DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
2014-2015 ANNUAL REPORT

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DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
FACULTY AND TRAINEE ROSTER
2014-2015

Chair

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

Vice Chair

Joan M. Taylor, Ph.D., Professor, Vice Chair for Research
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, Associate Professor, Vice Chair for Academic Affairs

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)
Richard R. Tidwell, Ph.D. (Kenan Distinguished Professor)

Professors

C. Robert Bagnell, Jr., Ph.D.
Thomas W. Bouldin, M.D.
Debra A. Budwit, M.D. (Separated December 2014)
Frank C. Church, Ph.D.
William B. Coleman, Ph.D.
Marila Cordeiro-Stone, Ph.D. (Retired June 2015)
Leslie G. Dodd, M.D.
Rosann A. Farber, Ph.D.
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.
Margaret L. Gulley, M.D.
Catherine A. Hammett-Stabler, Ph.D.
H. Michael Jones, M.D. (Retired June 2015)
Kathleen A. Kaiser-Rogers, Ph.D.
David G. Kaufman, M.D., PhD.,
William K. Kaufmann, Ph.D.
Hyung-Suk Kim, Ph.D.
Thomas J. Lawton, M.D. (Joined July 2014)
Susan J. Maygarden, M.D.

Melissa B. Miller, Ph.D. (Promoted June 2015)
Volker R. Nickeleit, M.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.
Michael D. Topal, Ph.D.
Cyrus Vaziri, Ph.D. (Promoted October 2014)
Karen E. Weck, M.D.
Bernard E. Weissman, Ph.D.
John T. Woosley, M.D., Ph.D.

Associate Professors
Jessica K. Booker, Ph.D.
Brian C. Cooley, Ph.D.
Georgette A. Dent, M.D.
David A. Eberhard, M.D., Ph.D.
George Fedoriw, M.D. (Promoted October 2014)
Craig A. Fletcher, D.V.M., Ph.D.
Susan C. Hadler, M.D., M.S.
Tracy M. Heenan, D.V.M.
Jonathon W. Homeister, M.D., Ph.D.
Peiqi Hu, MD
Masao Kakoki, M.D., Ph.D.
Daniel Kenan, M.D., Ph.D.
Mehmet Kesimer, Ph.D.
Ruth A. Lininger, M.D.
Christopher P. Mack, Ph.D.
C. Ryan Miller, M.D., Ph.D.
Eizaburo Sassatomi, M.D. (Joined January 2015)
Leigh B. Thorne, M.D.
Julia W. Whitaker, D.V.M.
David C. Williams, Jr., M.D., Ph.D.
Alisa S. Wolberg, Ph.D.
Hong Xiao, M.D.
Maimoona B. Zariwala, Ph.D.

Assistant Professors
J. Todd Auman, Ph.D.
Claudia M. Brady, M.H.S.
Kevin E. Greene, M.D.
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.
Stephanie Montgomery, D.V.M., Ph.D. (Joined October 2014)
Vincent J. Moylan, Jr., M.S.
Siobhan M. O'Connor, M.D.
Yara A. Park, M.D.
Nirali M. Patel, M.D.
Xinchun Pi, Ph.D. (Joined July-August 2014)
Li Qian, Ph.D.
Jay S. Raval, M.D.
Marian A. Rollins-Raval, M.D., M.P.H.
Lori R. Scanga, M.D., Ph.D.
Dennis A. Simpson, Ph.D. (Separated June 2015)
Dimitri G. Trembath, M.D., Ph.D.
Eric Weimer, Ph.D., Ph.D. (Joined July 2014)
Scott Williams, Ph.D.
Liang Xie, Ph.D. (Joined July-August 2014)
Yang Yang, Ph.D. (Joined October 2014)
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.

Clinical Faculty (Medical Examiners)
Sandra C. Bishop-Freeman, Ph.D.
Justin O. Brower, Ph.D.
Craig Nelson, M.D.
Deborah L. Radisch, M.D.
Lauren Scott, M.D.
Susan E. Venuti, M.D.
Ruth E. Winecker, Ph.D.

Faculty Emeritus
Stuart A. Bentley, M.D.
John D. Butts, M.D.
John F. Chapman, Dr.P.H.
Myra L.Collins, M.D., 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.
M. David Goodman, M.D.
Joe W. Grisham, M.D.
J. Ed Hall, 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. (Surgery)
Nizar Chahin, M.D. (Neurology) (Separated October 2014)
Claire M. Doerschuk, M.D. (Medicine)
Ronald J. Falk, M.D. (Medicine)
Susan A. Fiscus, Ph.D. (Microbiology, Retired)
Ajay Gulati, M.D. (Pediatrics)
Nigel S. Key, M.D., Ch.B. (Medicine)
Nigel Mackman, Ph.D. (Medicine)
Valerie A. Murrah, D.M.D., M.S. (Dentistry)
Timothy C. Nichols, M.D. (Medicine)
Charles M. Perou, Ph.D. (Genetics)
Kathleen W. Rao, Ph.D. (Pediatrics)
Harold R. Roberts, M.D. (Medicine) (Retired)
Darrel W. Stafford, Ph.D. (Biology)
James A. Swenberg, D.V.M., Ph.D. (Environmental Sciences and Engineering)
Melissa Troester, Ph.D. (Epidemiology)
Young E. Whang, M.D., Ph.D. (Medicine)
Elizabeth Wilson, Ph.D. (Pediatrics)
Daniel Zedek, M.D. (Dermatology)

Adjunct Faculty
Araba N. Afenyi-Annan, M.D.
Peter M. Banks, M.D. (Ventana-Roche Corporation)
Jared G. Block, M.D.
Gary A. Boorman, D.V.M., Ph.D. (NIEHS)
Mark E. Brecher, M.D. (Laboratory Corporation of America)
Robert C. Brown, M.D. (Emeritus)
Shu Huey Chaing, Ph.D. (State Dept of Health and Human Services)
Paul Chastain. Ph.D
Cherie H. Dunphy, M.D. (Laboratory Corporation of America)
Jeffrey Everitt, D.V.M. (GlaxoSmithKline)

Thomas H. Fischer, Ph.D.
Dana M. Fowlkes, M.D., Ph.D. (Green Spring Technology) (Separated May 2015)
Kim R. Geisinger, M.D. (Piedmont Pathology Group)
M. David Goodman, M.D.
Oleg Gorkun, Ph.D.
Delores J. Grant, Ph.D. (North Carolina Central University)
Christopher W. Gregory, Ph.D. (Voyager Pharmaceutical)
Heike Hunt, M.D. (Baystate Medical Center) (Separated December 2014)
John P. Hunt, M.D. (Baystate Medical Center)
Wendell D. Jones, Ph.D. (Expression Analysis/Quintiles)
Scott Kilpatrick, M.D. (Forsyth Medical Center)
Suzanne L. Kirby, M.D., Ph.D. (Separated July 2014)
Joe N. Kornegay, D.V.M., Ph.D. (Texas A&M University)
Myla Lai-Goldman, M.D. (Laboratory Corporation of America, Retired)
Thomas G. Lightfoot, Ph.D. (American Red Cross Blood Services)
Chad A. Livasy, M.D. (Carolinas Pathology Group)
Roger L. Lundblad, Ph.D.
Amil E. Mandal, M.D. (Medical Specialists of St. Augustine)
Keith V. Nance, M.D. (Rex Hospital)
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 Universaity (Joined September 2014)
Ashley L. Rivenbark, Ph.D. (Oxford Science Editing, ASIP)
Dennis W. Ross, M.D., Ph.D. (Forsyth Medical Center, Retired) (Separated August 2014)
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. (Tohuku University, Sendai, Japan)
Paul A. Wade, Ph.D. (NIEHS)
Ruth F. Walters, M.D. (Laboratory Corporation of America)
Carol J. Weida, M.D. (Joined September 2013)
Douglas C. Wolf, Ph.D., D.V.M. (EPA)

Clinical Fellows
Lisa J.H. Cichon, M.D. (Hematopathology)
Kristy R. Crooks, Ph.D. (Cytogenetics)
Daniel L. Duncan, M.D. (Molecular Genetic Pathology)
Lina Maria Espinosa Saltaren, M.D. (Nephropathology)
Akanksha Gupta, M.D. (Nephropathology)
Amanda C. Hemmerich, M.D. (Surgical Pathology)
Ronald Henriquez, Ph.D. (Clinical Chemistry)
Grace M. Lee, M.D (Blood Banking and Transfusion Medicine)
Hanan F. Mohammad, Ph.D. (Clinical Chemistry)
Rongpong Plongla, M.D. (Clinical Microbiology)
Brooke S. Rambally, M.D. (Surgical Pathology)

Anthony N. Tran, Dr. PH, MPH (Microbiology)
Patrick L. Ware, M.D. (Cytopathology)
Sara E. Wobker, M.D. (Cytopathology)

Co-Chief Residents
Kimberly E. Janssen, M.D. (PGY IV) Co-Resident
Nathan D. Montgomery, M.D., Ph.D. (PGY IV) Co-Chief Resident
Avani A. Pendse, M.D., Ph.D. (PGY IV) Co-Chief Resident
Spencer L. Rusin, M.D. (PGY IV) Co-Chief Resident

Residents
Christine E. Bookout, M.D. (PGY III)
Calire H. Edgerly, M.D. (PGY II)
Adil H. Gasim, M.D. (PGYI)
Jonathan M. Hollyfield, M.D. (PGY II)
Julie A. Hull, M.D. (PGY II)
Kimberly E. Janssen, M.D. (PGY III)
Sixto M. Leal, M.D., Ph.D. (PGY I)
Tian W. Li, M.D. (PGY I)
Lindsey E. Matthews, M.D, MPH. (PGY III)
Alexis R. Peedin, M.D. (PGY III)
Irina Perjar, M.D. (PGY I)
Bart B. Singer, M.D. (PGY II)
Hugh T. Stoddard, M.D. (PGY I)
Jessica P. Vanleer, M.D. (PGY I)

Research Associates
Donald A. Patrick, Ph.D. (Dr. Richard Tidwell)

Postdoctoral Research Fellows
Xue Bai, Ph.D. - Dr. Joan Taylor
Stephanie Bilinovich, Ph.D. – Dr. David Williams
Milton Carpenter, Ph.D. – Dr. Mehmet Kesimer
Zhaokang Cheng, Ph.D. – Dr. Joan Taylor
Yanzhe Gao, Ph.D. – Dr. Cyrus Vaziri
Richa Gupta. Ph.D.- Dr. Mehmet Kesimer
Yukako Kayashima, Ph.D. – Dr. Nobuyo Maeda
Marlon Lawrence, Ph.D. – Dr. Oliver Smithies
Yuanli Li, Ph.D. – Dr. Mehmet Kesimer
Kota Matsuki, Ph.D. – Dr. Nobuyo Maeda
Georgia Radicioni, Ph.D. – Dr. Mehmet Kesimer
Boris Reinhardt-Reidel, Ph.D. – Dr. Mehmet Kesimer
Yuliy Rozenberg, Ph.D. – Dr. Christopher Mack (Separated August 2014)
Hua Su, Ph.D. – Dr. Charles Jennette (Separated July 2014)
Wei Tang, Ph.D. – Dr. Monte Willis
Mark Vitucci, Ph.D. – Dr. Ryan Miller (Separated July 2014)

Patrick Weiser, Ph.D. – Dr. Richard Tidwell

Graduate Students
Sabri Abdelwahab – Dr. Mehmet Kesimer
James Byrnes – Dr. Alisa Wolberg
Rachel Dee – Dr. Joan Taylor
Nicole Fleming – Dr. Jiandong Liu
Ashley Fuller – Dr. Melissa Troester
Julia E. Geddings – Dr. Nigel Mackman (Graduated May 2015)
Britta E. Jones - Dr. Ronald Falk
Sravya Kattula – Dr. Alisa Wolberg
Pamela Lockyer – Dr. Xinchun Pi
Kevin D. Mangum - Dr. Christopher Mack
Bethany D. McInturff – Dr. Mehmet Kesimer
Robert McNeill – Dr. Ryan Miller
Justine M. Monk – Dr. Claire Doershuk (Graduated May 2015)
Krystal Orlando – Dr. Bernard Weissman
Adam D. Pfefferle – Dr. Charles Perou (Graduated June 2015)
Amanda L. Rinkenbaugh – Dr. Albert Baldwin
Leander Sinanan – Dr. David Williams
Katherine G. Stember – Dr. Ronald Falk
Haley R. Vaseghi – Dr. Li Qian
Bethany L. Walton – Dr. Alisa Wolberg (Graduated May 2015)
Laura M. Weise Cross – Dr. Christopher Mack (Graduated August 2015)
Qiang Zhu – Dr. Joan Taylor

RESEARCH AND SCHOLARLY ACCOMPLISHMENTS

Over the past year an excellent record of achievement in research has resulted in 279 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.

JAMES TODD AUMAN, Ph.D.

Dr. Todd 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 efforts are 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, Dr. Auman's plan to focus his efforts on investigating expression patterns in cervical cancer and profiling pharmacogenomic variants in UNC cancer patients. 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.

C. ROBERT BAGNELL, JR., Ph.D.

A new lab director will have to be trained by Victoria Madden and Kristen White during the coming year. Utilization of the iLAB system for calendaring, billing, and reporting is being investigated as a replacement for the current FileMaker Pro system. Other goals for next year are to add vibration isolation to the SEM, write an NCBC grant to support the purchase of a new transmission electron microscope and complete various computer and software upgrades for the new OIS firewall system.

DWIGHT A. BELLINGER, D.V.M., Ph.D.

Dr Bellinger's research interests remain in the area of hematology and cardiovascular disease. Swine models have been used for studying atherosclerosis for many years in this laboratory. A colony of familiar hypercholesterolemic pigs is maintained to study the role of hyperlipidemia on atherosclerosis, wound healing and renal disease. Grant funds continue for the maintenance of the hemophilia A and B and von Willebrand disease dogs at the FOBRL as a National Resource. Recently dogs with deficiency in factor VII and dogs with Glanzmann's thromboblasthenia have been added to the colony. The dogs continue to be an effective model to test various gene therapies and other strategies to correct these inherited bleeding disorders. Studies using this model have resulted in human trials.

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. With the integration of next generation sequencing into the clinical arena, current efforts are focused on the validation of a panel of genes involved in hereditary cancer syndromes. 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. Goals include publication of a book chapter and several scientific papers.

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

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.

She is currently a Subject Matter Expert (SME) for anatomic pathology as UNC Healthcare moves forward with the implementation of the EPIC Beaker module which will replace the current pathology information system in 2016. In this role, she will work with other SMEs throughout the healthcare system in addition to various administrators and the Beaker Foundation team to formulate a product that is functional and stylized for pathology at UNC. We are actively in the build phase and will implement the testing phase in September 2015.

An Anatomic Pathology laboratory with remote frozen section services will be opening at the UNC HealthCare Hillsborough Campus in August of 2015. Ms. Brady has been involved in the design process and will be involved in the validations and accreditation process.

FRANK C. CHURCH, Ph.D.

The *basic science* research area of Frank Church, PhD, 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 they have 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 and 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.

For the last few years, Dr. Coleman's laboratory has focused on molecular mechanisms (genetic and epigenetic) of neoplastic transformation in breast, and implications for breast cancer treatment and prevention. They have investigated epigenetic mechanisms underlying human breast cancer development by examining breast cancers that exhibit high rates of gene expression loss due to hypermethylation defects and those that lack methylation-dependent loss of gene

expression. Their results suggest that ER-negative breast cancers (triple-negative breast cancers) exhibit a higher magnitude of methylation-dependent gene silencing than ER-positive breast cancers. Further, the hypermethylation defect expressed by ER-negative breast cancers is associated with overexpression of DNMT3b protein and elevated DNMT activity leading to concurrent aberrant methylation of numerous genes. This hypermethylator breast cancer type is strongly associated with the basal-like and claudin-low molecular subtypes of triple-negative breast cancer. The mechanism accounting for overexpression of DNMT3b in hypermethylator cell lines and primary basal-like breast cancers is related to concurrent loss of several microRNAs that normally regulate DNMT3b mRNA post-transcriptionally.

GEORGETTE A. DENT, M.D.

Dr. Dent is working with the American Medical Association (AMA) on a collaborative 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 to study the impact of social networking on the professional development and specialty choices of medical students.

LESLIE G. DODD, M.D.

Dr. Dodd struggles again during this interval with production of "the book". The "book" was slightly delayed and sent to the publisher on June 20, 2014. In September it was returned as proofs. It is over 400 pages long and proofing required a significant amount of time. The Co-author of "the book" submitted her revisions separately. The co-authors "revisions" had to be revised by the primary author in October and November. It will finally be in print in December. Goals for the upcoming year are to get back on track publishing in peer-reviewed journals and to involve trainees in publications.

Dr. Dodd continues to struggle with balancing a heavy service load with all of her extracurricular activities. The book is finally finished but Dr. Dodd does not really feel "caught up" yet. This half year she has had to prepare lots of "talks". Now that these are finally behind her (last was April 24) she looks forward to finishing a review paper that was promised a year ago.

DAVID A. EBERHARD, M.D., Ph.D.

Dr. Eberhard directs the Pre-Clinical Genomic Pathology (gPATH) Core in the LCCC, supporting the UNCseq Next-Generation Sequencing (NGS) Cancer Genomics program. gPATH provides automated medium-throughput sample processing and analysis capabilities for massively parallel DNA and RNA sequencing and Nanostring gene expression of human cancer samples to UNC intramural and extramural cancer researchers. Their ongoing UNCseq efforts have enrolled over 1800 patients for tumor genomic analysis to date.

In the coming year they will work together with UNC Pathology to analyze and publish their genomic findings in the UNCseq patient population; for example, manuscripts describing our findings in meningioma, schwannoma and gliosarcoma patients are in preparation. They will complete and publish a collaborative project on digital analysis of neovascularization in tumors, and they will provide support for a variety of oncology clinical research projects initiated by UNC clinicians and scientists.

ROSANN A. FARBER, Ph.D.

Dr. Farber's major activities are as Associate Chair for Academic Affairs in the Department of Genetics and Director of the UNC American Board of Medical Genetics Postdoctoral Training Programs. Next summer the postdoctoral program will be up for its 5-year reaccreditation, which will include a site visit for the first time. Dr. Farber will be preparing for that as the time approaches, but dates have not yet been provided. She no longer has the opportunity to teach genetics to medical students, because genetics has been severely cut in the new curriculum. She will be teaching in a course for Genetics Fellows and in the Molecular Pathology course.

GEORGE FEDORIW, M.D.

Dr. Fedoriw serves as the Director of Hematopathology. His research is primarily focused on understanding the role of B-cells in the bone marrow transplant setting and B-cell activation in patients with HIV infection. His studies hope to clarify aspects of lymphoid development, and B-cell reconstitution and 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 is working to characterize the distribution of lymphoma subtypes in Malawi. Dr. Fedoriw also actively provides research support for collaborators in the Lineberger Comprehensive Cancer Center and 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 160 employees. DLAM operates 18 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. UNC has maintained accreditation for the entire campus with the Association for the Assessment and Accreditation of Laboratory Animal Care, International (AAALAC International) since 1989. Federal regulations, as well as AAALAC requirements for accreditation, require adequate veterinary care for all research animals. DLAM completed a successful AAALAC visit in 2014 and the University remains fully accredited until 2017. 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. Ongoing studies with the Nigel Mackman laboratory are investigating the mechanisms by which tissue factor (TF) activation mediates coagulation and thrombosis. They are interested in the role of TF in mediating coagulation in Anti-phospholipid Syndrome, concentrating on the activation of tissue factor (TF) in monocytes, endothelial cells, and platelets. Dr. Fletcher is also currently collaborating with Dr. Julia Whitaker and Dr. Garner at Stanford University investigating the effect of oxidative stress on mouse dermatitis as a model for the human disease of Skin Picking Disorder and evaluating 2 novel treatments for mouse dermatitis.

