, and support the professional development of my team, that works side-by-side with him to accomplish these goals. His main goals for the lab in the coming year are: (i) Implement iLabs, an integrated lab management, calendaring and reporting system, and (ii) Increase visibility of our services with the goal of significantly increasing our usage, billing, and financial stability.

JAMES TODD AUMAN, Ph.D.

Dr. Auman's research efforts are focused on two main areas. First, he investigates expression patterns in human tumors to determine if there are expression-based tumor subtypes. He uses RNA sequencing data from the TCGA project in various cancer types to do this analysis. In addition, he examines the correlation of expression patterns for specific genes or groups of genes with clinical parameters and other genomic data in an effort to elucidate potential molecular tumor subtypes. The end goal of this research effort is identify tumor subtypes that provide prognostic or diagnostic information that impact treatment options. His other research effort is focused on investigating the role of pharmacogenomic DNA variants on response to chemotherapeutic agents in cancer patients. Working with the UNCSeq clinical trial, they are profiling over 60 DNA variants with known importance to the response to chemotherapeutics. The goal of this effort is to be able to use the knowledge of a cancer patient's pharmacogenomic variant profile to help guide chemotherapy options in an effort to individualize the patient's therapy to be more efficacious while limiting unwarranted toxicities. During the coming year, he will collaborate with Federico Innocenti on a project focusing on the role of the β -catenin/WNT pathway in immune activated/non-activated metastatic colorectal cancer tumors. In addition, he plans to collaborate with

other UNC researchers to investigate the utility of sequencing plasma for cell free cancer DNA variants, with the goal of being able to use this data to evaluate cancer recurrence and tumor heterogeneity. The process of profiling of cfDNA is progressing and he is actively collaborating with other Lineberger researchers to advance this area of research.

VICTORIA K. BAXTER, D.V.M., Ph.D., DACLAM

Dr. Baxter's time is divided primarily clinical care, teaching, and independent research efforts. Clinical care includes providing veterinary care for research animals, managing outbreaks, and performing related administrative duties as part of DLAM, including serving on the IACUC and IBC. Clinical service goals for the coming year include taking on more formal responsibility for the containment (BSL2 and BSL3) program, sentinel program, and diagnostic lab for DLAM. Teaching efforts currently include mentoring lab animal medicine residents, primarily regarding their ACLAM eligibility research projects, and also serving as a lecturer and assistant lab instructor for lab animal medicine resident and UNC graduate student courses. Teaching goals for the upcoming year include playing a significant role in mentoring the new incoming resident and continuing to help with current residents' research projects. Her independent research focuses on understanding the immunopathogenesis of and host immune response to viral infections of the central nervous system, particularly chikungunya virus. This past year she has focused on gaining access to and establishing her research program in the BSL3 lab, and in the coming year she plans to continue experiments and apply for external grant funding.

JESSICA K. BOOKER, Ph.D.

Dr. Booker's area of research is focused on the development and validation of molecular methods for expansion and improvement of clinical testing. Particular areas of interest are inherited diseases as well as somatic mutations that arise in cancer and provide potential therapeutic targets. Dr. Booker is involved in two major research efforts employing whole exome sequencing. NCGENES is focused on pediatric and adult patients with an unidentified cause of an apparently genetic disease, and NC NEXUS, which is North Carolina Newborn Exome Sequencing for Universal Screening. Plans for the coming year include continuing efforts to create a solid infrastructure to support the significant increase in next generation sequencing in the clinical arena. Dr. Booker has been the training director of the ABMGG Clinical Molecular Genetics Fellowship. As of July 1, 2017, the individual Clinical Molecular Genetics and Clinical Cytogenetics fellowships will be a combined specialty called Laboratory Genetics and Genomics. Drs. Booker, Kaiser Rogers, and Farber have succeeded in gaining accreditation of the new program and will have the first fellow starting July 1.

THOMAS W. BOULDIN, M.D.

For the coming year, Dr. Bouldin will continue to be heavily involved in all aspects of the diagnostic neuropathology services at UNC Hospitals. These services include surgical neuropathology, autopsy neuropathology, the nerve-biopsy service, and ophthalmic pathology. He will also continue to serve as the web master for the Department of Pathology and Laboratory Medicine's web site.

CLAUDIA M. BRADY, M.H.S.

Ms. Brady's current daily duties and responsibilities include dissection and description of surgical pathology specimens and teaching pathology residents the same. In addition to this, she provides gross room orientations and safety training each July for the incoming new residents. Annually, she reviews the gross template manual to ensure accurate information is being documented in the patient's pathology report according to CAP guidelines. This year, approximately 20 new templates were added to the gross manual to facilitate gross report transcription. With the increase in surgical case volume annually and the need to store specimens from the Hillsborough Hospital laboratory, the specimen storage space in the

gross room was at capacity the majority of the time. To be able to maintain the CAP guidelines for 2 weeks of specimen storage, she was able to negotiate to have additional storage space installed in the gross room to safely allow for a minimum of four weeks of storage. To decompress the workload in the main hospital surgical pathology gross room, she worked with the laboratory outreach staff, the courier system, Meadowmont GI Procedures staff, and the clinical lab to seamlessly have an average of 20 GI biopsy cases from Meadowmont delivered daily directly to the Hillsborough Hospital laboratory to be accessioned and grossed.

FRANK C. CHURCH, Ph.D.

The basic science research area of Dr. Frank Church, is concerned with proteases and their inhibitors in human biology and in various disease processes, focused in the arena of hemostasis-thrombosis. For more than 25 years Dr. Church's research group has performed structure to activity studies with heparin-binding serpins (serine protease inhibitors) antithrombin, heparin cofactor II, protein C inhibitor, and plasminogen activator inhibitor-1. They are characterizing the Tidwell Library of di-cationic compounds ("pentaminidine-like") for potential therapeutic anticoagulant activities. The educational science research area involves developing/assessing both qualitative and quantitative measures of student learning in undergraduate biology and in medical school courses by advancing the paradigm that Active/Engaged Learning (using conversation, cooperation, collaboration, and collegiality) will bolster a student's motivation to matriculate to and successfully navigate through medical school.

WILLIAM B. COLEMAN, Ph.D.

Breast carcinogenesis is known to be associated with both genetic and epigenetic events. Whereas a number of epigenetically-silenced genes have been identified in breast cancer and suggested to be causally related to neoplastic transformation of breast epithelia, few studies have surveyed alterations in gene expression in response to changes in DNA methylation in a breast cancer model system. Therefore, to identify genes that are epigenetically-regulated in human breast cancer, the Coleman research group treated MCF-7 breast cancer cells with the demethylating agent 5-aza-2'-deoxycytidine (5-aza) and the histone deacetylase inhibitor trichostatin A (TSA), and gene expression patterns were examined by microarray analysis. MCF-7 cells were treated for 3 weeks with 250 nM 5-aza or 5-aza + 50 nM TSA, and then allowed to recover for 5 weeks after treatment withdrawal. Through analysis of the microarray data, they identified 37 genes that were associated with a >2-fold increase in 5-aza-treated MCF-7 cells, but returned to control levels after withdrawal of treatment. Similarly, 70 genes were identified in 5-aza + TSA treated MCF-7 cells, that returned to control levels after treatment withdrawal. Comparative analysis revealed 20 genes represented in both groups of increased genes. DNA sequence analysis of the promoter region and 5'-upstream sequences identified some interesting features that may influence the epigenetic regulation of these genes: (a) promoters containing typical CpG islands, (b) promoters containing CpG density, but not CpG islands (intermediate features), and (c) promoters lacking CpG density (atypical features). Analysis of gene promoters with typical CpG islands may enable the identification of novel control sequences that regulate methylation in breast cancer, or may confirm regulation by previously identified sequence elements. In addition, further characterization of the promoter sequences of genes that lack easily recognizable CpG islands or other CpG-containing sequence features may identify novel methylation-sensitive regulatory sequences, or sequence-specific methylation events that abrogate the binding of transcription factors or other regulatory proteins that are essential for gene expression. Likewise, additional investigation of the decreased gene set may identify new methylation-dependent mechanisms of gene regulation, or indirect pathways for down-regulation of genes in cancer cells.

BRIAN C. COOLEY, Ph.D.

Dr. Cooley's research has focused on investigating the initiation and propagation of thrombosis in large arteries and veins, to determine common and differing features for these clinically disparate pathologies. Recent studies have also expanded into evaluation of hemostatic clotting. A major experimental approach uses a custom-designed intravital fluorescence microscope system. Recent findings have identified unique thrombotic responses dependent upon the induction mechanism of the thrombus – free radical injury to the vessel, mechanical vessel injuries, and intraluminal collagen exposure to blood flow – and the modulation of thrombosis by the relative degree of injury. Another active area of research is the study of vein graft disease, looking at the development of stenosis-inducing neointimal overgrowth (often called negative vascular remodeling) that develops in nearly half of patients undergoing vein grafting for coronary bypass and lower limb claudication. Recent work has identified an endothelial-to-mesenchymal transition process for the development of vein graft neointima, mediated by a TGFbeta-Smad2/3-Slug signaling pathway. Future studies will explore this phenomenon and look at flow-mediated modulation of the remodeling response, to identify new approaches for preventing stenosis-associated vein graft failure.

GEORGETTE A. DENT, M.D.

Dr. Dent is working with the American Medical Association (AMA) on a collaborative research project known as Innovative Strategies to Transform the Education of Physicians (ISTEP). The primary objective of the project is to study the educational learning environment of medical schools using instruments that access the values, feelings, and perspectives of students as related to their education. The goal of the project is to determine the factors that are most influential in the professional development of medical students and physicians. Almost fifty medical schools are participating in this project. Dr. Dent is also collaborating with the School of Medicine Offices of Medical Education and the School of Veterinary Medicine at North Carolina State University to study the impact of social networking on the career and personal development of professional students and she is working with the UNC CH Department of Psychology and Neurosciences to study anxiety in medical students.

LESLIE G. DODD, M.D.

Dr. Dodd's current and future publications will be in collaboration with fellow and resident projects for which she has provided funding support or has significantly participated. She also expects publications as a product of her other commitments. She has two very active CAP committees.

ROSANN A. FARBER, Ph.D.

Dr. Farber's major activities are as Associate Chair for Faculty Affairs in the Department of Genetics and Director of the UNC American Board of Medical Genetics & Genomics (ABMGG) Postdoctoral Training Programs. There was a decision by the ABMGG that all programs in Clinical Cytogenetics and Clinical Molecular Genetics will be merged into 2-3 year programs in Laboratory Genetics and Genomics (LGG), effective July 1, 2017. She led the preparation and submission of the application for accreditation of a 3-year program, and the application has been approved. The first LGG fellow, Lori Ramkissoon, will begin her training this year. Fellows will be trained in the Cytogenetics and Molecular Genetics laboratories, and she will oversee the program. Alexandra Arreola is completing a two-year fellowship in Clinical Cytogenetics and will begin a one-year fellowship in Molecular Genetics in July. Tasha Strande has just completed one year of Molecular Genetics and has decided to stay for an additional two years to complete training in both areas. She will take the LGG board exam in 2019, but the ABMGG will not consider her to be an LGG fellow. She will file an annual report 9/1/17, as required of every ABMGG program. During the coming year, Dr. Farber has agreed to assist the Department of Pathology & Laboratory Medicine in establishing a system for regular notifications of tenure-track Assistant Professors and tenured Associate Professors of deadlines for upcoming reviews and promotion

applications and to be sure that they understand well in advance what documents they will be expected to provide. She will also help keep track of letters from reviewers, both external and internal. As time permits, she will draft Chair's letters for reappointments and promotions of tenure-track faculty.

GEORGE FEDORIW, M.D.

Dr. Fedoriw serves as the Director of Hematopathology and Special Hematology Laboratories. His research is primarily focused on classification and biology of B-cell lymphoproliferative disorders, particularly in the setting of HIV infection. His studies hope to clarify aspects of lymphoma biology and B-cell activation to ultimately improve patient diagnosis and clinical outcome. Dr. Fedoriw has developed a close collaboration with investigators in the UNC Center for AIDS Research and the Lineberger Comprehensive Cancer Center (LCCC) and is working to understand distribution of lymphoma subtypes in Malawi. This work incorporates a comprehensive molecular characterization of Diffuse Large B-cell Lymphoma in the setting of high HIV prevalence. He also actively provides research support for collaborators in the LCCC and the School of Pharmacy.

CRAIG A. FLETCHER, D.V.M., Ph.D.

As Director of Division of Laboratory Animal Medicine and Assistant Dean for Animal Research Resources, Dr. Fletcher provides oversight of animal care for the research animals at UNC. DLAM staff currently consists of approximately 175 employees. DLAM operates 26 laboratory animal facilities on campus and in nearby off-campus locations. In addition, he provides oversight of animal facility design and renovation, research programmatic planning, and animal research operations management. Federal regulations, as well as AAALAC requirements for accreditation, require adequate veterinary care for all research animals. DLAM completed a successful AAALAC visit in 2017 and the University will be accredited until 2020. Dr. Fletcher is also a member of Institutional Animal Care and Use Committee, Institutional Biosafety Committee, Facilities Planning committee, and the University Safety and Security Committee. Dr. Fletcher's teaching duties include training graduate students and residents in the laboratory animal medicine program. He currently teaches in the UNC Disease Mechanisms Molecular and Cellular Pathology Program (PATH 714L.400). UNC also has an NIH-funded, ACLAM-certified residency training program in laboratory animal medicine. In addition, UNC is part of a joint ACLAM-certified residency training program between Duke, NCSU, Glaxo Smith Kline and NIEHS. In the research arena, he is collaborating with Nigel Mackman in the McAllister Heart Institute. They are investigating the role of tissue factor (TF) and platelets in viral infection. Viral infections lead to activation of coagulation, and it has been reported that influenza virus infection is associated with activation of coagulation and the increased risk for thrombotic events, such as myocardial infarction. While lethal IAV infection is associated with both lung and systemic activation of coagulation, excessive influenza virus replication leads to massive immune cell infiltration causing severe lung tissue injury resulting in bleeding. They are studying the roles of platelet factor 4 (PF4) in maintaining lung hemostasis and thrombosis during influenza virus infection using a mouse model that lacks PF4.

WILLIAM K. FUNKHOUSER, M.D., Ph.D.

Dr. Funkhouser is currently focused on the problem of inter-pathologist diagnostic reproducibility, using non-small cell lung carcinoma (NSCLC) as a model. He created a web based survey used by 22 pathologists to diagnose 54 NSCLC cases using H&E alone, then H&E plus mucin/immunostains, allowing calculation of kappa (the measure of non-random inter-observer reproducibility) for recent and current classifications of NSCLC. He found that diagnostic reproducibility for NSCLC is improved when pathologists have access to a standard panel of mucin and immunostains, and with serial WHO re-classifications. Data analysis is completed, and the manuscript is being circulated amongst coauthors prior to submission to APLM.

PETER H. GILLIGAN, Ph.D.

Studies are ongoing to determine the feasibility of using RGM medium for recovery of non-tuberculous mycobacterium from patients with bronchiectasis. The feasibility of using detection of mRNA for C. difficile toxin genes is being explored as a means of diagnosing C. difficile infection.

VIRGINIA L. GODFREY, D.V.M., Ph.D.

Dr. Godfrey continues to provide collaborative pathology evaluations for colleagues in the Medical School faculty, particularly members of the Department of Genetics. Many of these collaborations are initiated by diagnostic necropsies of sick animals referred to the DLAM clinical services. Recent and continuing projects include morphologic evaluations of: 1) pig models of atherosclerosis and Type II diabetes (Nichols), 2) interactions of Brg 1 and intestinal flora in mouse models of IBD (Bultman), 3) dog models of hemophilia (Nichols), 4) mouse models of tuberculosis (Braunstein), and various mouse tumor models. She assists in characterization of new mouse models through the interactions with the National Gnotobiotic Rodent Resource (B Sartor), the Mutant Mouse Regional Resource Center (MMRRC) at UNC (Magnuson), and the Collaborative Cross (Pardo Manuel de Villena). In particular, her initial characterizations of spontaneous lesions in CC mice have led to new models of bronchiectasis, polycythemia, Hodgkins-like lymphoma, and chronic colitis.

KEVIN G. GREENE, M.D.

Dr. Greene is part of a team of researchers that has submitted a Specialized Programs of Research Excellence (SPORE) grant application to study pancreatic cancer. If approved, he would serve as the Director of the Tissue Procurement, Pathology, and Genomics Core. Dr. Greene is collaborating with colleagues in the Molecular Pathology and Genetics Laboratory to study multiple aspects of gastric carcinoma. One aim of these studies is to develop a classification system that is based on molecular subtyping. Dr. Greene is collaborating with a colleague in the Department of Cell Biology and Physiology to define the role of CD73 in liver injury and neoplasia. Their first R01 grant submission was approved and is in the first year of a five-year funding cycle.

MARGARET L. GULLEY, M.D.

Dr. Margaret L. Gulley studies the molecular basis of virus-related tumorigenesis and develops novel laboratory tests to better manage patients affected by cancer or at risk for cancer. Substantial progress towards these goals was made in the past year. Genomic technology was applied to measure mutation levels in serial plasma specimens of patients with tumors that had also been studied to identify tumor markers, to validate performance of “liquid biopsies” to monitor tumor burden during therapy, to find and track emerging tumor subclones, and to better interpret germline vs somatic alterations in DNA. They showed that plasma DNA is amenable to genomic analysis and is informative of clinical status. Teaming with Pathologist colleagues and with TraCS and Lineberger Comprehensive Cancer Center leaders, Dr. Gulley improved laboratory support for campus investigators, and helped translate basic science discoveries into practical tests adopted for routine clinical implementation in McLendon Clinical Laboratories. In the coming year, she will to carry out team science, provide clinical services, and train the next generation of pathology and laboratory medicine professionals.

SUSAN C. HADLER, M.D., M.S.

Dr. Hadler’s efforts in the Medical School are centered around teaching and curriculum. She is involved in teaching 1st, 2nd, and 4th year medical students in multiple courses, as well as Pathology and Toxicology graduate students and Physical Therapy graduate students. She serves on a number of medical school curriculum related committees as well as the Medical School Progress Committee. Her

efforts in the Dental School are also centered on teaching; she teaches 1st year dental students in multiple courses. She also serves on the Dental School's Curriculum committee.

TRACY M. HEENAN, D.V.M.

Since 1994 under the direction of Tracy Heenan, the Office of Animal Care and Use (OACU) has provided excellent service to animal research community, ensuring humane animal care and use, facilitating the application review process, providing exemplary training of research personnel, and conducting fair and thorough investigations of animal welfare concerns and noncompliance while still working to establish rapport with researchers and fostering animal research. The necessity of providing fair and thorough customer service is one of OACU's guiding principles. The OACU serves an essential role in educating and advising faculty, students, research personnel, IACUC, Division of Laboratory Animal Medicine (DLAM) personnel, and Department of Environment Health and Safety (EHS) representatives regarding proper animal care and use policies and practices. The Director will continue to serve as an integral link between the IACUC and the Office of the Vice Chancellor for Research (VCR), DLAM, EHS, and the University Employee Occupational Health Clinic and will work to enhance all levels of communication between these groups.

JOHANN D. HERTEL, M.D.

Dr. Hertel is board-certified in anatomic pathology and cytopathology. His current research focus is on clinical and translational research in pre-neoplastic and neoplastic lesions of the breast. His goal is to obtain salary support to support his research efforts and produce an abstract for USCAP with subsequent publication.

STEVEN C. HOLMES, B.S., M.H.S.

Steven Holmes' area of expertise is in surgical pathology and gross anatomy. With this knowledge he is able to fulfill his role as an instructor to residents, medical students, prospective applicants and Pathologists' Assistant students. His instruction includes but not limited to identifying and proper orientation of specimens as well as proper conduct and safety training in the laboratory. These skills are needed for handling simple biopsies up to complex surgical resections. Due to the high volume of specimens, his training also includes proper time management without adversely affecting patient care. In the upcoming year, he envisions an even more hands on role with the departmental staff regarding staff instruction through laboratory bench work, conference planning and via meetings. He also plans to take a more active role in the frozen section room and learn the connection amongst the other labs with surgical pathology. Throughout the year, the growth, maturation, and improved skill level of residents in the surgical pathology laboratory is a reflection of my success as a clinical instructor. He has accomplished his goals at becoming a more effective/leader in the gross room. In addition, he has improved on his efficiency in the frozen section laboratory. During the upcoming year, he will increase his duties within the remote laboratory at the Hillsborough location. These duties include, but aren't limited to accessioning of specimens and prompt/efficient handling of specimens and slide preparation for remote diagnoses by the pathologists.

JONATHON W. HOMEISTER, M.D., Ph.D.

The research of Jonathon Homeister, M.D., Ph.D. has two major goals. The first is to utilize leukocyte lineage-specific transgenic gene expression and leukocyte lineage-specific gene targeting in murine experimental models to investigate $\alpha(1,3)$ -fucosyltransferase (FUT) gene function in the development of atherosclerotic cardiovascular disease. They are using these mice and other mice made deficient in FUT-IV and FUT-VII in all tissues to define a role for the selectin adhesion molecules and their fucosylated ligands in the development and progression of atherosclerosis. These mouse strains will be used to

continue their studies that define the selectin-dependent contribution of several leukocyte lineages to the atherosclerotic disease process, as well as to homeostasis of the circulating counts of granulocytes and monocytes. The second goal is to determine the mechanisms whereby the FUTs regulate hemostasis and thrombosis. These studies are to elucidate the mechanisms whereby fucosylation of selectin ligands and/or other blood molecules alters coagulation and thrombosis. These studies also utilize the mouse strains described above to modulate generalized and leukocyte lineage-specific FUT expression.

PEIQI HU, M.D.

Dr. Hu's research aims at understanding of molecular mechanisms of immune mediated kidney diseases with emphasis on antineutrophil cytoplasmic autoantibody (ANCA) induced glomerulonephritis and vasculitis (ANCA disease). He and his collaborators recently generated a reproducible mouse model of ANCA-induced pulmonary granulomatosis that closely mimics human Granulomatosis with Polyangiitis (GPA). By using this model, they are elucidating the pathogenesis of ANCA-granulomatosis and analyzing relative importance of various mediator systems and potential therapeutic interventions. His research approaches include testing the disease induction in mice with selective deficiency in complement (e.g. C5, C4, C5a, Factor B) or complement regulatory components (Factor H and Factor I KO), and selective deficiency in Fcγ receptors and bradykinin receptors; and with pharmacologic blockade of the mediator systems. Dr. Hu also studies on pathogenic anti-MPO epitope specificity by epitope excision and mass-spec-based epitope mapping for identifying specific epitopes that are targeted by pathogenic anti-MPO antibodies; and gene expression in innate inflammatory cells that modulate murine MPO-ANCA GN to identify candidate genes responsible for the disease susceptibility.

J. CHARLES JENNETTE, M.D.

Dr. Jennette's research is focused on elucidating the clinical and pathologic features, pathogenesis and etiology of immune mediated vascular inflammation, especially vasculitis and glomerulonephritis induced by anti-neutrophil cytoplasmic autoantibodies (ANCA). The current major research in his laboratory uses mouse models of inflammatory vascular disease caused by ANCA to validate concepts that can be translated into therapeutic and prognostic advances for patients with ANCA disease.

KATHLEEN A. KAISER-ROGERS, Ph.D.

Dr. Kathleen Kaiser-Rogers continues to characterize the chromosome rearrangements of some of the more interesting patients referred to the UNC Hospitals Cytogenetics Laboratory using both traditional and molecular cytogenetic techniques, including fluorescence in situ hybridization (FISH) and chromosome microarray analysis (CMA). Two of these cases were presented in poster form at the recent American College of Medical Genetics Meeting; one involved the identification of a familial cryptic 17;21 translocation, while the other involved a rare deletion that encompasses both the Potocki-Shaffer and WAGR syndrome regions. Dr. Kaiser-Rogers also continues to function as a resource for researches with an interest in using cytogenetic technologies in their research projects. They performed CCND1 FISH testing on a population of patients with HPV-associated oropharyngeal squamous cell cancers for a study conducted by Dr. Bhisamjit Chera in the Department of Radiation Oncology. They also performed chromosome microarray analysis to characterize Angelman syndrome deletions for a study directed by Dr. Heather Hazlett in the Department of Psychiatry. A manuscript describing an unusual patient with concomitant Down syndrome and SUCLA2-related mitochondrial depletion syndrome has been submitted by several coauthors in the Department of Pediatrics for publication in the American Journal of Medical Genetics. The UNC Hospitals Cytogenetic Laboratory also continues to participate in two cancer cooperative groups, the Alliance/Cancer and Leukemia Group B (CALGB) and the Children's Oncology group (COG). As the ACMG has decided to merge the Cytogenetics and Molecular Genetics Fellowship Training Programs into a single new Laboratory of Genetics and

Genomics (LGG) Fellowship Training Program, Dr. Kaiser-Rogers, Dr. Jessica Booker and Dr. Rosann Farber recently designed and received accreditation for this new Fellowship Program. Dr. Kaiser-Rogers now serves as Director of the ABMGG Cytogenetics Fellowship Training Program, and will serve as Co-director of the new LGG Fellowship Training Program along with Dr. Jessica Booker. She also continues to function as Vice Chair of the CAP Cytogenetic Resource Committee, as the CAP-ACMG Liaison for the ACMG Laboratory Quality Assurance Committee, and as Chair of the ACMG Salary Survey Workgroup.

MASAO KAKOKI, M.D., Ph.D.

Dr. Kakoki has 26 years of experience as a physician-scientist in nephrology and cardiovascular medicine, of which the last 16 years have been devoted to molecular biology with initial emphasis on understanding the molecular mechanisms that are responsible for cardiovascular and renal diseases. To study the role of the gene of interest, he has studied genetically altered mice under the supervision of Dr. Oliver Smithies. The sets of mice having 5 graded mRNA levels of transforming growth factor beta1 (TGFbeta1), endothelin-1 and engulfment and cell motility protein 1 (Elmo1), all of which have been suggested to be involved in the development of diabetic complications, were generated by the method replacing the 3' untranslated regions (3' UTR). He has recently found and reported that the genetic insufficiency of Elmo1 abolishes the phenotype of diabetic nephropathy suggesting the therapeutic possibility of Elmo1 inhibitors. He is currently studying the phenotype of diabetic cardiomyopathy in mice having 5 graded levels of Elmo1, and also collaborating with Dr. Ben Bahr in studying Alzheimer's disease.

DAVID G. KAUFMAN, M.D., Ph.D.

Dr. Kaufman is working on a translational research project to determine the efficacy of chemotherapy in women undergoing drug therapy for breast cancer based on DNA damage in circulating cancer cells recovered from the blood of treated patients. He has developed a method to quantify significantly the DNA damage in extended DNA fibers using as few as 5 cells. With his collaborators he also shown that he can recover circulating tumor cells from mice bearing transplanted human breast cancers and that he can detect excess DNA damage in these cells if the mice were treated with chemotherapeutic drugs. As originally developed these methods were very time consuming, but he has automated the three steps of the analysis yielding a much reduced analysis time. Concurrently he is trying to develop a micro-fluidic technique to make these measurements in continuous flow mode that would be suitable for use in a clinical pathology lab at much lower cost and with much shorter turn-around-time. This latter work is being done in collaboration with Dr. Steven Soper from the Department of Biomedical Engineering. Recent progress has shown it is possible to separate tumor cell subtypes from heterogeneous cancers and each subtype can be evaluated separately. This work initially was supported by an NC TraCS grant. Subsequently a P41 Center Grant was funded (5 years at \$850,000 per year; David G. Kaufman is a PI) for developing micro-fluidic and nano-fluidic technology that can be translated into clinical practice. This project is being pursued as part of this new grant. In September 2016 an NIH R33 grant proposal was submitted to develop this technology as a means of rapidly determining whether chemotherapy for advanced breast cancer is effective in individual patients. In May 2017 an NIH R33 grant proposal was submitted to grant proposal was submitted to NIH evaluate this assay for assessing the efficacy of chemotherapy in patients with advanced endometrial cancer.

WILLIAM K. KAUFMANN, Ph.D.

Dr. Kaufmann is working to implement a proposal to develop a tool to quantify residual disease burden in patients with acute myeloid leukemia who have achieved clinical remission. He formed a small business called Asystbio Laboratories to exploit the intellectual discovery of the computer algorithm

called MIMIR which uses consensus sequencing to identify and quantify low frequency variant alleles. An STTR grant to fund a phase I feasibility study is scheduled to be awarded 7/1/17.

APRIL E. KEMPER, M.H.S.

Ms. Kemper's goal for the upcoming year is to continue to provide the department with consistent quality work in the gross room. Part of her work will continue to include resident and medical student instruction and supervision.

DANIEL J. KENAN, M.D.

Dr. Kenan's clinical service is focused on the UNC Nephropathology Service, which includes a weekly kidney biopsy teaching conference involving Nephrology fellows and attending as well as medical students and residents. His basic research activities have focused on BK polyomavirus (BKPV) and mechanisms of infection and latency in renal allografts as well as its role in promoting aggressive urothelial neoplasms. His studies have shown that these neoplasms are linked to integration of the BKPV genome into the host cell chromosome and further suggest a mechanism for oncogenesis centered on up-regulation of the BKPV large T antigen. In the coming year, Dr. Kenan will take a position at Arkana Laboratories in Little Rock, AR. He plans to transition to Adjunct Professor in the Department of Pathology & Laboratory Medicine at UNC where he will continue to collaborate with members of the division of Nephropathology on various projects including molecular analysis of kidney biopsies and biomarker discovery.

MEHMET KESIMER, Ph.D.

Dr. Kesimer has a pending R01 related to E-cigarette PI, pending CFF grant related to mucin maturation. His team is in the process of renewing their P50 TCORs grant for the next 5 years. He also has heard that tPPG and the SPIROMICS 2 are funded in which he has the mucus/mucin core in both of them. He will continue to look for external funds to extend his research on new ideas especially in the area of extracellular vesicles and their role in lungs innate defense and remodeling and role of mucins in CF pathogenesis.

NICHOLE L. KORPI-STEINER, Ph.D.

Dr. Korpi-Steiner's research is focused on clinical chemistry laboratory test performance characteristics, quality assurance and test utilization practices. She partnered with the Division of Pulmonary and Critical Care Medicine and industry to conduct a clinical trial with the aim of evaluating capillary whole blood glucose meter test performance in critically ill patients. Dr. Korpi-Steiner serves as the principle investigator. This clinical trial was challenging to perform necessitating coordination with Pulmonary and Critical Care Medicine Research Coordinators, POCT Medical Technologists, Nurses, patients and patient families. The multi-disciplinary UNC study team has done a terrific job and completed this clinical trial in March 2017. At the request of clinical trial industry sponsors, Dr. Korpi-Steiner and Pulmonary and Critical Care Medicine colleagues are currently considering participation in two additional clinical trials in 2017-2018. In addition to clinical trial research endeavors, Dr. Korpi-Steiner's clinical research goals for the upcoming year include: Publish article regarding comparative analysis of point of care activated clotting time methods in different clinical settings in collaboration with colleagues at UMass Memorial Medical Center; Publish case report regarding vanishing drug metabolite in patient treated with buprenorphine therapy; Complete study and publish article regarding the evaluation of serum free light chain assay analytical performance characteristics using a new optilite analyzer; Complete study and publish article regarding comparative analyses of serum free light chain reference intervals using 4 different analyzers in collaboration with colleagues at Ohio State University and Dartmouth Hitchcock Medical Center; Develop and validate a new methodology for plasma amino

acid analyses using ultraperformance liquid chromatography (UPLC) mass spectrometry with publication in 2018.

THOMAS J. LAWTON, M.D.