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

Dr. Funkhouser continues to collaborate with Dr. Hayes in the Department of Medicine/LCCC on molecular subsets of lung and ENT carcinomas. He is collaborating with Dr. Kristy Crooks of Cytogenetics on a paper that uses Bayes' theorem to optimize step-wise testing to identify mismatch repair-defective colorectal carcinoma. He is collaborating with his Biostats son to craft a web-based survey tool that with calculate inter-observer diagnostic reproducibility on virtual images. He continues to serve on the CAP panel that is crafting guidelines for defining the molecular subsets of new colorectal carcinomas. He continues to serve on the CAP Molecular Oncology committee that crafts and assesses inter-laboratory diagnostic reprodulibility of a variety of molecular tests.

Dr. Funkhouser hypothesizes that some diagnostic classification schemes are not reproducible amongst trained Pathologists. He has collaborated to design a web-based survey tool that will calculate inter-Pathologist diagnostic reproducibility for a given diagnostic classification scheme. The first classifications to be tested are used for diagnosis of non-small cell lung carcinomas.

Dr. Funkhouser collaborated with urologists and endocrinologists to write a review and guidelines paper on congenital adrenal hyperplasia.

Dr. Funkhouser maintains an interest in DNA mismatch repair in colorectal carcinoma, and plans to collaborate with a Bayesian statistician to define and publish the optimal testing strategy for detection of mismatch repair-defective colorectal carcinoma.

PETER H. GILLIGAN, Ph.D.

Dr. Gilligan's current plans are to expand knowledge on the ise of MALDI-TOF mas spec in the identification of organisms especially those involved in chronic lung disease. Studies are continuing on understanding the epidemiology of rapidly growing mycobacterium and it contribution to chronic lung disease in cystic fibrosis. Work continues on ways to improve diagnostic capabilities for detection of *Clostridium difficle* infections.

Studies are continuing on the use of MALDI-TOF Mass Spectroscopy to identify organisms that are important in cystic fibrosis lung disease. Specifically the identity of infrequently encountered bacteria which microbiome studies have revealed may play a role in CF lung disease is being assessed by MALDI-TOF MS. Data is being reviewed currently to assess the potential

role of two fungal genera, *Trichosporon* and *Exophilia* in CF lung disease. Studies to assess the role of reflex urine cultures in the management of patients with renal calculi are soon to begin. Finally exploration of the role of metabolomics in the direct detection of *Clostridium difficile* i in fecal specimens is in preliminary stages. Two related questions will be considered. Can the organism be accurately detected and does detection by metabolomics methods equate with the presence of disease.

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 Lineberger Comprehensive Cancer Center. 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 also 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, patent ductus arteriosis, Hodgkins like lymphoma, and chronic colitis.

KEVIN G. GREENE, M.D.

Dr. Greene is involved in a collaborative project using RNA in-situ hybridization to study the cellular distribution of hepatitis C virus in patients co-infected with HIV. He is also in the early stages of a collaborative project to study serrated polyps of the colon and their associated risk of malignancy in subsequent colonoscopies. He recently began collaborating with Dr. Peggy Gulley in a study seeking to identify intrinsic molecular subtypes of gastroesophageal junction (GEJ) and gastric adenocarcinoma and to identify actionable mutations within these tumors. A related study seeks to compare microRNA profiles of invasive GEJ and gastric adenocarcinomas to microRNA profiles of their background premalignant lesions (e.g., intestinal metaplasia, dysplasia). These studies will continue into the coming year.

PAMELA A. GROBEN, M.D.

Dr. Groben collaborates with Dr. Nancy Thomas in Dermatology (PI). The research concerns DNA methylation profiles of Melanoma and other melanocytic lesions. BRAF mutations in melanoma are also an area of study. Population studies (GEM Study Group) of pigmented versus non-pigmented melanomas was an area of study. Most recently imminohistochemical studies of several markers in melanomas were reviewed and an article on IL2 inducible T-cell kinase was published. Dr. Groben reviews H&E slides and immunohistochemical sections.

MARGARET L. GULLEY, M.D.

Dr. Margaret L. Gulley's research is aimed at (1) understanding the molecular basis of Epstein-Barr virus (EBV)-related malignancy, and (2) developing novel laboratory tests to help manage

affected patients. In the past year there has been substantial progress towards these goals.

In the past year there has been substantial progress towards these goals. They mined The Cancer Genome Atlas (TCGA) database to create a microRNA gene expression profiling test system, and showed that EBV and associated human microRNAs were measurable in both formalin-fixed paraffin- embedded tissue and in plasma and serum. Their abstract on this work was chosen for platform presentation at the Association for Molecular Pathology Annual Meeting. In another study, funding from Illumina provided reagents to comprehensively sequence hotspot mutations in formalin fixed cancer tissues and premalignant lesions, and this work supports implementation of our novel GastroGenus Gastric Cancer Classifier test panel in the clinical Molecular Genetics Laboratory. In separate work, they studied infection-related gastric and head and neck cancer tissues for two TCGA studies that were published in Nature.

Ongoing work aims to refine tumor markers and to validate assays for druggable biochemical pathways in order to support clinical trials and ultimately to improve routine patient care. This work is accelerated by support from university and hospital leaders who provide modern DNA sequencing instruments and associated resources. In January 2014 the Solid Tumor Mutation Panel was implemented clinically in order to sequence 175 amplicons from 26 cancer genes in paraffin embedded tumor specimens. Raw data is analyzed by pathologists and other laboratory professionals to identify gene variants and to interpret and report those results that might be actionable in patient management.

In another study, enhanced formalin fixation procedures were explored, aimed at improving DNA and RNA quality in tissues prepared in histopathology laboratories. In ongoing clinical work, Dr. Gulley teams with TraCS and Lineberger Comprehensive Cancer Center leaders to support laboratory services for campus investigators. This work enhances clinical translation of scientific discoveries made locally, reinforcing the important role of pathologists in advancing medical practice using modern laboratory tools. In the coming year, Dr Gulley will continue to develop and refine standard operating procedures and collect evidence of performance that is required to implement new laboratory services in the clinical realm. Trainees involved in all of these projects are better prepared to practice laboratory medicine and to become competent, confident directors of research and clinical laboratory services. Pathology Residency and Fellowship Training Programs are being revamped to better track progress in learning Molecular Diagnostics and Cytogenetics by formal instruction combined with month-long rotations whereby trainees gain practical experience delivering molecular diagnostic services. The technical and medical foundation provided promotes lifelong learning by healthcare providers.

In work of a more general nature, Dr. Gulley has teamed with TraCS and Lineberger Comprehensive Cancer Center leaders to improve laboratory services for campus investigators and to support clinical trials. This work enhances translation of basic science discoveries to the clinical realm, reinforcing the important role of pathologists in advancing medical practice using modern genomic tools. Evidence of our progress is recent implementation of our third next-generation sequencing assay (for myeloid neoplasia) in the clinical laboratories. In the coming year, they will continue to develop and refine standard operating procedures, importantly by incorporating quality assurance measures and applying these assays to well annotated specimens to gather the evidence required to bring new laboratory assays into the clinical realm. They

continue to maximize productivity of local clinical investigators (faculty, med students, residents and fellows) by making tissue/lab/pathologist resources available for team science. Trainees are involved in most of our projects to prepare them to practice laboratory medicine and to generate competent, confident leaders of translational studies. In the coming year they will implement "milestone"-based evaluations to help assure that each trainee acquires the skills and experience required for current pathology practice. Twelve continuing education lectures were delivered at ASCP conferences over the past year. Locally, Dr. Gulley organized our Annual UNC Department of Pathology and Laboratory Medicine Symposium that promotes lifelong learning by practitioners who trained here in prior years.

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

Susan Hadler, M.D., M.S.'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. 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 admissions committee.

CATHERINE A. HAMMETT-STABLER, Ph.D.

Dr. Hammett-Stabler's focus is in the improvement of clinical laboratory services and patient safety. She is currently engaged in two initiatives toward the development of practice guidelines both of which relate to the laboratory support of pain management and addiction programs (one evidence-based, the other consensus based). She is collaborating with Francis Ligler and Glenn Walker of the UNC/NCSU Biomedical Engineering Department in the development of a new immunoassay device.

TRACY M. HEENAN, D.V.M.

Under the direction of Tracy Heenan since 1994, 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 focused on clinical and translational research on cytopathology. At present Dr. Hertel is working with several quality control projects within cytopathology. The projects currently screening for anal squamous cell carcinoma and screening for thyroid carcinoma. Currently, anal pap smears are used to screen high risk population for anal squamous cell dysplasia and carcinoma. Dr. Hertel is working to evaluate the utility and accuracy of anal pap smears as a screening tool and evaluate additional immunohistochemcal and molecular tests to improve the performance of anal carcinoma screening programs. Dr. Hertel is also collaborating with clinical faculty in infecions disease to evaluate the implementation of and current status of the screening programs.

Dr. Hertel also has projects in progress evaluating the use of the Bethesda criteria for thyroid pathology. The projects include comparing our use of Bethesda to national published data as well as that of regional peers as well as evaluating the success of an intervention regarding the use of the Bethesda criteria.

Dr. Johann Hertel's clinical activities include cytopathology, breast pathology and gastrointestinal pathology. Dr. Hertel's research interests focus on evaluating and improving quality control in cytopathology, as well as, incorporating new and emerging technologies and techniques into daily cytopathology practice.

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 indentifying 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. Within the past few years he'll be able to become a more confident teacher. This confidence stems from a year at private practice and years as an instructor/recruiter at Duke University Medical Center. 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 his 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 gene targeting in murine experimental models to investigate α(1,3)-fucosyltransferase (FUT) genefunction 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 stains will be used to continue their studies that define the selectin-dependent contribution of several leukocyte linages 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 mouse model of lung granulomatosis induced by anti-myeloperoxidase antibody (anti-MPO) that closely mimics the early acute pulmonary lesions of human ANCA granulomatosis. By using this model, they are elucidating the nature of the anti-MPO exposure and the modulation of the innate immune system that result in granulomatosis. Dr. Hu's research approaches also include (i) investigating the role of the kinin system and their inhibitors in pathogenesis and therapeutic interventions of ANCA disease; (ii) epitope excision and mass-spec-based epitope mapping for identifying specific epitopes that are targeted by pathogenic anti-MPO antibodies, (iii) microarray and taqman PCR based gene expression analysis on the mouse strains susceptible or resistant to anti-MPO induced crescentic glomerulonephritis 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 cyplasmic antoantibodies (ANCA). Dr. Jennette is a co-investigator in multiple ongoing NIH-funded clinical and translational research consortia focused on glomerular diseases including CureGN and NEPTUNE. Dr. Jennette's basic research (which has been continuously funded by the NIH since 1989) focuses on the pathogenesis of inflammatory glomerular and vascular disease caused by anti-neutrophil cytoplasmic autoantibodies (ANCA). A major experimental tool that is used is an animal model of ANCA disease discovered in his laboratory that is induced by injecting mouse anti-myeloperoxidase (anti-MPO) IgG antibodies or anti-MPO leukocytes into mice. Prior studies have demonstrated that ANCA disease in this animal model is mediated by ANCA IgG alone, requires neutrophils but does not require T cells to induce or granulomatouos inflammation, is modulated by Fc

receptors, is influenced by genetic regulation of innate immunity, and requires alternative complement pathway activation and C5a receptor engagement. Current research is discovering an important pathogenic role for the kinin system including bradykinin receptor engagement on neutrophils; is demonstrating that ANCA with different epitome specificity have different pathogenic potential; and is revealing an iconoclastic mechanism for ANCA-induced granilomatosis that involves ANCA-activated neurotrophils rather than T lympnocytes.

H. MICHAEL JONES, M.D.

Dr. Jones is permanent, part-time faculty, attending on the autopsy service and also serving as a resource pathologist for the TPL (Translational Pathology Laboratory) assisting in the interpretation of pathologic/histologic materials generated in investigational studies for multiple investigators as required.

KATHLEEN A. KAISER-ROGERS, Ph.D.

Dr. Kathleen Kaiser-Rogers continues to characterize ther 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). The rearrangements and corresponding phynotypes observed in two such patients were reported at the March 2014 American College of Medicla Genetics meeting. Additionally, posters describing the clinical utility of chromosome microarray analysis in acute lymphocytic leukemia, and the use of whole exome sequencing and chromosome microarray analysis to identify copy number varients were presented at this meeting. Two manuscripts are in preparation that involve several cytogenetic observations following non-invasive prenatal testing (NIPT) of cell-free DNA in material circulation. The first describes the deletion of two different maternal chromosome abnormalities secondary to NIPT, while the second describes a case with false-positive and true-positive NIPT results in a trisomy 21 pregnancy with confined placental mosaicism for a cell line with trisomy for both chromosomes 18 and 21. Dr. Kaiser-Rogers also continues to function as a resource for researches with an interest in using cytogenetic technologies in their research project currently serves a member on the CAP Cytogenetic Resource Committee and Co-Chairs the ACMG Salary Survey Work Group.

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

Dr. Kakoki has 24 years of experience as a physician-scientist in nephrology, of which the last 14 years have been devoted to molecular biology with initial emphasis on understanding the molecular mechanisms that are responsible for cardiovascular and renal dysfunction in diabetes mellitus using genetically altered mice. The set of mice having 5 graded levels of TGFb1 mRNA (10, 60, 100, 200 and 300 % of WT) was generated by the novel method replacing the 3' untranslated regions (3' UTR) of TGFb1 gene (TGFb1 nullizygotes are perinatally lethal). Dr. Kakoki studied Akita diabetic mice having 5 graded levels of TGFb1, and reported that the genetic insufficiency of TGFb1 abolishes not only the decrease in glomerular filtration rate (GFR), renal histological changes and albuminuria, but also polyuria and glucosuria, despite no changes in plasma glucose levels. In the same study, he also showed that podocyte-specific

overexpression of TGFb1 exacerbates the decrease in GFR and glomerulosclerosis, but slightly increases albuminuria. In contrast, proximal tubule-specific overexpression of TGFb1 unaltered the decrease in GFR and glomerulosclerosis, but markedly increases albuminuria. The set of mice having 4 graded levels of endothelin-1 mRNA (20, 60, 100, and 350 % of WT; the nullizygote and the homozygous hypermorph are both lethal *in utero*) were also generated, and he reported that the 20 % and even 60 % hypomorphs have dilated cardiomyopathy, which is caused by enhanced superoxide and matrix metalloproteinase 9. He is also studying the phenotype of 2 other sorts of mice, and also collaborating with other labs by offering the mice that they have generated.

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

Dr. Kaufman is working on a translational research study 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 patients. He has developed a method to quantify DNA damage significantly in extended DNA fibers from as few a 5 cells. He has 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 these 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 microfluidic 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 process 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 and applications for future support have been submitted to the NIH.

He is also doing a translational research study to try to find an immunohistochemical test to distinguish functional endometrial hyperplasias from premalignant endometrial intraepithelial neoplasia (EIN). The morphology of hyperplasia and EIN are sufficiently similar to be incorrectly diagnosed with notable frequency. Morphometric studies have shown that EIN has quantitatively lass stroma between glands than tpical hyperplasias. Since most surgical pathologists do not morphometry in routine diagnosis, a simple immunohistochemistry test would be a valuable aid to diagnosis. He has analyzed gene expression in co-cultures of endometrial epithelial and stromal cells where the ratio of stromal to epithelial cells was varied to resemble hyperplastic and EIN. He is now doing immunohistochemical studies of tissue microarrays of normal, hyperplastic and neoplastic endometrium targeting the gene products of the relatively few (and related) gene products found to be abnormally expressed in the gene expression study. This study was supported by an NC TraCS grant and now it continues with support from the American Cancer Research Center and Foundation.

WILLIAM K. KAUFMANN, Ph.D.

In the next year Dr. Kaufmann will concentrate on development of a plan for a training grant application in the area of translational science and pathobiology. He will also try to incorporate

into UNC grant applications the utilization of a new technology termed consensus sequencing which reduces mutation error rate in next-generation DNA sequencing. He will work with AssystBio to submit an SBIR grant application to apply a computational model of the G2 checkpoint to enhance chemotherapy for cancer.

APRIL E. KEMPER, M.H.S.

This past year, Ms. Kemper's efforts focused on teaching gross pathology to the first year residents, assisting and supporting the upper level residents and mentoring the 2nd year Duke PA students. Once again the 1st year residents were extremely smart, enthusiastic, and were very receptive to instruction. She also ran several gross conferences this year, including the introduction to grossing conference for the 1st years. She assisted medical students and others in the gross room, answering questions and grossing requests. She is also responsible for ordering supplies for the gross room and for keeping things stocked and organized. She plans to continue her role as instructor and hopes to continue to be a valuable resource for those passing through the gross room. She also plans to help next spring in the implementation of the Beaker system. Additionally, she will continue to provide the department and the patients of UNC hospitals with organized, attention to detail, efficient, high quality grossing.

DANIEL J. KENAN, M.D.

Dr. Kenan's 75% position is structured to include 2 weeks of clinical service followed by one week of research and then one week of personal time. His clinical service has been focused on the UNC Nephropathology Service, which includes a weekly kidney biopsy teaching conference involving Nephrology fellows and attendings as well as medical students and residents. In the coming year he hopes to gradually assume the role of attending physician on the Nephropathology service, with decreasing supervision as deemed appropriate by other Nephropathology faculty. He also wishes to expand his role on the Nephropathology consult service as deemed appropriate. His basic research activities have focused on BK polyomavirus (BKPV) and its role in promoting aggressive urothelial neoplasms in renal allografts. 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 he plans to develop a more detailed research program investigating mechanisms of BKPV latency and infection as it relates to polyomavirus nephropathy. He also hopes to engage more with the UNC Kidney Center to explore potential collaborative projects.

MEHMET KESIMER, Ph.D.

Dr. Kesimer's research group is still growing along with his grants portfolio. 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. He is expecting to extend his current contract with Kimberly Clark for another $150,000-$200,000 and two new contracts with Amgen and Europe based company ProQR Therapeutics.

HYUNG-SUK KIM, Ph.D.

In animal models, to understand homeostatic response to the genetic change, molecular phenotyping procedures had been developed by gene expression study using high-throughput real time RT-PCR method. Dr. Kim's results in published works showed its power for recognizing subtle phenotypic changes in animals even with minimal genetic differences. Currently Dr. Kim is director of the gene expression core facility, and collaborates with many researchers as shown in his published papers, and will continue to study more projects.

NICHOLE L. KORPI-STEINER, Ph.D.

Dr. Korpi-Steiner's research is focused on the utilization and quality assurance of clinical point-of-care and laboratory tests. She recently published in the Clinical Biochemistry journal some of her research findings regarding the use of a simulation model to assess risk of false negative point-of-care urinary human chorionic gonadotropin (hCG) results due to high-dose hCG interference. This study performed incollaboration with NIH unvestigators who provided data for hCG concentrations observed in early natural pregnancy from the prospective NIEHS Early Pregnancy Study. In addition, she is currently leading a disinfection study to evaluate UNC Hospitals glucose meter disinfection practices using fluorescence gel dye spot indicator.

Dr. Korpi-Steiner's goals for the upcoming year are to publish findings from the studies mentioned above as well as to develop and lead additional scholarly clinical research studies. She plans to initiate a multi-disciplinary study evaluating the clinical concordance of diabetes mellitus diagnosis using point of care HbA1c testing versus laboratory HbA1c testing.

THOMAS J. LAWTON, M.D.

Dr. Lawton continues his interest and research on high risk lesions of the breast. He has an IRB-approved study of high risk breast lesions on core biopsy and his co-authored abstract on radial scars of the breast was presented as a platform session at the USCAP 2015 Annual Meeting in Boston. The study is currently being written by resident Bart Singer for submission as a publication. He was also invited to submit an Editorial on Molecular Subtyping of Breast Cancer for the American Journal of Clinical Pathology which was published in April. He is also currently involved in a study on intraductal papillary lesions of the breast with resident Christine Bookhout and Dr. Sheryl Jordan of Breast Imaging at UNC. Dr. Lawton has recently joined with several researchers at Lineberger Cancer Center on a rapid autopsy study involving the analysis of the genetic alterations involved in metastatic breast cancers and is beginning involvement in the UNC SPORE. He is also in collaboration writing a clinical research grant on the management of lobular neoplasia with his breast imaging colleague Dr. Dianne Georgian-Smith of Harvard Medical School.

RUTH A. LININGER, M.D.

Dr. Lininger is an experienced surgical pathologist with fellowship training in gynecologic and breast pathologist. She teaches residents, medical students, and graduate students and is actively involved with medical colleagues in multidisciplinary conferences as part of a multidisciplinary

clinical team providing state of the arts health care in a tertiary care setting. Her research interest is largely clinical, functioning as a pathologist in collaborative studies, primarily in gynecologic and breast cancer research. She has an interest in the scientific basis of integrative medical therapies, especially those related to cancer treatment as well as difficult to treat diseases, including viral and antibiotic resistant bacterial infectious diseases. She provides private outside consultative services focusing on gynecologic and breast pathology and is the major consultant for difficult gynecologic and breast pathology cases for a number of regional reference laboratories. She also participates in the business and fiscal aspects of surgical pathology billing and coding, as well as surgical pathology scheduling.

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. His research goal is to study on the molecular mechanisms that link mechanical forces and genetic factors to the morphogenesis of the heart. Their 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.

His 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. They have shown that nuclear localization of the myocardin family of SRF co-factors by RhoA signaling is an important mechanism by which extrinsic factors regulate SMC-specific transcription. 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. The Mack lab is also examining the role of histone and DNA methylation on the control of 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 new goal is to identify genetic polymorphisms that regulate the expression of Graf3, a novel SMC-specific, Rho-specific GAP that is critical for blood pressure homeostasis. They hope that their in vitro and in vivo studies will lead to therapeutic targets for several cardiovascular pathologies that involve altered SMC phenotype including atherosclerosis, restenosis, and hypertension.

NOBUYO N. MAEDA, Ph.D.

Dr. Maeda's laboratory is interested in the genetics and molecular pathology of atherosclerosis, a complex multi-factorial vascular disease and the major cause of death and disabilities in modern societies. They have generated apolipoprotein E-deficient mice that develop spontaneous and

human-like atherosclerotic plaques. With this mouse model, they have explored whether and how other factors modify plaque development. Their current works challenge a completely new concept; namely the interactions between genetic factors affecting the morphology of the arterial tree and the distribution of atherosclerotic plaques. They observed distinct differences in the geometry of the aortic arch between two common strains of mice (C57BL/6 and 129/SvEv), which correlate with the distribution of intra-arterial plaques that develop in the mice when they lack apoE. They have extended this observation to the genetic analysis of the F2 progeny from a cross between apoE-null mice of the two inbred strains and demonstrated that the quantitative trait loci that affect susceptibility to atherosclerosis in the aortic arch are independent of the loci for atherosclerosis in the aortic root. Furthermore, one of the loci for arch atherosclerosis overlaps with a locus that affects curvature of the arch. This raises the possibility that inherited anatomical differences influence hemodynamics sufficiently to affect the development of atherosclerosis. QTL analysis of a second F2 population (cross between 129/SvEv and DBA/2J) has helped them to narrow the candidate susceptibility loci. One of the loci contains the *Stab2* gene, which encodes for a scavenger receptor for macromolecules such as apoptotic cells, acetylated LDLs and hyaluronans. Stab2 is expressed highly in sinusoidal endothelium of the liver, spleen and lymphonodes. Curiously, the allele in DBA/2J strain is associated with 50 fold increased plasma hyaluronan levels, and with smaller atherosclerotic plaque size in the aortic arch but not in the aortic roots. They also found that the DBA/2J-*Stab2* allele is highly expressed in various tissues in which other strains are not expresses, and this ectopic expression is epigenetically controlled. In the coming year, they aim to identify whether and how the *Stab2* gene variations influence susceptibility to plaque development at some locations of blood vessels but not other locations.

TRACIE L. MASSEY, B.S., P.A.

Tracie Massey is primarily responsible for triaging and banking specimens for the Tissue Procurement Facility. She has increased the amount of specimens banked from about 20% to 60-80%. Her goal is to have 95-98% of the cases consented 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 2^{nd}-4^{th} year residents and fellows in the frozen section room.

Starting July 1, 2014, Tracie has agreed to cover 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. Tracie has also agreed to cover the frozen section bench for 2 rotations (one month) to cover maternity leave scheduling problems.

Tracie covers the frozen section bench to allow the resident on service to be trained for renal biopsies and for the RISE exam.

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, and has recently taken on the role of Hematopathology fellowship 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 recently accepted a position on the American Society of Clinical Pathology PRISE 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 and correlation of red blood cell MCV with automated morphology flagging. She is also involved in a clinical study of prognostic factors in mantle cell lymphoma with Dr. Steven Park. 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 works with the GU oncology group at UNC on several translational projects. . She also has an interest in fine needle aspiration of the thyroid and is completing several manuscripts on Bethesda classification system for thyroid aspirates. She provides IHC interpretation for a Phase II clinical trial of novel therapeutic approaches for the treatment of bladder cancer, by assessing RB and P16 immunostaining of samples of tumors potentially eligible for the trial. Her other scholarly interests include screening for breast and lung cancer and works with an interdisciplinary UNC team to create a registry for lung cancer screening patients. Dr. Maygarden also has an interest in fine needle aspiration of the thyroid and is completing several manuscripts on Bethesda classification system for thyroid aspirates.

MARSHALL MAZEPA, M.D.

Dr. Mazepa's research activities include translational research in disorders of hemostasis and both clinical and translational research in Thrombotix Thrombocytopenic Purpura (TTP). With regard to his work in hemostasis, he is evaluating the role of a subpopulation of platelets with enhanced procoagulant sctivity called coated platelets. From their known properties, many suspect that they have an important role in hemostasis, however they have yet to be fully evaluated in bleeding disorders. He will complete an ongoing study of how these platelets define the bleeding risk in a canine model of severe hemophilia in July 2015. He will also expand his work to human subjects referred for bleeding symptoms and am collaborating witht the UNC Genetics department (Dr. James Evans, MD, PhD.) to perform whole-exome sequencing (WES)

with the purpose of asking 1) whether WES is a logical and cost-effective replacement for screening functional assays of coagulation and 2) Are there genes associated with failure to achieve platelets with high activation states (coated platelets) that tell us about the mechanism of this activation state and bleeding phenotype? He anticipates enrollment of at least 40 subjects in this study in the next year.

His work in TTP includes both clinical and translational research. He continues to collaborate with Drs. Jay Raval and Yara Park on retrospective studies in TTP and new wrok in biomarker discovery. He anticipates analysis of their first biomarker study in the first quarter of 2015 he anticipates his first sponsored study in TTP to open, and importantly, he anticipates that this will occur via the newly formed USTMA Clinical Research Consortium. Dr. Mazapa founded this consortium in November 2014 in conjunction with Dr. Spero Cataland at Ohio State Univesity. This consortium will set the stage for ability to efficiently perform future sponsored and investigator-initiated trails and for translation research utilizing the biorespository that will be extablished with the group. Dr. Mazepa has submitted and investigator-initiated pilot study for the use of a novel proteasome inhibitor in TTP in 2014 and anticioates possible opening of this trail at UNC in 2015if the sponsorapproves the study. Dr. Mazepa has established a TTP clinical for long-term follow-up of TTP patients for improved study of long-term outcomes and anticipates establishment of a TTP support group at UNC in the coming year.

In the coming year, they anticipate the potential to expand the UNC Healthcare's Blood Donation Center through the efforts of Carolina Value by merging with the Rex blood donation center. In anticipation of this expansion, efforts to expand the reach to the UNC undergraduate population for blood donation have begun via Dr Mazepa's Biology course on blood donation (slated to take place in the Fall of 2015 again) and a formal platelet donation club with undergraduate student leadership and Dr Mazepa being a co-faculty mentor for the group. Dr Mazepa also continues to expand his clinical work and teaching in the Special Coagulation Lab as the dedicated elective for the Pathology and Lab Medicine Residents is planned to begin in Winter 2016.

Dr Mazepa's clinical work and clinical research continues to grow in the arena of TTP. His TTP clinic continues to grow, offering long-term follow up for this relapsing condition. This is important for studying what many see as one major new concern in TTP: long-term morbidity and mortality. He is the co-founder of the USTMA research consortium, a group of 12 institutions committed to conducting clinical trials in TTP and establishing a registry and biorepository for future translational research. Dr Mazepa also anticipates two exciting new clinical trials in TTP opening at UNC. The first is the phase 3 study of caplicizumab, a nanobody designed to interfere with the Platelet/vWF interaction that causes TTP – importantly, this is the first study to be conducted by the USTMA consortium. This drug is likely to be FDA approved in TTP but still has many unanswered questions regarding its long-term use and safety in TTP. Dr Mazepa anticipates opening a pilot study of Ixazomib, a 2nd generation proteasome inhibitor, in TTP. This would be the first trial of this drug in TTP and unique to UNC. Given our success in treating a refractory patient at UNC with bortezomib (first generation proteasome inhibitor), we have high hopes for this trial.

GAYLE C. McGHEE

Gayle McGhee's responsibilities for this year include provision of gross organs for all of the organ blocks in the Medical School sequence, Graduate Courses, First Year Dental Pathology and various other 'one-time" requests such as the provision of lungs and heart for anti-smoking lectures in local High Schools. The work is being made more complicated this year by the necessity to rearrange our library of gross organs in the recently renovated Autopsy Suite. Unfortunately, the available space has been rearranged and compressed making this into a difficult project.

Provision of gross specimens is a multistep process as follows;
Selection of appropriate organ specimens with the assistance of Drs. Hadler, Reisner and other faculty;
Careful examination of specimens and washing for overnight;
Draining specimens and arraying on appropriate display trays with supplies of towels, gloves 7 etc.;
Moving specimens to the various teaching rooms and placing them out on desks/tables;
After use specimens are returned, inspected and replaced in new formalin;
Collection maintenance is an ongoing process which involves discarding old, damaged specimens and consultation with Mr. Moylan and others to replace organ sets and enhance our collection.

Another major component of her work is the scanning of microscope slides for use in Virtual Microscopy. To some extent this is a "hands-on" process which requires knowledge and experience in the use of the Aperio system and includes the ability to trouble shoot common problems. Scanning is done for teaching and in house research needs at no cost. In addition they scan for non-departmental faculty as a fee for service. The proceeds are used to support the yearly contract for service and upgrades for the Aperio slide-scanner.

Additionally Ms. McGhee helps in the organization of various teaching blocks by acquisition of teaching material and more importantly-by helping to organize and enter material for the Medical School on-line examination system. In the absence of Dr. Reisner she serves as a delegate to the CC2 Course Directors meeting and help to prepare surveys as needed by Dr. Reisner for his role on that committee.

For the coming year Ms. McGhee plans on helping implement changes that are required to make Pathology teaching a excellent experience for the students they teach. She wants to provide more help toward lectures and lab preparation.

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

C. Ryan Miller, M.D., Ph.D.'s current activities are focused on translational research involving Comparative genolics analysis of gliomas from both humans and genetically-ebgineered mice (GEM). The main goals of this work are to (1) define the impact of cellular origin on the genomics of malignant glioma progression, (2) define the impact on agingon the genomics of malignant astrocytoma progression, (3) define the role of PIK3CA mutations in gliomagenesis

and PI3K inhibitor sensivitity, and (4) determine molecular signatures of himan GBM after vorinostat therapy.

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MELISSA B. MILLER, Ph.D.

Melissa Miller, Ph.D.'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 reistance 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. Further, Dr. Miller has developed an interest in the clinical and economic outcomes associated with the implementation of molecular infectious disease diagnostics. She continues to investigate and publish on the molecular emidemioligy of MRSA, respiratory viral infections and mycobacterial infections.

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

As a collaborative pathologist, Dr. Montgomery has varying levels of participation in numerous research projects, the majority of which involve mouse models of human neoplastic or infectious disease. During her first months on campus, she invested time introducing herself and services to researchers with projects involving animal pathology. This has already led to being included on 4 publications and 6 grant proposal submissions. At this point, she is coming in on the tail end of many projects, whereas one day she envisions having an increasing influence in planning experiments, which is already happening. She also hopes to build a couple of long-term collaborations with various labs, which she has discussed with several investigators in different departments. As she finds out how many of the grants that she has been included on are funded, it will guide the course of my research collaborations over the next year. She will continually pursue new projects, working toward attaining salary support and maintaining a strong publication record. With permission, she plans to independently pursue any pathologically interesting findings that fall out of collaborations that are not of interest to the principle investigator. Additionally, in the past months the aforementioned updates to the AHC has consumed a good deal of effort; her hope is that in the next year, as research collaborations further develop, the changes that she instituted for the Core will make it function more efficiently and independently.

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

Vincent Moylan's main role in the 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. Stergos 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 continues to work closely with Dr. Nickeleit 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 continuing work with Drs. Hadler, Reisner, and Aylsworth and other medical student teaching projects as they become available.

JUDITH NIELSEN, D.V.M.

In the research arena, Dr. Nielsen continues to collaborate with investigators at UNC on their research programs, such as members of the Bill Goldman laboratory, Nancy Raab Traub, and others. She is mentoring two Veterinary Residents in DLAM. One research project evaluating the potential benefits of a new form of double decker caging to house rats is nearing completion and an abstract for presentation of this work has been submitted for the National AALAS Meeting in November, 2015. A second resident research project is examining the ability to predict pinworm infection in mice by PCR of dust from IVC rack exhaust air. In addition, she continues to explore and evaluate means of most efficiently and cost effectively monitoring the health status of their animal populations at UNC, with hopes that their studies will result in reports and publications within the Laboratory Animal community.

Dr. Nielsen has also continued her collaboration studying the pathogenesis of *Cryptococcus neoformans* in a mouse model with Dr. Kirsten Nielsen, who is now an Associate Professor in the Department of Microbiology, School of Medicine at the University of Minnesota. This research has resulted in an additional publication in PLoS Pathogens in early 2015.

Dr. Nielsen looks forward to continuing her leadership role in the Division of Laboratory Animal Medicine and the university in the support of Animal Welfare and Research.

VOLKER R. NICKELEIT, M.D.

The research activities of Volker Nickeleit 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 and liver transplant are under investigation. Dr. Nickeleit 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 enhancedantibody/DSA testing. (2) A major research effort addresses polyomavirus infections in kidney allograft recipients. Dr. Nickeleit is the chair

of the "Banff-working group" on polymavirus 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 part funded by extra-mural support from Astellas Pharmaceuticals. In addition a mouse animal model of "polyomavirus nephropathy" is being characterized. Dr. Nickeleit 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 are conducted to validate the mouse model (in part supported by Astellas Pharmaceuticals).

SIOBHAN M. O'CONNOR, M.D.

Siobhan is working on a project with Johnny Hollyfield evaluating whether a panel of four immunostains can distinguish transitional cell carcinoma of the ovary from malignant Brenner tumor. She is also working with Avani Pendse on a case report of squamous cell carcinoma of the nipple. She is collaborating with a breast radiologist on several projects reviewing radiology/pathology correlation of unusual breast carcinomas. She is collaborating with gyn clinicians on several projects including "Metformin Use and Clinical Outcomes in Diabetic Patients," "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," and "Factors Associated with Recurrence Risk in Women with Endometrial Carcinoma". Siobhan will continue her collaboration with the breast and gyn clinicians. She also plans to assist with additional Breast Spore projects and use the resources for her own research projects.

Siobhan O'Connor, M.D. is the PI on a resident project evaluating malignant Brenner tumor versus transitional cell carcinoma of the ovary, and two resident care case reports. She has also been working on a study of receptor 1HC in multifocal/multicentric breast carcinoma, and plans to have this project completed and published by spring 2015. She is the faculty advisor for a medical student who is investigating TLS polymerase activity in HPV driven cervical cancer. Dr. O'Connor's plan for the coming year is to continue the collaborations with clinicians, complete and publish the research with the residents and medical student, and find additional gyn and breast pathology topics to investigate.

YARA A. PARK, M.D.

Dr. Park's research focuses on thrombotic thrombocytopenia 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 also conducting a nation-wide survey of practice patterns in TTP and distribution of TTP cases around the country.

NIRALI M. PATEL, M.D.

Dr. Patel's primary research role is to provide anatomic and molecular pathology support for Lineberger Comprehensive Cancer research projects such as the UNCseq (LCCC1108) project, which identifies clinically actionable somatic mutations in cancer patients using massively parallel sequencing. Clinically, she directs the implementation of next-generation sequencing for somatic mutations within the clinical genetics lab, which currently offers a targeted solid tumor mutation panel and is in the process of validating a panel for hematologic diseases. As an educator, she presents the utility of next-generation sequencing to all healthcare professionals in manner that demonstrates its clinical relevance. She is active at the national level in professional medical organizations, working to increase understanding of the field of molecular pathology and demonstrate its utility across multiple areas of healthcare, best demonstrated by her position on the board of directors of the Association for Molecular Pathology.

Clinically, Dr. Patel oversees somatic mutation testing using massively parallel sequencing within the UNC Molecular Genetics Laboratory. In addition to the Solid Tumor Panel, she directed the launch of the Myeloid Mutation Panel (for AML, MDS, and MPN indications) in April 2015. Over the coming year, she will be developing an expanded somatic mutation sequencing panel for use in the clinical molecular laboratory. This is a translational project based on her role as a molecular pathologist for the UNCseq project, where she interprets data and oversees clinical confirmations to enable enrollment of patients into clinical trials.

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 get their first R01 funded, one or more postdoctoral fellowship funded and publish 2-3 research articles.

KATHLEEN W. RAO, Ph.D.

Dr. Rao's current and translational research activities are focused in the area of cancer cytogenetics. The UNC Clinical Cytogenetics Laboratory participates in two cancer cooperative groups (Alliance/CALGB and Children's Oncology Group) and Dr. Rao is active in peer review and/or leadership roles in both groups. As Chair of the COG Cytogenetics committee, Dr. Rao hosted a 1.5 day Cytogenetics Workshop in St. Louis, MO for over 200 Cytogeneticists from the US, Canada, Australia, New Zealand, and Great Britain (April 24-25). During the past year, the Cytogenetics Laboratory validated several new assays for paraffin embedded tissues and is currently Collaborating with Dr. Fedoriw in a project to characterizie paraffin–embedded lymphoma specimens from Malawi. New assays using a high resolution SNP microarray for scute lymphoblastic leukemia and for uveal melanoma and has presented findings on clinical

utility and new observations from these studies at two national meetings (Dr. Melissa Hayden, former Cytogenetics Fellow). The Laboratory is currently engaged in cataloging the cytogenetically visible rearrangements that involve genes that are or may be amenable to targeted treatment in various liquid and solid tumors and producing a tool that can be used at the microscope to identify these targetable abnormalities. Dr. Kristy Crooks (Cytogenetics Fellow) presented this work at the American Cytogenetics Conference in May. Plans for the coming year include adding additional FISH and microarray assays to the Cancer Cytogenetics clinical testing menu and aggressively pursuing the Laboratory's interest in identifying targetable genetic abnormalities in their UNC Healthcare cancer patient population.

JAY S. RAVAL, M.D.

Dr. Raval has been very active in the Division of Transfusion Medicine. In addition to covering clinical service time in the areas of therapeutic apheresis (Medical Director), transfusion medicine, Blood Banking, immunohematology, and the platelet/plasma donor center, he has also recently become the Associate Medical Director of Hematopoietic Progenator Cell Progenitor Cell (HPC) Laboratory. Dr. Raval's research continues to cover multiple areas in transfusion medicine, primarily evidence-based therapeutic aphersis and transfusion studies; however, given his new role in the HPC Laboratory, projects in this area will be iniated soon. Dr. Raval has involved many people in his clinical and research activities at UNC; these individuals' backgrounds are diverse and range from high school students to residents and fellows to faculty members here at UNC and at other institutions. Dr. Raval's involvement with AABB and ASFA continue to increase, and he contributes consistently to these organizations' missions. With the increasing volumes in transfusion medicine, therapeutic apheresis, and HPC transplantation at UNC, clinical and research activities will also continue to grow in the division. The upcoming year looks to be a very productive one for Dr. Raval and his colleagues.