Dr. Lawton is completing work as a co-investigator with Dr. Xianming Tan (Lineberger) and PI Dr. Sarah Nyante (Radiology) on a one-year NC TraCS pilot grant entitled “Expression of breast extracellular matrix proteins in lobular carcinoma in situ” with abstract submitted to AACR and manuscript in preparation. As a follow-up to this study, these investigators have submitted an R21 grant to NCI’s Provocative Questions Initiative (RFA-CA-15-009) entitled “Matrix metalloproteinase epithelial expression as a mechanism for lobular neoplastic invasion.” Dr. Lawton is also a pathologist co-investigator on an R01 grant submission with Co-PIs Drs. Perou and Carey on “The role of tumor and immune microenvironmental factors in determining sensitivity to HER2-targeting and benefit of dual HER2-targeting using RNA- and DNA-based studies on human breast cancer samples from women participating in neoadjuvant clinical trials in HER2-positive disease.” Dr. Lawton is also the pathologist for Project 1 (“Tumor somatic mutation patterns by race and age in the Carolina Breast Cancer Study”) of the UNC/Lineberger SPORE grant renewal which was submitted this Fall.

FENG LI, Ph.D.

Dr. Li’s current research is focusing on hypertension especially pregnancy related hypertension, preeclampsia. She published a paper in PNAS reporting that nicotinamide benefits both dams and pups in two contrasting preeclampsia models in Nov. 2016 (<https://www.ncbi.nlm.nih.gov/pubmed/27821757>).

Now, she is finishing the manuscript

“Maternal endothelin-1 (ET-1) plays an important role in a preeclampsia-like-phenotype present in pregnant mice over-expressing ET-1” and plans to submit to *Hypertension* at the end of June. She will also finishing another paper “positive feedback between endothelin-1 and sFlt-1.” She will be studying the role of endothelin-1 on trophoblast cell differentiation and consequential effects on trophoblast cell invasion, and whether nicotinamide affects trophoblast cells differentiation and/or invasion. She will be also studying the role of Vitamin B12 on acute kidney injury caused by ischemia/reperfusion.

JIANDONG LIU, Ph.D.

Congenital heart diseases are one of the most common birth defects in humans, and these arise from developmental defects during embryogenesis. Many of these diseases have a genetic component, but they might also be affected by environmental factors such as mechanical forces. Dr. Liu’s research goal is to study on the molecular mechanisms that link mechanical forces and genetic factors to the morphogenesis of the heart. Our studies using zebrafish as a model system serve as the basic foundation to address the key questions in cardiac development and function, and could provide novel therapeutic interventions for cardiac diseases. Dr. Liu’s plan for the coming year is to publish three to four peer-reviewed articles, apply for NIH R01 grant and participate in departmental and MHI seminars/activities and continue serving on various committees.

CHRISTOPHER P. MACK, Ph.D.

The overall goal of the Mack lab is to identify the signaling pathways and transcription mechanisms that regulate smooth muscle cell (SMC) differentiation. Their current studies are focused on identifying the signaling pathways upstream and downstream of RhoA that regulate SMC transcription with a particular focus on the role of this pathway in the nucleus. Using genome wide data sets on chromatin structure, histone modification, and transcription factor binding, the Mack lab is also characterizing the epigenetic mechanisms that regulate SMC-specific gene expression and is attempting to identify the specific chromatin modifying enzymes and chromatin readers that mediate these effects. In collaboration with

the Taylor lab, a major goal is to identify human genetic polymorphisms that regulate the expression of Graf3, a novel SMC-specific, Rho-specific GAP that we have shown to be critical for blood pressure homeostasis.

NOBUYO N. MAEDA, Ph.D.

Pathogenesis of atherosclerosis is complex and a large number of genetic factors contribute to determine the susceptibility to the disease. Using hyperlipidemic apolipoprotein E-deficient mice that develop spontaneous and human-like atherosclerotic plaques, we have been exploring how genetic factors modify plaque development in a vascular location-specific manner. Their systematic genetic analyses of the F2 progeny from crosses of apoE-null mice on three inbred strains (C57BL/6, 129/SvEv and DBA2) have identified several quantitative trait loci that affect susceptibility for plaque development in the aortic arch independent of the loci for atherosclerosis in the aortic root. They have determined that a reduced expression but not the protein structure variation of *Mertk* promotes plaque development in DBA/2J mice, compared in 129SvEv mice. *Mertk* encodes for a membrane tyrosine kinase important for the clearance of apoptotic/necrotic cells (efferocytosis). Thus, their results show that efferocytosis is atheroprotective in the early stages of plaque formation, not only in late stages as previously reported (Kayashima et al. 2017). While Dr. Maeda's own research during the last half of this period was greatly affected by the passing of her spouse and colleague Oliver Smithies in January, her team has also demonstrated that QTL analyses in F2 mice from three combinations of crosses among three inbred strains is a powerful approach and have submitted a manuscript to Plos One (Makhanova et al, 2017, submitted). Based on these results, she has prepared and submitted a renewal of the R01 in March to continue to test candidate genes that affect atherogenesis. She was not able to make the proposal as exciting as she hoped, but hopes that it will be reviewed favorably. If not, she is prepared to end her study on the genetics of Atherosclerosis supported by the NIH for the last 28 years. A bright side has been that she has taken over the project on diabetic complications and vitamin B12 for preventing the development of complications. She helped with Oliver's R01 renewal on this subject last November, which was favorably reviewed with her as the PI. It will be most likely funded, and she is committed to continue this line of work. She will be adjusting their combined laboratories according to the availability of research funds in 2017-2018.

TRACIE L. MASSEY, B.S., PA.

Tracie Massey is primarily responsible for triaging and banking specimens for the Tissue Procurement Facility. She has increased the number of specimens banked from about 20% to 60-80%. Her goal is to have 95-98% of the consented cases banked. Tracie has become the clinical instructor of the Frozen Section Room. She has standardized the work flow and implemented the lean concept. She is now the sole instructor responsible for training all first year residents, as well as assisting/training 2nd-4th year residents and fellows, in the frozen section room. Starting 2014, Tracie covered 3 months (6 rotations) per year of frozen section bench coverage alone with no resident to allow the residents to cover other areas of their program requirements. In July 2016, this increased to more than 6 months of the year. Tracie has now taken on the responsibility for the QA portion of the frozen section room. This includes assures all the billing is correct for all the frozen sections cases, entering the TAT in the database and entering any exemptions for cases going over 20 minutes and entering the Intra-operative versus Final Diagnosis in both Beaker and the data base. In the past, the frozen section room has been deficient in the TAT are for the CAP inspection. Since Tracie has taken over we are 100% compliant in all areas. Tracie covers the frozen section bench to allow the resident on service to be trained for renal biopsies, for the RISE exam, and for residents to take vacation.

STEPHANIE P. MATHEWS, M.D.

The majority of Dr. Mathews' work is in the Division of Hematopathology and entails comprehensive interpretation of hematopoietic and lymphoid tissue, incorporating morphologic, immunophenotypic, flow cytometric, cytogenetic, and molecular data. She also provides interpretation of serum and urine electrophoresis and immunofixation studies and serves as Director of the high volume Analytical Hematology Laboratory within McLendon Clinical Laboratories. In addition to having teaching responsibilities with pathology residents and the Hematopathology fellow during daily sign out activities, Dr. Mathews' participates in didactic lecture series for the residency and fellowship programs, has taken on the role of Hematopathology fellowship Director and Clinical Competency Committee member for the core residency program, and more recently become the residency Hematopathology rotation director. She is involved in medical student education as a small group lab instructor, previously during the MS2 Hematology/Oncology block and now as part of the MS1 hematology TEC curriculum. In keeping with her focus on clinical work and education, she serves on the American Society of Clinical Pathology PRISE committee and on the Society for Hematopathology Education Committee and RISE/FISHE sub-committee. Her research is primarily case-based with ongoing projects including the evaluation of EMA immunohistochemistry in the identification of erythroid precursors in bone marrow. She is also involved in several clinical studies including one of prognostic Christopher Dittus. In the past, she collaborated with Dr. Kashuba in UNC's School of Pharmacy on a project evaluating drug transporters in mucosal tissue and their implications for drug disposition in HIV prevention. In summary, Dr. Mathews' focus is primarily clinical with an emphasis on education and clinically valuable research projects.

SUSAN J. MAYGARDEN, M.D.

Dr. Maygarden is working on a project on the economics of academic breast pathology, comparing the workload and reimbursement for the handling of breast pathology specimens with other specimen types, in order to study the perceived undervaluing of breast pathology specimens by CPT coding. This study is being done with two residents, Jessica Vanleer and Steven Johnson, and another pathology faculty member, Dr. Siobhan O'Connor. Dr. Maygarden's plans for the coming year are to continue to direct the anatomic and clinical pathology residency program and to recruit and retain excellent residents and oversee a quality educational experience for them.

GAYLE C. MCGHEE

Gayle McGhee has continued to work closely with autopsy personnel to maintain and gain additional teaching material for the department needs. She has continued to share ideas on equipment and the latest technology that is being used in the field. Changes in autopsy volume continue to change so it is important that the autopsy personnel and she work more effectively together. The autopsy room arrangement of space remains to be a challenge in respect to meeting our teaching class time schedules with the autopsy workflow and our lab time overlapping in use of the autopsy suite. There are only so many washing/work areas for the gross specimens to be prepared for the classes. This has been accomplished by autopsy personnel and teaching communicating on the daily activism. All gross specimens that are saved for teaching as well as specimens teaching personnel collect have to be cataloged, inventoried, filed appropriately, preserved and accessible by log system or computer search. Maintaining how many, what they are, when needed and when to wash for availability for class take good management. Then to replace specimens back in formalin and stored is time consuming. The scanning of virtual microscopy is now a vital part of teaching. They will continue to scan slides and collect more interesting slide cases for use in teaching. They have made their virtual images available to all by creating a spreadsheet with diagnosis and important information as to retrieval of the virtual images. The volume has increased this year with more scanning for research projects which she scans for them.

C. RYAN MILLER, M.D., Ph.D.

Dr. Miller's current activities are focused on translational research involving comparative genomics and proteomics analyses of gliomas from both humans and genetically-engineered mice (GEM). The main goals of this work are 1) to define the impact of cellular origin on the genomics of malignant glioma progression; 2) to define the impact of cellular origin and oncogenic mutations on the kinomes of malignant gliomas; 3) to define the impact of aging on the genomics and proteomics of malignant glioma progression, 4) to define the transcription factor repertoire that mediates oncogenic mutation-induced de-differentiation of astrocytes into glioblastoma stem cells (GSC); 5) to define the role of PIK3CA mutations in gliomagenesis and targeted drug sensitivity, and 6) to determine molecular signatures of human GBM after targeted drug therapies in order to develop molecular diagnostics for personalized therapy.

MELISSA B. MILLER, Ph.D.

Melissa Miller, PhD's major interests reside in the use of molecular technology to improve clinical infectious disease testing and, further, to use these technologies to explore the epidemiology of viral infections and antimicrobial resistance in bacterial infections. She is employing and comparing a variety of molecular technologies, including microarrays, sequencing and mass spectrometry, in the clinical diagnosis and epidemiology of infectious diseases. During the next year, Dr. Miller will be focusing on the clinical implementation of sequencing-based microbiome analysis for clinical trials and investigating the role of next generation sequencing in the clinical lab for the diagnosis of infectious diseases. Dr. Miller has maintained an interest in the clinical and economic outcomes associated with the implementation of molecular infectious disease diagnostics.

STEPHANIE A. MONTGOMERY, Ph.D., D.V.M.

Dr. Montgomery provides collaborative pathology support on animal models and pre-clinical studies. As lead veterinary pathologist, she offers investigators a sophisticated understanding of how the models of experimental disease that they are studying recapitulate natural disease by providing a description of the types, progression, and severity of histopathologic changes, allowing researchers to accept or refute various aspects of their animal models. She educates investigators across disciplines on animal models, serving as a resource of anatomical and physiological differences between humans and animals, including age-related and strain (breed)-specific changes. As the Director of the Animal Histopathology & Laboratory Medicine Core, she has developed extensive immunohistochemistry and immunofluorescence assays for animal tissues that provide investigators with sophisticated tissue analysis that replicates the diagnostic tests performed in a clinical setting. Recently she has updated and expanded the clinical laboratory services to include a Complete Blood Count (CBC) with 5-part differential and clinical chemistry testing with a rigorous quality control program to more closely mimic the clinical diagnostic setting in a pre-clinical research environment. As areas of animal pathology-related interest arise, she has become involved in investigations of how current tools and practices in place impact research studies being conducted on campus. In the largest of these projects, she is leading a study with the UNC Animal Studies Core to determine the effect that *Corynebacterium bovis* (a commonly encountered bacteria in research vivaria) has on xenotransplant tumor take rate and growth in various immunocompromised mouse strains. This project was recently funded through a 1 year ACLAM Foundation grant in which she will serve as PI.

VINCENT J. MOYLAN, JR., M.S., P.A. (ASCP)

Vincent Moylan's main role in our department is to serve as instructor for our pathology residents when they rotate onto the autopsy service. He is also involved in several research projects that are affiliated with the UNC Cancer Center. The first being the LCCC Tumor Donation Program. This is a rapid

autopsy program headed up by Drs. Lisa Carey and Leigh Thorne. This research program involves breast cancer patients that have previously consented to autopsy upon their death. The second project is a second rapid autopsy program similar to the above mentioned cancer study, except the study participants have metastatic melanoma. The program is headed up by Dr. Stergios Moschos. In addition, he will also be involved in a new research study that is just in the beginning stages and involves Alzheimer's disease participants. Also, he will continue to work closely with Dr. Nickleit and the Nephropathology department handling all of the medical kidney specimens, and assisting the surgical PA's by processing and photographing select explant cases (cardiac, hepatic, lungs). He looks forward to his continuing work with Drs. Hadler and Reisner and other medical student teaching projects as they become available.

VOLKER R. NICKELEIT, M.D.

The research activities of V. Nickleit, MD focus on different aspects of renal allograft pathology. 1) Adjunct assays (in particular electron microscopy and C4d staining) for the diagnosis of cellular and antibody mediated rejection in kidney transplants are under investigation with additional focus on C4d in glomerular basement membrane remodeling. V. Nickleit is the chair (together with P. Randhawa from Pittsburgh) of the "Banff-working group" on T-cell mediated renal allograft rejection aiming at (re)defining features of cell mediated rejection in the modern era of enhanced antibody/DSA testing. 2) A major research effort addresses polyomavirus infections in kidney allograft recipients. V. Nickleit is the chair of the "Banff-working group" on polyomavirus nephropathy aiming at defining diagnostic guidelines. A new and exciting line of investigation focuses on non-invasive diagnostic strategies to establish a diagnosis of "polyomavirus nephropathy" without an (invasive) biopsy (in close cooperation with H. K. Singh, MD). In pilot analyses negative staining electron microscopy on voided urine samples and the detection of three-dimensional polyomavirus clusters, termed "Haufen", has proven to be a robust diagnostic method with negative and positive predictive values of greater than 90%. Extended prospective studies are currently conducted in order to validate the initial findings further. These efforts are in part funded by extra-mural support from Astellas Pharmaceuticals. In addition a mouse animal model of "polyomavirus nephropathy" is being characterized. Dr Nickleit and his team succeeded in mimicking polyomavirus induced tubular injury typical for human disease in a mouse model and could identify urinary "Haufen" in diseased mice. Further studies including gene expression profiling in mouse PVN and human PVN are currently conducted. Recently polyoma-BK-virus has also been associated with oncogenesis. V. Nickleit and D. Kenan are further characterizing the role of BK-virus in neoplastic growth using deep gene DNA and RNA sequencing strategies; the efforts have already resulted in one major publication in the Journal of Pathology.

JUDITH NIELSEN, D.V.M.

Dr. Nielsen is continuing her research into the best, most efficient and cost effective means to conduct our Animal Health Surveillance program at UNC. At present she is in the midst of a study evaluating use of Interceptor attachments to their air handling units for quick and efficient sampling of agents trapped in dust being expelled from their ventilated caging systems. It remains to be determined, however, how sensitive this testing method is for detection of some of the agents they wish to monitor. She would also like to have an effective way to determine individual PI colony health status to assist in selecting the most appropriate housing location health status-wise for our investigators. With the upcoming reopening of MEJ animal facility, they will have another chance to re-organize new clean space and create levels of sterile housing for investigators wishing to do research related to gut microbiome, or using other immune-altered animals that may not be pristine and eligible for housing in our high barrier facility. She will also continue to participate in research in the pathogenesis of Cryptococcal infections of human and animals and am collaborating with investigators at the University of Minnesota examining some

interesting human isolates that do not kill humans or animals but reside in the lungs and brain of infected mice, sometimes in massive numbers.

SIOBHAN M. O’CONNOR, M.D.

Dr. O’Connor is working with gyn clinicians on collaborative projects including “Using Novel in situ Hybridization Techniques to Detect Hep C Virus in Placentas,” “Biomarkers of High Grade Cervical Dysplasia,” “Diagnostic Endometrial Sampling After Ablation Therapy,” “Washing of the Abdominopelvic Cavity During Myomectomy,” “Factors Associated with Recurrence Risk in Women with Endometrial Carcinoma”. She is collaborating with a breast clinician on the AURORA US project, which assesses metastatic breast carcinoma and includes rapid autopsy cases. In addition, she is on a dissertation committee for a PhD student in Pathology who is evaluating epigenetic consequences of SMARCA4/A2 (SWI/SNF Complex ATPases) re-expression in Small Cell Carcinoma of the Ovary, Hypercalcemic Type (SCCOHT). She is also a co-mentor with Chuck Perou for a PhD student in Translational Pathology who is studying molecular signatures in DCIS. Siobhan will continue her collaboration with the breast and gyn clinicians. She also plans to assist with additional Breast Spore projects.

YARA A. PARK, M.D.

Dr. Park’s research focuses on thrombotic thrombocytopenic purpura (TTP), specifically the causes and exacerbating factors. Currently, she is investigating possible biomarkers in the initial presentation of TTP as well as in exacerbations during treatment. She is completed a nation-wide survey of practice patterns in TTP and distribution of TTP cases around the country. The Transfusion Medicine group is investigating the use of metabolomics in the management of TTP.

NIRALI M. PATEL, M.D.

Dr. Patel oversees clinical testing for somatic mutations in cancer, including both solid tumors and hematologic malignancies. She also supports the translational research and clinical trial enrollment efforts of the UNC Lineberger Cancer Center by providing pathology support for multidisciplinary research projects. Goals for the coming year including expanding the availability of somatic mutation testing to patients utilizing in-house testing solutions as well as increased collaboration with outside providers. Dr. Patel is in the process of closing the UNCseq (LCCC1108) research project, with final patient enrollment and results reporting anticipated in early June 2017. She has also set up pathology support for specimen handling and provided reporting procedures for the Strata clinical trial and Foundation Medicine send outs.

ANDRE PHELAN, P.A.

Andre Phelan’s primary activities include clinical instruction of gross pathology to the UNC pathology residents first through fourth year. Duties also include gross dissection and dictation of pertinent findings on surgical pathology specimens, assisting in intra-operative consultations through frozen section procedures, collecting samples for tissue procurement foundation, presenting gross conferences to pathology residents and performing ancillary duties such as specimen photography and radiography.

LI QIAN, Ph.D.

The goal of Dr. Qian’s lab research is to understand the molecular basis of direct cardiac reprogramming and apply this knowledge to improve efficiency and clinical applicability of cellular reprogramming in heart disease. She has pioneered the system in which direct cardiac reprogramming could be rigorously studied and implemented, and demonstrated that endogenous cardiac fibroblasts can be reprogrammed into cardiomyocyte-like cells in their native environment. Her lab continues their recent work on direct

cardiac reprogramming by delving into the molecular mechanisms that drive this fascinating process. Their plan for the coming year is to extend our research to the human cells, to secure more funding, and publish additional 2-3 research articles.

JAY S. RAVAL, M.D.

Dr. Raval has been very active this year. He spends his clinical service time in the areas of therapeutic apheresis (Medical Director), hematopoietic progenitor cell laboratory (Associate Medicine Director), transfusion medicine, blood banking, immunohematology, and platelet/plasma donor center (Medical Director). Dr. Raval's research continues to cover multiple areas in transfusion medicine. He continues to involve many individuals in his clinical and research activities; the backgrounds of these personnel are diverse and range from medical students to housestaff to faculty members (both here at UNC as well as from other institutions). He was awarded a \$50,000 NCTraCS-DTMI dual-institution CTSA to study the impact of RBC rejuvenation on sickle cell disease patients receiving chronic transfusion therapy. Additionally, he is working closely with RTI International to characterize metabolomic markers of TTP disease activity, which will hopefully result in additional grant funding. He is also the UNC site PI for the Phase III randomized clinical trial for caplacizumab therapy in acquired TTP. He is also the UNC site co-PI for the NIH funded randomized clinical trial involving RBC transfusion in myocardial infarction/cardiac ischemia patients. Last but not least, Dr. Raval has taught the BIOL 294H service learning course the spring semester that focuses on platelet donation, as well as participated actively in medical student teaching of blood bank topics. Dr. Raval's involvement with AABB and ASFA continue to increase, and he contributes consistently to these organizations' missions. With the increasing clinical volumes in transfusion medicine, therapeutic apheresis, and HPC transplantation here at UNC, due in part to expansion of the UNC Health System, clinical and research activities will also continue to increase. The upcoming year looks to be a very productive one for Dr. Raval and his colleagues.

ALLISON ROGALA, D.V.M.

As a laboratory animal veterinarian at UNC, Dr. Rogala's primary focus is to facilitate research using animal models while assuring compliance of regulations that govern such endeavors and maintaining the highest level of animal care such that investigators can attain quality research outcomes. While her primary responsibility is the veterinary care of animals and assurance of regulatory compliance pertaining to their use, her training in comparative medicine uniquely positions her for numerous opportunities to collaborate with investigators. Upon her joining the department in September of 2016, she has continued established relationships in which she will continue to apply her expertise in rodent gastrointestinal physiology and pathology. Additionally, over the past year, she has gained additional collaborations including a project investigating the relationship between the gut microbiota and gastrointestinal pathology in a ferret model of schizophrenia. Dr. Rogala's personal research interest focuses on understanding the role of environmental factors on phenotypic variation of animal models of human disease. A better understanding of these factors can enable laboratory animal veterinarians to develop better methods of controlling variables in the housing environment to decrease experimental variability and increase reproducibility, thus reducing the number of necessary animals and increasing the translatability of findings. More specifically, she is utilizing individual strains of the Collaborative Cross, a panel of recombinant inbred strains of mice designed for the mapping of complex traits, to identify genes that are involved in host-microbial interactions.

MARIAN ROLLINS-RAVAL, M.D., Ph.D.

Over the past six months, Dr. Rollins-Raval has been attending on service in Hematopathology and Coagulation. In Flow Cytometry, at the behest of our clinical colleagues, she and the UNCH Flow Cytometry lab have become a Children's Oncology Group Accredited Laboratory for the monitoring of

minimal residual disease in B-lymphoblastic leukemia which began March 2017. As the Special Coagulation Director, she has worked on a multidisciplinary team, including Hematology and Pharmacy, to institute a new protocol in EPIC for screening and monitoring Heparin allergies in relationship to heparin-induced thrombocytopenia (HIT). In addition to teaching while on Hematopathology Service, she also teaches a formal Coagulation Sign-Out to be experienced by DPLM residents during the Hematopathology rotation, fellows in Hematopathology and Transfusion Medicine throughout the whole year, both adult and pediatric Hematology/Oncology fellows when on service with her, and, potentially in the future, medical students. She has also hosted several elective rotations with Hematology/Oncology fellows in Coagulation. Largely as a result of these efforts in Coagulation education, she was awarded the Clinical Pathology Faculty Teaching Award by the UNC Pathology Residents this May. She is actively pursuing several projects (primarily in Coagulation) in the areas of ADAMTS13, HIT and Factor VIII testing.

EIZABURO SASATOMI, M.D., Ph.D.

Dr. Sasatomi has recently developed a panel of immunohistochemical stains (smooth muscle actin, CD34, and glutamine synthetase) and a scoring system that will facilitate diagnosis of chemotherapy-induced sinusoidal injury (CSI). A manuscript titled “Chemotherapy-induced Sinusoidal Injury (CSI) Score: A Novel Histologic Assessment of Chemotherapy-related Hepatic Sinusoidal Injury in Patients with Colorectal Liver Metastasis,” has recently been published. Dr. Sasatomi is planning additional studies to assess the diagnostic utility of the same panel of immunohistochemical stains for the assessment of impaired sinusoidal microcirculation in several common clinical conditions such as steatohepatitis and ischemic/re-perfusion injury after liver transplantation. Dr. Sasatomi is planning a study regarding the histogenesis of intraductal tubulopapillary neoplasms (ITPN), which is a newly recognized biliary neoplasm that was recognized in the WHO classification revision of 2010.

LORI R. SCANGA, M.D., Ph.D.

Dr. Scanga has the following active research projects in the areas of cytology and surgical pathology, and supervises five research projects with pathology trainees. **Project:** Negative Predictive Value of Renal Cytology Specimens, faculty advisor of Christine Bookhout (PGY5). An abstract has been submitted to The American Society of Cytopathology 2017 Annual meeting. **Project:** Consultation in gynecologic pathology at an academic pathology department: concordance in diagnosis, quality measures, and effect on patient management, faculty advisor of Avani Pendse (PGY6). This project is in the status of data collection, with a goal to submit an abstract to either USCAP or SGO in 2018. **Project:** The cytologic interpretation of Papanicolaou smears when HPV reflex testing is concomitantly requested, faculty advisor of Avani Pendse. This research was presented as a poster in 2017. The manuscript is being written currently, with a goal of publication in 2017. **Project:** PREFER Trial: Preserving Fertility Choice in Early Cervical Cancer, faculty advisor of Avani Pendse and in collaboration with Dr. Boggess. Drs. Scanga and Pendse are coordinating the pathology methods and specimens for this clinical trial. **Project:** Case report of a previously unreported co-occurrence of BRAF and EGFR mutations in micropapillary lung carcinoma, faculty advisor of Claire Edgerly (PGY 4) and in collaboration with Dr. Nirali Patel. This abstract has been accepted for the CAP 2017 Pathologists’ Meeting.

JOHN L. SCHMITZ, Ph.D.

Dr. Schmitz’ laboratory has completed evaluation of alternate technologies and algorithms for syphilis diagnosis. Two manuscripts are in preparation and will be submitted for publication in June. Two posters on these studies were accepted for the ASM annual meeting. Dr. Sanfilippo received a travel grant from ASM to attend the meeting and present the data. The flow cytometry laboratory has completed validation and received approval by the Children’s Oncology Group (COG) to perform B-

ALL minimal residual disease testing for subjects enrolled in COG trials. This testing has also been made available to non-study patients in the healthcare system. In the HLA arena, Dr. Schmitz and Weimer co-authored a study with Transplant Clinical Faculty demonstrating utility of detecting high level C1q binding antibodies as predictors of antibody mediated rejection in liver transplant recipients. In the coming year, we will be collaborating with transplant colleagues to assess clinical outcomes of de novo donor specific HLA antibodies in renal transplant recipients and the impact of epitope mismatch load on the development of these antibodies.

STEVEN T. SHIPLEY, D.V.M.

Dr. Shipley's primary mission is divided between administration, clinical service, teaching and research. Clinical service plans/goals for the coming year include creating efficiency in delivery of clinical veterinary care (particularly to off-campus locations) through coordination and consolidation of duties with veterinary faculty and residents. His teaching goals include continuing to be actively involved in day to day mentoring and ongoing didactic instruction of LAM residents at UNC as well as RTLAMTP Didactic lectures. Research goals include ongoing data analysis, presenting data at regional/national meetings and producing publications for currently funded research – experiments completed August 2016. He has initiated collaboration with Dr. Tom Egan (Professor, Surgery) on a swine lung transplant project – will likely begin next few months. He has written several proposals with Dr. Jeffrey Macdonald (Associate Professor in Biomedical Engineering) for various large animal (woodchuck and swine) imaging projects. None have yet been funded but they will continue those efforts. Dr. Shipley will continue to actively reach out to UNC faculty for collaborative research opportunities in his areas of strength/interest – large animal models, infectious disease, and immunology.

HARSHARAN K. SINGH, M.D.

Dr. Singh's clinical responsibilities have been devoted to renal pathology which has also been a major focus of her research. As Associate Director in the Division of Nephropathology, Dr. Singh assists the Director with oversight of all clerical and laboratory staff in the clinical and research laboratories, management of the nephropathology histology and immunohistochemistry laboratory, laboratory quality control issues, and the development of new diagnostic assays. As Director of Electron Microscopy services, she oversees quality control issues as related to EM and maintains oversight of all technical staff in this area. Approximately 75% of Dr Singh's time is devoted to clinical and teaching responsibilities in Nephropathology with the remaining time devoted to clinical / translational research in renal pathology with a focus in transplantation and teaching in the medical and dental schools as well as in the Pathology graduate program. Dr. Singh recently became Adjunct Professor in the School of Osteopathic Medicine at Campbell University and assumed the teaching responsibilities for 2nd year students in Nephropathology. Dr. Singh is a translational physician-scientist whose practice and clinical research interests are in polyomavirus infection in the setting of renal and other solid organ transplantation. She is also interested in the application of electron microscopy and ultrastructural pathology in the setting of renal transplantation. A number of projects in both human subjects and in animal models are underway in the area of Polyomavirus Nephropathy including: 1) multicenter study with Children's Hospitals of Philadelphia and Cincinnati involving children post-bone marrow transplantation and evaluating Polyomavirus infections and the application of the urine PV-Haufen test to diagnose Polyomavirus Nephropathy in this subset of patients. 2) Dr. Singh is chairing the Banff working group for Electron Microscopy to evaluate glomerular basement membrane double contours, including Cg1A lesions and the presence of severe peritubular capillary basement membrane multi-lamination as features of chronic rejection and to develop and validate a standardized, reproducible diagnostic approach. The potential reversibility or progression of these lesions also remains undetermined and will be studied. 3) Proof of concept studies in an animal model of PVN are ongoing [developed at UNC]. 4)

Finalizing data for publication of a 5 year prospective study funded by Astellas Pharma evaluating patients with PVN with protocol biopsy data at time of PVN resolution; 5) Development of a non-EM based assay for the identification of urinary PV-Haufen to diagnose PVN is underway using confocal microscopy and Q-dot methodology.

SCOTT V. SMITH, M.D.

Dr. Smith is the Associate Director of Surgical Pathology and Director of Pediatric Pathology for UNC Hospitals. Dr. Smith's clinical activities are focused in surgical pathology with broad emphasis in pediatric, ENT, cardiac, pulmonary, gastrointestinal, genitourinary, prostate, pancreaticobiliary, endocrine, cardiovascular, bone and soft tissue pathology. An integral part of these endeavors is the instruction of pathology residents and fellows to facilitate their professional development. Dr. Smith is Director of Surgical Pathology Resident Rotations for the UNC Pathology Residency Program. Dr. Smith has conducted an extensive review of our training program and he has instituted substantial revisions of the content and design of our Surgical Pathology rotations in 2017 to improve postgraduate education in Surgical Pathology. Dr. Smith is the Director of Surgical Pathology Fellowship Program, overseeing all aspects of recruitment and development of these Fellows as they complete their capstone year of training. Dr. Smith works in collaborative research with Dr. Julie Blatt and Dr. Ian Davis in Pediatric Hematology Oncology.

JOAN M. TAYLOR, Ph.D.