MARIAN ROLLINS-RAVAL, M.D.

Over the past six months, Dr. Rollins-Raval has been attending on service in Hematopathology more than any other attending within the division. In addition, as Director of the special coagulation laboratory she is overseeing the validation of new assays for Dabigatran, as well as a Chromogenic FVIII assay, as well as developing factor activity and inhibitor assays to monitor patients who will be receiving the newly FDA approved recombinant porcine FVIII. An automated ELISA instrument has arrived on which platform the lab has been validating the Anti-Cardiolipin and Beta-2 Glycoprotein 1 antibody with HIT PF4 antibody studies to follow. In Flow Cytometry, at the behest of our clinical colleagues, she has undertaken the challenge for the lab to become a Children's Oncology Group Accredited Laboratory for the monitoring of minimal residual disease in B-lymphoblastic leukemia, the anticipated deadline for which is June 2016. In addition, she is continuing to work closely with the flow cytometry team to improve hematopoietic panels offered clinically, including 4 new tube combinations. In addition to teaching while on Hematopathology Service, she has been training another DPLM Pathologist, Dr. Marshall Mazepa, to sign out Lupus Anticoagulant, Heparin Induced Thrombocytopenia, von Willebrand Factor and Platelet Aggregation panels. She is developing a formal Coagulation Sign Out to be experienced by DPLM residents during the hematopathology rotation, the hematopathology and transfusion medicine fellows throughout the whole year, as

well as available to both adult and pediatric hematology/oncology fellows, and, potentially in the future, medical students. She has also taught several coagulation related didactic sessions for pathology residents. While time for research and education development has been severely limited, she has started to pursue several projects in Hematopathology and in Coagulation.

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

Dr. Sasatomi has no currently ongoing clinical or basic research activity.

For the coming year, Dr. Sasatomi is planning an immunohistochemical study to assess the diagnostic utility of a panel of immunohistochemical stains, consisting of alpha smooth muscle actin (α-SMA), CD34, and glutamine synthetase (GS) for the qualitative and/or quantitative assessment of hepatic endothelial injury and resultant microcirculatory disturbance in a variety of clinical conditions such as sinusoidal obstruction syndrome, suboptimal hepatic venous outflow, steatohepatitis, and ischemic/re-perfusion injury after liver transplantation.

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

Dr. Scanga has multiple active research projects in the areas of cytology and surgical pathology, and supervises two research projects with pathology residents. She recently published "Utility of Fine Needle Aspiration and Core Biopsy with Touch Preparations in the Diagnosis of Renal Lesions" in Cancer Cytopathology.She is continuing to study this data set to determine the correlation of the preliminary diagnosis at the time of procedure with the final diagnosis, and will present this data in poster format at the American Society of Cytopathology 62ndAnnual Meeting in Dallas, TX, November 14-17, 2014. Dr. Scanga will write and submit a paper for publication about this research in 2015.

Dr. Scanga has also established multiple research collaborations with the UNC Otolaryngology/Head and Neck Surgury Department of Radiation Oncology and the Division of Surgical Oncology. She has a current submission and accepted manuscript "Postoperative Radiotherapy for Diffuse Pigmented Villonodular Synovitis of the Termandibular Joint", to the American Journal of Otolaryngology with Dr. Chera. Dr. Scanga is also collaborating with Dr.. Zdanski, Dr. Shores, Dr. Serody and Dr. Grace Kim to study Myeloid-Derived Superior Cells in Head and Neck Cancer (MDSM clinical trial). This research was presented as an abstract at the ASCO 2013 Annual Meeting in Chicago, Illinois, and is currently in the stage the manuscript preparation.

Most recently, Dr. Scanga is also a study pathologist for a large study of cervical histology adjucation usine p16 in the New Mexico HPV Pap registry (NMHPVPR) at the University of New Mexico School of Medicine. This research is in the stage of data collection for publication in 2015.

JOHN L. SCHMITZ, Ph.D.

Dr. Schmitz and the CFAR Virology/Immunology/Microbiology Core continue to support HIV researchers at UNC and Duke via performance of a variety of immunologic assays. Currently, a significant effort is underway to assess T cell responsiveness to Malaria peptides in donors of

varying HLA genotypes. These studies will be continuing. The CFAR is also preparing it application for competitive renewal. The Immunology laboratory has implemented the Quantiferon (Interferon gamma release assay) TB screening test. A study was conducted with Dr. Hans Herfarth and colleagues from GI to determine the cause of indeterminate test results in their population. A large contributer to the risk of indeterminate was determined to be testing of patients receiving steroids. This work was presented as two posters at the Digestive Disease Week 2015 meeting and a manuscript will be prepared for submission. The laboratory is currently investigating the causes of the decreased rate of indeterminate test results encountered with in house test performance. Dr. Weimer's HLA-B57 flow cytometry screening assay, developed to support a UNC CFAR Clinical Trial, is being implemented as a clinical assay in the Hospital Flow Cytometry Laboratory. The will provide HLA-B57 screening in a rapid and less expensive manner. The Flow Laboratory is also supporting studies by Drs. Earp and Armistead assessing expression of novel markers (MIR and AXL) on hematolymphoid malignancies. The Histocompatibility Laboratory has submitted its NGS validation packet to our Accrediting Agency, ASHI. This work will be submitted as an abstract to the ASHI annual meeting in September 2015 and also for publication. Dr. Schmitz and Weimer have begun meeting with Duke University Lung Transplant Researchers to develop a collaborative CTSA proposal to assess the antibody response to allogeneic lung transplantation. It is hoped that this initial collaboration will lead to future collaborative grant applications.

HARSHARAN K. SINGH, M. D.

Dr. Singh is a translational physician-scientist whose practice and clinical research interest are in polyomavirus infection in the setting of renal and other solid organ transplantation. She is also interested in the application of electronic microscopy and ultrastructural pathology in the setting of renal transplantation. A major contribution exemplifying her professional commitment is to be seen in her research that culminated in the characterization and development of a novel, non-invasive, diagnostic test (Urine PV-Haufen test) to diagnose a major infectious complication post kidney transplantation known as Polyomavirus Nephropathy. This new diagnostic technique developed in collaboration with colleagues at UNC avoids invasive biopsy procedures, and could potentially have profound implications for the care of kidney allograft recipients worldwide. The clinical impact of this novel discovery is now confirmed in a prospective study with funding from Asellas Pharma, US Inc. The transplant research group in the Division of Nephropathology at UNC (headed by Dr. Volker Nickeleit) has developed a mouse model of Polyomavirus Nephropathy. Dr. Singh is heavily involved in animal studies using their mouse model in evaluating the specific conditions under which PV-Haufen develop and are shed into the urine (proof-of-concept studies). Dr. Singh and her colleagues are also spearheading a multi-center study in children post bone marrow transplantation evaluating Polymavirus infections and the application of the urine PV-Haufen test to diagnose Polymovirus Nephropathy in this subset of patients. These research activities allow Dr. Singh to combine and integrate these diverse areas of her expertise in electron microscopy, cytopathology and renal pathology. Dr. Nickeleit and Dr. Singh (UNC) are the lead investigators with 9 centers participating from the US, Canada, and Europe in developing in International Consensus Classification of Polyomavirus Nephropathy which is nearing is completion. A new Banff multicenter study spearheaded by Drs. Nickeleit and Singh (central reviewers) is underway on T-cell mediated rejection (TCMR-BANFF working group) with 8 centers participating from the US, Canada and France.

SCOTT V. SMITH, M.D.

Dr. Smith is an Associate Director of Surgical Pathology and Director of Pediatric Pathology for UNC Hospitals. Dr. Smiths' 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 the pathology residents and fellows to facilitate their professional development. His teaching activities are substantial within the medical center including ongoing lecture series within the Schools of Medicine, Dentistry, and Public Health. Dr. Smith works in collaborative research with Dr. Julie Blatt and Dr. Ian Davis in Pediatric Hematology Oncology.

OLIVER SMITHIES, D. PHIL.

Over the past 25 years much of Dr. Smithies' research has been focused on identifying genetic factors that control blood pressure. Recently, he has shifted its emphasis towards understanding factors that cause some pregnant women to develop pre-eclampsia, which is characterized by hypertension and proteinuria. He is encouraged in this transition by learning that his main research grant, which is now focused on this problem, will be funded. Indeed it was rated in the top 1% of proposals reviewed by the study section. A second new research area that is occupying his attention concerns the way that the kidney glomerulus discriminates between large proteins, which do not cross the glomerular barrier, from small proteins, which do. This work has also been recognized by our being awarded a grant from a UNC fund (TraCS) that encourages new basic research likely to have a translational impact on clinical practice.

JOAN M. TAYLOR, Ph.D.

The long-term goal of Dr. Taylor's research is to identify signaling mechanisms that contribute to normal and pathophysiological cell growth in muscle (smooth, cardiac and skeletal). They are interested in studying cardiac and vascular development as well as mechanisms involved in heart failure, hypertension, and muscle degenerative diseases. The current directions of the Taylor lab are to characterize components of the integrin signaling cascade in these specialized cell types and to target disruption of these regulatory molecules *in vivo* in an effort to determine their precise role in cardiovascular growth and disease. They also seek to design therapeutics to target relevant pathways.

LEIGH B. THORNE, M.D.

Dr. Thorne's research activities a 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 is now also participating in a Phase 3 clinical trial to evaluate PET for Detection of B-Amyoid when compared with postmortem histopathology. She will be procuring the brain from patients consenting to autopsy.

Dr. Thorne's clinical duties continue in molecular genetic pathology and the autopsy service. Dr. Thorne has also taken over as director 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 will also continue to assist the Decedent Care staff in improving this still newly developed area.

RICHARD R. TIDWELL, Ph.D.

Dr. Tidwell will continue research on the R01 subcontract with the University of Washington (co-principal investigator on the grant). During the first two years of this grant their laboratory has synthesized over 300 molecules and screened them for activity against the trypanosome responsible for human African trypanosomiasis (HAT). Several of these molecules have demonstrated all the positive attributes needed to predict success against the neurological form of HAT including the ability to cross the blood brain barrier. During the coming year selected molecules will be synthesized in larger quantities and tested in an animal model of HAT. He will also continue the writing of a book entitled "US Encounter with Tropical Disease". The book will detail how tropical infectious diseases have impacted the United States throughout its history. A major project this year will be to complete and submit two manuscripts detailing the Phase 2 and 3 clinical trials of parafuramidine against early stage HAT. These trails were among the first to be carried out under FDA regulations in Africa. He began phased retirement on July 1, 2014. Dr. Tidwell's phased retirement will last through December 31, 2016.

MICHAEL D. TOPAL, Ph.D.

Assistant Dean for Core Technologies – The position serves as both part of Terry Magnuson's management team for the Office of Research and as the Director of the Translational Technology Core of the TraCS Institute. As such, the position serves to unite the office of research and TraCS Institute both of which interact with research core facilities.

In addition, Dr. Topal chairs the Core Facilities Advocacy Committee (CFAC), which meets monthly to review, and advise the Dean's Office, on matters pertaining to core facilities. These matters include all requests and problems related to equipment, emergency funds, space, and recruitment that impact our research infrastructure represented by core facilities. He also chairs the TraCS Office of Translational Technologies (OTT) where they review core facility financials, poll users of core facilities to determine if UNC core facilities are serving their needs, and poll core directors to determine core needs for the next year. In addition, the OTT runs an educational series and workshops focused on educating researchers at UNC about their core facilities and the available technologies. In addition, they develop and maintain a website devoted to providing information and education about UNC core facilities (http://www.med.unc.edu/corefacilities).

Director, Translational Technologies Core of TraCS – This position involves guiding the members of this core in evaluating and facilitating core facilities. He chairs a weekly meeting with staff to keep track of cores and their needs. This involves monthly financial reports from the Dean's Office that enables us to evaluate core facilities' finances. In addition, they survey core

directors and users of UNC core facilities to determine problems before they arise, and to determine whether the cores need help with business functions such as marketing, business plan development, and invoicing. They invite core facility directors and users of our core facilities to our weekly meetings to gain a better understanding of the core and its vision, while at the same time educating the core director on the help available to the core facility through TraCS. My position on the Vice Dean for Research management team together with my position in TraCS has enabled me to bring the Office of Research and TraCS together to help and manage cores at UNC in a way that was not possible in the past.

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

Dr. Trembath maintains a busy clinical service, signing out general surgical pathology the GI Smalls and GI Large benches. Dr. Trembath, in conjunction with Drs. 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. Dr. Trembath is also accepting responsibility for the muscle service starting 2015, in conjunction with Dr. Leigh Thorne. Dr. Trembath assumed responsibility as Director of the Division of Neuropathology at UNC.

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. Most recently, Dr. Trembath has begun collaborating with Dr. Shehzad Sheik of the UNC Department of Medicine to look at microRNAs involved in the pathogenesis of inflammatory bowel disease.

CYRUS VAZIRI, Ph.D.

Dr. Vaziri's current research is focused on understanding molecular mechanisms of genome maintenance as pertains to cancer etiology and cancer therapy. His 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 his 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. Dmitri Kireev (School of Pharmacy), Dr. Buddy Weissman (Pathology), Dr. Ben Major (LCCC), and Dr. Yuri Fedoriw (Pathology). A collaborative drug discovery project with Dr. Janzen has already resulted in a funded R01. A collaborative R01 application with Dr. Scott Williams received a priority score that places this grant in the top 19th percentile. While this grant does not meet the agency payline, he is optimistic that a revised proposal will eventually be successful. He's hopeful 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 tests into a CLIA-certified laboratory setting for clinical diagnostic and prognostic testing and to investigate the clinical utility of novel molecular testing. Major areas of focus in the past year include somatic mutation testing and 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 Investigattor on a NHGRI U01 grrant called North Carolina Genomic Evaluatle by Next-generation Exome Sequencing (NCGENES). The overall goals of the UNC NCGENES project are to use of whole exome sequencing (WES) as a diagnostic tool in selected clinical conditions with a 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 tradionally underserved populations throughout North Carolina. Significant efforts in the past year have been made to support the UNCSeq cancer project, supported by the University Cancer Research Fund. The goals of UNCSeq are to identify potentially medically actionable somatic mutations in UNC patients with cancer through massively parallel sequencing of ~250 genes in druggable pathways. In addition, in the past year UNC Clinical Molecular Genetics Laboratory has developed several new clinical genomic assays for use in patient care, including validation of next generation sequencing technology to detact a panel of somatic mutations in tumors for use in patient care. The goals of Dr. Weck's research in thhe next year are to continue effort to utilize next generation sequencing for clinical care at UNC in the areas of cancer and genetic disease.

ERIC T. WEIMER, Ph.D.

The Flow Cytometry laboratory is validating assay for plasma cell leukemia, MRD, CD45RA/RO enumerating and T-cell proliferation in the coming year. The Immunology laboratory is completing validation for galactomannan and Qunatiferon. Immunology also validated two new instruments Diasorin Liaison XL and a newer versionof the Abbott Architect. Liaison XL and Architect perfom the majority of infectious disease serology testing in the laboratory. The HLA laboratory worked to reduce the cross—match time and reduce wait-time for solid organ transplants. Additionally, evaluations are ongoing to study C1q antibodies as well as projects to reduce the amount of post-transplant testing that is performed. In the coming year, real-time PCR and next-generation sequencing (NGS) are major projects for the HLA lab.

A study is being initiated to develop NGS panels for primary immune deficiency with goal of submitting for NCTracs funding in June and potential publication by the end of 2016. Additional projects include resolution and submission of identified novel HLA alleles for official naming and inclusion in the IMGT/HLA database. One manuscript was submitted describing the use of clinically focused exome sequencing to identify mutations in primary immune disease Lastly, 2 papers, 1 review article and 1 co-authored book chaptered are in progress for publication next year.

BERNARD E. WEISSMAN, Ph.D.

Dr. Weissman's laboratory will continue to work on identifying the mechanisms that drive SCCOHT development. They will also finish studies on the role of SNF5 loss in the development of malignant rhabdoid tumors. Finally, they are developing novel reagents (cell lines and genetically engineered mouse models) to dissect the role of NFE2L2 (NRF2) activation in the development of human squamous cell carcinomas. These studies represent a continuing effort with his long-time collaborators in the Lung Cancer/COPD working group. His biggest goals this coming year are to obtain at least one additional grant and to publish at least the 4 completed studies on the role of SNF5 or SMARCA4 inactivation on human tumor development.

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

Dr. Whitaker continues to provide veterinary clinical care for the research animals on campus and to supervise the Surgical and Clinical areas of Veterinary Services. The clinical case load has increased in the past year, and additional functions have been added to Veterinary Services, and she supervises this area as Associate Director of Veterinary Services. 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 and she is writing a publication from a 2012-2013 study. In addition, she and Dr. Moy, along with Dr. Craig Fletcher, completed a new project with additional collaboration with Dr. Pardo-Manuel studying the effect of caging environment in Diversity Outbred mice. She mentored a laboratory animal resident this year in a project in collaboration with Dr. Garner at Stanford University investigating the effect of oxidative stress on mouse dermatitis as a model for the human disease of Skin Picking Disorder and evaluating 2 novel treatments for mouse dermatitis, which resulted in a publication in PLoS ONE. 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. She will continue to co-chair the Southeastern location of the International Mock Board Exam Coalition for the ACLAM board exam.

DAVID C. WILLIAMS, M.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 DANA for which he has successfully completed most of the first two aims. Over the next year he wil focus on finishing studies proposed for the second aim and beginning the third aim in preparation for competitive renewal in two years. More recently, Dr. Williams has submitted a manuscript describing an intrinsically disordered region of the MBD2 protein critical to the formation of the NuRD complex (currently under revision for Nucleic Acids Research). Based on that work, he submitted an R01 grant application to further characterize how this region stably binds the NuRD complex. In addition, he has established collaborative efforts with Nate Hathaway and Stephen Frye of the Center for Integrative Chemical Biology and Drug Discovery to develop molecular

inhibitors of the MBD2-Nu-RD comples. Over the next year he plans to expand those collaborations, collect additional preliminary data and submit additional grant applications for extramural funding. Finally, he has become and active member of the hematopathology service and will continue to expand his role both in teaching residents and in clinical service.

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

Dr. Willis is the Department of Pathology & Laboratory Medicine Vice Chair of Academic Affairs, 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 laboratory also creates therapeutic interventions for heart failure using peptide-mediated inhibition of signal transduction [Project 6: Inhibiting cardiomyocyte cell death and fibroblast collagen synthesis in myocardial infarction via peptide inhibition of MK2]. 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. The startup company CardioEphEx, LLC (https://www.facebook.com/cardioephex?fref=photo) was recently founded by Dr. Willis and his colleague Dr. Jitka Virag (East Carolina University) to develop therapies focusing on the cardiac Ephrin systems in ischemic heart disease and fibrosis. In the coming year, collaborative efforts with industry and international collaborators via the Leducq collaborative (http://www.fondationleducq.org/nivel2.aspx?idsec=1195) will continue and focus on generating the pre-clinical data needed to apply for FDA approval use in human studies for cardiac applications.

ALISA S. WOLBERG, Ph.D.

The major goals of Alisa Wolberg, PhD are to examine cellular, biochemical, and biophysical mechanisms that modulate procoagulant activity and fibrin formation during hemostasis and thrombosis. Dr. Wolberg's group has made substantial progress towards both goals during this year. 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. Their findings suggest novel approaches to reduce venous thrombosis risk. Future plans are to delineate the role of transglutaminase activity in determining venous thrombus size and stability.

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 her resulted in multiple publications that have expanded the radiopathologic knowledge base. Dr. Woosley is very actively involved in collaborative research projects with Dr. Evan Delton and Dr. Ramon Bataller, Division of Digestive Diseases, Department of Internal Medicine, UNC School of Medicine. The collaboration with Dr. Delton focuses on the basic pathophysiology of Eosinophilic esophagitis. The collaboration with Dr. Bataller focuses on the pathogenesis, prognosis, prognosis, and treatment strategies for alcohol steatohepatitis. He is actively involved in medical student and pathology resident training, but plays no active role in pathology graduate student training.

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). Her current approaches consist of (1) Identifying specific epitopes that are targeted by pathogenic anti-MPO IgG. Recombinant mouse/human MPO chimeric molecules have created and the pathogenic epitopes are being mapped using the chimeric molecules. (2) Strain based genetic analysis for genetic loci, trying to identify candidate genes and their protein products that modulate the diseases severity in experimental MPO-ANCA disease, which might be new markers for disease activity and potential targets for novel therapeutic strategy in humans. (3) Investigating the involvement of receptors on neutrophil such as FcrR, C5R and kinin receptors in pathogenesis of ANCA disease and testing therapeutic interventions with inhibitors in ANCA disease model. (4) Using animal model to dissect the mechanism of anti-MPO induced extravascular inflammation and tissue injury such as granuloma.

MAIMOONA B. ZARIWALA, Ph.D.

Elements of Dr. Zariwala's research include: (1) Decipher possible genetic causes of Primary ciliary dyskinesia, and idiopathic bronchiectasis and continue to provide research genetics results to the consortium, and UNC patients and families. (2) Identify large deletions/duplications and decipher breakpoints to develop PCR based assays and decipher functional consequences of splice-site mutations. (3) Work with the already developed research genetic test panel to identify

genetic lesions in the known PCD associated genes that will help (i) determine the actual denominator for the mutations in the unselected PCD cohort, (ii) assist with the genotype-phenotype correlations, (iii) provide negative samples which will be helpful resource for the novel discoveries, and (iv) continue to build well characterized cohort for the upcoming possible clinical trial. (4) Continue to provide consultation and ongoing support to the Molecular Pathology Lab for expansion of clinical genetics test panel for Primary Ciliary Dyskinesia.

Dr. Zariwala's laboratory has made significant progress towards each of these goals in the last year. The work on founder mutations in certain ethnicities has been published. Breakpoint determinations for large deletion/duplications, and functional consequences of splice mutation on transcript has continued to be ascertained. Additional PCD families with the mutations have been identified. Ongoing collaboration and consortium bring additional DNA samples. Whole exome sequencing efforts in collaboration with the investigators from the Seattle Genomic Sequencing Center, Yale Center for Mendelian Genomics continues and 2 novel possible candidates are being characterized. Whole exome sequencing is being carried out at Johns Hopkins Center for Mendelian Genetics for cases of "idiopathic bronchiectasis. Genotype-phenotype correlations are being made as we have published our findings of severe lung disease in patients carrying mutations in *CCDC39* and *CCDC40* genes, whereas mutations in *RSPH1* cause milder form. Additionally, next generation sequencing based research genetic test panel is ready that will interrogate 28 of 34 genes associated with PCD. The work represents significant step forward in the studies of 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. Their 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 one paper published at *Genes&Development* last year. Currently, they have another paper in revision for *EMBO Journal* and one more paper in submission. He is planning to apply for some new investigator awards/grants such as V foundation. More importantly, he already applied for an multi-PI R01 grant (me as the contact PI) and is in the process of writing another R01 for Oct of 2015. 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.

PROGRAMS AND SERVICES

TEACHING

HOWARD M. REISNER, Ph.D.

MEDICAL:

Second Year Medical School Involvement: Pathology content provided by our department is incorporated into 10 of the 11 blocks which comprise the second year curriculum in prior use. The 2014-2015 academic year represents the final use of that format for teachingThe blocks have been predominantly organ system based. However, two blocks, an introductory "Tools"

block and a Clinical Medicine Cases Block, serve special functions to be discussed. The only organ system in which the department does not play a strong role is the Musculoskeletal/Dermatology block which supplies its own expertise from Dermatology. However, we support the block in providing virtual scanned images for use. Each organ system block is represented by a member of this department serving on a "block committee". Several committees are chaired by departmental faculty members including the Tools Block (Reisner) and Integrated Clinical Case blocks (Hadler). Each block attempts to integrate pathology and abnormal physiology/medicine into a single course with a single syllabus (all presented on-line). Different blocks have taken somewhat different approaches but, in general, independent pathology lectures remain relatively intact and are usually broken into small units. The tendency for "independent" pathology laboratory sessions to be used in several of the blocks (including respiratory, GI, endocrine, female reproductive, and renal/urinary) has continued and receives excellent student comments. This year there has been increasing use of medical residents working along with Pathology Faculty and Residents in several of these laboratory sessions. These "mini-pathology" lab sessions are most successful when presented before the more medical sections of the laboratory (when such exist) and are designed to complement other material presented. The availability of laboratory staff that participate in multiple blocks (particularly Dr. Hadler) allows students to get to know our faculty members across several organ system blocks and student attendance in laboratories continues to be excellent. The availability of gross organ specimens in the much improved facilities of Bondurant Hall continues to be an extremely positive development in laboratory/small group sessions and the department is pleased that such specimens were available for and heavily used this academic year. AIMS based quizzes have been used in the tool block and will be used until the 2015-2016 semester when a commercial system Examsoft will be introduced for examinations and. The Tools Block (Block 1) includes the entire Introduction to Pathology (General Pathology) sequence and has been accompanied by a substantial increase in hours available to this department.

Running concurrently with the prior curriculum is the new TEC 1 integrated curriculum which spans the first three semesters of undergraduate medical education. The TEC 1 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 is 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 50 minutes to 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 and a small group session on inflammation and an overview lecture on mechanisms of immunopathology was included in the Immunology block. This will be modified and somewhat expanded in the 2015-2016 curriculum. In addition an introductory lecture on neoplasia has been integrated into the Hematology (3^{rd}) block. The teaching of systemic pathology ion the subsequent organ system blocks is organized much as in 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) has been much improved by working with Leica-Biosystems to provide an off-site service.

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 staffed by both residents and MD faculty. The examination format has been somewhat modified to fit the integrated TEC 1 examination paradigm. Many small group sessions included 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) provided a series of nine one hour lectures which cover all essential aspects of general pathology. Because much of this material is not reviewed in subsequent courses in systemic medical and dental pathology, a good deal of attention to details and use of the textbook (Rubin's Essentials of Pathology 6th Edition) was encouraged. All lecture material was presented as PowerPoints which are made available to students before the lecture. There are seven laboratories covering general aspects of histopathology which are supervised by Drs. Hadler (who comments on gross organ pathology) and Reisner. This has been made easier by incorporating access into the Sakai system. Two multiple choice exams were used as evaluation tools along with short "extra credit" exercises expanded this year to a surprising degree of enthusiasm. Although grading such short answer material is very time consuming it is repaid by student interest. In general, course comments and ratings have continued to be satisfactory.

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 we continue to reduce the variability between sessions. 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. Given the availability of virtual microscopy short self-directed laboratory modules may also be included in the future.

*Several of our newer faculty including Drs. Fedoriw, Homeister, and Ryan Miller took an active role which will continue next year as a result of enthusiastic student comments.

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. During the 2014-15 academic year, program leadership sheparded the program through its latest self-study and review, as required every eight years by The Graduate School. Outside reviewers of the self-study included Ilona Jaspers, Ph.D., of the University of North Carolina, Satdarshan (Paul) Monga, M.D., of the University of Pittsburgh, and Linda McManus, Ph.D, of The University of Texas Health Science Center at San Antonio. The self-study and review presented a very positive view of the graduate program, and highlighted its existing uniqueness, strengths, and quality. The self-study and review also identified eleven specific items that the department and program will work to implement in the near future to further enhance the strength and quality of graduate training in our department.

Dr. Jennette, the program leadership, and the medical school administration worked with The Graduate School to change the name of our graduate program from *Molecular and Cellular Pathology* to *Pathobiology and Translational Science*. This change was made to (1) enhance the visibility of the translational research training present in the department,(2) help recruit outstanding graduate students interested in translational research to UNC, and specifically, to our graduate program, and (3) help define the unique nature of graduate training in experimental pathology. In conjunction with the name change, the program is working to enhance the strength of translational science training by (1) implementing coursework modifications and additions to strengthen the curriculum in the Pathobiology and Translational Research program, (2) recruiting as mentors in our program translational scientists on campus who have not traditionally trained graduate students, and (3) recruiting as mentors in our graduate program faculty and/or graduate students from other departments/centers who are engaged in translational research projects.

The graduate student body individually and collectively has accumulated a number of significant accomplishments during the past year. Four students successfully completed the Ph.D. program (Julia G. Jeddings, Adam D. Phefferle, Bethany L. Walton, and Laura M. Weise-Cross). One student successfully completed the M.S. degree (Justine M. Monk). With these graduates, the Pathobiology and Translational Science graduate program has produced 186 total graduates and 137 Ph.D. graduates since 1954. Julia is continuing her education in the MD program at UNC Medical School, Bethany is currently a Medical Writer for Conisus in Tampa, FL, Laura has accepted a post-doctoral teaching fellowship at the University of New Mexico, Adam Pfefferle is in a Post-doctoral Fellowship at UNC-CH in the department of Chemistry, and Justine is currently a Clinical Laboratory Technician at Duke University.

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 2014, Fall 2014, and Spring 2015, nine faculty members associated

with the Pathobiology and Translational Science graduate program hosted eleven laboratory rotation experiences for seven individual students. This is a smaller number of laboratory rotations than the previous year. However, six of the seven rotating students joined the program. As a result of these rotations, Sravya Kattula, Bethany McInturff, Krystal Orlando, Katherine Stember, Haley Vaseghi, and Qiang Zhu, matriculated into our program from the BBSP in June of 2015. Sravya Kattula will work with Dr. Wolberg, Bethany McInturff will work with Dr. Kesimer, Krystal Orlando will work with Dr. Weissman, Katherine Stember will work with Dr. Falk, Haley Vaseghi will work with Dr. Qian, and Qiang Zhu will work with Dr. Taylor. The seventh rotating student joined the laboratory of Monte Willis, but matriculated into another graduate program. As of July 1, 2015, the Pathobiology and Translational Science graduate program has a total of 17 students (16 from the BBSP and one from the M.D.-Ph.D. Program)

In 2014, graduate students from the program contributed authorship to over 25 publications in 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 2014 Molecular and Cellular Pathology Annual Research Symposium (September 2014, prior to the program name change), Britta Jones and Kevin Mangum received awards for outstanding presentations by a graduate student. Sabri Abdelwahab received the Trainee's Choice Award from his colleagues. Kevin Mangum also received a 2015 ATVB Travel Award for Young Investigators to attend the 2015 ATVB Conference. Sabri Abdelwahab received a FASEB MARC Student Travel Awards from the *American Society for Investigative Pathology* to attend Experimental Biology 2015. Sabri also received the Stuart J. Hirst Abstract Excellence and Abstract Scholarship Award to attend the 2015 American Thoracic Society (ATS) International conference on Assembly of Respiratory Structure and Function. James Byrnes received the XXV Congress of the International Society on Thrombosis and Haemostasis Young Investigator Travel Award, and had his abstract chosen for inclusion in the the "Highlights of ISTH" presentation at the conclusion of the XXV Congress of the International Society on Thrombosis and Haemostasis meeting. Last, Kevin Mangum received the 2015 Katherine Pryzwansky Young Investigator Award from the Department of Pathology and Laboratory Medicine.

Research support for students in Molecular and Cellular Pathology was provided by a number of sources other than their mentor's grants. Several students received support from NIH training grants or the NSF. Kevin Mangum, Lantz Mackey, Laura Weise-Cross, and Bethany Walton were all supported by the Integrative Vascular Biology NIH Training Program, and Britta Jones was supported by the North Carolina Kidney Foundation NIH Training Grant. James Byrnes and Nicole Fleming were supported by NSF Pre-doctoral Fellowships. Rachel Dee was supported by a Predoctoral Fellowship from the American Heart Association, and Laura Weise-Cross received a Dissertation Completion Fellowship from the UNC Graduate School. In addition, several students were supported by funds from the Department of Pathology and Laboratory Medicine. During 2014-2015, Amanda Rinkenbaugh, Robbie McNeill, Julia Gedding, and James Byrnes received support as Robert H. Wagner Scholars in Pathobiology and Translational Science. Rachel Dee received support as a Bill Sykes Scholar in Pathobiology and Translational Science.

The involvement of Pathobiology and Translational Science students and faculty in the Certificate Program in Translational Medicine remains strong, although financial support is no

longer offered to the students. Seven Pathobiology and Translational Science Ph.D. students including, Sabri Abdelwahab, James Byrnes, Nichole Fleming, Britta Jones, Robbie McNeill, Amanda Rinkenbaugh, and Bethany Walton were fellows participating in the Program in Translational Medicine.

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 2015 Seminar Series featured presentations by 9 Pathobiology and Translational Science Ph.D. students. Beyond our Tuesday seminar series, graduate students from our program participated in numerous other research symposia on campus. Graduate students were also featured in a Pathology Grand Rounds session in Spring 2015. Amanda Rinkenbaugh (from Dr. Baldwin's laboratory) gave a presentation entitled "*Inhibition of the IKK/NF-kappaB Pathway Impairs Glioma Stem Cell Function*," Adam Pfefferle (from Dr. Perou's laboratory) gave a presentation entitled "*Modeling Breast Carcinoma with Genetically Engineered Mice*," and Robbie McNeill (from Dr. Miller's laboratory) gave a presentation entitled "*Influence of PI3K pathway mutations on glioblastoma pathogenesis and drug response*." This series provides a valuable opportunity for students, faculty, and staff to learn more about graduate student research ongoing in the department. The Marc J. Mass, Ph.D., Memorial Distinguished Lecture Committee hosted Charles E. Murry, M.D., Ph.D., from Washington University on Tuesday, September 2, 2014, for a talk entitled "*Regenerating the Heart*".

In the summer of 2014, the graduate students selected Dr. C. Robert Bagnell, Jr., Ph.D. the 2014 recipient of the ***Joe W. Grisham Award for Excellence in Graduate Student Teaching***. The award was presented in September, 2014 at the home of Dr. J. Charles Jennette during the annual Open House for the Pathobiology and Translational Science graduate students, and the department faculty. 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.

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).

We offer 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 our 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.

For the academic year July 1, 2014, through June 30, 2015, we had a total of 17 residents (15 AP/CP residents plus 2 AP only residents). The two AP only residents came about because of an increase in program complement granted in September, 2014 to allow additional tracks in our program (AP only, CP only or a research track). The first individual recruited for this extra position is an anatomic pathology only resident who joined our program on January 1, 2015. Our second AP only resident is a former AP/CP resident who transitioned to an AP only position also in January, 2015.

The 4 graduating residents completed the program on June 30, 2015. All have gone on to fellowship programs: 1 in cytopathology at UNC, 1 in surgical pathology at UNC, 1 in hematopathology at UNC, 1 in forensic pathology at UNC (Office of the Chief Medical Examiner of North Carolina) . The program successfully matched 4 residents in March, 2015 to form the incoming 2015 class. The program received approximately 425 applicants. 53 applicants were invited to interview, 45 were interviewed, and 43 were ranked.

A major focus of the residency program was the transition to the Next Accreditation System (NAS), which was implemented July 1, 2015. During 2013-14 the program formed a Clinical Competency Committee, the members of which are Dr. Herb Whinna (chair), Dr. Scott Smith, Dr. Siobhan O'Connor and Dr. Jay Raval. Dr. Susan Maygarden and Ms. Elizabeth McDonald are non-voting members. The CCC performed their first sets of semi-annual assessments in the fall of 2014 and spring of 2015 and reported these to the ACGME. The program has received a status of continuing accreditation from the ACGME in January, 2015. The next scheduled self study of the program is planned in 2017.

The leadership of the residency program remained stable in 2013-14. Dr. Susan Maygarden is the residency program director, Dr. Herb Whinna is the associate director, and Ms. Elizabeth McDonald is the program coordinator.

SUBSPECIALTY FELLOWSHIP TRAINING PROGRAM

CLINICAL CHEMISTRY FELLOWSHIP 2014-15

CATHERINE A. HAMMETT-STABLER, Ph.D., Director
Hanan F. Mohammad, Ph.D., Fellow, 2013-2015
Ronald R. Henriquez, Ph.D., Fellow 2014-2016
(http:www.pathology.unc.edu/fellowship/clinchem.htm)

Begun in 1972, this ComACC-accredited 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. Dr. Hanan F. Mohammad successfully passed the NRCC and ABCC examinations prior to completing her training. Capt Ronald R. Henriquez, Ph.D. completed his first year of training and successfully passed the NRCC examination and part A of the ABCC. Drs. Mohammad and Henriquez presented several posters at the AACC annual meeting in Atlanta, *Comparison of Two Methods for Monitoring Compliance and Thoroughness of Glucose Meter Disinfection Practices* and *Evaluation of Hemoglobin A1c Immunoassay and Capillary Electrophoresis Methods,* with Dr. Mohammad receiving a best poster award from the Critical and Point-of-Care Testing Division.

CLINICAL MICROBIOLOGY FELLOWSHIP 2014-2015
PETER H. GILLIGAN, Ph.D., DIRECTOR

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 America College of Microbiology. The Clinical Microbiology Fellowship is directed by Peter H. Gilligan, Ph.D. The major objective of this program is to train individuals to direct clinical and public-health-microbiology laboratories. The fellows' training includes five areas: (1) Technical training to become proficient at performing and interpreting the laboratory procedures offered in the clinical microbiology laboratory; (2) 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; (3) Clinical training enabling the trainee to interface effectively with infectious-disease clinicians; (4) Research in clinical microbiology; and (5) A four week external rotation at the State Laboratory of Public Health. On June, 5 2015, Anthony Tran DrPH completed a highly successful fellowship in this program. Dr Tran joined our program in July 2013 after completing his DrPH degree at the Unversity of California at Berkeley School of Public Health. In the summer of 2014, Dr Tran played a key role in Ebola preparedness in the laboratory, During Oct-December 2014, he worked at the NC State Laboroatory of Public Health on Ebola preparedness on a state wide level. During his fellowship, Dr Tran was engaged in validation amd cost analysis of organism identification using MALDI-TOF mass spectroscopy. This work was presented at the American Society for Microbiology meeting. It was the subject of a television report on WRAL and has been published in the Journal of Clinical Microbiology. Dr Tran successfully passed the American Board of Medical Microbiology Examination (which only has a 30% passing rate) and has become the Director of Policy and Operations, New York City Bureau of the Public Health Laboratory. In July 2014, Rongpong Plonga started our post-doctoral training program. His fellowship training is being supported by the government of Thailand. Dr Plonga is a graduate of the Faculty of Medicine Chulalongkorn University, Bangkok, Thailand and has a Master's of Medical Science degree from the University of Uppsala in Sweden. He presented 2 abstracts at the American Society of Microbiology General Meeting in May 2015. He has been actively engaged in teaching the Infectious Disease fellows and has completed his core curriciulum and competencies.

CLINICAL MOLECULAR GENETICS FELLOWSHIP
JESSICA K. BOOKER, Ph.D., DIRECTOR
Ian King, Ph.D., FELLOW, 2014-2016

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 dynskinesia, EBV and 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 Jessical Booker, Ph.D. There was one fellow in the training program in 2014-2015, and one from 2015-2016.