Over the past 5 years, Dr. Taylor's research interests have expanded into the studies of muscular dystrophy and hypertension. Their most exciting new project involves the role of the Rho-GAP ArhGAP42 in human hypertension. They demonstrated that ARHGAP42, is highly and selectively expressed in vascular smooth muscle in mice and humans and lowers BP by inhibiting RhoA-dependent contractility in this cell-type. The increase in blood pressure observed in our novel ArhGAP42-deficient mouse model indicated that ArhGAP42 is required for the maintenance of normal blood pressure and provided a potential mechanism for the blood pressure associated locus within the ArhGAP42 gene that was recently identified by Genome Wide Association Studies. They collaborated with a number of clinical teams at UNC to identify the causal SNP and to ascertain whether the ArhGAP42 genetic variant associated with high blood pressure modulates expression of ArhGAP42 and alters patient risk for end-organ failure. Their genotype analysis of a well-characterized cohort of untreated borderline hypertensive patients confirmed that the minor *ARHGAP42* allele was associated with higher ArhGAP42 expression and reduced blood pressure and suggested that the low frequency of this allele in African Americans may contribute to the increased hypertension susceptibility of this group. They also identified the causal SNP and determined the transcriptional mechanisms by which this eQTL functions to regulate ArhGAP42 levels. These results add significant insight into the genetic mechanisms that control blood pressure and should have important implications in regard to hypertension risk and individualized antihypertensive therapies. These studies have led to publications in Nature Communications, Journal of Clinical Investigation, and World Journal of Hypertension and invitations to speak at several National and International meetings. They have also made important inroads in uncovering an epistatic role for the related Rho-GAP ArhGAP26 in the pathogenesis of Duchenne's muscular dystrophy. Collectively, these new directions have led to new awards from the Muscular Dystrophy Association and NIH-NHLBI (multi-PI R01) that will garner 2.36M in direct funding when combined. We have also obtained funding from the American Heart Association and additional NIH funding over the past 5 years to support our program. Taylor lab expenditures over the past 5 years totaled 2.49M in direct (extramural) funds that were used to support our work in musculoskeletal and cardiovascular disease.

LEIGH B. THORNE, M.D.

Dr. Thorne's research activities continue with the Tissue Procurement Facility, most specifically focusing on the quality assurance of research tissues collected. She also collaborates on two rapid autopsy programs (breast and melanoma). Dr. Thorne provides review and quality assurance of breast cancer tissues used in the Carolina Breast Cancer Study. Dr Thorne's clinical duties continue in molecular genetic pathology and the autopsy service, as well as oversight of muscle pathology. With new hospitals coming into the UNC Healthcare umbrella, in the upcoming year the UNCH Autopsy Service will be providing a more centralized system for the performance of autopsies among the different hospitals. She also continues as the Medical Director over Decedent Care staff in improving this still newly developed area.

DIMITRI G. TREMBATH, M.D., Ph.D.

Dr. Trembath, in conjunction with Dr. Tom Bouldin, is responsible for covering the surgical neuropathology service. These duties include teaching residents, covering frozen sections for both services and signing out the in-house and outside cases assigned to that bench. In conjunction with Dr. Bouldin, Dr. Trembath is also responsible for covering the ophthalmologic pathology service. In terms of research, Dr. Trembath is involved in several collaborative efforts. With Dr. Stergios Moschos of Hematology-Oncology, Dr. Trembath is analyzing melanoma brain metastasis to discover genes involved in the metastatic process as well as genes important for prognosis and response to therapy. Dr. Trembath is also involved in a similar effort researching breast cancer brain metastases with Dr. Carey Anders. With Dr. Hae Won Shin of the UNC Neurology department, Dr. Trembath is collaborating in validating new MRI modalities for identifying seizure foci and with Dr. Shehzad Sheik of the UNC Department of Medicine, Dr. Trembath is helping in analyses to look at microRNAs involved in the pathogenesis of inflammatory bowel disease; the latter project is currently being submitted for R01 funding with percent effort included for Dr. Trembath. With Dr. Simon Khagi, UNC's neuro-oncologist, Dr. Trembath has become involved in a project examining changes in microsatellite markers in brain tumors before and after treatment.

CYRUS VAZIRI, Ph.D.

Our current research is focused on understanding molecular mechanisms of genome maintenance as pertains to cancer etiology and cancer therapy. Dr. Vaziri's major goals are to publish results of ongoing research projects in high quality journals in order to maintain existing grants and to provide additional funding opportunities. Another goal is to broaden the scope of our research by identifying new avenues for future research and initiating new projects that will provide vehicles for extramural funding. To this end, trans-disciplinary studies are ongoing with several colleagues at UNC including Dr. Ken Pearce (School of Pharmacy), Dr. Buddy Weissman (Pathology), Dr. Ben Major (LCCC), Dr. Yuri Fedoriw (Pathology). A collaborative drug discovery project with School of Pharmacy colleagues has already resulted in a funded R01. A collaborative R01 application with Dr. Scott Williams received a high priority score but did not meet the agency payline, we are optimistic that a revised proposal will eventually be successful. We hope this is one of many trans-disciplinary collaborations that will help procure future funding.

KAREN E. WECK, M.D.

The goals of the research of Dr. Karen Weck are to translate novel molecular genomic tests for clinical diagnostic and prognostic testing and to investigate the clinical utility of novel molecular genetic testing. Major areas of focus in the past year include somatic mutation testing in a variety of tumor types to identify response or resistance to specific pathway inhibitors and support of broad-scale next-generation human exome sequencing efforts to identify mutations in genetic diseases and cancer. Dr. Weck is Co-

Principal Investigator on a NHGRI U01 grant called North Carolina Genomic Evaluation by Next-generation Exome Sequencing (NCGENES). The overall goals of the UNC NCGENES project are to evaluate the use of whole exome sequencing (WES) as a diagnostic tool in selected clinical conditions with a likely genetic etiology, evaluate the use and impact of incidental sequence information, develop a clinically-oriented structure for interpretation, storage and reporting of WES data, and implement WES in traditionally underserved populations throughout North Carolina. The goals of Dr. Weck's research in the next year are to continue efforts to utilize next generation sequencing for clinical care at UNC in the areas of cancer and genetic disease, specifically development of clinical NGS panels for detection of primary ciliary dyskinesia and inherited forms of kidney disease.

ERIC T. WEIMER, Ph.D.

Dr. Weimer's current clinical activities are completing the validation of a genetic testing panel for primary immune deficiency and will be looking into APOL1 screening for African-American renal transplant donors. It is anticipated this will be completed by July 2017. In addition the flow cytometry laboratory has started testing for B cell MRD and will be validating plasma cell MRD testing in the coming year. The Immunology laboratory has taken on considerable testing volume increases from affiliate clinical testing and is currently undergoing extensive renovations. While maintaining TAT, the Immunology laboratory has evaluated new syphilis testing algorithms and technology as well as new automated IFA-based ANA testing technology. The HLA laboratory received an automation compatible liquid handler for our NGS assay and will be working towards validation of the instrument in the coming months. As for translational research, Dr. Weimer is investigating the utility of cell-free DNA as a biomarker for solid-organ transplant rejection and looking to initiate a clinical trial by the end of the year or early 2018. In addition, the laboratory is also developing a novel rapid high-resolution HLA genotyping assay that can be utilized for HLA genotyping of deceased donors.

BERNARD E. WEISSMAN, Ph.D.

Dr. Weissman's laboratory will continue to work on identifying the mechanisms that drive SCCOHT development. They have also initiated a new study with our colleagues at TGEN and UBC on the role of SNF5 loss in the development of pediatric chordomas. Finally, they have found an esophageal hyperplastic phenotype in our novel genetically engineered mouse model (*LSL-Nrf2^{E79Q}*). While they continue their efforts to model the role of NFE2L2 (NRF2) activation in the development of human squamous cell carcinomas, they are also expanding these efforts into the etiology of esophageal squamous cell carcinomas. His biggest goals this coming year are to obtain funding for the pediatric chordoma study and to publish their initial characterization of the epigenome in SMARCA4-deficient SCCOHT cell lines.

JULIA W. WHITAKER, M.S., D.V.M.

Dr. Whitaker continues to provide veterinary clinical care for the research animals on campus and she is Associate Director of Research Administration in DLAM. She continues to pursue research on the effect of caging environment on mouse reproduction and behavior, in collaboration with Dr. Sheryl Moy in the Department of Psychiatry, with a recent study which was published in 2016. She mentored a laboratory animal resident in 2016 in a project in collaboration with Dr. Moy using new caging technology to study enrichment and aggression in mice. She is mentoring another laboratory animal resident this year in a project using zebrafish and examining the effect of enrichment items and disease status on zebrafish reproductive efficiency and behavior. Her interest and specialty training in aquatic animal medicine will continue to be used to support the aquatic research species on campus. She will continue to be involved in teaching and training of laboratory animal residents in the Research Triangle area through the

Research Triangle Laboratory Animal Training Program seminar, and through individual teaching of the UNC laboratory animal residents.

DAVID C. WILLIAMS, M.D., Ph.D.

David Williams maintains both an NIH funded research laboratory and clinical service responsibilities in hematopathology. His laboratory is currently funded to study the dynamic interaction between methylcytosine binding domain proteins and DNA for which he has successfully completed most of the aims. Over the past six months, he published two manuscripts and was invited to present his research at a national meeting and another academic institution. Over the next 6 months he will focus on publishing two manuscripts (one currently under revision after favorable reviews from *Nucleic Acids Research*). He was recently invited to write a review article for *Pharmacology and Therapeutics* (Impact Factor 11.0), which he plans submit in September. David is actively submitting multiple grant applications to expand his external funding. He recently submitted a new multi-PI R01 grant application based on collaborative efforts with Gordon Ginder. This work builds on their efforts to develop molecular inhibitors of NuRD complex formation that disrupts methylation dependent gene silencing. They will be focusing on the role of NuRD in silencing of fetal hemoglobin with the goal of developing novel therapies for β -hemoglobinopathies. David is a co-investigator on a grant submitted by Jeremy Prokop, a collaborator at HudsonAlpha research institute. The goal of this research is to develop a novel pipeline for tagging transcription factors in stem cells. He is submitting a competitive renewal next month that builds on a new collaboration with Hong Wang at NC State to use single molecule fluorescence to follow DNA binding by the MBD proteins. In addition, he has recently started a new collaboration with Cyrus Vaziri in the Department of Pathology and Laboratory Medicine at UNC. The two of them will be studying the role of the NuRD complex in DNA damage. They will be submitting grant applications to the Department of Defense and NIH next fall. In addition, David maintains an active collaboration with Brian Strahl and Stephen Frye to characterize bivalent readers of chromatin. He is a co-investigator on an R01 with Stephen Frye which was recently renewed. Finally, he has become an active member of the hematopathology service and will continue to expand his role both in teaching the medical students, residents and in clinical service.

SCOTT E. WILLIAMS, Ph.D.

Broadly, Dr. Scott Williams' lab is interested in how stratified epithelia are built and maintained, in the context of development and cancer. They study a broad array of epithelial tissues including the skin epidermis, oral epithelia (collaborations involve Antonio Amelio, UNC Dentistry), and neuronal epithelia (collaborations involve Timothy Gershon, UNC Neurology). They study how cell polarity is established in these tissues, how it regulates cell-cell adhesions and asymmetric cell divisions, and how it becomes altered in squamous cell carcinomas. Other research interests include the genetic basis of epithelial-derived cleft lip and palate syndromes and identification and characterization of stem cells of the oral epithelia.

MONTE S. WILLIS, M.D., Ph.D.

Dr. Willis is the Department of Pathology & Laboratory Medicine Vice Chair of Academic Affairs, Director of the NC State University Student Health Services, Director of the UNC Campus Health Services Laboratory, Director of UNC Hospitals sweat testing laboratory, and Assistant Director of the UNC Hospitals core (clinical chemistry) laboratories. He is also an independent Principal Investigator in the McAllister Heart Institute directing a translational research program investigating the role of ubiquitin ligases (MuRF1, MuRF2, MuRF3) in metabolism, autophagy, and protein synthesis [**Project 1:** MuRF1 regulation of nuclear transcription factors (PPARalpha and Thyroid Receptoralpha) in stretch mediated cardiac hypertrophy and atrophy; **Project 2:** MuRF2 and MuRF3 regulation of PPAR isoforms

in diabetic cardiomyopathy by non-canonical ubiquitination in vivo; **Project 3:** Role of MuRF1 in calpain-1 mediated heart failure in vivo]. His laboratory also investigates the role of protein misfolding, autophagy, and proteotoxicity in the pathophysiology of heart failure [**Project 4:** The role of the human Bag3+ mutation (P209L) in mediating cardiac-specific heart failure; **Project 5:** Interactions between human cardiac myosin binding protein-C (cMyBP-C) truncation mutations and muscle-specific ubiquitin ligases in heart failure]. The dynamic and interactive mentoring of post-doctoral fellows, graduate students, clinical residents, and visiting scientists are the creative focus of Dr. Willis' research and discovery program. In the coming year, collaborative efforts with industry and international collaborators via the Leducq Network of Excellence collaborative.

SARA E. WOBKER, M.D., MPH

Dr. Wobker's clinical service is focused on the diagnosis of genitourinary cancer and general cytopathology. Her research involves the clinical and translational study of GU malignancies, with a focus on the molecular characterization of rare histologic variants of urothelial carcinoma. Ongoing collaborations with members of the Department of Urology and Division of Medical Oncology are focused on the prospective validation of prostate cancer biomarkers and the study of urothelial carcinoma following prostate radiation, in addition to collaborations with the Department of Epidemiology investigating the molecular profiling of prostate and bladder cancer in a North Carolina registry-based patient cohort.

ALISA S. WOLBERG, Ph.D.

The major goals of Dr. Wolberg are to examine cellular, biochemical, and biophysical mechanisms that contribute to hemostasis and thrombosis. Her group has made substantial progress towards these goals. They have used in vitro and in vivo models of thrombosis and thrombolysis to examine how plasma hypercoagulability and vessel injury promote thrombus formation. Their studies suggest pathogenic roles for cell-derived microvesicles in thrombosis and cancer, correlate vascular injury with thrombus formation and stability, and have revealed newly-recognized pathways that regulate arterial and venous thrombosis. They have recently revealed a newly-recognized role for transglutaminase factor XIII in determining venous thrombus composition and size, and characterized the operant biochemical mechanisms. They have also demonstrated mechanisms relating red blood cell function with thrombosis in mice. Their findings expose previously-unrecognized pathophysiologic mechanisms in arterial and venous thrombosis, and suggest novel approaches to reduce thrombosis risk. Future plans are to delineate the role of red blood cells and transglutaminase activity in determining venous thrombus size and stability, and develop novel molecules to inhibit factor XIII function as a potential therapeutic.

JOHN T. WOOSLEY, M.D., Ph.D.

Dr. Woosley's primary research effort is in GI and Liver pathology. Over the last 20 years he has been a co-investigator on a continuum of research projects with Robert Sandler, MD. The general thrust of these projects has involved the defining of environmental risk factors for adenomatous polyps and colorectal cancer and the identification of biomarkers as guides to more effective screening and prevention. The biology of colorectal cancer provides unique opportunities for etiologic research. Because colorectal cancer arises from an ordered series of pathologic precursor lesions, it is important to determine where potential environmental risk factors operate in the cancer sequence. Dr. Woosley also has a very active collaboration with Richard Semelka, M.D., Department of Radiology that has resulted in multiple publications that have expanded the radiopathologic knowledge base. Dr. Woosley is very actively involved in collaborative research projects with Dr. Evan Dellon, Dr. Ramon Bataller, and Dr. Robert Sandler, Division of Digestive Diseases, Department of Internal Medicine, UNC School of medicine. The collaboration with Dr. Dellon focuses on the basic pathophysiology of Eosinophilic esophagitis. The

collaboration with Dr. Bataller focuses on the pathogenesis, prognosis, and treatment strategies for alcoholic steatohepatitis. The collaboration with Dr. Sandler focuses on the basic pathophysiology of microscopic colitis. He is the study pathologist on a GVHD study using a mouse model, Primary Investigator – John Serody, MD.

HONG XIAO, M.D.

Dr. Xiao's research efforts are focused on elucidating the pathogenic mechanism of immune mediated vascular damage with emphasis on antineutrophil cytoplasmic autoantibody (ANCA) induced glomerulonephritis and small vessel vasculitis (ANCA disease). In collaboration with Dr. Hu and Dr. Jennette, she developed a pulmonary granulomatosis animal model mimicking GPA in patients. Her current approaches consist of 1) Using this animal model to dissect the mechanism of anti-MPO induced extravascular inflammation and tissue injury such as pulmonary granulomatosis. 2) Investigating the involvement of receptors on neutrophil such as Fcγ receptors, complement receptors and bradykinin receptors in pathogenesis of ANCA disease and testing therapeutic interventions with inhibitors in ANCA disease model. 3) Identifying specific epitopes that are targeted by pathogenic anti-MPO IgG. 4) In collaboration with the National Gnotobiotic Rodent Resource Center at UNC to compare anti-MPO IgG induced GN in WT versus germ free gnotobiotic 129S6 and C57BL/6J mice and evaluate the effects of microbiome on disease phenotype.

YANG YANG, Ph.D.

Dr. Yang's current research activity is working on the revision of a paper, which will be resubmitted to Journal of Cell Biology in July. She is also working on the NC TraCS Pilot Grant, wrapping up a paper by the end of this year. Her goal for the coming year is to submit a NIH grant.

MAIMOONA B. ZARIWALA, Ph.D.

Dr. Zariwala's research activities involves studying genetic underpinning of Primary Ciliary Dyskinesia. This includes: (a) to decipher possible genetic causes of Primary Ciliary Dyskinesia, and idiopathic bronchiectasis; (b) continue to provide leadership, oversight and guidance to the lab, answer genetics related questions and provide research results to our 10-site consortium and UNC colleagues patients; (c) identify possible large indels in pertinent cases; (d) possibly identify novel candidate genes (e) continue to provide ongoing support for variant interpretations to the Molecular Pathology & Genetics Lab and for the Vertex Pharmaceuticals, Inc. clinical trial and outside Physicians seeking assistance. She has made significant progress towards her proposed activities. Over 150 unrelated cases of Primary Ciliary Dyskinesia have been tested for the panel of 30 disease associated genes and current data suggests that ~55-60% cases harbor biallelic mutations. We identified large indels on one allele in 5 families that were lacking 2nd hit, and large indels one both alleles in two families thus helped with solving these cases. It is pertinent to mention that large indels are usually not identified by the sequence-based assays. She plans to work towards defining the possible breakpoints that is a cumbersome procedure depending on the size of the indel and may take time. She has completed whole exome sequencing of 179 cases in collaboration with Mendelian Genome Centers at St. Louis and Yale and have identified mutations in known genes in ~20 cases and additional analysis is ongoing. Further analysis in collaboration with Dr. Ostrowski's lab is ongoing for the two families harboring *SPAG1* mutations but not fitting the ciliary phenotype. She assisted Molecular Pathology and Genetics Lab of UNC Hospital in development of the expanded test panel for Primary Ciliary Dyskinesia which is being offered since Feb 2017. Additional work with Molecular Pathology and Genetics Lab on patients with unexplained neonatal respiratory distress in term neonates to decipher possible variants in Primary Ciliary Dyskinesia associated genes is ongoing. She continues to provide guidance, leadership and oversight to the research lab, and provide consultation on variant interpretation for the clinical trial. The research activities in the Primary Ciliary Dyskinesia

genetics laboratory continues to represents significant steps forward in the studies of this genetically heterogeneous disorders in humans.

QING ZHANG, Ph.D.

Dr. Zhang's research focuses on understanding how hypoxia signaling/prolyl hydroxylase pathways contribute to breast cancer and renal cell carcinoma. The ultimate goal is to develop selective strategies to target key signaling pathway in hypoxia signaling involved in cancer. His plan for the coming year is to publish at least 2-3 peer-reviewed research articles. His lab has four papers published at Cancer Research, Oncotarget, Cell cycle and BBA-Reviews on Cancer. Currently, we have another paper under review in Science. He successfully secured his first R01 grant. He also submitted another R01 and one ACS scholar grant. He plans to submit at least one more R01 next year. He will also be actively participating in departmental and lineberger cancer center seminar/symposium events and will continue to serve on committees for graduate students. He will also direct the pathology 725 class.

TEACHING

HOWARD M. REISNER, Ph.D.

MEDICAL: The TEC 1 integrated curriculum which spans the first three semesters of undergraduate medical education is taught in a completely integrated format. The curriculum integrates preclinical science (such as biochemistry, histology, cell biology, physiology and genetics) previously taught in the first year with the pathophysiology/pathology previously taught in the second year. The curriculum remains organ system based with the blocks being taught in a similar order. The initial block (Principles of Medicine, POM) and the second block (Immunology-Host Defense) serve a somewhat introductory role. An introductory lecture of 100 minutes on mechanisms of pathology was given by Dr. Jennette and two two-hour small group sessions covering the histopathology of cellular response to injury (including a short quiz) was included in the POM block. A small group session on inflammation and an overview lecture on mechanisms of immunopathology were included in the Immunology block. In addition an introductory lecture on neoplasia has been integrated into the Hematology (3rd) block. The teaching of systemic pathology in the subsequent organ system blocks is organized similar to the prior curriculum. Because of the shorter available time more use is being made of “free-standing” teaching modules for use independently by students. The use of virtual microscopy in several of the blocks (POM, Immunology, Pulmonary, Renal) continues to be much improved by working with Leica-Biosystems to provide an off-site service and upgraded performance.

Dr. Reisner has aided in preparation of teaching material with the assistance of Ms. McGhee and they have concentrated on making virtual microscopy slides easily available as part of the syllabi. As “Coil” for Pathology, Dr. Reisner works closely with the surgical pathology faculty who are responsible for teaching in each system block and also with faculty from other Departments (such as Cell Biology) to help in the provision of virtual microscopy for histology. Student acceptance has increased with the much improved Leica-Biosystems based server system and a far greater interest in histopathology was noted to be present during laboratory sessions. Laboratories continue to be staffed predominantly by both residents and M.D. faculty. The examination format has been somewhat modified to fit the integrated TEC 1 examination paradigm. Many small group sessions include a short quiz done in lab to help reinforce major points in the lecture and laboratory.

DENTAL: First Year Dental School Teaching: Pathology 127: Dr. Reisner (Course Director) revised the previous lecture-based format replacing most formal lectures with a prerecorded introduction followed by a brief-individually based on-line quiz. Dr. Reisner was available during the time devoted to individual student review and for an additional 15 minutes to provide guidance and answer questions. Following the quiz either histology review sessions or in some cases short case based sessions were provided followed by group quizzes. Several of the sessions did maintain the prior lecture based format for comparison. In addition a single joint general/dental pathology session was done in collaboration with Dr. Padilla. For the 2017 semester all lectures will be provided using prerecorded material. Student comments regarding the new format were extremely positive and represented a significant improvement. Two open book examinations were also included to encourage students to review the material.

Second Year Dental School Teaching (Pathology 214): The course is currently a series of eleven lectures designed to cover most areas of systemic pathology by invited Pathology Clinical Faculty with Dr. Reisner filling in where necessary. Because of this format, the variability between sessions continues to diminish. The lack of a laboratory de-emphasizes histopathology and the use of fixed organ material. Lectures are now much more standardized and apropos the needs of the Dental students. Current efforts are focused on converting this format to the use of prerecorded lectures because of very poor student attendance at lectures.

PATHOBIOLOGY AND TRANSLATIONAL SCIENCE GRADUATE PROGRAM
JONATHON W. HOMEISTER, M.D., Ph.D., DIRECTOR OF GRADUATE STUDIES
CYRUS VAZIRI, Ph.D., ASSOCIATE DIRECTOR OF GRADUATE STUDIES

Summary of Programmatic Activities, and Graduate Student Accomplishments and Activities - Pathobiology and Translational Science Ph.D. Program

The graduate program Director, Jonathon W. Homeister, M.D., Ph.D., and Associate Director, Cyrus Vaziri, Ph.D., have held these positions since August of 2012. The remainder of the 2016-2017 Executive Committee included Past Director, Bill Coleman, Ph.D.; Qualifying Exam Representative, David Williams, M.D.; Education Representative, Melissa Troester, Ph.D.; Member-at-Large, Scott Williams, Ph.D.; and Student Representative, Rachel Dee. Program faculty Drs. Mack and Wolberg served as BBSP first year group leaders. Dr. Vaziri served on the BBSP Pathogenesis Admissions Committee, and Drs. C.R. Miller, Coleman, D. Williams, and Zhang served on the BBSP NCGC Admissions Committee. Drs. D. Williams (Chair), Liu, Vaziri, S. Montgomery, and Zhang comprised the Preliminary Examination Committee.

The graduate student body individually and collectively accumulated a number of significant accomplishments during the past year. Two students successfully completed the Ph.D. program (Kevin Mangum and Robbie McNeill), and one completed the M.S. program (Pamela Lockyer). With these graduates, the Pathobiology and Translational Science graduate program has produced 191 total graduates and 141 Ph.D. graduates since 1954. Kevin is currently finishing his medical training as part of the MSTP at the University of North Carolina Medical School. Robbie is a Scientist at Cato Research in Research Triangle Park. Pamela is relocating prior to returning to the workforce.

The Biological and Biomedical Sciences Program recruited another excellent class of graduate students, many of whom were interested in the Pathobiology and Translational Science graduate program. During Summer 2016, Fall 2016, and Spring 2017, fourteen faculty members associated with the Pathobiology and Translational Science graduate program hosted nineteen laboratory rotation experiences for fourteen individual students. This is five more laboratory rotations than the previous year. Six students matriculated into the program from the BBSP in June of 2017. Johnny Castillo will work with Dr. Al Baldwin, Matthew Combs will work with Dr. Joan Taylor, Jean Marie Mwiza will work with Dr. Monte Willis, Abigail Shelton and Erin Smithberger will both work with Dr. Ryan Miller, and Bethany Wagner will work with Dr. Scott Williams. As of July 1, 2017, the Pathobiology and Translational Science graduate program had a total of 19 students.

In 2016-2017, graduate students from the program contributed authorship to a number of peer-reviewed journals as well as numerous published abstracts, many with a graduate student as first author, and several with multiple graduate students as co-authors. In addition, many graduate students were recognized for their research excellence with awards. At the 2016 Pathobiology and Translational Science Annual Research Symposium, Sravya Kattula and Robbie McNeill received awards for outstanding presentations by a graduate student. Nicole Fleming received the Trainee's Choice Award from her colleagues. Jamie Byrnes received the First Place Poster Award at the Translational Medicine Symposium at UNC, the International Society on Thrombosis and Hemostasis Young Investigator Award, and a GEAB Horizon Award. Nicole Fleming received the Second Place Poster Award at the Translational Medicine Symposium, a Poster Award at the Weinstein Cardiovascular Development Conference, and received the Katherine Pryzwansky Young Investigator Award from the program. Ashley Fuller was inducted into the Royster Society of Fellows at UNC. Sravya Kattula received a

Young Investigator Travel Award to attend the XXVI Congress of the International Society on Thrombosis and Haemostasis. Katie Stember was inducted into the Frank Porter Graham Honor Society, and Qing Zhu received a travel award from the UNC Graduate School.

Research support for students in Pathobiology and Translational Science was provided by a number of sources other than mentor's grants. Several students received support from NIH training grants. Zachary Opheim and Haley Vaseghi were both supported by the Integrative Vascular Biology NIH Training Program, and Katie Stember was supported by the North Carolina Kidney Foundation NIH Training Grant. Nicole Fleming, Sravya Kattula, and Qing Zhu were all supported by Predoctoral Fellowships from the American Heart Association. Sravya also received an NIH Ruth L. Kirschstein Research Award (F31). In addition, two students were supported by funds from the Department of Pathology and Laboratory Medicine. During 2016-2017, Robbie McNeill, and James Byrnes received support as Robert H. Wagner Scholars in Pathobiology and Translational Science. The Bill Sykes Scholarship was not awarded.

The involvement of Pathobiology and Translational Science students and faculty in the Certificate Program in Translational Medicine remains strong. Six Pathobiology and Translational Science Ph.D. students including Sabri Abdelwahab, Bethany Batson, James Byrnes, Nicole Fleming, Sravya Kattula, and Katie Stember were fellows participating in the Program in Translational Medicine. The involvement of Pathobiology and Translational Science students in the Certificate Program in Cardiovascular Science continues to grow. This year five of the program's PhD students, Rachel Dee, Nicole Fleming, Zachary Opheim, Haley Vaseghi, and Qian Zhu were fellows in the program.

During the last year, the Graduate Student Seminar Series, which began in Fall of 2001, continued to showcase the excellent research of the graduate trainees. The Spring 2017 Seminar Series featured presentations by 8 Pathobiology and Translational Science Ph.D. students, as well as other speakers. Beyond the Tuesday seminar series, graduate students from the program participated in numerous other research symposia on campus. Graduate students were also featured in a Pathology Grand Rounds session in Spring 2017. Rachel Dee (from Dr. Taylor's laboratory) gave a presentation entitled "Blood Pressure Regulation by GRAF3, a smooth-muscle specific RhoGAP," and Ashley Fuller (from Dr. Troester's laboratory) gave a presentation entitled "Obesity, immune microenvironments, and triple-negative breast cancer: insights into etiology and progression." These seminar series provides valuable opportunities for students, faculty, and staff to learn more about graduate student research ongoing in the department. The student-led Marc J. Mass, Ph.D., Memorial Distinguished Lecture Committee hosted Mina Bissell, Ph.D., from Lawrence Berkeley National Laboratory on Thursday, March 16, 2017, for a talk entitled "Why don't we get more cancer: the critical role of ECM and microenvironment in malignancy and dormancy."

In the summer of 2016, the graduate students selected Dr. Cyrus Vaziri, Ph.D. the 2016 recipient of the Joe W. Grisham Award for Excellence in Graduate Student Teaching. The award was presented to Dr. Vaziri in September 2016 at the evening open reception after the Annual Research Symposium, held at the University's Carolina Club. In other activities, the graduate students have continued to have regular outings to local restaurants and events for informal discussions related to the graduate program and their research, as well as fun social interaction.

Programmatic changes of note in 2016-2017 included the institution of a requirement for incoming students to prepare an individual development plan for themselves, and review it annually with a research mentor.

RESIDENCY TRAINING PROGRAM IN PATHOLOGY

SUSAN MAYGARDEN M.D., DIRECTOR

The Department of Pathology & Laboratory Medicine currently sponsors a residency training program in Anatomic Pathology (AP) and Clinical Pathology (CP). Our program is fully accredited by the American Council on Graduate Medical Education (ACGME); a complete description of our program, curriculum and current trainees is available on the departmental web site: <https://www.med.unc.edu/pathology/residency>.

The educational goals and philosophy of the residency program are:

1. Provide a flexible, broad-based training program for physicians that includes training in anatomic, clinical, and experimental pathology.
2. Encourage trainees to participate in research.
3. Provide an educational experience sufficient to ensure that all residents develop skill levels expected of a new practitioner in the six ACGME-defined competencies (patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice).

The program offers a four-year combined AP and CP residency with ample opportunities for research and post-residency fellowship training in a wide range of subspecialty areas in Pathology. The first three years of our program are focused on core training in AP and CP. The curriculum is organized to blend AP and CP core rotations within each of the first three years of training. The fourth year of training permits the trainee great flexibility – there are 5 months of elective rotations in AP, CP, or pathology research, so that the resident can concentrate on his/her particular interests. Overall there are 7.5 months of elective rotations interspersed throughout the four-year training program. All residents in the training program are provided with an individual study carrel, microscope, and computer fully loaded with appropriate software, connected to the internet and fully supported by the UNC Hospitals' ISD staff. Residents have access to a major medical library. The electronic medical record (EPIC) and laboratory information system (Beaker) permit electronic reporting of cases and full search capabilities.

There were two major changes in leadership of the program: Dr. Yara Park replaced Dr. Herb Whinna as the associate program director, and Ms. Michelle Hewlings replaced Ms. Elizabeth McDonald as the program coordinator. Dr. Susan Maygarden remained as the program director.