MOLECULAR GENETIC PATHOLOGY FELLOWSHIP 2014-2015
MARGARET L. GULLEY, M.D., DIRECTOR
https://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 including massive parallel (next generation) sequencing, Sanger, and pyrosequencing. Other technologies include protein truncation, DNA amplification (PCR), tissue macrodissection and related cell enrichment procedures, Southern blot, *in situ* hybridization/FISH, and array technologies including gene 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, identification, 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 learns to design and carry out research aimed at understanding the molecular basis of disease and translating fundamental discoveries into improved 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. More information is found at, https://www.med.unc.edu/pathology/residency/fellowships/mgp

COAGULATION FELLOWSHIP

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

CYTOGENETICS FELLOWSHIP
KATHLEEN W. RAO, Ph.D., DIRECTOR

The McLendon Clinical Laboratories of UNC Hospitals and the Department of Pathology and Laboratory Medicine sponsor a fully accredited training program in Clinical Cytogenetics, which leads to eligibility for certification by the American Board of Medical Genetics (ABMG). The usual training period is two years. Upon successful completion of the program and ABMG Certification, the fellow will be qualified to direct a clinical Cytogenetics laboratory. The Cytogenetics Fellowship Program is part of a comprehensive ABMG 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 4000 specimens on which more than 6000 tests are performed annually for both constitutional and oncology diagnostics. Sample types include CVS, 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 is directed by Kathleen W. Rao, Ph.D.

CYTOPATHOLOGY FELLOWSHIP
LESLIE DODD, M.D., DIRECTOR

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 a 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. We have Cytopathology specific milestones the PEC will be using to evaluate trainee' progress. We are expanding our evaluation process to include more "360" evaluators in different departments (Radiology, Interventional Pulmonology, Gastroenterology). New to the curriculum will be an option for trainees to attend an "off-site" comprehensive Cytopathology course.

FORENSIC PATHOLOGY FELLOWSHIP
DEBORAH L. RADISCH, M.D., MPH, DIRECTOR

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 (2015-2016).

HEMATOPATHOLOGY FELLOWSHIP 2014-2015
STEPHANIE MATHEWS, M.D., DIRECTOR

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. We have been highly successful in attracting high-quality applicants with a broad range of backgrounds, interests, and career goals. Our 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 Jeremy Parris from East Carolina University and Stacey O'Neill, a former UNC resident and molecular fellow. Both were a tremendous asset to the work in our division, and functioned seamlessly within our team.

NEPHROPATHOLOGY FELLOWSHIP 2014-2015
VOLKER NICKELEIT, M.D., DIRECTOR
Alexi Mikhailov M.D., Fellow
Francois Gougeon, M.D., Fellow

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 over 1900 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. Nickeleit, M.D (www.uncnephropathology.org).

SURGICAL PATHOLOGY FELLOWSHIP/INSTRUCTORSHIP

WILLIAM K. FUNKHOUSER, M.D., Ph.D., DIRECTOR
Brooke Rambally, M.D., FELLOW/INSTRUCTOR (2014-15)
Amanda Hemmerich, M.D., FELLOW/INSTRUCTOR (2014-15)

The Department of Pathology and Laboratory Medicine sponsors a one-year fellowship/instructorship in diagnostic Surgical Pathology. The training program focuses on workup, diagnosis, and reporting of surgical pathology cases, with correlative exposure to cytopathology, immunohistochemistry, cytogenetics, electron microscopy, and molecular genetic pathology. The training year is divided into two equal parts. Each 6 month block has three components: 4 months are spent working up/diagnosing/dictating cases during rotations on 7 organ-specific benches and the frozen section room, 1 month is spent diagnosing/dictating outside cases, with presentation of a subset of these cases at 5 weekly multi-disciplinary conferences, and 1 month is spent on elective time for project completion/writing/submission. The difference between the fall and spring blocks is that the Fellow's work is checked and signed out by credentialed faculty in the fall, whereas the Fellow is credentialed by the hospital during the fall and given independent sign-out responsibilities as a faculty Instructor in the spring. We have received uniformly good feedback on this training format from our Fellows/Instructors as they have competed for, and been hired as, independent practicing Pathologists in the academic or private practice workforce.

TRANSFUSION MEDICINE, APHERESIS, TRANSPLANT SERVICES

TRANSFUSION MEDICINE (Blood Bank, Platelet Donor Program, Apheresis)
YARA A. PARK, M.D., DIRECTOR

The Transfusion Medicine Service (TMS) had a steady workload and transfused 39,000 products in the last year. TMS prepared for the Epic conversion and although the computer system did not change for the blood bank, the interface with Epic was built, tested, and validated. Additionally, TMS, in conjunction with the Emergency Department (ED), established a secure,

monitored refrigerator for emergency use red blood cells for use during traumas or massively bleeding patients in the ED. This allowed ED providers to have almost immediate access to blood products when needed and reduced the wastage of blood units that were being sent to the ED for every trauma.

Therapeutic apheresis continued to see an increase in the patient census. The unit for the first time, performed extracorporeal photopheresis on pediatric patients, some of which weighed less than 15 kilograms. The unit is preparing for an expansion which will increase the clinic treatment bays from five to nine. With the EPIC conversion, the apheresis unit went from paper charting and ordering to completely electronic.

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. In August 2013, the BDC began collection apheresis plasma as well. The BDC has a Green Belt Project planned to recruit and retain donors who can donate more than one unit of platelets at a time.

PATHOLOGY AND LABORATORY MEDICINE GRAND ROUNDS - 2014-15

GRAND ROUNDS ORGANIZING COMMITTEE: YURI FEDORIW, M.D., Chair
Members: Monte S. Willis, M.D., Ph.D., M.B.A. and Cyrus Vaziri, Ph.D.

The Department of Pathology and Laboratory Medicine Grand Rounds seminar series continued to be well attended during the academic year 2014-15. 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 & 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.

Yuri Fedoriw (Chair), Cyrus Vaziri, and Monte Willis comprised the Grand Rounds Committee for this academic year. The 2014-2015 Grand Rounds series debuted a new format intended to highlight and encourage the clinical and research collaborations of our DPLM faculty. Most 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 2014-15 presenters, their affiliations and topics demonstrate that both internal and external speakers are sought.

Category 1 CME credit is offered for seminar participation. We provide 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, and research.

FALL 2014	SPEAKER/AFFILIATION/TITLE
09/02/2014	Marc J. Mass Invited Lecturer: Charles E. Murry, MD, PhD Professor of Pathology and Bioengineering Director, Center for Cardiovascular Biology University of Washington *"Regenerating the Heart"*
09/25/2014	J. Charles Jennette, MD Kenneth M. Brinkhous Distinguished Professor and Chair of Pathology and Laboratory Medicine Professor of Medicine The Univeristy of North Carolina at Chapel Hill Ronald J. Falk, MD Allan Brewster Distinguished Professor of Medicine Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill *"Vascular Inflammation Caused by Anti-neutrophil Cytoplasmic Autoantibodies (ANCA): From Bedside to Bench and Back A*gain"
10/02/2014	Leslie G. Dodd, MD Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill Margaret L. Gulley, MD Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill *"What's New in Sarcoma? From Microscopic to Molecular Diagnostics"*
10/09/2014	John L. Schmitz, PhD Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill

Eric T. Weimer, PhD
Assistant Professor of Pathology and Laboratory Medicine
The University of North Carolina at Chapel Hill

"Good…Better…Best: Evolution and Impact of Molecular Technologies on HLA Testing and Transplant Practice"

10/23/2014 C. Ryan Miller, MD, PhD
Associate Professor of Pathology and Laboratory Medicine and of Neurology;
Member, Lineberger Comprehensive Cancer Center and the Neurosciences Center
The University of North Carolina at Chapel Hill

Jing Wu, MD, PhD
Assistant Professor of Neurosurgery and of Neurology;
Member, Lineberger Comprehensive Cancer Center
The University of North Carolina at Chapel Hill

"The Glioma Osyssey: From Empirical Management to Precision Medicine"

10/30/2014 George (Yuri) Fedoriw, MD
Associate Professor of Pathology and Laboratory Medicine;
Director, Division of Hematopathology
The University of North Carolina at Chapel Hill

Kristy Richards, MD, PhD
Assistant Professor of Genetics
The University of North Carolina at Chapel Hill

"Biomarkers of B cell Lymphoma: Predicting Response to anti-CD20 Antibodies"

11/06/2014 William L. Roper, MD, MPH
Dean, UNC School of Medicine
Vice Chancellor for Medical Affairs
CEO, UNC Health Care System

"UNC Health Care – Leading, Teaching, Caring"

11/13/2014 Scott E. Williams, PhD
Assistant Professor of Pathology and Laboratory Medicine;
Member, Lineberger Comprehensive Cancer Center
The University of North Carolina at Chapel Hill

Antonio L. Amelio, PhD
Assistant Professor of Dental Ecology;
Member, Lineberger Comprehensive Cancer Center

The University of North Carolina at Chapel Hill

"Oral Epithelia: From Development to Cancer"

11/20/2014 Monte S. Willis, MD, PhD
Associate Professor of Pathology and Laboratory Medicine;
Member, McAllister Heart Center
The University of North Carolina at Chapel Hill

Brian C. Jensen, MD
Assistant Professor of Cardiology and of Pharmacology;
Member, McAllister Heart Center
The University of North Carolina at Chapel Hill

"Novel Therapeutic Approaches Targeting Fibrosis in Post-myocardial Infarction Remodeling and Heart Failure"

12/04/2014 Joan M. Taylor, PhD
Professor and Vice Chair for Research of Pathology and Laboratory Medicine;
Associate Director, McAllister Heart Institute
The University of North Carolina at Chapel Hill

Anthony Viera, MD, MPH
Associate Professor of Family Medicine;
Director, Hypertension Research Program
The University of North Carolina at Chapel Hill

"Hypertension – A Role for Aberrant Smooth Muscle Contractility"

12/11/2014 Thomas W. Bouldin Visiting Lecturer:

John R. Goldblum, MD
Professor and Chairman of Pathology
Cleveland Clinic Lerner College of Medicine

"Controversies in the Diagnosis of Barrett's Esophagus and BE-related Dysplasia"

12/18/2014 Melissa B. Miller, PhD
Associate Professor of Pathology and Laboratory Medicine;
Director, Clinical Molecular Microbiology Laboratory, UNC Hospitals
The University of North Carolina at Chapel Hill

"Impact of Molecular Infectious Disease Testing on Clinical Outcomes"

SPRING 2014	SPEAKER/AFFILIATION/TITLE
01/22/2015	William B. Coleman, PhD Professor of Pathology and Laboratory Medicine; Member, Lineberger Comprehensive Cancer Center The University of North Carolina at Chapel Hill Carey K. Anders, MD Associate Professor of Medicine, Division of Hematology and Oncology; Member, Lineberger Comprehensive Cancer Center The University of North Carolina at Chapel Hill *"Breast Cancer – From Basic Biology to Clinical Trials"*
01/29/2015	Stephanie P. Mathews, MD Assistant Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill Brandi N. Reeves, MD Clinical Fellow of Medicine-Oncology The University of North Carolina at Chapel Hill *"Philadelphia Chromosome Negative Myeloproliferative Neoplasms: Establishing a Research Program at UNC"*
02/05/2015	Yara S. Park, MD Assistant Professor of Pathology and Laboratory Medicine Director, Transfusion Medicine Services & Hematopoietic, Progenitor Cell Laboratory The University of North Carolina at Chapel Hill Jay S. Raval, MD Assistant Professor of Pathology and Laboratory Medicine Associate Medical Director, Transfusion Medicine Services The University of NC at Chapel Hill *"The Pursuit for Prognostic Markers in Thrombotic Thrombocytopenic Purpura"*
03/05/2015	Oliver Smithies, DPhil Weatherspoon Eminent Distinguished Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill Nobuyo Maeda, PhD Robert H. Wagner Distinguished Professor of Pathology and Laboratory Medicine The University of North Carolina at Chapel Hill

"From Gene Targeting to Mouse Models of Atherosclerosis"

03/12/2015 Residents & Fellows Research Day:

Nathan D. Montgomery, MD, PhD
Pathology and Laboratory Medicine Resident
The University of North Carolina at Chapel Hill

"Collaborative Telepathology Bolsters Diagnostic and Research Capabilities in a Resource limited Setting"

Bart B. Singer, MD, PhD
Pathology and Laboratory Medicine Resident
The University of North Carolina at Chapel Hill

"Are Radial Scars at Core Biopsy High Risk Lesions? A 10-year Single Institution Study and Literature Review"

Lisa J. Hannan Cichon, MD
Hematopathology Fellow
The University of North Carolina at Chapel Hill

"Bone Marrow B cell precursor number after allo-HSCT is associated with cGVHD"

Alexis R. Peedin, MD
Pathology and Laboratory Medicine Resident
The University of North Carolina at Chapel Hill

"Residual Schistocytes do not Predict Relapse in Patients with Severe ADAMTS13 Deficiency"

03/19/2015 Alisa S. Wolberg, PhD, FAHA
Associate Professor of Pathology and Laboratory Medicine
The University of North Carolina at Chapel Hill

Nigel S. Key, MB, CHB, FRCP
Harold R. Roberts Distinguished Professor of Medicine and Pathology;
Director, UNC Hemophilia and Thrombosis Center
The University of North Carolina at Chapel Hill

Venous Thrombosis: Questions and Answers From the Clinic and the Bench"

04/02/2015 Li Qian, PhD
Assistant Professor of Pathology and Laboratory Medicine;
Member, McAllister Heart Institute
The University of North Carolina at Chapel Hill

"Mending A Broken Heart"

04/16/2015 Graduate Students Research Day:

Amanda Rinkenbaugh, BS
Pathology and Laboratory Medicine Graduate Student
The University of North Carolina at Chapel Hill

"Inhibition of the IKK/NF-kappaB Pathway Impairs Glioma Stem Cell Function"

Robbie McNeill, BS
Pathology and Laboratory Medicine Graduate Student
The University of North Carolina at Chapel Hill

"Influence of PI3K Pathway Mutations on Glioblastoma Pathogenesis and Drug Response"

Adam Pfefferle, BS
Pathology and Laboratory Medicine Graduate Student
The University of North Carolina at Chapel Hill

"Modeling Breast Carcinoma with Genetically Engineered Mice"

04/23/2015 Gaorav Gupta, MD, PhD
Assistant Professor of Radiation Oncology
The University of North Carolina at Chapel Hill

"DNA Damage Responses in Oncogene-driven Cancer"

04/30/2015 Deborah L. Radisch, MD, MPH
Chief Medical Examiner, State of North Carolina
Professor of Pathology and Laboratory Medicine
The University of North Carolina at Chapel Hill

"Structure and Function of the North Carolina Medical Examiner System"

05/07/2015 Karen E. Weck, MD
Professor of Pathology and Laboratory Medicine and of Genetics;
Director, Molecular Genetics Laboratory
The University of North Carolina at Chapel Hill

James P. Evans, MD, PhD
Bryson Distinguished Professor of Genetics and Medicine
The University of North Carolina at Chapel Hill

"Whole Exome Sequencing n Clinical Genetics and Public Health"

05/14/2015 Bernard E. Weissman, PhD
Professor of Pathology and Laboratory Medicine;
Member, Lineberger Comprehensive Cancer Center
The University of North Carolina at Chapel Hill

D. Neil Hayes, MD, MPH
Associate Professor of Medicine, Division of Hematology and Oncology;
Member, Lineberger Comprehensive Cancer Center
The University of North Carolina at Chapel Hill

"Translating the Cancer Genome Atlas into Basic Research and Clinical Practice-examples from Lung Cancer and Beyond"

05/21/2015 Jiandong Liu, PhD
Assistant Professor of Pathology and Laboratory Medicine;
Member, McAllister Heart Institute
The University of North Carolina at Chapel Hill

"Regulation of Cardiac Morphogenesis"

06/04/2015 Margaret L. Gulley, MD
Professor of Pathology and Laboratory Medicine;
Director, Molecular Pathology Program
The University of North Carolina at Chapel Hill

Kevin G. Greene, MD
Assistant Professor of Pathology and Laboratory Medicine;
Director, Histology and Special Procedures Laboratory
The University of North Carolina at Chapel Hill

"Pathogenomics of Gastric Cancer"

CLINICAL SERVICES

BACKGROUND McLENDON CLINCAL 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 health care 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. For FY 14-15, the laboratory contributed 84 million dollars to UNC Hospital's operating margin.

McLendon Laboratories continued to provide leadership in clinical services. McLendon Laboratories participated in late fall 2014 in implementation of an Ebola Laboratory at Chatham Hospital. Microbiology and Core Laboratory technologists were trained to mobilize upon identification of suspected Ebola cases. The AFP Laboratory, which provides maternal testing to North Caroline Public Health Departments, transitioned from UNC to McLendon Laboratories in December 2014. In addition several new tests and technologies were added to laboratory services including: electron microscopy, next generation sequencing, HPV, and muscle biopsies.

Expansion of laboratory services through growth and business opportunities was also a focus for FY15. The Hillsborough Hospital campus implementation was completed in June with the Emergency Department opening for patient visits on July 6th. Contract negotiations were begun in May for management of the Chatham Hospital Laboratory by McLendon Laboratories. A reduced fee schedule was developed for implementation October 1, 2015, to maintain competitive outreach pricing for UNCPN clinics. As part of the implementation of EPIC Beaker laboratory information system planned for March 2016, McLendon Laboratories is preparing for reference testing from other UNCHCS Hospitals. The Beaker LIS build required major time resources as laboratory personnel from all disciplines participated in validation and standardization sessions. The Beaker build also facilitated development of relationships and networking among the UNCHCS laboratories.

SURGICAL PATHOLOGY (Histology/Special Procedures Labs) 2014-2015
WILLIAM K. FUNKHOUSER, Jr., M.D., Ph.D., DIRECTOR

UNC Surgical Pathology generates diagnoses on UNCH specimens, on specimens to be reviewed because of patient referral to UNC hospitals, and on outside expert consultation specimens. In 2014, 30,000 cases were diagnosed, including 2500 outside cases, a 2% year-over-year increase. The DPLM now trains 16 AP/CP residents. Gross room training of these residents is performed by the gross room Pathologists' Assistants. Cases route to 8 Surgical Pathology benches (not including Derm or Neuropath) benches (Breast, Benign Ob/Gyn, Gyn Onc, GI/Liver biopsies, GI/Liver resections, GU/Bone/ST, and ENT/Thor/Vasc). Junior residents gross all cases, preview resections, and sign out all cases real-time. Senior residents independently diagnose/dictate all cases, and gross 2 cases/day. Junior and senior residents also rotate through the Frozen Section room. SP Fellows independently diagnose/dictate all of their cases in the Fall, and serve as credentialed faculty Instructors with independent sign-out responsibility in the Spring. Organ-specific lectures are presented by faculty, fellows, and residents in didactic and unknown formats. Fellows and senior residents rotate through a Conferences/Consult service during which they staff a multi-disciplinary conference each day, and diagnose/dictate 10 outside consult cases per day. Overall, these approaches are designed to offer graded responsibility, with the opportunity to become skilled at grossing, frozen section diagnosis, permanent section diagnosis, reporting, and teaching.

A new signout faculty member, Dr. Sasatomi, joined us in 2014. Dr. Sasatomi has specialty expertise in liver pathology, and signs out the GI/Liver biopsy bench. The UNCH Histology laboratory is commensurately busy. We are fortunate that the Laboratory is well-led by Ms. Deloney, and that it is well-managed by Mr. Mortillo. This laboratory and its upstream accessioning personnel are critical to an efficient, error-free service. Block volume increases have been met with increased productivity, Lean analysis, improved instrumentation, and budget approval for seamless barcoding of specimens from accessioning to case sign-out. Error records are returned to the Histology laboratory for management follow-up and quality monitoring. Challenges for 2015 are to automatically trend block volumes, case TATs, and error rates, and to correlate these data with staffing type and levels, in order to define optimal technical staffing.

Overall, continuing increases in workload have been met by continuing increases in effort, ingenuity, and efficiency. 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. Our overall laboratory service volume remains relatively stable with the exception of a decline in Pap smear cases that follows an overall national trend due to changing screening paradigms. The decline in Gyn cases has been offset by 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 a fellowship trained pulmonologist with endoscopic expertise. The addition of this individual has led to an increased demand for “on site” evaluation services for both our cytotechnologists and trainees (fellows) but offers additional learning material and potential opportunities for collaboration on scholarly projects. In addition, 2014 brought us an additional gastrointestinal interventionist, increasing our presence in the GI interventional suite. The staff in this area has gratiously granted us a “permanent space” dedicated to our team which we appreciate. The workspace is currently under construction and will be functional in late Fall 2015. The division will be relocating one of the telemicroscopy units here with a static connection. The plan is to use this technology for both oversight (of trainees) and to capture revenue from (attending) on site assessment going forward.

The Cytopathology lab remains relatively stable in staffing. We have lost one cytotechnologist in the previous year but were able to fill this position with a highly qualified applicant. Due to our overall increase in FNA volumes, we filled this position with an individual with extensive prior experience. 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.

The Cytopathology fellowship training program remains very successful. The 2014-2015 fellows both passed their ACGME Boards in Cytopathology. On fellow is training in another fellowship but expects to take a job the following academic year. The second fellow is employed in a

private practice group in Kentucky. Our current fellows are outstanding and we expect their performance will continue to be exceptional.

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. Dr Hertel presented a Cytopathology/Molecular Pathology study for Duke Pathology Grand Rounds in August 2105. In 2014 the Cytopathology faculty co-authored two abstracts with residents for the USCAP meeting. 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.

AUTOPSY PATHOLOGY & DECEDENT CARE SERVICES
LEIGH B. THORNE, M.D., DIRECTOR

The UNCH Autopsy Service continues to provide valuable information to clinicians and families of patients. In 2014, a total of 117 autopsies were performed and 146 in the 2014-15 fiscal year. We had six faculty participating in the autopsy service in addition to the full time autopsy Pathologist's Assistant and two part-time autopsy technicians. We support UNC Healthcare System affiliates and also provide autopsy services for other hospitals in the state.

In addition to our 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 research (rapid) autopsies were performed in the last fiscal year between the two programs. We also provide tissues for research on an as needed basis for UNC investigators.

The mission of the Decedent Care program, begin 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 Connie Bishop, Director of McLendon Labs and Sheila Deloney, Assistant Administrative Director in Anatomic Pathology. Currently Decedent Care is staffed by three individuals providing services to our clinicians and patient families seven days a week. In 2014, Decedent Care processed over 1000 deaths and coordinated and handled paperwork for 96 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 2014-2015
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 with description of each clinical service is found on our website:
http://www.uncmedicalcenter.org/uncmc/professional-education-services/mclendon-clinical-laboratories/directory/molecular-pathology-and-genetics/

Newly implemented are the Myeloid Mutation Panel and the GastroGenus Gastric Cancer Classifier. On the horizon is a test for heritable cancer predisposition based on BRCA1/2 gene sequencing. All of these new tests rely on massively parallel sequencing technology to identify mutations in hotspot regions of relevant cancer-associated genes. A pathologist's interpretation of the findings is reported to the patient's medical record.

Underway is validation work for next generation sequencing of genes pertinent to diagnosis or carrier screening for cystic fibrosis and primary ciliary dyskinesia.

Our clinical and academic mission is to advance healthcare using modern molecular technologies. Our training programs educate physicians, medical students, post-doctoral fellows, genetic counseling students, and clinical laboratory science students. Our fellowship training program in Molecular Genetic Pathology was the first in the nation to educate a board-certified physician in this subspecialty. We offer a month-long course in Molecular Diagnostics and Cytogenetics targeted at pathology residents and open to other interested medical professionals. Further information on our clinical, educational and research work is found at: http://www.med.unc.edu/pathology/faculty/biosketch-of-dr-margaret-gulley

In May, we welcomed many of our department's alumni back to campus for a continuing education program focused on molecular pathology practice. Molecular pathology is growing rapidly as clinicians learn to use molecular tools for diagnosis and management. Increasingly we are use panels of genomic tests to simultaneously analyze multiple DNA or RNA targets at once, aimed at adding value for disease classification or 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 implement advanced molecular tests. We are well prepared to train the next generation of pathologists and clinical laboratorians to become competent, confident consultants on medical use of molecular technology. Furthermore, we provide opportunities to validate novel genomic assays. Learn more about assay design and implementation in a document entitled "Validating assays for use in clinical trials" at http://www.uncmedicalcenter.org/uncmc/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, Perkin Elmer Janus Robotic Pipettor; Qiagen EZ1, Qiacube, and QiaSymphony extractors; Applied Biosystems 9700, 9800, 7500, and 7900 PCR instruments; two ABI Veriti thermocyclers, Idaho Technologies LightScanner, three ABI 3130xl capillary gel electrophoresis instruments, Biotage Pyromark MD pyrosequencer, Affymetrix array scanner, RoboSep cell separator, and UVP gel documentation system.

Faculty are: Margaret L. Gulley MD, Karen Weck MD, Bill Funkhouser MD PhD, Leigh Thorne MD, Jessica Booker PhD, Nirali Patel MD, and Rosann Farber PhD. Fellows are Lynn Ferguson MD and Ian King PhD. Our excellent staff includes six medical technologists, three research scientists, our supervisor and administrative director, and an office support assistant.

TRANSFUSION MEDICINE, APHERESIS, TRANSPLANT SERVICES
YARA A. PARK, M.D., DIRECTOR

The Transfusion Medicine Service (TMS) had a steady workload and transfused 39,000 products in the last year. TMS prepared for the Epic conversion and although the computer system did not change for the blood bank, the interface with Epic was built, tested, and validated. Additionally, TMS, in conjunction with the Emergency Department (ED), established a secure, monitored refrigerator for emergency use red blood cells for use during traumas or massively bleeding patients in the ED. This allowed ED providers to have almost immediate access to blood products when needed and reduced the wastage of blood units that were being sent to the ED for every trauma.

Therapeutic apheresis continued to see an increase in the patient census. The unit for the first time, performed extracorporeal photopheresis on pediatric patients, some of which weighed less than 15 kilograms. The unit is preparing for an expansion which will increase the clinic treatment bays from five to nine. With the EPIC conversion, the apheresis unit went from paper charting and ordering to completely electronic.

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. In August 2013, the BDC began collection apheresis plasma as well. The BDC has a Green Belt Project planned to recruit and retain donors who can donate more than one unit of platelets at a time.

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 providing excellent patient care 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 FY15, the CMI labs expanded our testing menus, adopted new instrumentation, supported research endeavors and began preparation for conversion to a new laboratory information system. Here are some of the endeavors that were undertaken in each of the laboratory areas.

Microbiology

This year, the Microbiology laboratory began offering Nocardia and rapid growing mycobacteria susceptibility testing. This testing was previously sent to an outside reference laboratory. The lab also validated new organisms for identification by MALDI-TOF, which previously required sequencing by 16s. A new mould blood culture order was created to simplify orders for the clinicians and maximize recovery of organisms. The lab also performed testing which supported research protocols for both the Pharmacy service and individual physicians. Laboratory staff have spent hours preparing Individual Quality Control Plans in order to comply with CMS regulations that are set to take effect January 1, 2016. Additionally, the lab has trained 2 post-

doctoral fellows, multiple pathology residents, medical students and Clinical Laboratory Science students. The lab has also had several technologists present papers and participate in workshops at national conferences.

Immunology

During the past year, the Immunology Laboratory enhanced clinical services by implementing new equipment and new assays. A new instrument (Bio-Rad Ph.D. Slide Processor) was validated and replaced the existing Ph.D. instrument. This replacement was carried out due to recurring instrumentation problems. The Ph.D. performs all pipetting for Indirect Fluorescent Antibody (IFA) assays including, ANA, ANCA, DSDNA, Ehrlichia, and RMSF.
Two new assays were validated and implemented in this period. The Aspergillus galactomannan antigen assay is used for the detection of invasive aspergillosis in immunocompromised patients. The assay was validated on serum as well as on broncho alveolar lavage samples. The second test validated and implemented was the quantiFERON-TB Gold In-Tube test. This is an in-vitro test used in place of the traditional TB skin test. While offering similar sensitivity, it offers increased specificity in patients who have received BCG vaccination or have been infected with certain environmental mycobacteria. Initial projections based on historic testing data suggested an annual volume of 1000 tests. The annualized volume for this first year of testing is ~2000 tests. Implementation of this testing in house has had a significant positive impact on referral testing budget. A third test, the cryptococcal antigen lateral flow assay, was validated. However, implementation has been delayed pending implementation of the new laboratory information system in early 2016.

Molecular Microbiology

A major initiative in the Molecular Microbiology section is the assessment of the impact of implementation of new molecular tests. Outcome measures include test utilization, hospital costs and patient outcomes (length of stay, mortality, appropriate therapy, etc.). In collaboration with our pediatric infectious disease colleagues, an outcome study was performed in FY15 on the impact of the multiplex respiratory viral panel (RVP) on pediatric clinical care. We found that results from the RVP confirmed clinical management in 56% of patients and changed management in in 24% of patients. The most common clinical changes were discharge from the hospital, or discontinuing antibiotics. Less common changes included delaying surgical procedures, or providing specific treatment such as IVIG, oseltamivir or ribavirin. The study allowed us to identify areas for improved RVP utilization among pediatric clinicians, which will be addressed in FY16. During FY15, we also began an outcome analysis for the impact of the multiplex gastrointestinal pathogen panel (GPP) which is still ongoing. However, preliminary data indicate we have significantly reduced the number of tests performed per patient and provided more positive test results which has, in turn, led to the idenfication of more community-based outbreaks.

Five new tests were evaluated and implemented in FY15. (1) In response to a request by the OB/GYN department, primary HPV testing with genotyping was validated and implemented. This required obtaining a new instrument, as there is only one FDA-approved test for primary HPV testing. Positive primary HPV tests will be reflexed to cytopathology for analysis. (2)

Although norovirus is included in the multiplex GPP, we validated and implemented a norovirus stand-alone test. This offering should decrease the number of GPP tests performed, particularly on inpatients. The norovirus test has a turnaround time of 90 minutes, so it also suitable for testing patients in the emergency department, unlike the GPP that has a turnaround time of over 24h. (3) In FY14, it was noted by our ID colleagues that the rapid influenza PCR was missing positive influenza cases. We investigated this and found that some sensitivity had been lost with the current circulating strain. Therefore, we evaluated and implemented a new generation rapid molecular influenza/RSV combination test. All of the missed cases from FY14 were detected by the new test. (4) We were notified by the vendor of our Parvovirus PCR test that they were discontinuing the product. In response, we developed, validated and implemented a laboratory-developed test for parvovirus to ensure there was not lapse in clinical service. (5) We noticed that the FDA-approved HCV genotyping test we use had an increased rate of indeterminate calls, particularly for the genotype 1 sub-types. Subtyping genotype 1 has become important in the age of the new protease inhibitors. Since there is only one FDA-approved test, we validated a separate molecular protocol to enable us to sub-type the indeterminate results. Performing this testing in-house lessens the time to result and the laboratory costs associated with sending them to a reference laboratory.

Lastly, we assessed a novel platform for HSV PCR on CSF that would allow us to offer testing 24/7, similar to Enterovirus testing. However, our studies indicated that the new test performed significantly worse than our current test; therefore, it was not implemented. Future studies are aimed at implementing an HSV PCR test for CSF with a shorter time to result, as this has been shown to positively impact patient care and cost savings.

PHLEBOTOMY SERVICES
PETER H. GILLIGAN, Ph.D., DIRECTOR

Phlebotomy Services expenses for the 2015 fiscal year were 3% below budget. Inpatient collection volumes remain stable. The Press-Ganey score mean for the inpatient survey was 89.7% which has remained stable from 2014. A continuing problem for inpatient phlebotomy is frequent re-collections of patients during the early morning draw. This appears to be a systems problem due to EPIC not having cut-off times for routine draws. An Orange Belt project is underway to evaluate and develop solutions to this problem. It is also hoped that the institution of EPIC Beaker will help address this problem.

Outpatient services struggled with orders placed for “clinic collect” not crossing into SOFT. April of 2015 we began filtering outpatient orders so that we would only see those placed for “lab collect.” This eliminated the need for our staff to do as much troubleshooting of the “clinic collect” orders. Regardless, the challenges in the outpatient forum are still creating throughput time delays for patients in the outpatient blood collection areas. March of 2015 was spent validation planning for the EPIC Beaker go-live in February 2016. From May through August 2015, we spent time developing the new Beaker reports that will provide us with sorely needed collection data. All staff have completed LMS EPIC training in preparation for Beaker.

As part of the Carolina Value initiative, individuals involved in the early morning draw are being cross trained to assist in processing specimens in our Outreach Services. These individuals will split their days beginning in Inpatient Phlebotomy and when the morning draw is completed

shifting to Outreach Services. Individuals are also being deployed to offsite clinics to support Phlebotomy needs there.

CORE LABORATORY (Chem/UA/Coag/Hem/Tox/Endo)
CATHERINE A. HAMMETT-STABLER, Ph.D., DIRECTOR

The Core Laboratory services include coagulation, clinical chemistry, hematology, urinalysis, and referral testing. The Laboratory receives ~5000 samples daily performing >5 million tests annually. Referral Testing handles ~200 samples daily (50000 samples annually) for testing performed by external laboratories. All of the Laboratory's service areas continue to seek improvements to improve patient care and safety for staff and patients.

Assays introduced into service include plasma free hemoglobin, alpha-1 antitrypsin, β2-glycoprotein antibodies, alpha fetoprotein, dimeric inhibin A, unconjugated estriol, and βhCG. The last four of these were introduced as the laboratory assumed responsibility of maternal serum quadruple test screening for fetal aneuploidies and open neural tube defects. The smear review procedures were revised to align more closely with ICSH guidelines. Testing for phosphatidylglycerol and the use of Hansel stain for urine eosinophils were discontinued. In addition, the laboratory continues to maintain readiness of testing services for patients under investigation for highly infectious viruses. Teams are making progress towards the implementation of Beaker in early 2016. Instrument validations and evaluations included those for hematology (two Seimen's Advia 2120i's, the instrumentation for the maternal screening program (two Beckman Access immunoassay platforms), and assistance to Hillsborough Hospital in preparing to open their new laboratory. A major interference study was conducted to assess the impact of Sanguinate, a pegylated bovine carboxyhemoglobin, on routine testing in anticipation of several clinical trials taking place in the near future.

Quality performance initiatives for the year included expansion of competency assessment, further expandion of the use of the Bio-Rad Unity program into non-traditional quality management uses, and transition to the use of Individualized Quality Control Programs (IQCP) where appropriate.

The MT1 Advisory Board has continued to broaden educational opportunities for staff across all shifts. Christian Cristobal was named Core's Asistant Administrative Director. Four LEAN-Six Sigma projects were conducted that included two express workouts (Special Hematology Bone Marrow process and Hematology QC Review) and two green belt projects (Referral Testing Utilization and Customer Service in Outpatient Phlebotomy). Sally Lemmond was selected to receive the 2015 Care Award.

Lastly, Core Laboratory staff and directors are actively working through professional organizations (AACC and ASCLS) with respect to several critical pending regulatory issues, including the FDA's proposed *Notification and Medical Device Reporting for Laboratory Developed Tests (LDTs)* and the implementation of IQCP.

HEMATOPATHOLOGY 2014-2015
GEORGE 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 reports for our 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. Our faculty consists of five board certified hematopathologists with a wide range of clinical, administrative, teaching, and research responsibilities.

SPECIAL COAGULATION LABORATORY 2014-2015
MARIAN ROLLINS-RAVAL M.D. MPH, DIRECTOR

The Special Coagulation Laboratory provides access to esoteric testing of hemostasis for both UNC and community physicians. This past year we validated automated beta-2 glycoprotein 1 and anticardiolipin antibody testing, integrating both into our anti-phospholipid antibody panel for which we offer physician interpretaion. The laboratory continues performing special studies testing for equipment 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; Department of Medicine where hematology and coagulation issues on patients seen by the Hem/Onc Consult Service are discussed.

CLINCIAL CYTOGENETICS
KATHLEEN W. RAO, Ph.D., DIRECTOR
KATHLEEN A. KAISER-ROGERS, Ph.D., CO-DIRECTOR

The caseload continued to increase in the Cytogenetics Laboratory through 2014-15 during which over 4000 samples were received and over 6000 tests performed, with increases seen in requests for both conventional karyotyping and FISH assays. The laboratory currently processes approximately 500 constitutional microarray cases annually. At present, the laboratory offers over 40 different interphase FISH assays, most of which are designed to diagnose or monitor specific genetic abnormalities associated with various cancers. The laboratory currently offers three FISH assays that are considered “companion diagnostics” for drugs that target specific molecular features in tumors. A positive result on the HER2 assay (amplification of the ERBB2 locus) is required for a breast cancer patient to qualify for the drug Herceptin, and a positive result for rearrangement of the ALK locus or the ROS1 locus is needed for non-small cell lung cancer patients to qualify for the drug crozotinib. All three assays use FISH technology on paraffin embedded tumor tissue. Overall the laboratory has seen a 40% increase in paraffin FISH testing in the past 2 years, and during the past year has validated additional paraffin FISH assays for the following loci/rearrangements: IGH/BCL2, MYC/CEP8/IGH, and ROS1.

Several of our more interesting cytogenetic projects were reported in poster presentations at the 2015 American College of Medical Genetics Meeting in Salt Lake City, Utah. Dr. Kristy Crooks, who completed her Fellowship in Cytogenetics on June 30, 2015, presented a poster on Familial Craniofacial Microsomia associated with a microdeletion of FGFR3 and FGFR4. Dr. Kaiser-Rogers was senior author on that presentation. Debbie Keelean-Fuller was first author on a poster presentation about a patient with Beckwith-Wiedemann syndrome and a submicroscopic duplication of 11p15.5. Ms Keelean-Fuller is the laboratory Genetic Counselor; Dr. Kaiser Rogers was a co-author on that presentation. Drs. Kaiser-Rogers and Crooks were also co-authors on another poster presentation about a patient diagnosed with mosaicism by cell-free prenatal DNA analysis. Dr. Rao hosted a one and a half day Workshop for the Children's Oncology Group Cytogeneticists in St. Louis, MO in April in her role as Chair of the COG Cytogenetics Committee. Approximately 200 Cytogeneticists from across the USA and Canada attended. During the workshop, Dr. Rao led a "panel of experts" who answered questions from the audience about how to improve their pediatric ALL cytogenetic preparations, and gave an interactive talk in which the audience was asked to resolve several unusual ALL and AML cases entitled "You do the Review!"

The Cytogenetics Laboratory continues to participate in the cancer cooperative groups (Alliance/CALGB and COG). Dr. Rao continues her term as Chair of the COG Cytogenetics Committee and long-time member of the CALGB Cytogenetics Review Committee. Dr. Rao completed a 6-year term as a member of the Board of Directors of the American College of Medical Genetics and Genomics (ACMG) during 2015, with the final two years serving as the Vice President for Laboratory Genetics for the ACMG. She also continues in her second term as a member of the ISCN Committee (International System for Cytogenetic Nomenclature). Dr. Kathleen Kaiser-Rogers is currently serving as a member of the CAP/ACMG Cytogenetics Resource Committee, representing the ACMG.

LABORATORY INFORMATION SERVICES
HERBERT C. WHINNA, M.D., Ph.D., DIRECTOR

After spending most of 2013 and 2014 contributing to UNC HCS's highly successful Epic implantation as a vital ancillary service (even though Epic's LIS package was not implemented, we had to upgrade our third party LIS for ICD-10 readiness as well as ensure valid order/result interfaces with Epic), the LIS team believed they would have breathing space to work on some much needed non-Epic projects for McLendon Clinical Labs. However, early in the 2014-15 academic year, Dr. Whinna was approached by the UNC HCS CIO about how best to implement Epic's Beaker LIS for the Summer 2016 Epic implentations at High Point/Johnston and Pardee/Caldwell afillite hospitals. After evaluating the Epic 2014 vesion of Beaker and discussions with Rex Laboratory leadership, Dr. Whinna recommended that UNC McLendon Clinical Labs and Rex Labs go live with Beaker in the Spring of 2016, which would best allow the enterprise build of Beaker to include the complexities of the largest two hospitals. Following the Epic Core team example, build team membership for Beaker required employees to move from their home departments and become ISD members. One of our four LIS ananlysts had gone to the Epic Core team and in late summer 2014 two more LIS team members went to be part of the Beaker build team with Dr. Whinna serving as Physician Champion for the project. Even

with outside consultant resources being provided by ISD, supporting our legacy LIS systems has been a challenge. It is unclear if/how the McLendon Clinical Labs LIS will go forward in FY 2017.