For the academic year July 1, 2016 through June 30, 2017, we had a total of 16 residents (14 AP/CP residents plus 2 single tract residents (1 AP-only and 1 CP only)). There were 4 graduating residents who completed the program on June 30, 2017. All have gone on to fellowship programs: 1 to cytopathology at UNC, 1 to molecular pathology at UNC, 1 to dermatopathology at the University of Pittsburgh, 1 to microbiology at Cleveland Clinic. The program successfully matched 4 residents in March 2017 to form the incoming 2017 class. The clinical faculty reviewed approximately 360 applications to our program, invited 70 applicants to interview, conducted 52 interviews, ranked 47 (2 withdrew after interview, which were not ranked 3), matched 4. The discrepancy between the number of invitations to interview and the number of interviews actually conducted is explained by the fact that there were large numbers of couples match applicants who withdrew after applying because their match partner was not successful in securing an interview at UNC.

The program was especially fortunate to have matched 4 well qualified applicants because nationally it was a very difficult match for pathology. 216 US seniors matched in pathology out of 601 offered

positions (only 35.9% of matched path positions went to US grads, the worst of any of the major specialties and the worst in pathology in at least 25 years). There were 56 unfilled path positions in the main match (9.3% of offered positions). Most of these were eventually filled in the supplemental match (SOAP).

SUBSPECIALTY FELLOWSHIP TRAINING PROGRAM

CLINICAL CHEMISTRY FELLOWSHIP 2016-2017

NICHOLE KORPI-STEINER, Ph.D., DIRECTOR

<http://www.med.unc.edu/pathology/residency/fellowships/clinical-chemistry-fellowship>

Begun in 1972, this postdoctoral training program has a rich history of producing leaders within the field of Clinical Chemistry. Following two-years of intensive training in both the analytical and clinical aspects of clinical chemistry, fellows are prepared to enter laboratory medicine in clinical service, educational, or research roles. In 2016, the UNC Clinical Chemistry Fellowship Program was inspected by the Commission on Accreditation in Clinical Chemistry (ComACC) and received successful reaccreditation of this fellowship training program through 2021.

The Clinical Chemistry Fellowship did not have a Fellow assigned this year.

CLINICAL MICROBIOLOGY FELLOWSHIP 2016-2017

PETER H. GILLIGAN, Ph.D. AND MELISSA B. MILLER PhD, CO-DIRECTORS

<https://www.med.unc.edu/pathology/residency/fellowships/clinical-microbiology>

The Department of Pathology and Laboratory Medicine and UNC Hospitals sponsors the Clinical Microbiology Training Fellowship, which is a two-year training program accredited by the Committee on Post-doctoral Education Programs of the American College of Microbiology. The Clinical Microbiology Fellowship is co-directed by Peter H. Gilligan, PhD and Melissa B. Miller PhD. The major objective of this program is to train individuals to direct clinical and public-health-microbiology laboratories. The fellows' training includes five areas: (i) Technical training to become proficient at performing and interpreting the laboratory procedures offered in the clinical microbiology laboratory; (ii) Administrative training in the various aspects of laboratory management and administration, including budgeting, personnel, quality control, protocol preparation, safety regulations, and CLIA and OSHA requirements; (iii) Clinical training enabling the trainee to interface effectively with infectious-disease clinicians; (iv) Research in clinical microbiology; and (v) A four week external rotation at the State Laboratory of Public Health. Kara Levinson PhD, MPH who joined the program in July of 2016 successfully completed her first year of fellowship. During that time, she played a vital role in the UNC Health Care System by validating blood culture instruments at both UNC and Hillsborough Hospitals. She was an active participant in the training of Infectious Disease fellows and Pharmacy residents by presenting numerous presentations and performing daily clinical consultations. She also participated in teaching 2 sessions for third year medical students. In addition, she received the ASM Infectious Diseases Fellows Travel Award for Microbe 2017 where she made a presentation entitled: Evaluation of RGM Medium for the Isolation of Non-tuberculous Mycobacteria in Patients with Bronchiectasis and Cystic Fibrosis. On July 5 2017, Sheila Johnson PhD joined the program as a first year fellow. Dr. Johnson is a Major in the US Army. Her two years of fellowship training is fully supported by the Army.

CLINICAL MOLECULAR GENETICS FELLOWSHIP

JESSICA K. BOOKER, Ph.D., DIRECTOR

Natasha Strande, Ph.D., FELLOW, 2016-2018

Alexandra Arreola, Ph.D., FELLOW, 2017-2018

<http://www.med.unc.edu/pathology/residency/fellowships/clinical-molecular-genetics-fellowship>

The Department of Pathology and Laboratory Medicine and UNC Hospitals sponsors a Clinical Molecular Genetics fellowship, which is a one- or two-year training program in laboratory aspects of clinical molecular genetics. The program is accredited by the American Board of Medical Genetics and Genomics. The Molecular Diagnostic Laboratory at UNC Hospitals provides experience with tests including cystic fibrosis, fragile X mental retardation, hemochromatosis, factor V Leiden and prothrombin, α 1-antitrypsin deficiency, MCAD deficiency, connexin 26 and 30 mutations, Prader-Willi and Angelman syndromes, primary ciliary dyskinesia, BK viral loads, hereditary cancers, acquired mutations in cancer, chromosomal breakpoints in leukemias, pharmacogenetics, and monitoring of bone marrow transplants with polymorphic microsatellite markers. State-of-the-art technologies and instrumentation are used in all of these tests. The clinical aspects of the training program are complemented by a strong research foundation. The Clinical Molecular Genetics Fellowship is directed by Jessica Booker, Ph.D. There was one fellow in the training program in 2016-2017; there will be two fellows 2017-2018.

As of July 1, 2017 the American Board of Medical Genetics and Genomics has implemented a new Laboratory Genetics and Genomics specialty which takes the place of the individual Clinical Molecular Genetics and Clinical Cytogenetics Fellowships (<https://www.med.unc.edu/pathology/residency/fellowships/laboratory-genetics-genomics>).

MOLECULAR GENETIC PATHOLOGY FELLOWSHIP

MARGARET L. GULLEY, M.D., DIRECTOR

Claire Edgerly, M.D., FELLOW, 2017-2018

<http://www.med.unc.edu/pathology/residency/fellowships/mgp>

The Department of Pathology and Laboratory Medicine and University of North Carolina Hospitals sponsors a one-year fellowship in Molecular Genetic Pathology. Trainees gain a working knowledge of molecular procedures including DNA sequencing (massive parallel sequencing, Sanger, and pyrosequencing), DNA amplification (real time, melt curve, methylation-specific, or sized by electrophoresis), tissue macrodissection and other cell enrichment procedures, in situ hybridization/FISH, and array technologies including RNA expression profiling and single nucleotide polymorphism (SNP) chips. These advanced technologies are applied in a wide spectrum of clinical settings such as oncology, heritable disease, infectious disease, HLA-typing, identity, and pharmacogenetics. The fellow learns to analyze and interpret molecular data from clinical cases and to compose concise, informative reports that incorporate correlative clinical, histopathologic, immunophenotypic, and cytogenetic findings. The fellow designs and implements a research project aimed at understanding the molecular basis of disease and translating fundamental discoveries into laboratory advances for improving patient care. Ethical issues, quality assurance, and lab administration are discussed as they relate to clinical practice. UNC has the longest track record of board certifications among all ACGME-accredited molecular genetic pathology training programs in the nation. The program is directed by Margaret L. Gulley, MD with support from many faculty and staff across Molecular Genetics, Cytogenetics, Microbiology, Immunology, Surgical/Cytopathology, and Histology Laboratories. More information is found at, <http://www.med.unc.edu/pathology/residency/fellowships/mgp>

COAGULATION FELLOWSHIP

The Coagulation Fellowship did not have a Fellow assigned this year.

CYTOGENETICS FELLOWSHIP

KATHLEEN KAISER-ROGERS, DIRECTOR, Ph.D.

<https://www.med.unc.edu/pathology/residency/fellowships/clinical-cytogenetics-fellowship>

The McLendon Clinical Laboratories of UNC Hospitals and the Department of Pathology and Laboratory Medicine sponsor a fully accredited training program in Clinical Cytogenetics and Genomics, which leads to eligibility for certification by the American Board of Medical Genetics and Genomics (ABMGG). The usual training period is two years. Upon successful completion of the program and ABMGG Certification, the fellow will be qualified to direct a clinical Cytogenetics laboratory. The Cytogenetics Fellowship Program is part of a comprehensive ABMGG training program that includes Medical Genetics Residents, Clinical Molecular Fellows, Clinical Biochemical Fellows, and Molecular Genetic Pathology Fellows. All trainees and faculty involved in these programs participate regularly in multiple clinical and educational conferences, and Fellows have opportunities to teach in Medical Student and Resident courses. The UNC Cytogenetics laboratory is a full service laboratory, processing over 4800 specimens on which more than 7200 tests are performed annually for both constitutional and oncology diagnostics. Sample types include chorionic villi, amniocentesis, products of conception, peripheral blood, bone marrow, lymph nodes, solid tumors, tissue biopsies, and paraffin sections. Fellows are trained in result interpretation and in a variety of techniques, including tissue culture, chromosome banding and analysis, FISH, and high-resolution SNP microarray. The UNC Cytogenetics Laboratory is an approved Children's Oncology Group Laboratory and Cancer and Leukemia Group B Laboratory, and actively participates in both of these national cancer cooperative groups. The Clinical Cytogenetics Fellowship was directed by Kathleen W. Rao, Ph.D until March of 2016 and is currently directed by Kathleen Kaiser-Rogers, Ph.D. As of July 1, 2017, the ABMGG merged the Cytogenetics and Molecular Genetics and Genomics Fellowships into a single Laboratory Genetics and Genomics (LGG) Fellowship. Kathleen Kaiser-Rogers and Jessica Booker, Ph.D. jointly direct this LGG Fellowship.

CYTOPATHOLOGY FELLOWSHIP 2016-2017

LESLIE DODD, M.D., DIRECTOR

<https://www.med.unc.edu/pathology/residency/fellowships/cytopathology>

The Cytopathology Fellowship Program admits two trainees per year. The program has a highly competitive admissions policy and consistently attracts very well qualified candidates. All trainees in recent history have passed their qualifying examination (Cytopathology Board); we have a 100% pass rate. Trainees have a variety of learning experiences including cytopathology rotations, two months of elective time, and one required month of surgical pathology and conference review. This curriculum exceeds Board requirements for trainee engagement, progression to independent practice, and interdisciplinary learning.

The Cytopathology program has transitioned its evaluation process to comply with the "NAS" requirements stipulated by the ACGME. The program has cytopathology-specific milestones the PEC will be using to evaluate trainee' progress. The program has expanded the evaluation process to include more "360" evaluators in different departments (Radiology, Interventional Pulmonology, Gastroenterology). A fairly new addition to the curriculum is an option for trainees to attend an off-site comprehensive cytopathology course. To date, all fellows have reported this was an extremely positive experience. The curriculum has also added short rotations in the prep lab and the screening lab for fellows.

FORENSIC PATHOLOGY FELLOWSHIP

DEBORAH L. RADISCH, M.D., MPH, DIRECTOR

<https://www.med.unc.edu/pathology/residency/fellowships/forensic-pathology>

The North Carolina Office of the Chief Medical Examiner (OCME) in conjunction with the Department of Pathology and Laboratory Medicine and UNC Hospitals, offers a one-year fellowship in forensic pathology. The program is accredited by the Accreditation Council for Graduate Medical Education (ACGME) and is under the direction of the Chief Medical Examiner of the State of North Carolina. The trainee in forensic pathology performs approximately 250 forensic autopsies during the course of the one-year fellowship. Consultations in subspecialty areas, including neuropathology, pediatric pathology, forensic odontology, and forensic radiology are available within the Department of Pathology and Laboratory Medicine and the School of Dentistry. Ancillary laboratory studies, including post-mortem toxicology, clinical chemistry, microbiology, and special histology are provided by the in-house toxicology laboratory and WakeMed Pathology Laboratories. Forensic anthropology, crime lab technology, and other training experiences are also provided at designated sites, including North Carolina State University and the NC Crime Lab. The forensic pathology fellowship is directed by Deborah L. Radisch, MD, MPH. One fellow is currently undertaking the training program (2016-2017).

HEMATOPATHOLOGY FELLOWSHIP 2016-2017

STEPHANIE MATHEWS, M.D., DIRECTOR

<https://www.med.unc.edu/pathology/residency/fellowships/hematopathology>

The Department of Pathology and Laboratory Medicine (McLendon Clinical Laboratories) and the UNC Hospital sponsors a broadly based, one-year training program in hematopathology. The program is directed by full-time hematopathologists and is fully accredited by the ACGME. The program has been highly successful in attracting high-quality applicants with a broad range of backgrounds, interests, and career goals. The Fellowship is organized in such a way as to provide appropriate training in all areas of hematopathology, while also providing flexibility to address personal needs, interests, and objectives of the individual fellows. Trainees gain experience in the management and medical supervision of a high volume hematology laboratory, the evaluation of peripheral blood smears, bone marrow, and lymph node biopsies, coagulation testing, and hemoglobinopathy diagnosis. The Hematopathology Fellows have been very active in scholarly activities with resultant journal publications. The fellowship was able to recruit Steven Ellsworth, from VCU. He was an asset to the work in this division, and functioned seamlessly within the team.

NEPHROPATHOLOGY FELLOWSHIP 2016-2017

VOLKER NICKELEIT, M.D., DIRECTOR

<https://www.med.unc.edu/pathology/residency/fellowships/nephropathology-fellowship>

The Department of Pathology and Laboratory Medicine sponsors a one- to two-year fellowship in renal pathology in the Division of Nephropathology. Up to two fellows (from the US or foreign nationals) are accepted into the program. The fellows are directly involved in the diagnostic evaluation of approximately 2000 renal biopsies/nephrectomies (both native and transplant cases) examined annually. All fellows are integrative members of the nephropathology team and receive intensive training. They prepare cases for sign out by the faculty using all standard techniques (light microscopy, immunofluorescence microscopy, immunohistochemistry, and electron microscopy). The fellows' responsibilities include the organization of clinico-pathologic and biopsy review conferences for medical faculty and housestaff, and teaching renal pathology to medical students, residents, and fellows. Teaching conferences and continuous education series offered by the nephrology and transplant divisions at UNC provide additional ample learning opportunities. Although emphasis is placed on the development of diagnostic skills, fellows are expected to carry out clinico-pathological and/or basic research projects and

to present their data at national meetings, such as the ASN or USCAP (funding provided by the UNC Division of Nephropathology). Research projects focus on the pathogenesis of glomerulonephritides, allograft rejection, and polyomavirus infections. All state-of-the-art facilities (including gene sequencing) are available. Appropriate research studies are financially supported by the division. Clinico-pathological studies are facilitated by the Glomerular Disease Collaborative Network, which is a well-established network of over 200 nephrologists participating in clinical data collection. The division of nephropathology and the fellowship training program is directed by V. Nickleit, M.D. (www.uncnephropathology.org).

SURGICAL PATHOLOGY FELLOWSHIP / INSTRUCTORSHIP

SCOTT VICTOR SMITH, MD, DIRECTOR

Christine Bookhout, MD, FELLOW / INSTRUCTOR (2016-17)

Avani Pendse, MD, FELLOW / INSTRUCTOR (2016-17)

<https://www.med.unc.edu/pathology/residency/fellowships/surgical-pathology-fellowship>

Program Description: The UNC School of Medicine Department of Pathology and Laboratory Medicine offers a one-year Fellowship/Clinical Faculty Instructorship in Surgical Pathology. The training year is intended for board-eligible or board-certified anatomic pathologists who want progressive responsibility and to develop excellent diagnostic skills in Surgical Pathology in an academic practice environment. UNC Surgical Pathology case volume is approximately 37,000 cases per year and represents a broad spectrum of pathology case types. Service responsibilities include light microscopic evaluation, use of appropriate ancillary studies, diagnosis and case reporting, with the support and tutelage of the Surgical Pathology faculty. In addition, there is some experience with review of outside cases and case presentation at multidisciplinary conferences. Gross examination of all specimens are performed by highly qualified pathology assistants, i.e. there is no grossing by Fellows.

There is progressive responsibility and autonomy for the Fellows throughout the training year. During the early months of the Fellowship, the Fellow's service work is supervised and diagnoses are finalized by faculty. Fellows are credentialed by the Hospital to allow independent sign-out of cases, and Fellows are appointed as Clinical Faculty Instructors. Fellows begin to diagnose and sign out cases independently during November of the fellowship year, with support from faculty. In addition to service responsibilities, opportunities are available for didactic and slide-based teaching of medical students and residents. Two months of elective time are provided during the Fellowship, to allow for rotations in pathology subspecialty areas, scholarly projects, writing, meeting presentations, job interviews, etc.

Program Requirements: Applicants must possess an MD degree, be board-eligible/board-certified in Anatomic Pathology, and be eligible for medical licensure in North Carolina.

TRANSFUSION MEDICINE FELLOWSHIP

YARA A. PARK, M.D., DIRECTOR

The Department of Pathology and Laboratory Medicine and McLendon Clinical Laboratories of UNC Hospitals sponsor a comprehensive one-year fellowship program in Blood Banking/Transfusion Medicine that is fully accredited by the Accreditation Council of Graduate Medical Education (ACGME). The training program provides didactic and practical training in advanced immunohematology, therapeutic and donor apheresis, blood component donation, testing, preparation and storage, clinical coagulation, histocompatibility, hematopoietic progenitor cell collections and processing, and clinical support for an academic tertiary care hospital. Supported clinical programs include transplant programs in marrow/stem cells, liver, heart, lung and kidney; a Level I trauma

program; and a neonatal intensive care unit. The 2016-2017 fellow, Dr. Alexis Peedin, joined the Pathology Department at Thomas Jefferson University upon the completion of her fellowship in June 2017. While the fellow at UNC, Dr. Peedin completed a number of projects focusing on education in transfusion medicine and apheresis.

PATHOLOGY AND LABORATORY MEDICINE GRAND ROUNDS – 2016-2017

GRAND ROUNDS ORGANIZING COMMITTEE: MONTE S. WILLIS, M.D., Ph.D., M.B.A., Chair. Members: William B. Coleman, Ph.D., and Yuri Trembath, M.D.

<https://www.med.unc.edu/pathology/coming-events/pathology-laboratory-medicine-grand-rounds>

The Department of Pathology and Laboratory Medicine Grand Rounds seminar series continued to be well attended during the academic year 2016-2017. This weekly series provided a venue to disseminate clinically relevant translational and clinical research to promote the interaction and collaboration between the Department of Pathology and Laboratory Medicine faculty, residents, postdoctoral fellows, graduate students, and clinical fellows, and other members of the UNC academic community at-large. This is also the venue where we feature faculty academic accomplishments that serves as part of promotion and post-tenure reviews, and as a forum for announcements and discussion of items of interest and importance to faculty and trainees.

Monte Willis (Chair), Bill Coleman, and Yuri Trembath comprised the Grand Rounds Committee for this academic year. The 2016-2017 Grand Rounds included talks intended to highlight and encourage the clinical and research collaborations of the Department of Pathology and Laboratory Medicine faculty. Some Grand Rounds (with CME credits) were delivered by two individuals paired by clinical and laboratory interests. Some pairs had ongoing collaborations, and others had complementary expertise and perspectives on related topics. The committee strived to assure a range of experimental, clinical, and surgical pathology, and included scientific reviews of pertinent areas in clinical medicine, translational research, and/or basic science.

The following list of 2016-2017 presenters, their affiliations and topics demonstrate that both internal and external speakers are sought.

Category 1 CME credit is offered for seminar participation. The format provides an opportunity for the speakers to have their presentation formally evaluated, as required of all CME activities. Written comments and questions concerning the quality of the presentations are requested. Prior to each Grand Rounds seminar, refreshments are provided. This encourages a collegial atmosphere, and it also provides an opportunity for the attendees to visit and discuss science, medicine,

FALL

SPEAKER/AFFILIATION

08/11/2016	Susan J. Maygarden, MD Professor, Director, Residency Training Program Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill <i>“Resident fatigue, duty hours and physician wellness: required presentation for trainees and faculty of ACGME accredited programs”</i>
08/18/2016	Haifeng Yang, PhD Assistant Professor Department of Pathology and Anatomy and Cell Biology

Thomas Jefferson University
“Chromatin regulators and kidney cancer: What we have learned”

- 09/22/2016 Jeffrey J. Brault, PhD, ECU
Assistant Professor of Kinesiology
East Carolina Diabetes and Obesity Institute, Brody School of Medicine
East Carolina University
“Crosstalk between fat and muscle: does obesity accelerate degradation of skeletal muscle proteins?”
- 09/29/2016 Stephan Moll, MD
Professor of Medicine, School of Medicine
Department of Medicine, Division of Hematology-Oncology
The University of North Carolina at Chapel Hill
- Marian Rollins-Raval, MD, MPH
Clinical Assistant Professor
Director of Special Coagulation Laboratory
Department of Pathology and Laboratory Medicine
University of North Carolina School of Medicine
“Thrombophilia testing: Whom, what, when to test”
- 10/20/2016 Allison R. Rogala, DVM, DACLAM
Division of Laboratory Animal Medicine
Department of Pathology and Laboratory Medicine
University of North Carolina School of Medicine
”Understanding the impact of environment on animal models of human disease”
- 11/03/2016 Bill Kaufmann, PhD
Professor, Pathology and Laboratory Medicine
University of North Carolina School of Medicine
“Timeless checkpoints prevent chromosomal instability in cancer”
- 11/10/2016 Douglas Stairs, PhD
Assistant Professor, Department of Pathology
Director, Molecular and Histopathology Core
Penn State College of Medicine
“p120ctn loss cooperates with oncogenes to induce tumor invasion”
- 11/17/2016 David Huntsman, MD, FRCPC, FCCMG
Professor, Departments of Pathology and Lab Medicine and Obstetrics and
Gynecology, UBC Dir., of OvCaRe
Vancouver General Hospital
“Genomic pathology and the control of ovarian cancer”

- 01/12/2017 Shanmugam Nagarajan, Ph.D. (Univ of Pitt)
Associate Professor, Department of Pathology
University of Pittsburgh
"Fcγ receptors - Link to autoimmune-disease induced atherosclerosis"
- 01/19/2017 Clark Files, MD
Assistant Professor, Pulmonary, Critical Care, Allergy, and Immunologic
Medicine Center on Diabetes, Obesity, and Metabolism Gerontology and Geriatric
Medicine
"Mechanisms underlying skeletal muscle wasting in critical illness"
- 01/26/2017 Jen Jen Yeh, MD
Professor, Department of Surgery
University of North Carolina at Chapel Hill
"Deconstructing pancreatic cancer to identify tumor-specific signals"
- 02/02/2017 Victoria Baxter, DVM, PhD
Assistant Professor, Department of Pathology and Laboratory Medicine
University of North Carolina at Chapel Hill
*"Modeling alphavirus encephalomyelitis: Characterization and inhibition of
neurological sequelae"*
- 02/09/2017 Nigel Mackman, PhD
Professor, Department of Medicine, Division of Hematology/Oncology
University of North Carolina at Chapel Hill
"Tissue factor, coagulation proteases and PARs in health and disease"
- 02/16/2017 Jonathan Schisler, PhD
Assistant Professor, Department of Pharmacology
McAllister Heart Institute
*"Identification, characterization, and therapeutic outlooks of cerebellar
CHIPopathy (SCAR16)"*
- 2/23/2017 Phillip Boyer, MD
Clinical Associate Professor, Department of Pathology
Brody School of Medicine, East Carolina University
*"VZV and vasculitis: Is varicella zoster virus the etiologic culprit in temporal
arteritis and granulomatous aortitis?"*
- 03/02/2017 Charles M. Perou, PhD
The May Goldman Shaw Distinguished Professor of Molecular Oncology
Departments of Genetics, and Pathology & Laboratory Medicine-Lineberger
Comprehensive Cancer Center
The University of North Carolina at Chapel Hill
"Precision medicine for cancer patients using a systems biology approach"

- 03/09/2017 Melissa B. Miller, PhD, D(ABMM), F(AAM)
 Professor, Pathology & Laboratory Medicine
 Director, Clinical Molecular Microbiology Laboratory
 Associate Director, Clinical Microbiology-Immunology Laboratory
 UNC School of Medicine, Chapel Hill, NC
"Clinical microbiology: The future is now"
- 03/16/2017 Praveen Sethupathy, PhD
 Assistant Professor, Department of Genetics School of Medicine
 The University of North Carolina at Chapel Hill
"MicroRNAs in GI disease and intestinal stem cell function"
- 03/23/2017 Nicholas Oberlies, PhD
 Professor, Department of Chemistry and Biochemistry
 The University of North Carolina at Chapel Hill
"Natural products drug discovery: How we discover the compounds you may one day prescribe"
- 03/30/2017 Clair Doerschuk, MD
 Professor of Medicine and Pathology and Director, Center for Airways Disease,
 Marsico Lung Institute, Division of Pulmonary and Critical Care Medicine
 University of North Carolina at Chapel Hill
"Regulators of inflammatory and immune responses in pneumonia"
- 04/06/2017 Maureen Su, MD
 Associate Professor, Department of Pediatrics and Microbiology and Immunology
 The University of North Carolina at Chapel Hill
"Aire expands: Lessons from patients with autoimmunity"
- 04/27/2017 Graduate Student Research Highlights
 Rachel Dee
 Program In Pathobiology and Translational Science
 Department of Pathology and Laboratory Medicine
 The University of North Carolina at Chapel Hill
"Blood pressure regulation by GRAF3, a smooth-muscle specific RhoGAP"
- Ashely Fuller
 Program In Pathobiology and Translational Science
 Department of Pathology and Laboratory Medicine
 The University of North Carolina at Chapel Hill
"Obesity, immune microenvironments, and triple-negative breast cancer: insights into etiology and progression"
- 04/20/2017 Jodie Fleming, PhD
 Assistant Professor, College of Science and Technology, Department of Biology
 North Carolina Central University
"The role of the lipolysis stimulated lipoprotein receptor in the promotion of breast cancer"

- 05/11/2017 Rafal Pawlinski PhD
Associate Professor, Division of Hematology and Oncology, Department of Medicine
University of North Carolina at Chapel Hill
"De-clotting sickle cell disease"
- 05/25/2017 Stephen D. Hursting, PhD, MPH
Professor, Department of Nutrition, the Nutrition Research Institute, and the Lineberger Comprehensive Cancer Center at the University of North Carolina at Chapel Hill
"Breaking the obesity-breast cancer link: New targets and strategies"
- 06/01/2017 Kathleen Caron, PhD
Professor and Chair, Department of Cell Biology and Physiology
University of North Carolina at Chapel Hill
"RAMPs and atypical chemokine receptors"
- 06/08/2017 Meghan Free, PhD
Assistant Professor, School of Medicine/UNC Kidney Center
University of North Carolina at Chapel Hill
"The quest for a tolerizing immunotherapy in ANCA vasculitis"
- 06/15/2017 Resident Research Highlights
Dr. Johnny Hollyfield
Chief Resident, Pathology and Laboratory Medicine
The University of North Carolina at Chapel Hill
"The FNA cell block and PD-L1 testing in non-small cell lung adenocarcinomas"
- Dr. Cori Breslauer
PGY-2, Pathology and Laboratory Medicine
The University of North Carolina at Chapel Hill
"Lymphoepithelioma-like carcinoma of the bladder: Analysis of mismatch repair proteins and PD-L1 by immunohistochemistry"
- Dr. Sixto Leal,
PGY-3, Pathology and Laboratory Medicine
The University of North Carolina at Chapel Hill
"Improved diagnostic strategies to identify C. difficile infection"
- 06/22/2017 Lori Renee Scanga, MD, PhD
Assistant Professor, Department of Pathology and Laboratory Medicine
University of North Carolina at Chapel Hill
"Lynch syndrome and the female genital tract"

06/29/2017

Stuart J. Schnitt, M.D.
4th Annual Thomas Bouldin Visiting Professor Lectureship
Professor, Harvard Medical School
Director, Beth Israel Deaconess Medical Center
"The Continuing Dilemma of DCIS"

BACKGROUND - McLENDON CLINICAL LABORATORIES

HERBERT C. WHINNA, M.D., Ph.D., DIRECTOR

McLendon Clinical Laboratories provides laboratory and pathology services to physicians in support of excellent patient care at UNC Hospital. Each laboratory section maintains fiscal accountability for revenue generated and expense required to provide clinical test results. The revenue contribution from the laboratory has continued to grow, despite the difficult financial climate facing healthcare as a whole. The directors of each laboratory, working closely with the assistant administrative directors, develop short and long range plans to assure that the laboratories are supporting the testing needs of the hospital, while continuing to provide the medical staff with cutting edge technologies. The laboratory contributed \$98 million to UNC Hospital's operating margin for FY17. McLendon Clinical Laboratories focused the past year on four major initiatives: Beaker LIS portion of the EPIC Upgrade implementation (addressed in the LIS section), continued development of services as an Internal Reference Laboratory for the UNC Health Care System (see below), laboratory system-wide instrument standardization (addressed in Core section), and UNC FP/PN practice conversion from LabCorp (addressed in OutReach section).

UNC Health Care System Internal Reference Laboratory

With the implementation of Epic's Beaker LIS in CY16, came the development of using UNC Health Care Laboratories as "Internal Reference Laboratories". This was mostly concept for FY16, but came to fuller fruition in FY17 as all the Epic installs for affiliate hospitals were completed during the summer of 2016. McLendon Clinical Laboratories saw greater than expected volumes of Internal Reference Laboratory testing, but the levels plateaued mid-FY17. Even so the estimated savings to affiliate hospitals were ~\$2 million, as McLendon Clinical Laboratories had agreed to this testing essentially at cost. The implementation of the Internal Reference Laboratory required development of new, complex budget processes, customer service support and resources, and a state-wide courier service. Additional staffing was added in departments highly impacted. The recently announced possible affiliation with Carolinas Health System may afford more opportunities for McLendon Clinical Laboratories to add value to UNC Health Care System outside of our significant contribution to UNC Hospitals operating margin.

SURGICAL PATHOLOGY DIVISION, 2016-2017

WILLIAM K. FUNKHOUSER, M.D., Ph.D., DIRECTOR

KEVIN G. GREENE, M.D., DIRECTOR OF HISTOLOGY LABORATORY

UNC Surgical Pathology generates diagnoses on UNCH specimens, on specimens obtained from UNC Health Care affiliate hospitals, on specimens to be reviewed because of patient referral to UNC Hospitals, and on outside expert consultation specimens. In 2016, 35,000 cases were diagnosed, including 2700 outside cases, an 11% year-over-year increase. Inside cases are grossed by Pathologists' Assistants (PAs) and residents on Surgical Pathology rotations. The department currently employs four PAs for gross room work and teaching, including one who rotates at the Hillsborough Hospital. The Department of Pathology and Laboratory Medicine now trains 16 AP/CP residents. Gross room training of these residents is performed by the gross room PAs. Junior residents gross all cases, and senior residents gross 2 cases/day to fill gaps in experience. Beginning in summer 2017, both junior and senior residents will gross many, but not all, specimens on their bench, in order to provide sufficient time for reading about and reporting their cases. Tissue cassettes containing patient specimens are fixed in formalin, then routed to the Histology Laboratory for processing, embedding, and slide preparation (cutting and staining). This Laboratory is well-led by Ms. Deloney, and is well-managed by Mr. Mortillo. Block volumes have increased along with case volumes, so UNCH will need to staff proportionate to demand for histology expertise to maintain an efficient, error-free service. A major change in record keeping occurred in April 2016, when laboratory personnel and pathologists began to use a new lab

software program, Epic Beaker. This software should allow us to use barcoding to identify and track specimens from accessioning to grossing to histology to signout, and also to automatically track block volume trends, case TATs, and error rates.

Glass slides are routed to 8 Surgical Pathology benches (not including Derm or Neuropath) including, Breast, Benign Ob/Gyn, Gyn Onc, GI/Liver biopsies (2), GI/Liver resections, GU/Bone/ST, and ENT/Thor/Vasc. Each bench is staffed either by a solo faculty pathologist, a faculty-resident pair, or a faculty-fellow pair. With Epic Beaker, retrieval of clinical and radiographic data can be done in a paperless fashion, and reports can be dictated using either voice recognition or outside transcriptionists. Junior and senior residents work regularly with, and model on the habits of, faculty pathologists to generate accurate diagnoses, thoroughly reported, in a timely fashion. Service cases supplement the educational mission: organ-specific lectures are presented by faculty, fellows, and residents in didactic and unknown formats. As well, fellows and senior residents rotate through a Conferences/Consults service, during which they staff a multi-disciplinary conference each day (5 per week, of 12 recurring multidisciplinary conferences), while concurrently reviewing and reporting 10 outside cases per day. Major goals of the residency training program are stepwise assignment of responsibilities to build confidence and competence, and regular feedback and mentoring to allow identification of preference of particular organ system pathology and future independent practice environment.

Overall, continuing increases in laboratory workload have been met by continuing increases in effort, ingenuity, and efficiency. It is hoped that the new electronic medical record can be configured to improve workflow efficiency at technical and professional levels. It is hoped that UNCH will choose to staff the Histology Laboratory proportionate to block volumes. The management and leadership skills of Dr. Whinna, the Director of the McLendon Clinical Laboratories, and of Dr. Jennette, Chair of the Department of Pathology and Laboratory Medicine, are perceived as critical to the improvements and successes described above.

CYTOPATHOLOGY

LESLIE DODD, M.D., DIRECTOR

The Cytopathology Division changed Directorship in 2013. Their overall laboratory service volume is increasing steadily. While the volume of Pap tests has declined in previous years following an overall national trend due to changing screening paradigms, 2016-2017 saw a 10% increase in Pap test volumes from the previous year. In addition, there has been a steady increase in fine needle aspiration cases. This includes a dramatic increase in the number of endoscopic bronchogenic ultrasound (EBUS) guided cases. The latter increase is due to the recent hire of two fellowship-trained pulmonologists with endoscopic expertise. This has led to an increased demand for on-site evaluation services for both the cytotechnologists and trainees (fellows), but offers additional learning material and potential opportunities for collaboration on scholarly projects.

Due to the overall increase in FNA volumes, the program has been filling their cytotechnologist open positions with individuals with prior experience in interpreting FNA. Overall, the cytotechnologists are spending more time with rapid on-site evaluations (ROSE) than conventional screening. The evolving role of the cytotechnologists was initially considered unwelcome, but the staff appears to have accepted that this is their fate. We have recently changed the Lab Supervisor. This individual appears enthusiastic about the division's mission.

The Cytopathology Fellowship training program remains very successful. The 2016-2017 fellows both passed their ACGME Boards in Cytopathology. One fellow is training in another fellowship but expects to take a job in an academic practice at the end of the year.

The Division of Cytopathology has also increased its academic presence through publications and presentations, both regionally and nationally. Dr. Maygarden was invited to speak at the North Carolina Society of Pathologists and Dr. Dodd gives a workshop at the American Society of Cytopathology each year. In 2015-2017 the Cytopathology faculty co-authored four abstracts with residents or fellows to present at national meetings. There were at least four manuscripts submitted and accepted for publication on cytopathology topics, authored by the faculty. The Division is also working on opportunities for junior faculty to publish and engage in other scholarly activities.

DECEDENT CARE AND AUTOPSY SERVICES

LEIGH B. THORNE, M.D., DIRECTOR

The UNCH Autopsy Service continues to provide valuable information to clinicians and families of patients. The service supports UNC Healthcare System affiliates and also provides autopsy services for other hospitals in the state. In 2016, a total of 114 autopsies were performed and 133 in the 2016-17 fiscal year. There were five faculty participating in the autopsy service in addition to the full time autopsy Pathologist's Assistant, a full-time autopsy technician/decendent care representative, and a part-time autopsy technician.

In addition to the clinical mission, Dr. Thorne, Vincent Moylan, PA and Claudia Brady, PA continue to participate in the breast and melanoma rapid autopsy programs, in collaboration with Dr. Lisa Carey (breast) and Dr. Stergios Moschos (melanoma). Nine rapid autopsies were performed in the last fiscal year for the breast cancer program with one additional research autopsy performed at the request of a family. They also provide tissues for research on an as needed basis for UNC investigators.

The mission of the Decedent Care program, which began in January 2012, is to improve not only the autopsy services provided to families of deceased patients but to improve the process from the time the patient passes to release of the body to the funeral home. The program is under the oversight of Dr. Leigh Thorne and Sheila Deloney, Assistant Administrative Director in Anatomic Pathology. Decedent Care is staffed by three individuals and a supervisor (position added in Fall 2016) providing services to our clinicians and patient families seven days a week. In 2016, Decedent Care processed 1183 deaths and coordinated and handled paperwork for 148 cremations/disposals. DCS also assists in coordinating the autopsies performed at UNCH and screens all deaths to ensure appropriate deferral to the Orange County Medical Examiner.

MOLECULAR PATHOLOGY

MARGARET L. GULLEY, M.D., DIRECTOR

The Molecular Genetics Laboratory performs assays on DNA and RNA to help in diagnosis, monitoring, and treatment of infectious disease, cancer, and heritable conditions. A test menu and description of each clinical service is found on our website:

<http://www.unccmedicalcenter.org/unccmc/professional-education-services/mclendon-clinical-laboratories/directory/molecular-pathology-and-genetics/>

Newly implemented are the following oncology tests: 1) Lymphoid Mutation Panel, 2) an expanded Myeloid Mutation Panel, 3) *JAK2* V617F mutation by PCR, and 4) *TERT* promoter mutations. On the heritable disease front, they now offer testing for Alport's syndrome and related kidney diseases, and they expanded the breadth of gene tests for cystic fibrosis and for primary ciliary dyskinesia. Their assay to monitor allogeneic transplant was improved. They are piloting a new service to provide residual blood specimens to TraCS investigators for IRB-approved research. On the horizon are multiple new or expanded genomic panels including a Plasma Mutation Panel. Most of the new tests rely on massively parallel sequencing technology to identify relevant gene variants. A pathologist's interpretation of the findings is reported to the patient's medical record.

The laboratory's clinical and academic mission is to advance healthcare using modern molecular technologies. Their test volume has increased in concert with growth of UNC Healthcare. Their training programs educate physicians, medical students, post-doctoral fellows, genetic counseling students, and clinical laboratory scientists. The fellowship training program in Molecular Genetic Pathology was the first in the nation to educate a board-certified physician in this subspecialty. They offer a month-long course in Molecular Diagnostics and Cytogenetics targeted at pathology residents and fellows, and is also open to other interested medical professionals. The aim is to train medical professionals to become competent and confident in using molecular technologies in clinical research and practice. Further information is found at: <http://www.med.unc.edu/pathology/faculty/biosketch-of-dr-margaret-gulley>

Increasingly clinicians use results of molecular tests for diagnosis and for patient management. We rely on solid evidence demonstrating that each test adds value for disease classification or for improving patient outcome. We thank UNC Hospitals, the TraCS Institute, the University Cancer Research Fund, and the Department of Pathology and Laboratory Medicine for making available the resources to validate and implement modern molecular tests. In many cases we can provide services at a lower cost and with greater consultative support than if testing were done at alternative laboratory facilities. Learn more about assay design and implementation in a document entitled "Validating assays for use in clinical trials" at

<http://www.unccmedicalcenter.org/unccmc/professional-education-services/mclendon-clinical-laboratories/directory/molecular-pathology-and-genetics/>

Major Equipment in the clinical molecular genetics lab: Illumina MiSeq and NextSeq sequencers, Life Technologies Ion Torrent PGM sequencer, Roche LightCycler 2.0 and 480 real-time PCR instruments, Abbott m2000, Roche MagnaPure extractor and MagnaLyser, Qiagility and Perkin Elmer Robotic Pipettors; Promega Maxwell MDX, Qiagen EZ1, Qiacube, and QiaSymphony extractors; Qubit/Nanodrop/TapeStation/Bioanalyzer quantifiers, Applied Biosystems / ThermoFisher QuantStudio Dx, 9700, 9800, 7500, and 7900 PCR instruments; two ABI Veriti thermocyclers, Idaho Technologies LightScanner, three ABI 3130xl and two ABI 3500 capillary gel electrophoresis instruments, Biotage Pyromark MD pyrosequencer, Affymetrix array scanner, RoboSep cell separator, and UVP gel documentation system.

Faculty include: Margaret L. Gulley M.D., Karen Weck M.D., Nathan Montgomery M.D. Ph.D., Leigh Thorne M.D., Jessica Booker Ph.D., and Rosann Farber Ph.D. Fellows are Alexandra Arreola PhD, Claire Edgerly MD, and Lori Ramkissoon PhD. Our excellent staff includes seven medical technologists, three research scientists, our supervisor and administrative director, and an office support assistant.

TRANSFUSION MEDICINE SERVICE

YARA A. PARK, M.D., DIRECTOR

The Transfusion Medicine Service (TMS) had a steady workload and transfused approximately 39,000 products in the last year. In summer 2017, TMS began using new automated immunohematology analyzers for most of our immunohematology testing. TMS is scheduled to begin pathogen-reduced platelet products as part of the inventory in late 2017. These products have been treated to prevent infectious complications from platelet transfusion.

Therapeutic apheresis had a steady workflow this year. The nurses completed a quality improvement project to reduce central line infections in apheresis outpatients. All procedures were transitioned to the newer apheresis instrument and the older machines were retired.

The Blood Donation Center (BDC) had maintained an outstanding collection rate of close to 2700 units of platelets per year. Multiple donor drives were done including hospital volunteers and intramural sports clubs. Faculty and staff from the BDC led an undergraduate service learning class on blood donation in both the spring and fall semesters of 2017. BDC also began testing donors for Zika virus in accordance with a new FDA requirement. The BDC celebrated its 20th anniversary in October 2017.

CLINICAL MICROBIOLOGY, IMMUNOLOGY LABORATORIES

PETER H. GILLIGAN, Ph.D., DIRECTOR

The Clinical Microbiology and Immunology laboratories continue to support the mission of UNC Health Care by performing cutting edge laboratory testing, while also supporting the training mission of the UNC School of Medicine, the school of Clinical Laboratory Science and the Molecular Diagnostic Science program. In FY17, the CMI labs implemented new bacterial collection devices, initiated new testing, adopted new instrumentation, supported research endeavors and underwent a major upgrade of their laboratory information system. The labs also experienced a 17% increase in volume from FY16 to FY17, which put a great strain on personnel. As a result, the lab was granted 3 new positions to deal with the increased volume. Here are some of the endeavors that were undertaken in each of the laboratory areas.

Microbiology

This year, the Microbiology laboratory began the transition to total laboratory automation with the BD Kiestra system. The system will allow the laboratory to automate culture setup and inoculation as well as incubation of plates and will help reduce the manual workload on the technologists and allow the lab to increase their capacity for cultures. The system will also lead to faster time to result for positive cultures and sensitivity testing. To prepare for this initiative, the laboratory had to validate and implement new urine culture collection devices, as well as new ESwab collection devices. The laboratory worked with materials management, nursing and the McLendon lab Outreach department to implement this change for the entire hospital and all of their offsite clinics. The installation of this new system will begin in October 2017, which will be followed by an extensive and lengthy validation requiring a large effort from the entire staff.

The laboratory also underwent a very successful CAP inspection which resulted in only 1 deficiency for Bacteriology. The lab also began validation of the BD Phoenix, an automated system for susceptibility testing. In addition to these accomplishments, the lab has trained 2 post-doctoral fellows, multiple pathology residents, medical students and Clinical Laboratory Science students. We offer daily consultative and education services for three different infectious disease consult services.

Clinical Immunology Laboratory

John L. Schmitz, Ph.D., Director

Eric T. Weimer, Ph.D., Associate Director

During the past year, the Clinical Immunology Laboratory (CIL) enhanced clinical services via 3 changes. First, the laboratory has implemented an EBV Immune status test with the goal of reducing unnecessary testing. To date, EBV antibody testing employed the performance of 3 individual tests for distinguishing acute from established EBV infection. Immune status testing for transplant candidate requires only one of the 3 tests (EBV Viral Capsid Antigen – IgG). A new test was implemented in EPIC that now results in just the EBV VCA test being ordered for immune status determination for transplant candidates. Second, due to volume increases, Quantiferon Gold testing has been instituted on a daily run basis to accommodate testing volumes. Third, the HIV reporting algorithm has been significantly updated to incorporate antibody screening and confirmation along with viral load testing results into one comprehensive result interpretation with appropriate comments. The Immunology Laboratory continues to have a significant teaching role. Both the Immunology and Microbiology Fellows, Pathology Residents, CLS students and Allergy/Immunology Clinical Fellows rotate in the laboratory.

PHLEBOTOMY SERVICES (2016-2017)

PETER H. GILLIGAN, Ph.D., DIRECTOR

The Press-Ganey mean score for the inpatient survey increased to 90.9% for the fiscal year ending June 30, 2017. The department continues to focus on Carolina Care initiatives and participated in Quiet Time Steering Committee pilot program on 3West and 6 Bedtower.

Beaker and Epic optimization continued into 2016-2017 Fiscal year. The blood culture contamination report was recreated and became available on 9/1/2016. The goal was to maintain a contamination rate below 2%. The overall contamination rate for phlebotomy for the 10 months in which data was available was 1.14%. The inpatient staff participates on the Code Sepsis Team with a goal of blood culture collection within 1 hour of order followed directly by antibiotic administration.

Significant staffing changes have occurred with new Carolina Value targets being implemented beginning in January 2017. The outpatient draw station at the ACC increased its hours of operation to accommodate the move of the post renal transplant clinic to the building from the Main hospital.

CORE LABORATORY (Chem/UA/Coag/Hem/Tox/Endo)

HERBERT C. WHINNA, M.D., Ph.D., INTERIM DIRECTOR

The Core Laboratory services include clinical chemistry, coagulation, hematology, and urinalysis. The Laboratory receives ~5000 samples daily performing ~6 million tests annually. The UNCH Core Laboratory team continues to lead quality care and improvement initiatives to improve patient care and safety for staff and patients.

New test validations were completed for Beta Hydroxybuturate and Haptoglobin testing. Core Laboratory Leadership provided technical assistance to Hillsborough Hospital Lab in the validation of Factor VIII Activity testing on their coagulation instrumentation. The ST II, Apolipoprotein B, and Lamellar Body tests were discontinued.

New urine collection tubes were validated for all testing in Core and Special Chemistry in collaboration with Microbiology and the preparation of their approaching new automation line.

A major endeavor in 2017 was the optimization of Beaker and the utilization of the Beaker QC module. Core Laboratory leadership continued to provide Beaker workflow support to affiliate hospitals, including High Point, Chatham, and Hillsborough.

Core Laboratory and Surgical Leadership collaborated to improve the protocol for testing of intra-operative PTH on plasma samples performed during parathyroidectomies.

Core Laboratory and Performance Improvement Leadership collaborated to test Computerized Physician Order Entry (CPOE) in the Leapfrog Annual Survey. UNC's team successfully received the highest possible score indicating "Fully Implemented."

The Core Laboratory had a successful CAP inspection with minimal deficiencies found by the inspection team.

In addition, the Core Laboratory continues to play a key role in the UNC School of Medicine mission to provide leadership and excellence in patient care and education. In 2017, eight pathology residents, fourteen UNC Clinical Laboratory Science (CLS) students, and 1 external CLS student participated in Core Laboratory clinical rotations receiving education in lab testing and the practice of laboratory medicine.

HEMATOPATHOLOGY 2016-2017

YURI FEDORIW, M.D., DIRECTOR

The volume and complexity of cases has continued to increase in the Division as the diagnostic services support growing clinical need. The primary Hematopathology service is responsible for all in-house peripheral blood, bone marrow, and tissue diagnostics, while the second service covers body fluid examination, referrals, and cases sent for expert consultation. The laboratory also provides hemoglobin evaluations for the work-up of hemoglobinopathies and thalassemias. We continue to work closely with the flow cytometry lab, and have added several new diagnostic panels. Incorporation of these data, along with cutting-edge testing from the Cytogenetic and Molecular Laboratories, provides a comprehensive diagnostic report for their patients. The Division of Hematopathology also supports a biopsy clinic in the North Carolina Cancer Hospital, which streamlines sample acquisition, processing, and communication with the clinical teams. Their faculty consists of five board-certified hematopathologists with a wide range of clinical, administrative, teaching, and research responsibilities

SPECIAL COAGULATION LABORATORY 2016-2017

MARIAN ROLLINS-RAVAL M.D. MPH, DIRECTOR

The Special Coagulation Laboratory provides access to esoteric testing of hemostasis for both UNC and community physicians. We are actively pursuing validation of new tests, including chromogenic Factor VIII. The laboratory continues performing special studies testing for equipment and pharmaceutical companies generating additional revenue, as well as assisting colleagues with research projects. Faculty and staff also continue to regularly participate in the Friday Hematology Conference sponsored by the Division of Hematology & Oncology in the Department of Medicine where hematology and coagulation issues in patients seen by the Hem/Onc Consult Service are discussed.

CLINICAL CYTOGENETICS

KATHLEEN A. KAISER-ROGERS, Ph.D., DIRECTOR

The caseload continued to increase in the Cytogenetics Laboratory through 2016-2017 during which over 4800 samples were received and over 7200 tests were performed. The greatest increases were seen in requests for conventional karyotyping and chromosome microarray testing. The laboratory currently

performs karyotyping on over 3100 cases annually, which represents a 30% increase over the past two years; the majority of this increase has been in our cancer caseload. Approximately 750 constitutional microarray cases are now being processed annually, which represents a 36% increase over last year. The laboratory also continues to offer a wide variety of FISH assays, most of which are designed to diagnose and monitor specific genetic abnormalities associated with various cancers. Three FISH assays, those for HER2, ALK, and ROS1, are considered companion diagnostics for drugs that target specific molecular features in breast and non-small cell lung tumors.

The cytogenetics laboratory has recently validated a fast hybridization fluorescence in situ hybridization (FISH) assay to detect the recurring PML-RARA rearrangement associated with acute promyelocytic leukemia (APL) and the BCR-ABL1 rearrangement associated with chronic myelogenous leukemia and acute lymphoblastic leukemia, within several hours of sample receipt. This rapid turnaround is especially important for our APL patients who can develop serious blood-clotting or bleeding problems and therefore need to be quickly diagnosed and placed on the appropriate therapy. The laboratory has also validated two FISH assays to identify and characterize chromosome rearrangements involving the CRLF2 gene, which are seen patients with high-risk B-cell precursor acute lymphoblastic leukemia (BCP-ALL).

Several of our more interesting cytogenetics projects were reported at the 2017 American College of Medical Genetics and Genomics (ACMG) meeting. Dr. Alexandra Arreola, the Cytogenetics Fellow, reported a patient with a rare deletion encompassing both the Potocki-Shaffer and WAGR syndrome regions; Dr. Kaiser-Rogers was senior author on this presentation. Dr. Kaiser-Rogers was also a co-author on a poster involving a cryptic familial translocation identified by chromosome microarray analysis, and has been involved in several projects that have now been published in the literature.

The Cytogenetics Laboratory continues to participate in the cancer cooperative groups (Alliance/CALGB and COG). In June of 2016, Dr. Kathleen Kaiser-Rogers was appointed Director of the Cytogenetics Laboratory and Dr. Andrea Penton was hired as the new Associate Director as of July 2017. Dr. Kaiser-Rogers continues to serve as Director of the ABMGG Cytogenetics and Genomics Fellowship, and became Co-director of the ABMGG Laboratory Genomics and Genetics Fellowship as of July 1, 2017. She also serves as Vice Chair of the CAP/ACMG Cytogenetics Resource Committee and as the ACMG-CAP liaison for the ACMG Laboratory Quality Assurance Committee and the ACMG Cytogenetics Quality Assurance Subcommittee. Additionally, she continues to function as a member of the ACMG Salary Survey Work Group, which is responsible for overseeing the design, implementation, and interpretation of a biennial salary survey for medical geneticists boarded by the AMBGG. The 2017 Survey will be conducted in the fall of 2017 and a report summarizing the results of this survey will be published on the ACMG Web Page in the spring of 2018.

LABORATORY INFORMATION SERVICES

HERBERT C. WHINNA, M.D., Ph.D., DIRECTOR

Our last LIS employee finished legacy application data transition to databases accessible to ISD Enterprise application Business Objects for data retrieval in the future. He then transitioned to another section of the laboratory. All technical support for these legacy LIS applications has been transferred to ISD and data retrieval assistance lies now within the Quality Management group.

NEPHROPATHOLOGY LABORATORY 2016-2017

VOLKER R. NICKELEIT, M.D., DIRECTOR

The Division of Nephropathology in the Department of Pathology and Laboratory Medicine is one of

few highly specialized centers in the U.S. that provides expert diagnostic evaluation of medical renal diseases and kidney transplant related disorders. Approximately 2000 renal specimens (native and transplant biopsies and nephrectomies) from over 200 nephrologists throughout the state, region, and the world are analyzed annually. During the 2017 calendar year, the Division evaluated close to 500 cases from UNC Hospitals, and the remainder from outside institutions. Over 90% of specimens are routinely evaluated not only by light microscopy at multiple levels of section with different stains, but also by immunofluorescence microscopy utilizing a panel of antibodies, electron microscopy, and occasionally by immunohistochemistry. Thus, the actual number of procedures that are performed on renal specimens by far exceeds 6000 per year. The Division of Nephropathology is involved in clinical, translational, and basic research on renal diseases, especially glomerulonephritides and disorders seen in renal allografts. The research activities are supported by extramural grants and are facilitated by an extensive database and archival systems that include data from approximately 45,000 renal specimens, 15,000 serum samples, and 2,500 urine samples. Currently, two pathology post-doctoral fellows are being trained on how to manage, organize and run a nephropathology laboratory/service. The UNC nephropathology faculty are also heavily engaged in continuous education series enhancing the diagnostic skills of pathologists and nephrologists, such as special symposia organized at the Annual Kidney Week/ASN Meeting, the Columbia Presbyterian post graduate course on nephropathology in New York, the 'Nephropathologiekurs Volhard-Fahr' in Mannheim (Germany) or the annual 'Transplant Workshop' in Basel/Switzerland. The 7th edition of 'Heptinstall's Pathology of the Kidney' published in 2014 had heavy editorial input from the UNC nephropathology division. Efforts are coordinated with activities of the Glomerular Disease Collaborative Network (GDCN). The GDCN has been in operation for over two decades and is a consortium of academic and community nephrologists; it has the goal to enhance knowledge of renal diseases and treatment strategies.

QUALITY MANAGEMENT GROUP

HERBERT C. WHINNA, M.D., Ph.D., DIRECTOR

As noted above, assistance for legacy LIS data retrieval was transitioned to this group in FY17. All members were vital in our successful CAP inspection in the fall where we received full accreditation for 2 years. The group continues to assist laboratory sections with proficiency testing, safety and electronic procedure documentation system.

The Quality Management broadened responsibilities to standardize quality management programs and provide on-site accreditation support for McLendon Laboratories satellite laboratories and UNC Health Care System laboratories with close relationships to UNC Hospitals. Successful CAP inspections were completed for Chatham Park Medical Office Laboratory, Caroline Pointe II Laboratory, and Hayworth Cancer Center Laboratory. Preparation is underway for upcoming inspections at Hillsborough Hospital Laboratory and Chatham Hospital Laboratory.

NEUROPATHOLOGY SERVICE AT UNC HOSPITALS

DIMITRI G. TREMBATH, M.D., Ph.D., DIRECTOR

The clinical diagnostic services in neuropathology at UNC Hospitals include diagnostic surgical neuropathology, autopsy neuropathology, ophthalmic pathology, and the interpretation of peripheral nerve biopsies. The volume and complexity of the neuropathology cases from the surgical service and autopsy service at UNC Hospitals provides a rich training experience in diagnostic neuropathology for the Department's 16 residents in anatomical and clinical pathology and two fellows in surgical pathology. Departmental faculty members regularly attend and are active participants in the neuropathology conferences at UNC Hospitals. These conferences include the weekly Neuro-oncology Conference, the

monthly Neuropathology-Neuroradiology Conference, the Autopsy Service's weekly Brain Conference, as well as individual teaching conferences to members of the departments of Neurology, Neurosurgery, and Ophthalmology.

OUTREACH LABORATORY SERVICES

HERBERT C. WHINNA, M.D., Ph.D., DIRECTOR

Outreach Services gained a new leader as Lisa Learning was promoted to Assistant Administrative Director. Lisa has been a valued employee in Outreach Services and has already made a very positive impact on the area.

McLendon Clinical Laboratories continued to expand off-site outreach services the past year by responding to UNC FP/PN requests to move testing from LabCorp to McLendon Labs. One practice was successfully converted and more are in various stages of transition.

McLendon Clinical Laboratories continued to partner with the Hayworth Cancer Center, providing a technical supervisor and quality management support to the freestanding lab there.

Also (and again at the practice's clinicians request), McLendon Labs began in FY17 to provide Hematopathology laboratory services to Hayworth Cancer Center. Informal consultation continues to be provided to McCreary Cancer Center on an as-needed basis.

TRANSPLANT LABORATORIES (HLA and Flow Cytometry)

John L. Schmitz, Ph.D.,

Eric T. Weimer, Ph.D., Associate Director

During the past year the Histocompatibility Laboratory implemented several process improvements aimed at increasing quality, efficiency and reducing costs. HLA antibody screening was enhanced with the addition of a carry-over well to monitor carry over in the high throughput sampling system used for sample acquisition. This addition provides further assurance of proper functioning of this system in real time on all assay runs to reduce risk for false positive results. Luminex-based single antigen bead tests for HLA antibody identification were enhanced by the addition of a pre-treatment step with EDTA to reduce sample interference. This treatment which has a negligible cost has replaced a pre-treatment step with a commercial bead product reducing costs for this testing. The HLA laboratory also validated and implemented version 2 of the next generation sequencing kits. This version has fewer ambiguous results and has allowed the lab to eliminate reflexing testing by Sanger sequencing for ambiguity resolution. Eliminating Sanger sequencing has reduced costs associated with maintaining the technology. Version 2 of the sequencing assay has also allowed a revised pooling strategy for assay set up that has resulted in less hands-on time. A change in gel electrophoresis supplies has allowed the laboratory to eliminate the use of ethidium bromide. Finally, the HLA laboratory information system was updated with a custom data interpretation package to automate HLA-DPB1 typing interpretations and report generation.

The flow cytometry laboratory implemented several changes during the past year. The laboratory implemented a new assay to enumerate naïve and memory T cells (CD45RA/RO). This assay is used to assess pediatric patients who have been detected as being T cell deficient on newborn screening. The laboratory also implemented minimal residual disease testing for B cell acute lymphoblastic leukemia. This assay is used to assess the response to therapy for this malignancy. Process improvements implemented in the laboratory include a revised test code for T cell enumeration in bronchoalveolar lavage samples and a revised fluorochrome for CD22 analysis. In order to accommodate increase workloads, the laboratory will transfer the HLA flow cytometer to the flow lab. This instrument has been upgraded with a third laser to permit upcoming inter-instrument standardization. Finally, in concert with

hematopathology, the laboratory has implemented a professional interpretation fee for paroxysmal nocturnal hemoglobinuria analyses by flow cytometry.

HEMATOPOIETIC PROGENITOR CELL (HPC) LABORATORY

YARA PARK, M.D., DIRECTOR

The Hematopoietic Progenitor Cell (HPC) Laboratory processed approximately 220 HPC products for transplant and transplanted over 180 patients during the past year. The lab was inspected and reaccredited by FACT in 2017. As the Bone Marrow Transplant program grows, HPC is planning for an expansion in both processing areas from three processing bays up to five as well as an increase in liquid nitrogen storage of products. The expansion will include an integrated oxygen monitoring system to ensure staff safety throughout the laboratory. The expansion is scheduled to be completed in July 2018.

CORE AND SERVICE LABORATORIES

MICROSCOPY SERVICES LABORATORY

Pablo Ariel, Ph.D., Director FY 2016-2017

Microscopy Services Laboratory is a UNC core facility for electron microscopy and light microscopy. The laboratory is also the light microscopy core facility for the Lineberger Comprehensive Cancer Center. Additionally, it provides clinical electron microscopy services. During this reporting period the laboratory supported research by 170 principal investigators from many departments and centers at UNC-CH, as well as other area institutions. The total number of active laboratory clients now stands at greater than 500.

In addition to its research role, the laboratory serves as the primary electron microscope facility for ultrastructural clinical diagnosis for Dr. Charles Jennette's renal pathology referral service. The laboratory also serves as an alternate for specimen preparation for electron microscopy for Dr. Charles Jennette's renal pathology referral service.

From July 2016 to June 2017, the light microscope and image analysis components of the core logged 5,820 hours of use, electron microscope facilities logged 1,432 hours of use and the laboratory performed 335 electron microscopy specimen preparations.

The MSL has implemented several important equipment upgrades in the past year. A Lavisium Ultra II light-sheet microscope was installed in the lab in November 2016, funded by the North Carolina Biotechnology Center and UNC. This system is ideally suited to study questions that require cellular resolution in very large samples (mouse organs or similar). 24 researchers from 16 labs have been trained to use the system since it was installed. This microscope generates large and complex three-dimensional data, so MSL requested and received funding from the Core Facilities Advocacy Committee to purchase a top-of-the-line workstation with advanced imaging software to assist in visualization and analysis of the resulting images. This workstation is a very powerful tool for all of our users, and we continue provide training and support in the development of varied image analysis workflows.

TRANSLATIONAL PATHOLOGY LABORATORY (TPL) 2016-2017

C. RYAN MILLER, M.D., Ph.D., DIRECTOR

The Translational Pathology Laboratory continues to meet the needs of clinical, basic, and population scientists who require the analysis of human tumors. The Core provides a centralized resource for researchers, offering professional expertise, quality-controlled and validated procedures, digital pathology evaluation, and access to human archived specimens. Utilization of this Core, which is

equipped with new-generation instrumentation, allows investigators to perform innovative clinical trials using molecular correlates and endpoints; to conduct research with large numbers of samples; and to perform qualitative and quantitative analysis of fresh, frozen and formalin-fixed, paraffin-embedded specimens using morphology-based assays of DNA, RNA, and proteins.

During 2016-2017 TPL provided 55,787 (\$585,385) service units to 138 investigators (113-UNC and 25-non-UNC): the Lab pulled 2,314 diagnostic slides and FFPE blocks from the UNCH Surgical Pathology archives; provided 24,984 units of histology services (cell line and tissue processing, microtomy and coring); 2,142 H&E slides; 6,345 single chromogenic and 2,012 multiplex fluorescent IHC slides; developed new staining protocols for 15 new antibodies; 17,280 units and 560h of digital pathology and 150 h pathology (MD) services .

The Core's rapidly growing 85 TB image library (<https://tpl-spectrum.med.unc.edu>), currently contains 162,167 digital images belonging to 291 PI, the server is maintained by the IT professionals in the LCCC Bioinformatics Core.

In 2016-17 TPL services were acknowledged in 82 published manuscripts and abstracts and TPL staff were co-authors on 17 (21%) of these.

THE ANIMAL CLINICAL LABORATORY FACILITY

STEPHANIE A. MONTGOMERY, Ph.D., D.V.M., DIRECTOR

The Animal Histopathology & Laboratory Medicine Core (AHLMC) is a Core Facility that provides the UNC biomedical research community access to a variety of high quality, affordable pathology services that allow for clinical testing to be performed on animal models. Major histologic services include tissue embedding and sectioning (frozen and paraffin), routine and special stains, consultation on animal study design and tissue collection, immunohistochemistry (IHC), and immunofluorescence tissue labeling. Major clinical laboratory services include hematology, blood and urine chemistry tests, urinalysis, and biomarker quantification.

The AHLMC is equipped with a Leica tissue processor, Leica autostainer, Leica coverslipper, Ventana Discovery Ultra immunostainer, 2 Leica histoembedders, Thermo Scientific Cryostat, 5 Leica microtomes, Bone Station, Ventana Discovery ULTRA, IDEXX Procyte DX Hematology Analyzer, Alfa Wassermann Vet Axcel clinical chemistry analyzer, Luminex MAGPIX multiplexing system, and numerous microscopes, including a fluorescent microscope. Currently, the core employs 3 full-time technicians, with over 45 years of combined experience. This instrumentation, staffing, and expertise allows the AHLMC to provide investigators high-quality pathology services at a convenient, on-campus location with competitive pricing. Investigators also have the ability to directly consult with a board-certified veterinary pathologist on site.

The core offers investigators over 50 pre-optimized IHC assays, as well as custom immunohistochemistry or immunofluorescence testing. Commonly requested IHC markers include immune cell, cancer cell, or cell death markers. For clinical chemistry tests, over 40 different analytes are available, including common liver function, kidney function, or lipid markers. For automated hematological testing, the following parameters are routinely determined: WBC#, Neut#, Neut%, Baso#, Baso%, Eos#, Eos%, Lym#, Lym%, Mon%, Mon#, RBC#, Bands, HGB, HCT, MCV, MCH, MCHC, RDW, Retic#, Retic%, PLT, MPV, and nRBCS. The AHLMC offers a Luminex MAGPIX magnetic-bead based assay that allows for quantification of numerous biomarker analytes (i.e., cytokine, chemokines, toxicity markers, metabolic markers) from a variety of biologic specimens. To aid

investigators in generating the best possible results, the core offers free consultation on specimen collection, selection of analytes, and data interpretation.

The AHLMC employs 3 FTEs and hosted 3 undergraduate work-study students in FY2017. In FY2017, 136 investigators utilized AHLMC services (124 UNC, 12 external to UNC). The Core was acknowledged or authored 20 publications. In FY2017, the core produced nearly 11,000 H&E slides, 2900 IHC slides, and 1900 special stain slides.

The core acquired two new instruments in FY 2017 with the generous support of the CFAC and LCCC, the IDEXX Procyte DX Hematology Analyzer and Alfa Wassermann Vet Axcel clinical chemistry analyzer. The core acquired a Leica embedder and Bone station from the generous support of DLAM.

To physically combine the histopathology and clinical laboratory services, in January 2017 the core merged into one space in 902, 903, and 904 Brinkhous Bullitt Building (BBB). (Histopathology services were previously performed in 426 and 432 MacNider Hall). AHLMC now occupies 1200 sq. ft of laboratory space in BBB.

SPECIAL HONORS AND AWARDS

VICTORIA K. BAXTER, D.V.M., Ph.D., DACLAM

2016 Merial Research Award for Graduate Veterinarians

FRANK CHURCH, Ph.D.

Richard H. Whitehead Lecturer, School of Medicine (August, 2016) [Being elected to deliver the Whitehead Lecture is among the highest honors for faculty members at the UNC SOM.]

- Honorary Member of the Whitehead Society
- Journey with Parkinson's blog was recognized by FeedSpot as the 14th ranked blog out of a total of 50 ranked blogs on Parkinson's Disease in the world.
- "Believe in Life in the Presence of Parkinson's Disease." Keynote Speaker PWR! Retreat May 28-June 3, 2017. [PWR! = Parkinson Wellness Recovery]

WILLIAM B. COLEMAN, Ph.D.

Faculty Merit Award for Outstanding Teaching and Mentoring, University of North Carolina School of Medicine, Fall 2016

WILLIAM FUNKHOUSER, M.D., Ph.D.

Best Doctors in America, Best Doctor, Inc. 2017-2018

Allowed to serve on the CAP expert panel for guidelines generation for molecular testing of colorectal carcinoma

KEVIN GREENE, M.D.

Frederic B. Askin Award for Teaching Excellence in Anatomic Pathology – 2017

MARGARET L. GULLEY, M.D.

Best Doctors in America, Best Doctors Inc. 2017-2018

SUSAN C. HADLER, M.D., M.S.

The Professor Award: Given by the 4th year medical school class to the professor who has had the most impact on their medical school education.

JONATHON HOMEISTER, M.D, Ph.D.

2017 Dalldorf Teaching Excellence Award

J. CHARLES JENNETTE, M.D.

Best Doctors in America, Best Doctors Inc. 2017-2018

NICOLE KORPI-STEINER, Ph.D.

2016 Lean Six Sigma Blue Belt certification

MELISSA MILLER, Ph.D.

Visiting Professorship at University of Iowa to present the Franklin Koontz Lecture

VOLKER NICKELEIT, M.D.

Visiting Professor, Dept. of Histopathology, PGIMER, Chandigarh, India – 2016

Best Doctors in America, Best Doctors Inc. 2017-2018

LI QIAN, Ph.D.

Finalist for NYSCF-Robertson Stem Cell Investigator Awards, NYSCF 2017
Featured at Research Features Magazine (UK) 2017
Jefferson Pilot Award in Academic Medicine, UNC-Chapel Hill 2016-2020
McAllister Young Investigator Award, UNC-Chapel Hill 2016-2018
Named “Hometown Hero”, WCHL (affiliate of CBS)/Chapelboro.com 2016
Boyalife, Science and STM Award in Stem Cells and Regenerative Medicine, Science/AAAS 2016

JAY S. RAVAL, M.D.

UNC Star Heels Award, July 2016
UNC James W. Woods Junior Faculty Award, October 2016
ASFA Junior Investigator Award (senior author)

MARIAN ROLLINS-RAVAL, M.D.

Clinical Pathology Faculty Teaching Award, Department of Pathology and Laboratory Medicine, University of North Carolina, Chapel Hill, NC – 2017
Junior Investigator Award (middle author), American Society for Apheresis, Ft. Lauderdale, FL – 2017

EIZABURO SASATOMI, M.D., Ph.D.

Fred Askin Anatomic Pathology Teaching Excellence Award 2016

STEVEN T. SHIPLEY, D.V.M., DACLAM

VA-MD College of Veterinary Medicine Lifetime Achievement Alumni Award conferred March 2017

SCOTT SMITH, M.D.

Fred Dalldorf Health Affairs (Medical Student) Teaching Excellence Award 2016

DIMITRI TREMBATH, M.D., Ph.D.

Neurosurgery Teaching Award – 2016

CYRUS VAZIRI, PH.D.

2017- Society of Toxicology Graduate Student Mentor Award
2016 - Joe Wheeler Grisham Award For Excellence In Teaching Graduate Students

KAREN WECK, M.D.

Invited Guest Editor for Special Edition of Archives of Pathology and Laboratory Medicine: Validation of Next-Generation Sequencing Technology for Clinical Molecular Testing Across Multiple Different Disciplines
Best Doctors in America, Best Doctors, Inc. 2017-2018

YANG YANG, Ph.D.

IBM Junior Faculty Development Award 2017

MAIMOONA ZARIWALA, Ph.D.

Promotion to Research Professor 11/9/16

QING ZHANG, Ph.D.

Mary Kay Foundation Award 2017
Jon Shevell Young Scientist Travel Scholarship 2016

LEADERSHIP POSITIONS

JESSICA BOOKER, Ph.D.

Chair of Credentials Committee, American Board of Medical Genetics and Genomics

FRANK C. CHURCH, Ph.D.

Scientific Advisory Committee, 5th World Parkinson Congress 2017-2019

Communications Committee, 4th World Parkinson Coalition

Planning Committee, Moving Day NC Triangle 2016-present

WILLIAM B. COLEMAN, Ph.D.

Steering Committee, Pathobiology for Investigators, Students, and Academicians 2017, January 2017-Present.

Co-Chair, ASIP Breast Cancer Scientific Interest Group, The American Society for Investigative Pathology, 2010-Present

Scientific Interest Group Oversight Committee, The American Society for Investigative Pathology, July 2014-Present

Finance Committee, The American Society for Investigative Pathology, July 2007-Present

Membership Committee, The American Society for Investigative Pathology, July 2004-Present

BRIAN C. COOLEY, Ph.D.

International Society for Thrombosis and Hemostasis

Animal Models Sub-Committee Co-Chair 2017-2019

GEORGETTE A. DENT, M.D.

Member, Association of American Medical Colleges (AAMC) Careers in Medicine (CiM) Advisory Committee

Member, American Society of Hematology (ASH) Committee on Promoting Diversity

LESLIE G. DODD, MD

Member, CAP - Surgical Pathology Committee

Member, CAP - Cytopathology Committee

Member, ASC PEC Exam Committee

Session Chair: Session 304: Molecular Pathology/Cytopathology: Approaches to Tissue and Cell based Cancer Diagnostics, World Cancer Congress, Barcelona Spain, 5/19/17 – 5/21/17

GEORGE FEDORIW, M.D.

Member, Society for Hematopathology, Education Committee

Member, ASCP Annual meeting hematology – course proposal review board

Member, ASCP Annual Meeting hematology – abstract review board

Member, College of American Pathologist: Hematology and clinical microscopy committee

Member, AIDS Clinical Trials Group: Kaposi Sarcoma central review

WILLIAM K. FUNKHOUSER, M.D.

Member, CAP/AMP/ASCO Expert Guidelines Panel, Colorectal Cancer (ends Fall 2016)

Member, CAP Molecular Oncology Committee (ends Fall 2016)

Member Nominating Committee, Pulmonary Pathology Society

Session Chair/Moderator Pulmonary Pathology Society, Chicago June 2017

PETER GILLIGAN, Ph.D.

Chair Professional Practice Committee, American Society for Microbiology

MARGARET GULLEY, M.D.

The Cancer Genome Atlas (TGCA) project at the National Cancer Institute (NCI):

Leader, Pathogen Committee, Mutation Signatures Working Group (2016-17)

Leader, Pathogen Committee, Pan-Gastrointestinal (Pan-GI) Working Group (2016-17)

Leader, Pathogen Committee, Esophageal Carcinoma (ESCA) Working Group (2014-16)

CAP/ASCP/ASCO Guideline Committee for HER2 Testing in Gastroesophageal Carcinoma

Translational Research Program Executive Committee, Alliance for Clinical Trials in Oncology

Sequencing Committee, Alliance for Clinical Trials in Oncology

Association for Molecular Pathology Awards Committee

Chair, Scientific Program Committee for the Association for Molecular Pathology Global Congress on Molecular Pathology

The Cancer Genome Atlas (TGCA) project at the National Cancer Institute (NCI):

Leader, Pathogen Committee, Mutation Signatures Working Group (2016-17)

Leader, Pathogen Committee, Pan-Gastrointestinal (Pan-GI) Working Group (2016-17)

Session Moderator, “The impact of viruses in cancer”, First Global Congress on Molecular Pathology, April 4, 2017

TRACY HEENAN, D.V.M.

Compliance Auditor NIH Office of Laboratory Animal Welfare (OLAW) July 2016

Ad hoc consultant Association for the Assessment and Accreditation for Laboratory Animal Care International (AAALACi) September 2012 - present

JONATHON W. HOMEISTER, M.D., Ph.D.

Member, Program Committee, American Society for Investigative Pathology

Member, Meritorious Awards Committee, American Society for Investigative Pathology

American Society for Investigative Pathology at EB2017, Symposium Organizer and Chair, “Blood Vessel Club-Endothelial Mechanisms that Regulate Function and Permeability.” Chicago, IL

American Society for Investigative Pathology at EB2017, Symposium Chair, “Society for Cardiovascular Pathology- New Roles for Inflammation in the Heart.” Chicago, IL

J. CHARLES JENNETTE, M.D.

Glomerular Disease Advisory Group, American Society of Nephrology

Advocacy Committee, Association of Pathology Chairs

Practice and Management Committee, Association of Pathology Chairs

EULAR/ACR Working Group on the Definition and Classification of Vasculitis

International Society Nephrology Commission for Global Advancement of Nephrology

International Society of Nephrology Committee on Renal Pathology

NIH Glomerular Disease Consortium CureGN Pathology Committee

International Organizing Committee, 18th Vasculitis & ANCA Workshop, Tokyo

Chair, NIH Glomerular Disease Consortium CureGN Pathology Scoring Work Group

KATHLEEN KAISER-ROGERS, Ph.D.

CAP-ACMG Liaison for the Laboratory Quality Assurance Committee

CALGB/COG Cytogeneticist for UNC

Chair of the American College of Medical Genetics Salary Survey Work Group
Vice Chair of the College of American Pathologists Cytogenetics Resource Committee

NICHOLE KORPI-STEINER, Ph.D.

Member, AACC Society for Young Clinical Laboratorians (SYCL) Mentor Connections Subcommittee, 2016 – Present
Member, AACC Profession Practices in Clinical Chemistry, 2014 – Present
Member, Hemolysis Working Group, 2016 – Present
Member, Point of Care Advisory Council, 2014 - Present
International Critical and Point of Care Testing Symposium, Organizing Committee Member 2015 – September 2016 (appointed)
Chair, AACC Society for Young Clinical Laboratorians (SYCL) Executive Committee 2016-present
Session Chair American Association for Clinical Chemistry, International Critical and Point of Care Testing Meeting, “Benefits and challenges of POCT across the clinical spectrum,” Copenhagen, Denmark, September 21-24, 2016 (16 h); Moderator for POCT in the ED session
Moderator and speaker, American Association for Clinical Chemistry, “Expanding Point of Care Testing in Healthcare Systems for Patient Centered Care,” Philadelphia, PA 2016

STEPHANIE MATHEWS, M.D.

Society for Hematopathology Education Committee member
ASCP PRISE Committee member
ASCP RISE/FISHE Sub-committee member

C. RYAN MILLER, M.D., Ph.D.

Member, National Cancer Institute, The Cancer Genome Atlas (TCGA), Low Grade Glioma Working Group
Member, National Cancer Institute, The Cancer Genome Atlas (TCGA), Glioblastoma versus Low Grade Glioma Working Group
Member, Neuro-oncology Committee, NCI Alliance for Clinical Trials in Oncology
Member, Pathology Committee, NCI Alliance for Clinical Trials in Oncology
Credentialing murine models for glioblastoma preclinical drug development
Co-Chair, Neuro-Pathology Committee, NCI Alliance for Clinical Trials in Oncology

MELISSA B. MILLER, Ph.D.

Member, ASM, Committee on Laboratory Practices
Member, ASM, Professional and Scientific Affairs Board
Member, ASM, Professional Practice Committee
Member, ASM, Clinical Awards Selection Committee
Member, PASCV, Clinical Practice Committee
Member, PASCV, Strategic Planning Task Force
Member, CLSI, M48 Revision Committee
Chair, ASM, U.S. Presidential Transition Advisors Group
Chair, GAO, Task force on Multiplex Point of Care Technology
Chair, AAM, Colloquium on Changing Diagnostic Paradigms for Microbiology (task force)
Chair, ASM, Committee on Laboratory Practices
Chair, PASCV, Clinical Practice Committee
Chair, AAM, Colloquium on Changing Diagnostic Paradigms for Microbiology (task force)

Session Chair/Moderator: Molecular Virology Workshop, Pan American Society for Clinical Virology, Session I: Pre-analytical considerations, Daytona Beach, FL, May 6, 2017
ASM Microbe, Session 291, Clinical Microbiology Updates from the Public and Scientific Affairs Board

STEPHANIE MONTGOMERY, Ph.D., D.V.M.

Co-Chair, RTP Rodent Pathology Course Planning Committee for 8th state-of-the-art biennial course, 2017; 2 year appointment
Member, American College of Veterinary Pathologist, Experimental Disease Committee, 3 year appointment

VOLKER NICKELEIT, M.D.

Banff Working Group on Electron Microscopy in the Evaluation of Renal Transplant Biopsies
Chair, Banff Working Group on Cellular Rejection and Borderline Changes
Chair, Banff Working Group on Polyomavirus Nephropathy
Session Chair/Moderator: Indian Society of Organ Transplantation (ISOT), session 3 on 10.7.2016 (moderator), October 2016, Chandigarh, India

YARA A. PARK, M.D.

AABB, Annual Meeting Education Program Unit, 2013-present
American Society for Apheresis, HPC Donor Subcommittee, 2009-present
Chair American Society for Apheresis, Clinical Applications Committee, 2016-present
Chair, College of American Pathologists, Transfusion Medicine Resource Committee, 2016-present
Session Chair, American Society for Apheresis Annual Meeting, Abstract Session 1, May 2016
Moderator, “CAP Proficiency Testing: Review of Test Performance and Future Directions”,
AABB Annual Meeting 2016

NIRALI M. PATEL, M.D.

Member, Association for Molecular Pathology Professional Relations Committee
Member, AMA Young Physician Section
Delegate for the College of American Pathologists ClinGen Somatic Work Group
Chair, Membership Affairs Committee, Association for Molecular Pathology

LI QIAN, Ph.D.

Co-Moderator/Chair for “Heart Regeneration” session & Abstract Review Committee, Weinstein Cardiovascular Research Conference 2017
Abstract Review Committee, International Society of Stem Cell Research (ISSCR) Annual Meeting 2016-2017
International Conference and Exhibition on Cardiology and Cardiovascular Health Research, Scientific Committee Member 2016
Weinstein Cardiovascular Research Conference, Organizing Committee
Stem Cell and Bioengineering” platform section, Session Chair 2016
Board of Directors International Chinese Stem Cell Foundation 2016
International Society of Stem Cell Research (ISSCR) Annual Meeting Abstract Review Committee
International Conference and Exhibition on Cardiology and Cardiovascular Scientific Committee Member
Weinstein Cardiovascular Research Conference, Session Chair “Stem Cell and Bioengineering” platform section

JAY S. RAVAL, M.D.

Member, ASFA Research Committee
Member, ASFA Neurologic Disorders Subcommittee
Member, ASFA Sickle Cell Disease Subcommittee
Member, AABB Annual Meeting Scientific Abstracts Review Committee
Member, ASFA Abstracts Committee
Member, ASFA Principles of Apheresis Technology Writing Group
Member, ASFA Clinical Applications Subcommittee
Member, ASFA Extracorporeal Photopheresis Subcommittee
Member, ASFA Pediatric Apheresis Subcommittee
Member, AABB Therapeutic Apheresis, Subsection
Member, AABB Pediatric Transfusion Medicine Subsection
Member, AABB Clinical Hemotherapy Subsection
Member, UNC SOM Academy of Educators
Member, ASFA Annual Meeting Education Program Organizing Committee
Member, ASFA Extracorporeal Photopheresis International Practice Characterization Initiative
Member, ASFA Pediatric Apheresis Adverse Event Reporting Initiative
Chair, ASFA Pediatrician Apheresis Guidance Document Initiative
Chair, AABB Cord Blood HPC Adverse Event Reporting Initiative
Chair, ASFA TTP/TMA Subcommittee
Chair, ASFA Severely ADAMTS 13 Deficient TTP Registry
Chair, AABB Cellular Therapy Product Collection and Clinical Practice Subsection
Chair, ASFA Practitioner Subcommittee
Chair, ASFA Webinar Subcommittee
Chair, ASFA Journal Club Subcommittee
Chair, ASFA Online Resources Subcommittee
Chair, ASFA ECP Practices Characterization Initiative
Chair, ASFA Education Committee
ASFA Annual Meeting Site Tour Committee
Session Moderator, Adverse Events and Specific Stem Cell Products, 2016 AABB Annual Meeting
Session Moderator, RAP Session: Graft Versus Host Disease, 2016 AABB Annual Meeting
Session Chair, "Opening Combined Symposium: Photopheresis Update and Apheresis in Autoimmune Neurological Disorders", American Society for Apheresis Annual Meeting, Ft. Lauderdale, FL, 5/2017
Session Chair, "Breakfast with the Expert I", American Society for Apheresis Annual Meeting, Ft. Lauderdale, FL, 5/2017
Session Moderator, Site Tour, ASFA Annual Meeting, Ft. Lauderdale, FL, 5/2017

MARIAN A. ROLLINS-RAVAL, M.D.

Member, ASFA, Clinical Applications Committee
Member, ASFA, Coagulation Subcommittee

JOHN SCHMITZ, Ph.D.

Member, ASHI Board of Directors
Member, ASHI Engagement Task Force
Member, ASHI Directors Affairs Committee
Member, ASHI Directors Training Review and Credentialing Committee
Member, ASHI National Clinical Affairs Committee

CPEP Program Directors Committee
UNOS Histocompatibility education Working Group
Chair, ASHI External Affairs Committee
Chair, ASHI Nominations Committee
Moderator, Plenary 4 – HSCT: Haplo vs URD; 2016 ASHI Annual Meeting
Moderator, ASHI Awards Session, ASHI Annual Meeting 2017

STEVEN T. SHIPLEY, DVM, DACLAM

Member, American Association of Laboratory Animal Science (AALAS) 2016-2017
Vice Chair, Scientific Advisory Committee 2017-2018
Chair – ACLAM/ASLAP Sub-Committee 2017-2018

HARSHARAN SINGH, M.D.

Member, Banff Society of Transplantation EM Working Group
Member, Banff Society of Transplantation Working Group on T-cell mediate rejection
Member, Banff Society of Transplantation Polyomavirus Nephropathy Working Group
Chair, Banff Society of Transplantation EM Working Group
Session Chair: Renal Transplantation of Biopsy Cases, Indian Society of Organ Transplantation Annual Meeting, Chandigarh, India, October 7-12, 2016
Moderator: Bone Marrow Transplantation and Polyomaviruses session, Indian Society of Organ Transplantation Annual Meeting, Chandigarh, India, October 7-12, 2016

JOAN M. TAYLOR, Ph.D.

American Society of Biochemistry and Molecular Biology Career Day – presenter, panelist April 2016
Weinstein Cardiovascular Development and Regeneration Conference – organizing committee, abstract reviewer June 2016

DIMITRI G. TREMBATH, M.D., Ph.D.

Representative, CAP House of Delegates
Member, CAP Molecular Oncology Committee

CYRUS VAZIRI

Member, Ad-Hoc reviewer of grant applications for the following international funding agencies: French National Cancer Institute (INCa)
KWF Kankerbestrijding (Dutch Cancer Society)
Netherlands Organization for Scientific Research (NWO, the Dutch Research Council)
Medical Research Council (MRC)-UK

KAREN WECK-TAYLOR, M.D.

Member, Council of Scientific Affairs (CSA), College of American Pathologists (CAP)
Member, Clinical and Laboratory Standards Institute (CLSI) Consensus Committee on Molecular Methods
Member, Pharmacogenetics Workgroup, Association for Molecular Pathology
Past Chair/Advisor, Biochemical and Molecular Genetics Resource Committee, College of American Pathologists
Past Chair/Advisor, Pharmacogenetics Workgroup, College of American Pathologists (CAP)
Member, CAP liaison to the American College of Medical Genetics and Genomics (ACMG)
Chair, Molecular Pathology and Genomics Cluster, College of American Pathologists

Chair, Biochemical and Molecular Genetics Resource Committee, College of American Pathologists
Chair, Pharmacogenetics Workgroup, College of American Pathologists
Session Moderator: “Challenges in Whole Exome Sequencing” Next Generation Dx Summit,
Washington, DC, August 24-26, 2016

ERIC T. WEIMER, Ph.D.

Member, ASM: Laboratory Practice Committee
ASHI: Quality Assurance and Standards Committee (QAS)

JULIA WHITAKER, M.S., Ph.D.

Co-Chair for Southeast region – International Mock Board Exam Coalition for the American College of
Laboratory Animal Medicine Board exam 2010 - 2016
Education Committee – North Carolina Academy of Laboratory Animal Medicine 2013- 2016

DAVID C. WILLIAMS, JR., M.D.

Co-Chair of the Gene Regulation Special Interest Group, American Society of Investigative Pathology
Co-Chair “Targeting Transcription Regulation in Disease” at EB2017, Chicago, IL Apr 15, 2017

MONTE WILLIS, M.D., Ph.D.

Member, Program Committee for Experimental Biology, American Society of Investigative Pathology,
August 2007-present
Member, Finance Committee, American Society of Investigative Pathology (AASIP), July 2014-June
2018 (Elected to a 4 year term total).
Member, ASIP Committee for Career Development and Diversity (CCDD). American Society of
Investigative Pathology (ASIP), July 2014-June 2018 (Elected to a 4 year term total).
Moderator: Session Title: Protein Misfolding in the Heart: History and New Developments. AHA
Scientific Sessions. November 15, 2016, 9:a.m. – 10:15 a.m. New Orleans Convention Center, Room
210, New Orleans, L.A.
Co -Chair, Peter Harrive Award Lecture, “Sarcomeres as hubs of signaling” (R. John Solaro, University
of Chicago). International Society of Heart Research-North American Section. June 1 2017 8-9 a.m.
New Orleans, LA.
Vice Chair 2016-2018 International society of Thrombosis and Haemostasis Governance Committee
Chair 2016-2018 American Heart Association Brinkhous Award Committee
Co-Chairman 2013-present International Society of Thrombosis and Haemostasis Scientific
Subcommittee on Factor XIII and Fibrinogen
Member, International Society of Thrombosis and Haemostasis Membership and Communications
Committee (2016-2018)
Member, American Society for Hematology (ASH) Scientific Affairs Committee (2016-2017)
Member, International Society of Thrombosis and Haemostasis Scientific Subcommittee on Animal
Cellular and Molecular Models (2015-present)
Vice-Chair, American Heart Association (AHA) Arteriosclerosis, Thrombosis and Vascular Biology
Brinkhous Award Committee (2014-2016)
Member, American Heart Association (AHA) Arteriosclerosis, Thrombosis and Vascular Biology:
Spring Program Committee (2014-2016)
Women’s Leadership Committee (2014-2016)
Abstract Committee Co-Chair and Planning Committee Member, Thrombosis & Hemostasis Summit of
North America: 2016
Member, International Advisory Board, 2nd International Factor XIII Workshop, Hévíz, Hungary: 2016

ALISA S. WOLBERG, Ph.D.

Vice-Chair Governance Committee, International Society of Thrombosis and Haemostasis 2016-2018
Chair, Brinkhous Award Committee American Heart Association 2016-2018
Co-Chairman Scientific Subcommittee on Factor XIII and Fibrinogen, International Society of Thrombosis and Haemostasis 2013-present
Member, International Society of Thrombosis and Haemostasis Membership and Communications Committee (2016-2018)
Member, American Society for Hematology (ASH) Scientific Affairs Committee (2016-2017)
Member, International Society of Thrombosis and Haemostasis Scientific Subcommittee on Animal Cellular and Molecular Models (2015-present)
Member, American Heart Association (AHA) Arteriosclerosis, Thrombosis and Vascular Biology Council Leadership Committee: 07/01/16 – 06/30/18
American Heart Association (AHA) Arteriosclerosis, Thrombosis and Vascular Biology: Spring Program Committee (2014-2017)
Member, Thrombosis & Hemostasis Summit of North America Planning Committee: 2018
Member, American Society of Hematology Media Relations Committee (2017-2019)
North American Society for Thrombosis and Haemostasis Research Fellows Committee: 2016 – 2017

MAIMOONA W. ZARIWALA, Ph.D.

Invited discussant for the session “Differentiation, Assembly and Regulation of Mucociliary Components” at the Gordon Research Conference: Cilia, Mucus & Mucociliary Interactions, Feb. 12-17, 2017, Hotel Galvez, Galveston, TX, USA.
Consultant for genetics of PCD during study development phase (2016) with Parion Sciences, Inc. At present, providing expertise and interpretations on an ongoing basis for PCD genetic findings leading to selection of patients enrolled in CLEAN-PCD clinical trial (ClinicalTrial.gov identifier: NCT02871778). This trial is sponsored by Vertex Pharmaceuticals, Inc. in collaboration with the Parion Sciences, Inc., ENTITLED: A Phase 2a, 2-part, Randomized, Double-Blind, Placebo-controlled, Incomplete Block Crossover Study to Evaluate the Safety and Efficacy of VX-371 (ENaC inhibitor) Solution for Inhalation with and without Oral Ivacaftor in Subjects with Primary Ciliary Dyskinesia.
Panelist for the American Thoracic Society (ATS) project committee working towards standardization of clinical criteria for Primary Ciliary Dyskinesia. This includes systematic reviews and meta-analysis leading to consensus statement.
Ad hoc consultant for genetics and research related question for the PCD foundation (patient advocacy group).

ELECTED LEADERSHIP POSITIONS

WILLIAM B. COLEMAN, Ph.D.

Council, The American Society for Investigative Pathology, July 2004-June 2017
Past-President, The American Society for Investigative Pathology, July 2016-June 2017

CRAIG A. FLETCHER, D.V.M., Ph.D.

NCABR Executive Committee & Board of Directors 2013 – 2017
ACLAM (American College of Laboratory Animal Medicine) Planning Committee Chair 2013 – 2017
Lab Animal, Nature Publishing Group – Editorial Board 2015 – 2018

PETER GILLIGAN, Ph.D.

CPC – American Society for Microbiology

KATHLEEN KAISER ROGERS, Ph.D.

CAP-ACMG Liaison for the Laboratory Quality Assurance Committee
Chair, American College of Medical Genetics Salary Survey Work Group
Vice Chair, College of American Pathologists Cytogenetics Resource Committee

NICHOLE KORPI-STEINER, Ph.D.

Chair-Elect, AACC North Carolina Local Section, 2016 – Present
Member-at-Large, AACC Critical and Point of Care Testing Division 2016 – Present

MELISSA B. MILLER, Ph.D.

Pan American Society of Clinical Virology, Council

VOLKER NICKELEIT, M.D.

Renal Pathology Society (RPS) member of the BOD/BOA: advisor to the president

JUDITH NIELSEN, D.V.M.

North Carolina Academy of Laboratory Animal Medicine, President Past President 9/30/2015 – present;
2 year appointment)

YARA PARK, M.D.

Director, Board of Directors, American Society for Apheresis

NIRALI M. PATEL, M.D.

Board of Directors, Association for Molecular Pathology

JAY S. RAVAL, M.D.

Board Member, AABB Cellular Therapies Section Executive Coordinating Committee
Board of Trustees, Americas Region, International Society of Apheresis

JOHN L. SCHMITZ, Ph.D.

President-Elect, American Society for Histocompatibility and Immunogenetics

STEVEN T. SHIPLEY, DVM

Society/Agency: American Society of Laboratory Animal Practitioners (ASLAP)

Committee Name: ASLAP Board of Directors – board member. Term of Appointment: 7/2015-7/2018
Committee Name: BOD Liaison to the ASLAP Legislative and Regulatory Affairs Committee. Term of Appointment: 7/2015-7/2018

DAVID C. WILLIAMS, JR., Ph.D.

Program Chair-Elect, American Society of Investigative Pathology

MONTE S. WILLIS, M.D., Ph.D.

Councilor, North American Section of the International Society for Heat Research (ISHR), Elected December 2014 to 6-year term (2015-2021).

Chair-Elect/Chair of the Education Committee, American Society of Investigative Pathology (ASIP), July 2014-June 2018 (Elected to a 4 year term total). This capacity includes service on ASIP Council and Program Committees.

Councilor, Society for Cardiovascular Pathology, March 3, 2013 – present (3 year term)

Councilor-at-Large (Elected April 2017), American Society of Investigative Pathology (ASIP), July 2017 – present (Elected 4-year term).

ALISA S. WOLBERG, Ph.D.

Council Member, International Society on Thrombosis and Haemostasis 2016-2022

Board of Counsellors, International Fibrinogen Research Society 2012-2018

Vice Chair, Chair, Gordon Research Conference, Hemostasis 2016, 2018

Board of Directors, North American Society of Thrombosis and Hemostasis 2014-2020

MEMBER OF BOARD OF DIRECTORS OF NATIONAL/INTERNATIONAL ACCREDITATION AGENCY

JESSICA BOOKER, Ph.D.

Member of BOD of the American Board of Medical Genetics and Genomics

FRANK C. CHURCH, Ph.D.

Scientific Advisory Committee, 5th World Parkinson Congress

Communications Committee, World Parkinson Coalition

Planning Committee, Moving Day NC Triangle

JOHN L. SCHMITZ, Ph.D.

American Society for Histocompatibility and Immunogenetics Accreditation Review Board

MEMBER OF FDA, CDC OR COMPARABLE COMMITTEE

WILLIAM K. FUNKHOUSER, M.D.

Member, Immunology Devices Panel, FDA

MARGARET L. GULLEY, M.D.

CAP/ASCP/ASCO HER2 Testing in Gastric Cancers Guideline Expert Panel Member

MELISSA B. MILLER, Ph.D.

FDA, Microbiology Devices Panel
Clinical and Laboratory Standards Institute, Antimicrobial Susceptibility Committee
NIH, Antimicrobial Resistance Leadership Group

JAY S. RAVAL, M.D.

ASFA Representative, Cellular Therapy Stakeholder Group, FDA Cell Therapy Liaison Meetings

KAREN WECK-TAYLOR, M.D.

Molecular and Clinical Genetics Devices Panel, FDA Medical Devices Advisory Committee

MEMBER OF NIH OR COMPARABLE STUDY SECTION

WILLIAM B. COLEMAN, Ph.D.

ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, June 2017
ad hoc External Reviewer for the Breast Cancer Now Catalyst Programme, London UK, June 2017
ad hoc External Grant Reviewer for the American Institute of Biological Sciences, June 2017
ad hoc External Grant Reviewer for the Oak Ridge Associated Universities, Florida Department of Health Biomedical Reviews, May 2017
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, November 2016
ad hoc External Grant Reviewer for the National Research Foundation (Research and Innovation Support and Advancement), South Africa, October 2016
ad hoc External Grant Reviewer for the Lung Cancer Research Program of the Department of Defense, Congressionally Directed Medical Research Program, Detection, Diagnosis, and Prognosis Concept Award Study Section (W81XWH-16-LCRP-CA), September 2016
ad hoc External Grant Reviewer for the Lung Cancer Research Program of the Department of Defense, Congressionally Directed Medical Research Program, Cell Biology Concept Award Study Section (W81XWH-16-LCRP-CA), September 2016

WILLIAM K. FUNKHOUSER, M.D.

Member, TRACS study section, UNC

MARGARET L. GULLEY, M.D.

NIH, Integrating Biospecimen Science Approaches into Clinical Assay Development (U01) 2016
NIH study section, Global Noncommunicable Diseases and Injury Across the Lifespan: Exploratory Research (R21), 2016

WILLIAM K. KAUFMANN, Ph.D.

NCI, Innovative Molecular Analysis Technologies

CHRIS MACK, Ph.D.

Ad hoc, NIH NHLBI Special Emphasis Panel – CV Function and Hypertension 2017

NOBUYO MAEDA, Ph.D.

NIH, F05D , Adhoc

MONTE S. WILLIS, M.D., Ph.D.

Study Section Co-Chair, American Heart Association. Cardiac Biology BCT3. October 20, 2016.

Study Section, Ad hoc Reviewer, NIH ZRG1 CVRS-L (03), IAR Nov. 30-Dec. 1, 2016.

Study Section Chair (and Reviewer), American Heart Association. Cardiac Biology BCT3. Meeting held April 28, 2017. *BCT3 Co-Chair: Il-Man Kim, MD; BCT3 AHA Peer Review Program Manager: Angela Johnson, MPH.*

BERNARD E. WEISSMAN, Ph.D.

DOD Chair, CBY4 Panel 07/2016

NCI P01 Special Emphasis Review Panel 10/2016

NCI P01 Special Emphasis Panel 02/2017

NCI NCI IRG Subcommittee I 02/2017

NCI SPORE Special Emphasis Panel 06/2017

ALISA S. WOLBERG, Ph.D.

adhoc NIH/NHLBI Hemostasis and Thrombosis

adhoc NIH ZHL 1 CSR-R (03)

QING ZHANG, Ph.D.

DOD BCRP 2016, The Breast Cancer Alliance 2017

SERVICE AS EDITOR OR ON EDITORIAL BOARDS

FRANK C. CHURCH, Ph.D.

Editor, Daily Parkinson eNewspaper, 2016 World Parkinson Congress

Editorial Board, Thrombosis

WILLIAM B. COLEMAN, Ph.D.

Associate Editor, American Journal of Pathology (K.A. Roth, Editor-in-Chief), October 2014-Present

Associate Editor, PLoS ONE (D. Pattinson, Executive Editor), December 2011-Present

Associate Editor, BMC Cancer (M. Norton, Editor-in-Chief), February 2010-Present

Editorial Board, Current Pathobiology Reports (S.S. Monga, Editor-in-Chief), May 2012-Present

Editorial Board, Laboratory Investigation (G.P. Siegel, Editor-in-Chief), July 2007-Present

Editorial Board, Archives of Pathology and Laboratory Medicine (P.T. Cagle, Editor-in-Chief), April 2007-Present

Editorial Board, Experimental and Molecular Pathology (J.M. Cruse, Editor-in-Chief), January 2007-Present

Editorial Board, Clinica Chimica Acta (J. Delanghe and Alan H. Wu, Editors-in-Chief), August 2000-Present

BRIAN C. COOLEY, Ph.D.

Heart Research – Open Journal

Journal of Angiology & Vascular Surgery

Microsurgery

LESLIE G. DODD, M.D.

Editorial Board, Diagnostic Cytopathology
Editorial Board, Am J Clin Pathol (AJCP)
Editorial Board, Journal of Am Cytopath Soc (JASC)

CRAIG A. FLETCHER, D.V.M., Ph.D.

Lab Animal, Nature Publishing Group- Editorial Board, 2015-2018

WILLIAM K. FUNKHOUSER, M.D.

Editorial Board, Molecular Path Section Editor, Arch Path Lab Med
Milestones Editor, ASIP Pathways Newsletter

PETER GILLIGAN, Ph.D.

Associate Editor, Mbio
Associate Editor, Clinical Microbiology Reviews
Associate Editor, Journal of Clinical Microbiology

MARGARET GULLEY, M.D.

Editorial Board, Applied Immunohistochemistry & Molecular Morphology
Editorial Board, American Journal of Surgical Pathology
Editorial Board, PLOS Currents: Evidenceon Genomic Tests

JONATHON HOMEISTER, M.D., Ph.D.

Editorial Board, Journal of Molecular and Cellular Cardiology
Editorial Board, Cardiovascular Pathology

J. CHARLES JENNETTE, M.D.

Editorial Board, Archives of Pathology and Laboratory Medicine
Editorial Board, American Journal of Kidney Disease
Editorial Board, American Journal of Surgical Pathology: Reviews and Reports
Editorial Board, Clinical Nephrology
Editorial Board, Journal of Rheumatology
Editorial Board, Laboratory Investigation
Editorial Board, Kidney International Reports

DAVID G. KAUFMAN, M.D., Ph.D.

Editorial Board, Experimental and Molecular Pathology
Editorial Board, Frontiers of Biosciences
Editorial Board, Translational OncoGenomics
Editorial Board, Clinical Medicine: Pathology
Editorial Board, The Open Reproductive Science Journal

WILLIAM K. KAUFMANN, Ph.D.

Editorial Board, Environmental and Molecular Mutagenesis

MEHMET KESIMER, Ph.D.

Associate Editor, Tobacco Regulatory Science
Editorial Board, American Journal of Respiratory Cell and Molecular Biology (AJRCMB)

NICHOLE KORPI-STEINER, Ph.D.

Section Editor, Clinical Chemistry ASCP Case Report 2014-Present
SYCL Section Editor for Clinical Chemistry Journal, 2016-Present
National Academy of Clinical Biochemistry, Scientific Shorts, 2015-Present

CHRISTOPHER MACK, Ph.D.

Editorial Board, Arteriosclerosis
Editorial Board, Thrombosis
Editorial Board, Vascular Biology

C. RYAN MILLER, M.D., Ph.D.

Editorial Board, Brain Pathology
Editorial Board, Brain Research Bulletin
Neuro-oncology Practice

MELISSA B. MILLER, Ph.D.

Editorial Board, Journal of Clinical Microbiology (ASM Press)
Editorial Board, Diagnostic Microbiology and Infectious Disease (Elsevier)

VOLKER NICKELEIT, M.D.

Journal of Nephrology and Urology, Jacobs Publishers
Austin Journal of Nephrology and Hypertension, Austin Publishing Group
Journal of Multidisciplinary Pathology, ScienceScript LLC
Annals of Clinical Cytology and Pathology
Journal of Transplantation & Stem Cell Biology (JTSCB), Avens Publishing Group
World Journal of Transplantation
Kidney and Blood Pressure Research
Ultrastructural Pathology
Journal of Cellular and Molecular Pathology, SciTechnol
Journal of Modern Human Pathology (JHP), Nobel Research

YARA A PARK, M.D.

Editorial Board, Journal of Clinical Apheresis

JAY S. RAVAL, M.D.

Frontiers in Surgery: Reconstructive and Plastic Surgery
Transfusion and Apheresis Science
Therapeutic Apheresis and Dialysis
International Blood Research and Reviews
The Journal of ExtraCorporeal Technology
International Journal of Blood Transfusion and Immunohematology
Journal of Blood Disorders and Transfusion

JOHN SCHMITZ, Ph.D.

Journal of Immunological Methods

HARSHARAN K. SINGH, M.D.

Ultrastructural Pathology
Journal of Nephrology and Urology
International Journal of Nephrology and Kidney Failure

DIMITRI G. TREMBATH, M.D., Ph.D.

Journal of Neuropathology and Experimental Neurology

KAREN WECK-TAYLOR, M.D.

Genetics in Medicine, Associate editor of Molecular Genetics and Pharmacogenomics
American Journal of Pathology Editorial Board
Journal of Molecular Diagnostics Editorial Board

BERNARD E. WEISSMAN, Ph.D.

Journal of Cellular Physiology
Genetics Research International
Lung Cancer: Targets and Therapy

MONTE S. WILLIS, M.D., Ph.D.

Section Editor, Archives of Pathology & Laboratory Medicine, Clinical Effectiveness and Economics, September 1, 2012-present.
Editorial Board, Military Medical Research, January, 2016-present.
Editorial Board, American Journal of Physiology – Endocrine and Metabolism, July 1, 2015-present.
Editorial Board, Cardiovascular Pathology. January 1, 2012-present (2nd 3 year term).
Editorial Board, American Journal of Pathology. July 2011-present (2nd 3 year term).
Associate Editorial Board, American Journal of Cardiovascular Disease, March 2011-present.

ALISA S. WOLBERG, Ph.D.

Associate Editor, Frontiers in Medicine (Hematology Section) 2015-present
Associate Editor, Seminars in Thrombosis and Hemostasis 2015-present
Associate Editor, Research and Practice in Thrombosis and Haemostasis (RPTH) 2017-2019
Guest Associate Editor, BioMed Research International Special Issue on Clot Structure and Fibrinolysis in Thrombosis and Hemostasis 2017
Member, Editorial Board, Journal of Thrombosis and Haemostasis 2016-present
Member, Editorial Board, Arteriosclerosis, Thrombosis and Vascular Biology 2010-present
Blood Advances 2016-2019

INVITED LECTURES AT STATE/NATIONAL AND INTERNATIONAL MEETINGS

VICTORIA K. BAXTER, DVM, Ph.D., DACLAM

The Role of Interferon Gamma in the Immunopathogenesis and Control of Sindbis Virus during Nonfatal Alphavirus Encephalomyelitis. 2016 Merit-NIH National Veterinary Scholars Symposium, Columbus, OH July 28-31, 2016.

WILLIAM B. COLEMAN, Ph.D.

American Society for Investigative Pathology, Annual Meeting, April 2017, Chicago, IL

Oral Presentation: "Breast ductal carcinoma in situ – Precursor to invasive breast cancer." W.B. Coleman (Presenter)

American Society for Investigative Pathology, Annual Meeting, April 2017, Chicago, IL

Oral Presentation: "Cancer genomics." W.B. Coleman (Presenter)

Pathobiology for Investigators, Students, and Academicicians 2016 (PISA 2016), American Society for Investigative Pathology, October 2016, Houston, TX

Poster Presentation: "Expression of an aberrant DNA hypermethylation gene expression signature is associated with aggressive breast cancer molecular subtypes." W.B. Coleman (Presenter), J.S. Parker, and R. Sandhu

Invited Presentation, September 2016, Kansas State University College of Veterinary Medicine, Manhattan, KS

"Molecular signatures of breast cancer – Predicting clinical characteristics from gene expression patterns" W.B. Coleman (Presenter)

GEORGE FEDORIW, M.D.

College of American Pathologists Annual Meeting, Las Vegas, NV September 25th, 2016 .

Diagnostic Challenges in Low Grade B-cell Lymphomas.

American Society of Clinical Pathology Annual Meeting, Las Vegas, NV September 14th, 2016. Update on World Health Organization classification of lymphomas (on behalf of the Society for Hematopathology)

American Society of Clinical Pathology: Practical and effective hematopathology. Las Vegas, NV, June 19-22 2017

Basics of bone marrow evaluation I and II

Cytologic evaluation of lymphoma

Evaluation of the cytopenic patient

a. Myelodysplastic syndromes and myelodysplastic/myeloproliferative overlap neoplasms

b. WHO update of myeloid neoplasms

c. Interactive case presentation

Weill-Cornell Department of Pathology and Laboratory Medicine Grand Rounds, May 1st, 2017.

Characterizing Lymphoproliferative Disorders in Sub-Saharan Africa: the UNC-Malawi Experience.

Yale School of Medicine, Department of Pathology Grand Rounds, March 30th, 2017. Characterization of Lymphoproliferative Disorders from Sub-Saharan Africa: Improving Care and Establishing a Research Program.

PETER GILLIGAN, Ph.D.

Clinical Microbiology Update September 2016. MAHEC, Asheville, NC

Clinical Microbiology Update November 2016. Wake AHEC Raleigh, NC

Detection of *C. difficile* infection: Impacting Patient Safety Metrics November 2016 Eastern Pennsylvania Branch of American Society for Microbiology Annual Symposium, Philadelphia (365)

Case Mysteries from Chapel Hill and ID Quiz. Diagnostic Microbiology Development Program
Cambodian Microbiology Laboratory Management Working Group Meeting Takeo, Cambodia Jan
2017

Multi-drug resistant organisms and Emerging Pathogens. University of Health Sciences, Phnom Penh,
Cambodia Jan 2017

Multi-drug resistant organisms. National Public Health Laboratories, Phnom Penh, Cambodia Jan 2017

Beyond Laboratory Testing: A Multidisciplinary Approach to Reducing Clostridium difficile Infection
Rates. Hospital and Healthcare System Association of Pennsylvania March 2017 (372)

Non-tuberculous mycobacterium. SEACM Greensboro, NC April 201

How Clinical Microbiologists impact the Care of Cystic Fibrosis Patients Illinois Branch ASM May 2017

Non tuberculous mycobacteria isolation and identification in Cystic Fibrosis Patients MICROBE New
Orleans 2017

MARGARET GULLEY, M.D.

“Principles of Molecular Assay Validation”, Assoc. for Molecular Pathology annual meeting, Charlotte,
Nov 10, 2016.

"Genomic Lab Support for Alliance Trials", Alliance for Clinical Trials in Oncology Pathology
Committee, Rosemont, Nov 4, 2016

“Laboratory Support via Academic Labs and NCTN: Integrated Translational Science Centers”, Alliance
for Clinical Trials in Oncology Translational Research Program Executive Committee, Rosemont,
Nov 3, 2016

“Genomic Update from the UNC Integrated Translational Science Center Laboratory”, Alliance for
Clinical Trials in Oncology Translational Research Program Executive Committee, Rosemont, May
11, 2017

“Advances in Genomics to Subclassify Tumors and to Monitor Tumor Burden”, Visiting Professor,
University of Texas Health San Antonio Department of Pathology, March 2, 2017.

First Global Congress on Molecular Pathology (2016-17), Chair of Scientific Program, April 3-5, 2017

TRACY HEENAN, D.V.M.

North Carolina Association of Biomedical Research IACUC 2017 Conference; RTP, NC; IACUC
Protocol Review May 4, 2017

J. CHARLES JENNETTE, M.D.

American Society of Nephrology Kidney Week, “Role for Complement in Vasculitis”, Chicago,
November 18, 2014

Cleveland Clinic Nephrology Update, “The Role of the Innate Immune System in ANCA Disease:
Targets for Therapy”, “2015 Mayo Clinic Renal Pathology Society Consensus Report on Pathologic
Classification, Diagnosis, and Reporting of Glomerulonephritis”, Clinicopathologic Case
Presentation, Renal Biopsy Case Presentations, Cleveland, OH, October 21-22, 2016

Columbia University Postgraduate Review Course: Renal Biopsy in Medical Diseases of the Kidney,
"Rapidly Progressive Glomerulonephritis and ANCA" and “IgA Nephropathy and IgA Vasculitis”,
New York, NY, July 20, 2016

Grand Rounds, “ANCA Glomerulonephritis and Vasculitis: Clinical Manifestations, Pathology and
Pathogenesis”, Methodist Health System, Dallas, TX, September 22, 2016

Course Co-Director: American Society of Nephrology Kidney Week Pre-Course: Fundamentals of Renal
Pathology, Chicago, November 15, 2016

Invited Lecture: XLII International Course of Internal Medicine, México City, Serologic and Pathologic
Features of ANCA Vasculitis, June 24, 2017

Invited Lecture: 31st Annual Glomerular Disease Collaborative Network Meeting, “Heterogeneity and Risk Prediction of Diabetic Kidney Disease”, Chapel Hill, NC, May 21, 2017

Invited Lecture: International Society of Nephrology World Congress of Nephrology, “Crescentic Glomerulonephritis Classification”. Mexico City, April 21, 2017

Invited Lecture: 18th International Vasculitis and ANCA Workshop, Renal Biopsy Whole Slide Image Review. Tokyo, Japan, March 28, 2017

Invited Lecture: KDIGO HIV Renal Pathology Satellite Meeting, “How can we classify HIV-related tubulointerstitial lesions?” San Antonio, Texas, March 4, 2017

DANIEL J. KENAN, M.D., Ph.D.

“Genomic Integration & Tumorigenesis by BK Polyomavirus”, University of Florida, Gainesville, FL. 8/23/2016

“Genomic Integration & Tumorigenesis by BK Polyomavirus”, Brown Alport Medical School/Lifespan Academic Medical 9/12/2016

MEHMET KESIMER, Ph.D.

Workshop Speaker: 11th World Immune Regulation Meeting. Davos March 15-19, 2017. Davos, Switzerland.

Invited symposium speaker: American Thoracic Society/NHLBI “Phenotyping in SPIROMICS. NHLBI symposium, May 21, 2017, Washington DC.

NICHOLE KORPI-STEINER, Ph.D.

Mayo Clinic, Department of Pathology and Laboratory Medicine, Clinical Biochemistry and Immunology Seminar, “Human chorionic gonadotropin testing in clinical practice: Assessing risk for patient care and safety,” Rochester, MN, September 10, 2106

Department of Nursing, Nursing Managers, Meeting, “Preanalytical limitations in point of care glucose testing,” June 7, 2016

Department of Pulmonary and Critical Care Medicine, Critical Care Leadership Meeting, “Outcomes of IQCP for point of care blood gas testing in the critical care setting,” October 6, 2016

Department of Anesthesiology, “Urine toxicology testing for monitoring drug therapy in pain management patients,” October 15, 2016

American Association for Clinical Chemistry, International Critical and Point of Care Testing Meeting, “Benefits and challenges of POCT across the clinical spectrum,” Copenhagen, Denmark, September 21-24, 2016; Scientific program organizing committee

Department of Nursing, Nursing Managers Meeting, “Utilizing dashboards to enhance quality/safety performances in POCT,” June 6, 2017

THOMAS T. LAWTON, M.D.

“In situ Lobular Neoplasia: Current Concepts and Controversies” 1st International Invasive Lobular Cancer Symposium, Pittsburg, PA Sept. 29-30, 2016

C. RYAN MILLER, M.D., Ph.D.

Irvin DM, Vitucci M, McNeill RS, Bash RE, Miller CR. Regional astrocyte heterogeneity influences evolution of low-grade glioma during malignant progression. Society for Neruo-Oncology. Scottsdale, AZ November 17-20, 2016

Targeting the glioma kinome for personalized therapy: Mouse models and experimental therapeutics. University of NC Department of Pharmacology, Chapel Hill, NC October 18, 2016

Correlative clinical trials in oncology. The role of UNC Surgical Pathology and the Translational Pathology Laboratory, UNC Lineberger Comprehensive Cancer Center, Protocol Office Executive Committee, Chapel Hill, NC September 1, 2016

MELISSA B. MILLER, Ph.D.

Association for Molecular Pathology Annual Meeting, Corporate Workshop Seminar, “Multiple respiratory viral testing: analytical and clinical considerations,” Charlotte, NC, November 9, 2016.

Food and Drug Administration, Workshop: Coordinated development of antimicrobial drugs and antimicrobial susceptibility test devices, “Roles and resources in coordinated development: ASM perspective,” Silver Spring, MD, September 29, 2016.

25th Annual Symposium on Molecular Pathology, Beaumont Health System, “The changing paradigm of the laboratory diagnosis of gastroenteritis,” Troy, MI, September 22, 2016.

School of Nursing, Continuing Education Program: Pediatric Sexual Assault Nurse Training, “STI Testing in Pediatrics,” October 20, 2016.

American Society for Microbiology, Microbe 2017, “Latest developments in LDT regulation,” New Orleans, LA, June 3, 2017.

European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Integrated Symposium, “Analytical considerations of multiplex respiratory viral testing,” Vienna, Austria, April 24, 2017.

Association for Molecular Pathology, Global Congress on Molecular Pathology, “Syndromic infectious disease testing: advantages, challenges and opportunities,” Berlin, Germany, April 4, 2017.

University of Iowa, Department of Pathology and Laboratory Medicine Grand Rounds, Franklin Koontz Lecture (Visiting Professorship), “Impact of molecular infectious disease testing on clinical outcomes,” Iowa City, IA, April 13, 2017.

University of Iowa, Department of Pathology and Laboratory Medicine Residents Lecture, Franklin Koontz Visiting Professorship, “Challenging Cases in Clinical Microbiology,” Iowa City, IA, April 12, 2017.

University of Iowa, Department of Pathology and Laboratory Medicine Laboratory Lecture, Franklin Koontz Visiting Professorship, “Advantages and challenges of molecular multiplex for GI pathogens,” Iowa City, IA, April 12, 2017.

Molecular Virology Workshop, 24th Annual Workshop, Pan American Society for Clinical Virology, Co-Chair, Daytona Beach, FL, May 6, 2017 (6h)

VOLKER NICKELEIT, M.D.

Indian Society of Organ Transplantation (ISOT), 27th conference: ”Potpourri of Unusual cases – When Masters are in a Fix” October 2016, Chandigarh, India – [invited guest lecturer]

Indian Society of Organ Transplantation (ISOT), 27th conference: ”Rejection revisited – is pathology still gold standard?” October 2016, Chandigarh, India – [invited plenary guest lecturer]

ASN/Kidney Week (Course on Fundamentals in Renal Pathology, ASN annual meeting, Chicago, IL, 11.2016); 4x during 2 day session

Visiting Professor, PGIMER, Dept. of Histopathology: “Pathologists in the Center of Polyomavirus Nephropathy” October 2016, Chandigarh, India- [invited guest lecturer]

Glomerular-Disease Collaborative Network meeting (GDCN 31st annual conference): “Renal biopsy case discussions with pathologic and clinical correlations”. May 2017, Chapel Hill, NC, USA

Banff-SCT Joint Scientific Meeting: “Final Decision on PVN scoring”. March 2017, Barcelona, Spain

Banff-SCT Joint Scientific Meeting: “Updates from the TCMR and borderline working group”. March 2017, Barcelona, Spain

Basel Seminars in Pathology 2017: Renal Transplantation, Basel, Switzerland (6.25. – 6.29.)

Tubulo-interstitial Lesions in Renal allografts 6.26.16, Basel, Switzerland
De-Novo and Recurring Glomerulopathies in Renal allografts 6.27.16, Basel, Switzerland
Approaches to the evaluation of transplant biopsies: interactive forum four times during 4 day seminar
Nephropathology Seminar (Nephropathologiekurs Volhard-Fahr),”Mannheim, Germany, annual course
2/23-2/25/2017; lecturer on: “Transplant-Pathology & Infections
Approaches to the evaluation of transplant biopsies: 1 hour 2/225/2017

NIRALI PATEL, M.D.

Mock Tumor Board: 2016 Advances in Genome Biology and Technology (AGBT) Precision Health Meeting. Scottsdale, AZ September 24, 2016
Delivering Precision Oncology in the Geonomics Era. Precision Medicine World Conference Durham, NC May 25, 2017
Molecular Diagnosis in Hematopathology. UNC Department of Pathology and Laboratory Medicine Chapel Hill, NC April 8, 2017

JAY S. RAVAL, M.D.

Invited Lecturer, “Transfusion Associated Circulatory Overload: What’s New?” 2016 AABB Annual Meeting
Invited Lecturer, “Massive Transfusion: What Have You Done For me Lately?” 2016 AABB Annual Meeting
“Clinical Applications: Donor and Cellular Therapy”, Apheresis Review Session, American Society for Apheresis Annual Meeting, Ft. Lauderdale, FL 5/ 2017
Invited Lecturer, “Breakfast with the Expert I”, American Society for Apheresis Annual Meeting, Ft. Lauderdale FL 5/2017
Invited Lecturer, “Transfusion Associated Circulatory Overload: What’s New?” Mississippi Valley Regional Blood Center Webinar Series, 1/ 2017

HARSHARAN SINGH, M.D.

Indian Society of Organ Transplantation Annual Meeting, Chandigarh, India (October 7-12, 2016): Polyomavirus Nephropathy: Is there more to know than viremia and viruria?
Renal Pathology Evening Specialty Conference, USCAP Annual Meeting, San Antonio, Texas, March 5-10, 2017
Electron Microscopy Scoring – Report of the Banff EM Working Group. Societat Catalana deTrasplantament and BANFF Foundation forAllograft Pathology Joint Meeting, Barcelona, Spain, March 27-31, 2017.
Final decision on PVN Scoring – PVN Classification Working Group. Societat Catalana deTrasplantament and BANFF Foundation forAllograft Pathology Joint Meeting, Barcelona, Spain, March 27-31, 2017.
EM in Transplant Pathology – are we ready for adoption into the Banff classification? Societat Catalana deTrasplantament and BANFF Foundation for Allograft Pathology Joint Meeting, Barcelona, Spain, March 27-31, 2017.
Renal Biopsy Session, GDCN Annual Meeting, Chapel Hill, NC May 20, 2017

JOAN TAYLOR, Ph.D.

Zhu Q, Cheng Z, Mack CP and Taylor JM. FAK phosphorylates Beclin1, suppresses autophagy and promotes cardiac hypertrophy. Duke/UNC Cardiovascular Symposium, Durham, North Carolina, May 2016.

Mangum KD, Bai XB, Taylor JM, Mack CP. Transcription mechanisms regulating expression of the smooth muscle-specific, hypertension-associated gene, *GRAF3*. Duke/UNC Cardiovascular Symposium, Durham, North Carolina, May 2016.

Xue Bai, Rachel Dee, Kevin D. Mangum, Anthony J. Viera, Christopher P. Mack and Joan M. Taylor. Role for the Smooth Muscle-Selective RhoGAP *GRAF3* in Hypertension. Duke/UNC Cardiovascular Symposium, Durham, NC May 2016

KAREN WECK-TAYLOR, M.D.

“Interpretation of WES Variants: Uncertain until proven guilty.” Next Generation SX Summit, Washington, DC August 24-26, 2016

“Pharmacogenomics,” Duke School of Medicine Department of Genetics, March 15, 2017

DAVID C. WILLIAMS, M.D.

“Structure and DNA binding dynamics of the methyl-cytosine binding domain (MBD) proteins”, Cellular and Molecular Biophysics Seminar, North Carolina State University, Raleigh, NC, Sep 1, 2016

“Structure, evolution, and divergence of methyl-cytosine binding domain (MBD) proteins”, HudsonAlpha Institute for Biotechnology, Huntsville, AL, Nov 9, 2016

“The MBD2-NuRD complex as a molecular target to block methylation dependent gene silencing”, ASIP Annual Meeting (EB2017), Chicago, IL, Apr 25, 2017

“Structure, evolution, and divergence of methyl-cytosine binding domain (MBD) proteins”, Visiting Scholar, Penn State Medical Center, Hershey, PA, Jan 10, 2017

MONTE S. WILLIS, M.D., Ph.D.

University of Pittsburgh, Injury, Repair & Regenerative Medicine Seminar Series “Therapeutic Targeting Proteotoxicity and Muscle-Specific Metabolism/Inflammation in Heart Failure: Two New Ideas”. Hosts: Dr. Cecelia Yates. Pittsburgh, PA. October 18, 2016.

Tuskegee University, Department of Biology and Center for Cancer Research Seminar. Talk entitled: “The Pathophysiology of Myocardial Infarction (heart attack) and the Development of Novel Therapeutic Strategies Targeting Fibrosis”. Hosts: Drs. Clayton Yates and Jesse Jaynes. Tuskegee, AL, Sept. 26, 2016.

University of Nebraska Medical Center MD-PhD Program Annual Retreat. Invited Keynote Speaker, talk entitled: Creativity, Entrepreneurship, and Business Management in Biomedical Research and Medical Practice. Lied Convention Center, Nebraska City, NE. August 12, 2016.

Heart Failure: Inflammasome, Necrosome and Signalosome. Società Italiana di Patologia e Medicina Traslazionale (SIPMeT) Symposium: Metabolism and Prevention of Disease Sponsored by ASIP and SIPMeT (Italian Society of Pathology and Translational Medicine). Tuesday, April 25, 2017.

Parlaying Social Networks to Market Yourself Effortlessly. Workshop and Breakfast talk at ASIP Annual Meeting, Experimental Biology 2017. Sponsored by the Committee on Career Development and Diversity. Sunday, April 23, 2017.

North Carolina A&T, Pre-Professional Scholars Program. Class panel participant. Host: Checo Rorie, PhD. April 5, 2017.

North Carolina A&T, Department of Biology Seminar. Talk entitled: “Myocyte-specific ubiquitin ligase-mediated regulation of protein synthesis, inflammation, and metabolism in muscle atrophy”. Host: Misty Thomas, PhD April 5, 2017.

Indiana University Medical Center, Indiana Center for Musculoskeletal Health and Department of Otolaryngology Hosted Seminar. Talk entitled: “The Role of Myocyte-Specific Ubiquitin Ligases (MuRF1) in Regulating Protein Synthesis, Inflammation, and Metabolism in Cancer Cachexia/Muscle Atrophy”. Host: Dr. Marion Couch, MD, PhD, MBA. February 23, 2017.

Duke University Medical Center, Division of Endocrinology, Metabolism, and Nutrition Grand Rounds Series. Talk entitled: “The Role of Myocyte-Specific Ubiquitin Ligases in Mediating Cardiomyopathy, Protein Synthesis, and Inflammation in Diabetes and Muscle Atrophy”. Hosts: Drs. Matt Crowley and James R. Bain. Durham, NC, January 27, 2017.

JULIA WHITAKER, M.S, DVM

North Carolina Association of Laboratory Animal Medicine Workshop in Laboratory Animal Medicine, Raleigh, NC. Title: “The Laboratory Zebrafish”. May 18-20, 2017

SCOTT E. WILLIAMS, Ph.D.

Epithelial Differentiation and Keratinization Gordon Research Conference

Rugged terrain: the search for oral epithelial stem cells. Barga, Italy 5/7-5/13/17

International Society for Stem Cell Research Annual Meeting A population of oral epithelial label-retaining cells resides in a discrete niche in palatal rugae ridges. Boston, MA 6/14/17-6/17/17

ALISA S. WOLBERG, Ph.D.

2nd Maastricht Consensus Conference on Thrombosis, Maastricht, NL, Clot Information and structure in atherothrombosis 2/23/2017

61st Annual Meeting of the Society of Thrombosis and Hemostasis Research (GTH), Basel Switzerland, Fibrinogen, factor XIII and red blood cells in thrombosis (Plenary) 2/16/2017

Centre for Blood Research Annual Earl W. Davie Symposium, Vancouver Canada, Fibrin(ogen), factor XIII and red blood cells in thrombosis November 17, 2016

American Heart Association Scientific Sessions, New Orleans LA, Animal models reveal new insights on the role of fibrin in VT 11/15/2016

British Society for Haemostasis & Thrombosis (BSHT) and UK Platelet Group 11/10/2016

American Society of Anesthesiologists of 2016 Annual Meeting, Chicago, IL, Critical quality of clot structure 10/23/2016

American Association of Blood Banks (AABB) 2016 Annual Meeting, Orlando, FL, Fibrinogen, factor XIII, and red blood cells in thrombosis 10/22/2016

2nd International Factor XIII Workshop, Heviz, Hungary, Fibrinogen factor XIII and red blood cells in thrombosis 9/29/2016

DIRECTOR OF CONTINUING EDUCATION COURSES

JESSICA BOOKER, Ph.D.

“Gastric Adenocarcinoma and Proximal Polyposis of the Stomach”
Current Topics in Medical and Human Genetics Conference 2/23/17

WILLIAM B. COLEMAN, Ph.D.

Experimental Biology 2017, April 2017, Chicago, IL, Breast Cancer Workshop: Ductal Carcinoma in situ – Discerning Aggressive Versus Benign Disease Using Molecular Features. Workshop Organizer and Session Chair: W.B. Coleman.

Experimental Biology 2017, April 2017, Chicago, IL, Course: Pathobiology for Research Scientists – Next generation Genomics for Basic/Translational/Clinical Scientists. Organizers and Session Chairs: W.B. Coleman, G.J. Tsongalis, and Mark E. Sobel.

NICHOLE KORPI-STEINER, Ph.D.

McLendon Clinical Laboratories, “Treating pain during the United States opioid epidemic: How laboratory medicine can help,” April, 2017.

Core lab, “Haptoglobin: Ups, downs and intercepts,” Cara Randall, MD – mentored presentation, 2017

Core lab, “Utility of sFLC assays in the diagnosis and treatment of plasma cell neoplasms, Renee Betancourt, MD – mentored presentation, 2017

Core Lab, “What’s the T? Testosterone testing in clinical practice, Cori Breslauer, MD – mentored presentation, 2017

VOLKER NICKELEIT, M.D.

Nephropathology laboratory staff CME, 8/25 8.30-9.30: Pathology of common renal diseases visited at the multi headed scope.

Nephropathology laboratory staff CME, 10/26, 8.30-9.30: Tissue staining and processing artifacts visited at the multi headed scope.

Nephropathology laboratory staff CME, 2/10, 8.30-9.30: Pathology of common renal diseases visited at the multi headed scope.

Nephropathology laboratory staff CME, 4/13, 8.30-9.30: Tissue staining and processing artifacts visited at the multi headed scope.

YARA A PARK, M.D.

Director of (ACGME, COMACC) fellowship training program

Member, P & T Committee of UNCH

JOHN L. SCHMITZ, Ph.D.

American Red Cross Continuing Education November 7, 2016: “ABO and HLA Antibody association” and “virtual crossmatching for platelet transfusion”

American Red Cross CE 8/26/16: “MICA Mismatching in HSCT”

American Red Cross CE 7/2016: “RNAi silencing of HLA ClassI in stem cells used as a source of platelets in a refractory model.”

Red Cross Continuing Education Lecture, February 28, 2017. Interference in Single Antigen Bead Testing

Red Cross Continuing Education Lecture, May 8, 2017. Cell free DNA detection for rejection diagnosis.

Red Cross Continuing Education Lecture, June 14, 2017. Basic HLA update.

Red Cross Continuing Education Lecture, June 30, 2017. HLA and Disease Association Mechanisms.

Director, UNC Medical Laboratory Immunology Fellowship Program

SCOTT V. SMITH, M.D.

ISUP Recommendations for Best Practice Application of Immunohistochemistry in Differential Diagnosis of Testicular Germ Cell Neoplasms, April 9, 2016

LEIGH B. THORNE, M.D.

NGS and ChimerSim analysis 2/9/16 Molecular journal club

KAREN E. WECK, M.D.

Current Topics in Medical and Human Genetics, December 15, 2016

SERVICE ON UNC AND UNCH COMMITTEES

PABLO ARIEL, Ph.D.

Member, UNC Imaging Roundtable Group
Core Directors Mentoring Task force

JAMES TODD AUMAN, Ph.D.

Member, NC TraCS CTSA Translational Advancements Resource Committee
Member, LDBR Data Sharing Committee

JESSICA K. BOOKER, Ph.D.

Training Director of the ABMGG Clinical Molecular Genetics Fellowship

FRANK C. CHURCH, Ph.D.

Committee member of School of Medicine Admissions Committee
Member, TEC SOM Foundation Phase Curriculum Development Committee Member
“Teaching Champions” Medical Education Committee

WILLIAM B. COLEMAN, Ph.D.

Department of Pathology and Laboratory Medicine Grand Rounds Organizing Committee, 2016-2017
Department of Pathology and Laboratory Medicine Annual Research Symposium Organizing Committee, 2010-Present
Pathobiology and Translational Science Graduate Program Executive Committee, June 2006-Present
BBSP-NCGC Admissions Committee, November 2014-Present

GEORGETTE A. DENT, M.D.

Member, Student Progress Committee
Member, Translational Education at Carolina (TEC) Foundation Phase Committee
Member, TEC Application Phase Committee
Member, TEC Individualization Phase Committee
Member, Education Committee

ROSANN A. FARBER, Ph.D.

Member, UNC APT Committee
Member, SOM Conflict of Interest Committee

Member, COI monitoring committees (Strahl, Albritton, Perou)
Member, Department of Genetics, Advisory Committee
Member, Department of Genetics, Search Committee
Member, Department of Genetics, Faculty Mentoring Committee

GEORGE FEDORIW, M.D.

Member, Oncology Program Heads Committee (NC Cancer Hospital)

CRAIG A. FLETCHER, D.V.M., Ph.D.

Member, A&T IACUC Committee
Member, Animal Program Master Planning, Executive Committee meetings
Member, UNC Search Committee for Assistant Dean, SOM Planning Office
Member, UNC Search Committee for Director of the Office of Industry Contracting
Member, UNC Search Committee for Facilities Engineering Director
Member, UNC Search Committee for Director for Research Division Financial Services
Dean Advisory Committee
Member, DLAM Advisory Committee
Member, DLAM/IACUC Subcommittee
Member, DLAM Leadership Committee
Member, DLAM Project Planning Committee
Member, Institutional Animal Care and Use Committee (IACUC)
Member, Institutional Biosafety Committee (IBC)
Member Office of Research (OoR) Large Group
Member, Wilson Hall Annex Committee
Member, UNC Facilities Planning Committee, member 2014-present
Member, UNC Facilities Work Group, member 2014-present
Member, UNC University Safety and Security Committee, member 2014-present

PETER GILLIGAN, Ph.D.

Preventable Patient Harm: C difficile infection prevention workgroup
ACT committee
SOM Admissions

MARGARET GULLEY, M.D.

Member, UNC Clinical Genetics Advisory Group to Lineberger Cancer Center and University Cancer Research Fund
Member, Executive Director's Advisory Group, UNCH McLendon Labs
Member, UNC Pathology Residency Education Committee; Director of Molecular Pathology

SUSAN C. HADLER, M.D., M.S.

Medical School TEC Foundations Committee
Medical School Progress Committee
Medical School STEP 1 Task Force
Dental School Curriculum Committee
Dental School 1st Year Teaching Committee

TRACY HEENAN, D.V.M.

Member, DLAM Advisory Committee (appointed June 2004)
Member, IACUC Animal Concern Subcommittee
Member, IACUC
Member, Vice Chancellor for Research Senior Staff Member
Member, University's Sustainability Advisory Committee
Member Search Committee for Assistant Professor Veterinarian,
Member, Division of Laboratory Animal Medicine (DLAM)
Member, Vendor Request for Proposal DLAM Master Plan
Member, Vice Chancellor for Research (VCR) Compliance Task Force
Member, Research Compliance Steering Committee
Chair, IACUC/DLAM Leadership Committee
Founder and Co-Chair, Network of Laboratory Animal Coordinator Steering Committee

JONATHON W. HOMEISTER, M.D., Ph.D.

Director of Graduate Studies, Pathobiology and Translational Science Ph.D. Program
Pathobiology and Translational Science Ph.D. Program Executive Committee
Member, BBSP Executive Committee
Member, Department of Pathology and Laboratory Medicine Research Advisory Committee
Member, Medical School TEC Foundation Phase Curriculum

J. CHARLES JENNETTE, M.D.

Member, UNC Health Care System Executive Council
Member, Dean's Advisory Committee of the UNC School of Medicine
Member, UNC Faculty Physicians Board
Member, Medical Staff Executive Committee
Member, UNC Faculty Physicians Payor Relations Committee
Member, NC TraCS Institute/CTSA Translational Science Advisory Board (TSAB)
Member, Carolina Value Labor Solution and Implementation Team
Member, Learning Environment and Patient Care Experience, UNC-HC Committee
Member, Clinical Chairs' Committee
Member, Chair Incentive Committee

DAVID G. KAUFMAN, M.D.

Member, UNC, University Safety and Security Committee
Chair, UNC, Radiation Safety Committee
Chair, SOM, Jefferson Pilot and Woods Award Selection Committee

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Chair, Department of Pathology and Laboratory Medicine Research Advisory Committee

MEHMET KESIMER, Ph.D.

Member, UNC Committee on Scholarship Awards and Student Aid
Member, Preliminary Examination Committee, Department of Pathology and Laboratory Medicine

NICHOLE KORPI-STEINER, Ph.D.

Member, Standards and Accreditation Committee
Chair, UNC Hospitals Point of Care Testing Committee
Co-Chair, Clinical Pathology Resident/Fellow Conference
Blue Belt Sponsor, Lean Six Sigma Teams:
Purple belt team, Point of Care blood gas testing quality assurance, 2015 – Present
Green belt team, Outpatient phlebotomy patient satisfaction, 2015 – Present
Purple belt team, Phlebotomy inpatient collection quality assurance, 2015 – Present
Member, UNC-HCS POCT Enter/Edit Standardization Committee, 2016 - Present
Member, Quality/Safety Subcommittee, Standards and Accreditation, 2017 – Present

CHRISTOPHER MACK, Ph.D.

Member, Research Integrity Office – Investigation Committee #20160822
Member, UNC McAlister Heart Institute Executive Committee
Member, IVB Training Grant Executive Committee
Chair, IVB Training Grant Selection Committee

NOBUYO MAEDA, Ph.D.

Department of Pathology and Laboratory Medicine Research Advisory Committee
DLAM Advisory Committee
DLAM Faculty Recruitment Committee

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Member, GMEC Committee
Member, CCC Committee for AP/CP Residency
Chair of Medicine Search Committee, UNC SOM
Chair of Surgery Search Committee, UNC SOM

C. RYAN MILLER, M.D., Ph.D.

Member, Lineberger Comprehensive Cancer Center Clinical Genomics
Member, Lineberger Comprehensive Cancer Center UNCseq Committee
Medical Scientist Training Program (MSTP) Admissions Committee
Biological and Biomedical Sciences Program (BBSP), Neurobiology, Cancer and Cell Biology
(NCGC) Admissions Committee,
Graduate Program in Translational Medicine

MELISSA B. MILLER, Ph.D.

Anti-infective Subcommittee of the Pharmacy and Therapeutics Committee, UNC Health Care
Hospital Infection Control Committee, UNC Health Care
CLABSI/MRSA Bacteremia Prevention Core Team, UNC Health Care
Anti-infective Subcommittee of the Pharmacy and Therapeutics Committee, UNC Health Care
School of Medicine, Associate Professor Appointments, Promotions and Tenure Committee
School of Medicine, Health Sciences Advisory Committee

JUDITH NIELSEN, D.V.M.

Member, IACUC
Member, IACUC Animal Concern Subcommittee
Member, Lab Animal Enrichment Committee (resigned Feb. 2016)

Member, LAC Steering Committee
Member, DLAM Leadership Committee
Member, DLAM Advisory Committee 2015-Jan 2016
LCCC Animal Studies Core Advisory Committee
IBC joined this committee in Feb. 2016- present

SIOBHAN O’CONNOR, M.D.

Resident Clinical Competency Committee
Cytopathology Fellow Clinical Competency Committee

LI QIAN, Ph.D.

Member, Search Committee for the new chair of Department of Genetics at UNC SOM
Faculty Judge, Woman in Science (WinS) Symposium
Panelist, Woman in Science
Member, UNC MHI Executive Committee
Member, UNC Human Pluripotent Stem Cell Core Faculty Mentoring Committee
Faculty Mentoring Committee
Chair of Animal Core Directors, UNC Core Facility Advocacy Committee (CFAC)

JAY S. RAVAL, M.D.

Member, UNC Assistant Professors/Assistant Librarians Representative, Faculty Grievance Committee
Member, Non-trauma Massive Transfusion Protocol Committee
Member, Sickle Cell Disease Patient Committee
Member, TMS Transplant Service Laboratories QA Committee
Member, BMT HPC QA/QI Committee
Member, Pulmonary Transplant Committee
Member, Living Donor Kidney Transplant Committee
Member, UNC Honor Council
Member, AP/CP Residency Program Clinical Competency Committee
Member, Benign Hematology QI/ME
Member, CP QI M&M Committee
Member, UNC Faculty Information Technology Advisory Panel
Chair, Transfusion Medicine Fellowship Program Clinical Competency Committee

MARIAN ROLLINS-RAVAL, M.D., M.P.H.

Member, TMS/Immunology QI Committee
Member, Transplant Services QI Committee
Member, Benign Hematology QI/ME
Member, Hematopathology Director’s Meeting
Member, Coagulation Director’s Meeting
Member, Flow Cytometry QI/Development
Member, CP QI/M&M Committee
Member, Parker Hematology/Oncology Conference
Member, HIT Collaborative Meeting

JOHN SCHMITZ, Ph.D.

Director, UNC Medical Laboratory Immunology Fellowship
Member, Post-Tenure Review Committee

SCOTT V. SMITH, M.D.

Member, AP/CP Clinical Competency Committee, UNC Pathology Residency Program

JOAN TAYLOR, Ph.D.

Department of Pathology, Research Advisory Committee

McAllister Heart Institute, Leadership Committee

School of Medicine Conflict of Interest Committee

Internal review committee for Pew, Searle, Ellison, Rita Allen, and Packard scholars

Primary Mentor & Committee Member, Li Qian, Dept. Pathology

Faculty Mentoring Committee Member, Jiandong Liu, Dept. Pathology

Faculty Mentoring Committee Member, Qing Zhang, Dept. Pathology

Faculty Mentoring Committee Member, Sean McLean, Dept. Surgery

Faculty Mentoring Committee Member, Michael Bressan, Dept. Cell Biology and Physiology

Faculty Mentoring Committee Member, Jimena Guidance, Dept. Cell Biology and Physiology

Faculty Mentoring Committee Member, Stephanie Montgomery, Dept. Pathology

Faculty Mentoring Committee Member, Pablo Ariel, Dept. Pathology

Chair, Search Committees, Jing Zhang, Shanmugam Nagarajan

Member, Vice Chair for Research, Department of Pathology

Associate Director, McAllister Heart Institute

CYRUS VAZIRI, Ph.D.

Member, Department of Pathology and Laboratory Medicine Research Advisory Committee

Member, BBSP 'Pathogenesis' Graduate Admissions Committee

Member, Graduate Program in Molecular Pathology Executive Committee

Member, Graduate Program in Molecular Pathology Qualifying Exam Committee

Member, Curriculum in Toxicology Qualifying Exam Committee

Member, Curriculum in Toxicology Executive Committee

Associate Director of Graduate Studies, Graduate Program in Molecular Pathology

Director of Graduate Admissions, Curriculum in Toxicology

KAREN WECK-TAYLOR, M.D.

Member, Department of Pathology and Laboratory Medicine Research Advisory Committee

BERNARD E. WEISSMAN, Ph.D.

Member, Executive Committee, Curriculum in Toxicology

HERBERT C. WHINNA, M.D., Ph.D.

Member, UNCCH POC Committee

Member, UNCH Transfusion Committee

Member, UNCH MSEC

Member, UNCH Credentials Committee

Member, Epic EPIC Committee

Member, Epic eLIP committee

JULIA WHITAKER, M.S., D.V.M.

Member, Institutional Animal Care and Use Committee (IACUC)

Member, DLAM Advisory Committee

Member, Enrichment Committee
Member, DLAM Project Planning Committee

DAVID C. WILLIAMS, M.D., Ph.D.

Member of UNCSeq Molecular Tumor Board
Member, DPLM Research Advisory Committee
Member, BBSP NCGC-A Graduate Admissions Committee

ALISA S. WOLBERG, Ph.D.

Member, UNC Thrombosis and Hemostasis Program Seminar Series
Member, UNC DPLM Retreat Planning Committee

QING ZHANG, Ph.D.

Member, Pathology Research Retreat Committee
Member, Pathology Preliminary Exam Committee
Member, University Cancer Research Fund Review Committee

DEPARTMENT FACULTY HANDBOOK

The Department of Pathology and Laboratory Medicine maintains the Faculty Handbook on the Departmental intranet. The Handbook is updated regularly as new information becomes available. The idea for this resource came from the faculty, who wished to have a centralized, easily accessible source of information on topics of interest for new and established faculty members. The Handbook provides our faculty members with detailed and up-to-date information on such topics as faculty appointments and promotion, purchasing, grant proposals, human resources, equipment available within the Department, core research services available within the University, and policies of the School of Medicine. The handbook also provides an introduction and overview of the process of faculty orientation. The Department of Pathology and Laboratory Medicine's Faculty Handbook is accessible to all faculty members through the Departmental intranet.



The screenshot shows a web browser window displaying the DPLM Faculty Handbook page. The browser's address bar shows the URL <http://www.med.unc.edu/pathology>. The page header includes the UNC School of Medicine logo and navigation links such as "directories", "maps & directions", "news", "make a gift", and "careers". A search bar is also present. The main content area features a banner image of laboratory staff with the text "Clinical Services for Today's Patients. Education and Research for Tomorrow's Patients." Below the banner, a breadcrumb trail reads "you are here: home > handbook". The main heading is "DPLM Faculty Handbook", followed by a list of links: [Annual Teaching Summary Policy](#), [Compensation Plans](#), [Faculty Mentoring Program](#), [Faculty Orientation](#), [Grant Proposals](#), [Guidelines for Appointment, Reappointment & Promotion of Faculty in UNC School of Medicine](#), [Human Resources](#), [List of Mentors & Mentees for 2010-11](#), [Pathology Equipment Inventory \(2010\)](#), [Procedures & Criteria for Appointments, Reappointments, Promotions, & Awards of Tenure](#), [Purchasing](#), [Research Grant Review Policy](#), and [Core Research Facilities at UNC](#). A "Print this" link is located at the bottom right of the content area. The browser's status bar at the bottom indicates a zoom level of 100%.

DEPARTMENT WEBSITE

The Departmental website (<http://www.med.unc.edu/pathology>) was inaugurated in 1995 as a means of making potential applicants more aware of our graduate, postdoctoral, and residency training programs. Today, the website is a comprehensive, detail-rich resource for those seeking information about the educational, research, and clinical training programs of the Department. The website includes information on our graduate program in molecular and cellular pathology, our residency training program, our eleven clinical fellowship programs, the four research core service laboratories available to scientific investigators, a faculty directory with links to individual faculty-member biosketches, and a list of upcoming Departmental events. The website also provides an overview of the Department, including its history, recent annual reports, administrative directory, and photographic archive. The website is on a server maintained by the UNC School of Medicine. Dr. Thomas Bouldin is the webmaster and authors the webpages for the faculty and clinical training programs. Dr. Jonathon Homeister authors the webpages for the Pathobiology and Translational Science graduate program.

Welcome to UNC Pathology & Laboratory Medicine

Graduate Studies

Our **Graduate Program in Molecular and Cellular Pathology** provides a unique environment for predoctoral and postdoctoral training in experimental pathology. Nationally and internationally renowned investigators provide laboratory research opportunities that use multifaceted approaches and state-of-the-art techniques to explore the pathogenesis of a wide range of human diseases.

Research Core Laboratories

Research services for scientists are available in the **Translational Pathology Lab**, the **Animal Clinical Chemistry & Gene Expression Labs**, the **Microscopy Services Lab**, the **Oligonucleotide Synthesis Core Facility**, and the **Mass Spectrometry Core Facility**.

Departmental Information

Our **Faculty Directory** and **Administrative Directory** are online. Also available are an **overview** of the Department, recent **annual reports**, and a **photographic archive** of faculty members and trainees dating back to 1948.

Clinical Training Programs

Our **Residency Program** in anatomic and clinical pathology is an ACGME-accredited, four-year training program. We also offer **Fellowships** in clinical chemistry, clinical molecular genetics, clinical cytogenetics, cytopathology, forensic pathology, hematopathology, microbiology, molecular genetic pathology, nephropathology, surgical pathology, and transfusion medicine.

Clinical Laboratories

The **McLendon Clinical Laboratories** provide clinical services in anatomic pathology and laboratory medicine to UNC Hospitals. The Labs' **Manual** includes a directory, test information, forms and requisitions, antibiograms, and other information.

Seminar Series and Annual CME Course

Grand Rounds and the **Graduate Program's Seminar Series** will recommence in the fall semester. Our **Annual CME Course** in the spring will focus on topics in diagnostic pathology and laboratory medicine.

Contact

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PUBLICATIONS

Department of Pathology and Laboratory Medicine

School of Medicine

University of North Carolina at Chapel Hill

July 1, 2016 – June 30, 2017

SILVIO ANTONIAK, Ph.D.

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VICTORIA K. BAXTER, D.V.M, Ph.D.

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JESSICA BOOKER, Ph.D.

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THOMAS W. BOULDIN, M.D.

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FRANK C. CHURCH, Ph.D.

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WILLIAM B. COLEMAN, Ph.D.

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BRIAN C. COOLEY, Ph.D.

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GEORGETTE A. DENT, M.D.

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Mota R, Parry T, Willis M: Atrogin-1 Transgenic (AT1 Tg+) Mice Have Age-Dependent Cardiac Dysfunction With Atrogin-1 Mediated Glucocorticoid Receptor (GR) Expression Down Regulation. Abstract 59.5. Oral Presentation (Mota) Saturday, Apr 22 3:00 PM

Parry TL, Brown DI, Mwiza JM, Willis MS: Muscle Ring Finger-1 Knockout (MuRF1^{-/-}) Mice are Resistant to LPS-induced Cardiac Dysfunction Due to Decreased NF- κ B Activity. Abstract 59.6. Oral Presentation (Parry) Saturday, Apr 22 3:00 PM

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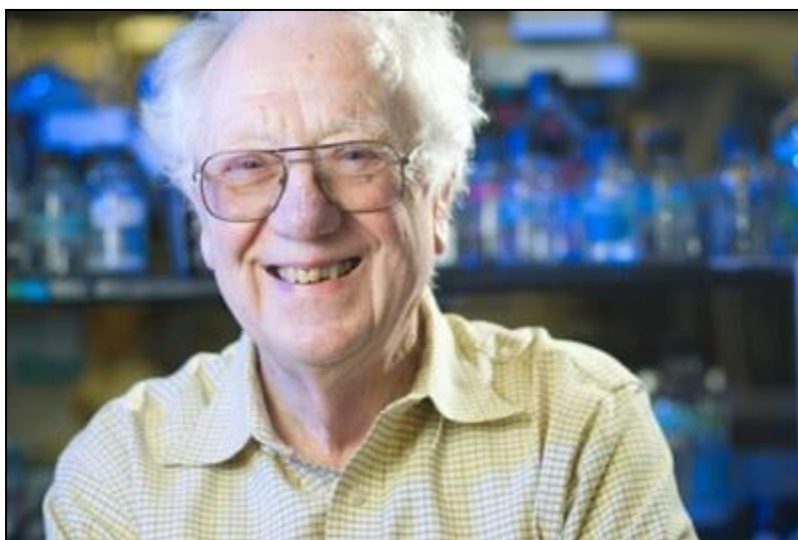
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In Memory and Remembrance of
Oliver Smithies, D.Phil. (1925 – 2017)

*Kay M. and Van L. Weatherspoon Eminent Distinguished Professor
of Pathology and Laboratory Medicine*



The 2017 Annual Research Symposium of the Department of Pathology and Laboratory Medicine is dedicated to the memory of our cherished friend and colleague Dr. Oliver Smithies who passed away on January 10, 2017 at the age of 91. Dr. Smithies earned a B.A. with First Class Honors in Physiology at Balliol College of Oxford University in 1946, and then earned a D.Phil. in biochemistry from Oxford University in 1951. Upon completing his doctorate, Dr. Smithies performed postdoctoral research from 1951-1953 in physical chemistry at the University of Wisconsin at Madison. After completing his postdoctoral research, Dr. Smithies served as a Research Assistant and then a Research Associate in the Connaught Medical Research Laboratory at the University of Toronto (1953-1960). In 1960, Dr. Smithies returned to the University of Wisconsin at Madison where he moved through the faculty ranks ultimately becoming the Hilldale Professor of Genetics and Medical Genetics. Dr. Smithies remained in Madison for 28 years before joining the faculty of the Department of Pathology and Laboratory Medicine at the University of North Carolina in 1988, where he continued to work as a bench scientist until his death. Most recently, Dr. Smithies served as the Kay M. and Van L. Weatherspoon Eminent Distinguished Professor of Pathology and Laboratory Medicine.

Dr. Smithies had a long and exceptionally productive career. He published his first paper in 1948 (Ogston and Smithies: Some thermodynamic and kinetic aspects of metabolic phosphorylation. *Physiol. Revs.* **28**:283-303, 1948), and >350 papers in total. Dr. Smithies' research was not only prolific it was also impactful. During the mid-1950s, Dr. Smithies developed a method for starch gel electrophoresis

that became the precursor for other electrophoretic methods that combine molecular sieving with protein separation by charge (Smithies: Grouped variations in the occurrence of new protein components in normal human serum. *Nature* **175**:307, 1955; Smithies: Zone electrophoresis in starch gels - Group variations in the serum proteins of normal human adults. *Biochem. J.* **61**:629-641, 1955). In recognition of the importance of this work, the *American Society of Human Genetics* recognized Dr. Smithies with the 1964 William Allen Memorial Award for "...outstanding work in human genetics, in recognition of development of starch gel electrophoresis, and of important work on the heredity of the *haptoglobins, transferrins, and gamma globulins...*" This work was also recognized in 1984 when the *American Association of Blood Banks* recognized Dr. Smithies with the Karl Landsteiner Memorial Award for "...the development of zone electrophoresis using starch gels, the discovery of the genetic polymorphism of *haptoglobin* and the insight provided on the role of chromosomal rearrangement and gene duplication in the evolution of protein structure....," and again in 1990 when Dr. Smithies received the Gairdner Foundation International Award for "...the discovery, development and application of gel electrophoresis methods that allow the separation and identification of specific proteins and nucleic acids...." Dr. Smithies continued to follow his interests into new projects that provided opportunities for new technical innovations. During the 1980s, Dr. Smithies work focused on homologous recombination of DNA, which led to the development of methods of gene targeting (Smithies *et al.*: Insertion of DNA sequences into the human chromosomal β globin locus via homologous recombination. *Nature* **317**:230-234, 1985). Technical developments related to gene targeting from Dr. Smithies and others formed the foundation for the development of genetically-modified mouse models (transgenic, knockout, and knock-in mice). In 1993, Dr. Smithies received a second Gairdner Foundation International Award for "...pioneering work in the use of homologous recombination to generate targeted mutations in the mouse..." This was the first of many awards related to his work in homologous recombination. In 1996, Dr. Smithies received the Ciba Award for Hypertension Research for "...his groundbreaking work in the use of homologous recombination to insert altered genes into specified positions in the DNA of living cells and the application of this technique to transfer 'designer mutations' to living animals and to the study of high blood pressure and cardiovascular diseases..." In 1998, Dr. Smithies was recognized as a Foreign Member of the Royal Society of London for "...his contributions to advancing the knowledge of recombination events in humans, and for applying this knowledge to innovate gene targeting in mammalian cells..." and received the Association of American Medical Colleges Award for Distinguished Research in the Biomedical Sciences for "...the landmark work that has made possible the only technology for directed mutagenesis in mammals..." as well as the Research Achievement Award from the American Heart Association for "...his extraordinary scientific accomplishments including innovative approaches in the modification of genes that have expanded the horizons of cardiovascular science and opened the door to improved treatments for heart and blood vessel diseases..." In 2001, Dr. Smithies shared the Albert Lasker Basic Medical Research Award with Dr. Mario R. Capecchi and Sir Martin J. Evans, for "...the development of a powerful technology for manipulating the mouse genome with exquisite precision, which allows the creation of animal models of human disease..." In 2007, Dr. Smithies shared the Nobel Prize for Physiology or Medicine with Dr. Mario R. Capecchi and Sir Martin J. Evans, for "...their discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells..." These represent just some of Dr. Smithies many awards recognizing the impact of his research on

various aspects of biomedical science. In addition to these awards, Dr. Smithies was elected to the National Academy of Sciences in 1971, the American Academy of Arts and Sciences in 1978, the Institute of Medicine in 2003, the American Association for Cancer Research Academy in 2013, and as a Charter Fellow in the National Academy of Inventors in 2013. Dr. Smithies delivered honorary lectures at numerous universities, and received honorary degrees from several institutions. Among these are an Honorary Doctorate of Science from the University of Toronto, an Honorary Doctor of Science from the University of Wisconsin at Madison in 2009, and an Honorary Doctor of Science from Oxford University in 2011.

Dr. Smithies' scientific career and accomplishments are truly impressive and quite exceptional. However, for those of us who had the privilege to know him and work with him, the papers, awards, and honors do not reflect his most important attributes. Despite his tremendous accomplishments, status in the field, and numerous awards and honors, Dr. Smithies is most often described as unpretentious and approachable, and is renowned as a person of gentle character, generous spirit, infectious curiosity, and possessing an enormous passion for science. He served as a formal research mentor for numerous young scientists over the years, and was considered a mentor by many others (including his peers). Dr. Smithies was a cherished colleague to everyone at the University of North Carolina. He was a friend to all and was eager to help others succeed (which he did time after time). Dr. Beverly H. Koller (Departments of Medicine and Genetics, University of North Carolina School of Medicine) was a postdoctoral fellow in Dr. Smithies' laboratory at the University of Wisconsin at Madison, and worked with Dr. Smithies for many years. Dr. Koller reflected on her memories of Dr. Smithies in an obituary published earlier this year [Koller: Oliver Smithies (1925- 2017). *Cell* **168**:743-744, 2017]. The following excerpt from Dr. Koller's obituary aptly describes Dr. Smithies as most of us saw him: "...*When celebrating Oliver's incredible life, I believe that we mourn not only the loss of a friend and mentor, but also of an ideal. In our hearts, we know that what Oliver represented was larger than a single life. [He] represented the freedom to be an explorer, to enjoy a lifetime of discovery, to continually ask why, and to continually challenge the consensus...*"

We are proud to have known Dr. Oliver Smithies for many years and we are grateful for the exceptional example he provided for us as a distinguished and accomplished experimental pathologist, and a genuinely good person. Even though he is gone, Dr. Smithies will continue to inspire the generations of scientists who were fortunate enough to have known him to take chances and to do their best work. The 2017 Annual Research Symposium is dedicated to his memory and the scientific ideal that he represented.

Dedication written by W. B. Coleman, Ph.D. and Jonathon W. Homeister, M.D., Ph.D. for the Annual Research Symposium September 7, 2017.