NEPHROPATHOLOGY LABORATORY 2014-2015
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. More than 1,900 renal specimens (native & transplant biopsies and nephrectomies) from over 200 nephrologists throughout the state, region and the world are analyzed annually. During the 2014 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 6,000 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 40,000 renal specimens, 15,000 serum samples, and 2,000 urine samples. Currently, two pathology post-doctoral fellows from Canada and the US are being trained on how to manage, organize and run a nephropathology laboratory/service. The UNC nephropathology faculty is also heavily engaged in continuous education series enhancing the diagnostic skills of pathologists and nephrologists, such as special symposia organized at the World Congress of Nephrology in Cape Town (South Africa), the Second International Renal Pathology Conference in Tsukuba City (Japan), the Columbia Presbyterian post graduate course on nephropathology in New York, or the 'Nephropathologiekurs Volhard--Fahr' in Mannheim (Germany). 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

The Quality Management Group collaborated with IT to upgrade the McLendon Laboratories website to a Sharepoint based application. They also led several operational efficiency programs within the laboratories that had significant impact on workflow improvement and operating costs. These projects were: Express workouts in cytology to improve distribution and tracking of cytology vials; Special Hematology workflow improvement, and Core Laboratory quality control review. Kaizans were completed in in CPII, Apheresis, and Transfustion Medicine.

Green belt projects were completed in the Platelet Donor Services to optimize platelet collections and Referral Testing to improve test utilization.

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 muscle 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 monthly Neuropathology–Neuroradiology Conference and 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

McLendon Laboratory's Outreach Service operates as the primary interface between the diagnostic testing services of the hospital laboratory and a variety of facilities located throughout North Carolina that require clinical laboratory testing. Some of these are physicians' offices, UNC hospital based clinics, UNC FP clinics, UNCPN clinics, skilled nursing facilities, home health agencies, community hospitals, dialysis centers (transplant patients), and other community services. The service has grown to serve over 112 clients in the research triangle area. Support is provided primarily in the areas of diagnostics, assistance with regulatory compliance and maintenance of point of care competency, training and testing. Forty-three of the serviced providers perform some level of point of care testing (from waived to moderately complex) and four of the clinics are CAP accredited. Last year Outreach served over 115,000 patients ordering and processed well over one-half million tests.

Outreach manages two off-site laboratories; the Ambulatory Care Center and Carolina Point 2 as well as a 24/7 hospital laboratory at UNC Hospitals, Hillsborough Campus. The ACC laboratory supports the operating rooms by providing rapid turn-around for parathyroid hormone testing. The Laboratory at CP2 provides a moderately complex test menu including hematology, general chemistries and urinalysis. Also, the CP2 and Hillsborough Hospital sites also accept walk-in patients providing a much needed service for off-campus specimen collection. Future moderately complex laboratories providing equivalent services to Carolina Point 2 will be located at a medical office building in Pittsboro and a medical office building at the intersection of Weaver Dairy Road and Martin Luther King Blvd. in Chapel Hill.

Outreach has restructured staffing so that the off-site laboratories will have a supervisor available to directly support off-campus laboratories, provide technical and personnel management. The call center and processing areas have been combined with referral testing to form a customer service division within McLendon Clinical Laboratories to better support affiliate testing. This

group will report to a new supervisor position under the Administrative Director. The Business Development and Account Liaison's role has expanded to include supporting those hospital based clinics that are continually relocating off of 101 Manning Drive and into the surrounding community.

This last year the impact of EPIC was substantial as a large number of the facilities and clinics off-campus that Outreach supports moved to an electronic order entry system allowing them to no longer need paper requisitions. With a common electronic order entry system in place as well as an upgraded LIS (Beaker) to go live early 2016, many of the current procedures in the processing area will change and work-flow will be substantially reduced due to specimens arriving already registered, ordered and barcoded.

TRANSPLANT LABORATORIES (HLA and Flow Cytometry) 2014-2015
JOHN L. SCHMITZ, Ph.D., DIRECTOR

The Histocompatibility (HLA) Laboratory implemented new services and process improvements to enhance overall laboratory operations and support of transplant patient care. The laboratory has taken a major step forward in HLA DNA based typing with the validation and implementation of next generation sequencing. This technology offers several advantages over the previous gold standard Sanger-based sequencing. Because of the capacity of this system to carry out clonal sequencing, the rate of follow-up testing to resolve ambiguous allele pairs has decreased from over 50% of loci typed to <3% of loci typed. This will result in significant savings in HLA reagents costs. In addition, the next generation technology also allows for multiplexing of up to 23 patient samples. The laboratory can now type, in one run, up to 23 patient samples for 11 loci. This provides a significant reduction in overall labor compared to Sanger sequencing with associated ambiguity resolution. The second technology that has been implemented is real-time PCR HLA typing. This system provides a low resolution type for 11 loci in 90 minutes. Rapid HLA typing is critical for the process of solid organ allocation.

Process improvements have been validated in the HLA laboratory as well. The laboratory evaluated a magnetic bead lymphocyte isolation system. Compared to the established Ficoll-Hypaque process, magnetic beads provide a more highly purified lymphocyte preparation for use in flow cytometric crossmatch at a minimal increase in cost. Lymphocyte purity affects the sensitivity of the flow crossmatch in a positive fashion providing assurance of the most sensitive method for detection of donor specific antibody for assessment of immunologic compatibility between solid organ donors and recipients.

The Flow Cytometry Laboratory has also implemented new services during this fiscal year. The laboratory implemented the HLA-B57 flow screening assay that it validated in the previous fiscal year. The HLA-B57:01 antigen is a known susceptibility allele for increased risk of hypersensitivity to the anti-retroviral drug abacavir. HIV infected patients are screened for the presence of this antigen prior to use of this drug. This testing has traditionally been done via molecular HLA typing. The flow cytometric assay is rapid and less expensive allowing same day test resulting. The laboratory validated and implemented 2 plasma cell phenotyping combinations to augment the leukemia/lymphoma testing menu. A cell surface combination provides a more specific identification of plasma cells while a second, intracellular staining

combination allow detection of light chain restriction. Finally, the Paroxysmal Nocturnal Hemoglobinuria assay was optimized to detect lower frequencies of PNH clones in patients with this disease.

A process improvement has recently been implemented in the flow cytometry laboratory. The BD Sample Processign Assistant is a sample handling system that automates pipetting for staining of blood samples. Automation of this process allows technologists the ability to conduct other activities while staining is carried out.

Both the Flow Cytometry and HLA Laboratories contribute to the teaching mission of the School of Medicine by hosting of CLS students, Pathology Residents, Laboratory Immunology, and Allergy/Immunology Clinical fellows.

HUMAN PROGENITOR CELL LABORATORY
YARA A. PARK, M.D., DIRECTOR

The Hematopoietic Progenitor Cell (HPC) Lab underwent a Kaizen event this year which optimized our current space as well as creating discrete work areas. With the work areas, multiple HPC products can be processed without the technologists crossing paths to reduce risk of cross-contamination. Additionally, an oxygen monitoring system was installed to ensure the safety of the staff while working with liquid nitrogen. The lab was inspected and re-accredited by CAP and AABB.

CORE AND SERVICE LABORATORIES

MICROSCOPY SERVICES LABORATORY
C. ROBERT BAGNELL, Jr., Ph.D., DIRECTOR FY 2014-2015

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 150 principal investigators from 33 departments and centers at UNC-CH, and other area institutions. The total number of active laboratory clients now stands at greater than 1000.

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

In the past 12 months from July 2014, the light microscope facilities logged 7,479 hours of use, electron microscope facilities logged 2,009 hours of use and the laboratory has performed 407 electron microscopy specimen preparations.

Robert Bagnell co-authored two peer reviewed publications. Victoria Madden co-authored three peer-reviewed publications one of which was in Nature Medicine. Kristen White co-authored one peer-reviewed publication.

Robert Bagnell received the Joe W. Grisham Teaching Award from the Pathology and Laboratory Medicine graduate students and a Star Heel Award from the Department, sponsored by TIAA-CREF.

Victoria Madden received a Star Heel Award from the Department, sponsored by TIAA-CREF.

Robert Bagnell will retire at the end of December 2015. The process to replace him is complete and the new director, Pablo Ariel, will take over on January 1, 2016.

MSL received funding from CFAC in the School of Medicine to add a second transmission electron microscope.

MSL successfully completed a cost recovery center audit by the Office of Research Services.

MSL has worked with OIS to secure on-line mass image storage space, in the near future, utilizing a server specifically for the Department of Pathology and Laboratory Medicine. This will be at no cost, at least initially.

Wi-Fi has been installed in the laboratory.

MSL continues to provide access, at low-cost, to powerful commercial image processing and analysis software and to free image analysis software in the form of macros and plug-ins for the NIH ImageJ platform, and to assist clients in developing imageprocessing algorithims.

LASER CAPTURE MICRODISSECTION CORE FACILITY
C. ROBERT BAGNELL, Jr., Ph.D., DIRECTOR FY 2014-2015

LCM is a method for collecting very small regions of tissue or specific cells for use in various-"omic" analyses. The facility houses a Zeiss PALM LCM, a Leica CM 1850 cryostat, and a ventilation hood for staining and dehydration. Over the past 12 months, the LCM system was utilized a total of 105.5 hours. Beginning in the next academic year, this system will be transferred to the Translational Pathology Laboratory on the 9th floor of Brinkhous-Bullitt building and will no longer be part of the Microscopy Services Laboratory.

TRANSLATIONAL PATHOLOGY LABORATORY (TPL) 2014-2015
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.

In 2015 TPL was awarded an Institutional Development Grant from the NC Biotechnology Center to acquire a new brightfield and fluorescent scanner from Leica Biosystems due to the high demand for scanning, digitization and analysis of multiplex fluorescent slides. The aquision of the Ariol platform is in progress. The Laser Capture Microdissection system (LCM, Zeiss) and Cryostat (Leica) have been moved to TPL from the Microscopy Core Facility and are offered to the UNC users as an equipment service.

During 2014-2015 TPL provided 65,795 ($521,147) service units to 129 investigators (114-UNC and 15-non-UNC): the Lab pulled 3,327 diagnostic slides and FFPE blocks from the UNCH Surgical Pathology archives; provided 26,181 units of histology services (cell line and tissue processing, microtomy), 8,291 TMA cores and tissue scrolls; 3,074 H&E slides; 9,278 chromogenic and fluorescent IHC and ISH slides; developed new staining protocols for 148 antibodies and 108-dual and 4-triple staining protocols; constructed 28 new TMA blocks; and scanned 15,252 slides.
The Core's rapidly growing 55 TB image library (https://tpl-spectrum.med.unc.edu), currently containing 112,140 digital images belonging to 150 PI, is maintained by the IT professionals in the LCCC Bioinformatics Core.

In 2014-15 TPL services were acknowledged in 20 published manuscripts and 7 abstracts and TPL staff were co-authors on 7 (35%) and 3 (42 %) of these respectively.

THE ANIMAL CLINICAL LABORATORY FACILITY
HYUNG-SUK KIM, Ph.D., DIRECTOR

The facility performs blood chemistry tests, urinalysis and hematological tests in animal samples, to characterize physiological and clinical phenotypes in animal models. For clinical tests, 44 different chemicals including general health tests, liver function tests and kidney function tests are currently available with an automated chemical analyzer, Ortho-Clinical Diagnostics Johnson & Johnson's VT350 (purchased in 2008), which can measure one test with 5 - 10 μl sample volume. For hematological tests, the animal blood counter (HESKA's CBC Diff, Veterinary Hematology System) can measure WBC#, Lym%, Lym#, Mon%, Mon#, Gra%, Gra#, RBC#, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV, and 3 distribution curves of WBC, RBC, and PLT with 20μl whole blood sample. Since we have various data accumulated for long period from normal or abnormal values, discussion with us will help to interpret clinical results. More than thirty principal investigators from the UNC-CH campus use these services for their research.

The Luminex MAGPIX system, using magnetic bead-based multi-analytes provides a complete solution for rapid, accurate biomarker quantitation in a variety of sample matrices, has been successfully operated during this fiscal year with more than 20 PIs. This affordable system can perform up to 50 tests simultaneously in a single reaction volume, greatly reducing sample input (10-20ul/sample), reagents and labor while improving productivity. The MILLIPLEX magnetic bead-based multi-analyte panels from EMD Millipore Company (see below kits) enable

researchers to gain more information faster without compromising reliability. Furthermore, an automated microplate washer from BioTek Company can enhance magnetic bead assays by complete plate biomagnetic separation during washing.

We now offer multiplexed biomarker immunoassays for Cytokine/Chemokine detection, metabolism, toxicity, cancer biomarkers, and many other disease states.

THE GENE EXPRESSION FACILITY
HYUNG-SUK KIM, Ph.D., DIRECTOR

The facility provides services for gene expression studies using quantitative real time RT-PCR by ABI 7500 and 7300 Sequence Detection Systems and high throughput preparation of total RNA and genomic DNA by ABI Prism 6100. Currently more than 2,000 disease-related genes have been developed to detect their expression levels mostly in mice, and humans and rats, including various house-keeping genes. In addition, a service for mouse genotyping analysis has been well established with a high throughput performance based on detecting differences of gene copy number, with a less than two-day turn-around time. This genotyping process can exclude many laborious procedures, such as preparation of genomic DNA, PCR, gel running, Southern blot analysis. Currently we are genotyping more than three thousand mice monthly. We can also provide a full service which includes all the steps necessary for designing and synthesizing Taqman probes and primers, preparing RNA samples, and quantitative analysis. Through full service, we are collaborating with many PIs for gene expression researches. More than thirty principal investigators from ten different departments are currently using this research core facility.

THE DNA SYNTHESIZING FACILITY
HYUNG-SUK KIM, Ph.D., DIRECTOR

The facility serves more than 50 investigators from a variety of campus-wide departments in its function of producing oligonucleotides for use in genetic research. Three DNA Synthesizers can produce ten oligonucleotides simultaneously. During this fiscal year, about three thousand oligonucleotides have been synthesized. The fluorescent oligonucleotide TaqMan probes with 5' fluorescein (6-FAM) and 3' quencher tetramethyl rhodamine (TAMRA) are successfully prepared for users of real time RT-PCR.

SPECIAL HONORS AND AWARDS

C. ROBERT BAGNELL, Jr., Ph.D.

Dr. Bagnell received the Joe W. Grisham teaching award from the Pathology and Laboratory Medicine graduate students.

ROSANN A. FARBER, Ph.D.

Dr. Farber was inducted as a Fellow of the American Association for the Advancement of Science.

PETER GILLIGAN, Ph.D.

Dr. Gilligan was appointed to a second term as an editor of Clinical Microbiology Reviews-the microbiology journal with the 2nd highest impact factor.

MARGARET L. GULLEY

Best Doctors in America, Best Doctors Inc. 2014
Research selected for platform presentation at the 2014 Annual Association for Molecular Pathology Meeting

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

2014 Sophomore Basic Science Teaching Award, Awarded by the UNC Medical Class of 2017

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

North American Veterinary Anatomic Pathology Top Resident Award, North Carolina State University, C.L. Davis Foundation, Atlanta, GA

VOLKER NICKELEIT, M.D.

Best Doctors in America, Best Doctors Inc. 2014

JAY S. RAVAL, M.D.

Inductee, UNC School of Medicine Academy of Educators, April 2015

Therapeutic Apheresis Best Abstract Award (co-author; Dr. Yara Park is 1st author), American Society for Apheresis, San Antonio, TX, May 2015

ALISA S. WOLBERG, Ph.D.

17th Biennial Award for Contributions to Hemostasis (BACH), Investigator Recognition Award from the International Society on Thrombosis and Haemostasis, 2015

Top Ten Reviewer, Arteriosclerosis, Thrombosis, and Vascular Biology, 2014

QING ZHANG, Ph.D.

2014 Sidney Kimmel Scholar Award
2015 UNC Junior Faculty Development Award

2015 DOD CDMRP Career Development Award
2015 Susan G. Komen Career Catalyst Award

LEADERSHIP POSITIONS

FRANK C. CHURCH, Ph.D.

Chair, Board of Directors, Mid-Atlantic Affiliate of the American Heart Association

WILLIAM B. COLEMAN, Ph.D.

President-elect, The American Society for Investigative Pathology, July 2014-June 2015
Council, *The American Society for Investigative Pathology*, July 2004-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
North Carolina Congressional Liaison Committee, The Coalition for Life Sciences, April 1999-Present
Medical Research Committee, *Blue Faery: The Adrienne Wilson Liver Cancer Association*, December 2004-Present

GEORGETTE A. DENT, M.D.

Member, Association of American Medical Colleges (AAMC) Electronic Residency Application Service (ERAS) Advisory Committee
Member, Association of American Medical Colleges (AAMC) Careers in Medicine (CiM) Advisory Committee
Member, Americal Society of Hematology (ASH) Committee on Promoting Diversity
Member, Americal Society of Hematology (ASH) Awards Committee

LESLIE G. DODD, M.D.

Member, Surgical Pathology Committee, College of American Pathologists
Member, Program Directors Committee, Americal Society of Cytopathology

DAVID A. EBERHARD, M.D., Ph.D.

Member, Strategy Group, NCI Program for the Assessment of Clinical Cancer Tests (PACCT)

GEORGE FEDORIW, M.D.

Member, Education Committee, Society for Hematopathology
Member, American Society of Clinical Pathology (ASCP) Pathologist Recertification Individualized Self-Assessment Examination (PRISE)
Member, CAP: Hematology and clinical microscopy committee

Member, USCAP: abstract review board
Member, Society for Hematopathology: Education committee

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

Co-chair, Taskforce Name: American College of Laboratory Animal Medicine; Planning Committee, 2013-2016
Co-Chair, International Mock Board Exam Coalition for the American College of Laboratory Animal Medicine Board exam

WILLIAM K. FUNKHOUSER, M.D.

Member, Expert Guidelines Panel, Colon Ca, CAP/AMP/ASCP
Member, Molecular Oncology Committee, CAP
Member, Nominating Committee, Pulmonary Pathology Society
Member, CAP/AMP/ASCO Expert Guidelines Panel, Colorectal Cancer
Member, CAP Molecular Oncology Committee
Section Chair/Moderator, Pulmonary Pathology Society, June 2015

PETER GILLIGAN, Ph.D.

CPC American Society of Microbiology
Chair, Professional Practice Community
Chair, American Society of Microbiology

MARGARET GULLEY, M.D.

Chair, Alliance for Clinical Trials in Oncology, Chair of Laboratory Quality Assurance Standards
Chair, Alliance for Clinical Trials in Oncology, Director, Molecular Reference Laboratories
Member, Alliance for Clinical Trials in Oncology,
Member, Translational Research Program Executive Committee, Sequencing Committee
Member, College of American Pathologists (CAP), Personalized Healthcare Rapid Response Workgroup, Council on Government and Professional Affairs
NCI The Cancer Genome Atlas (TGCA) Stomach-Esophagus Analysis Working Group, Leader of the Viral Pathogen Workgroup

CATHERINE HAMMETT-STABLER, Ph.D.

Member, AACC Government Relations Committee
Member, NACB-AACC Evidence Based Laboratory Medicine Committee
Member, NACB Laboratory Medicine Practice Guideline Committee on Pain Management
Member, CLSI Document Development Committee on Toxicology and Drug Testing in the Clinical Laboratory
Chair, CLSI Document Development Committee on the Laboratory Support of Pain Management Services

TRACY HEENAN, D.V.M.

Chair, CPIA Council member, CPIA Council member Administrators (CPIA)
Chair, Recertification Committee, CCPIA
Ad hoc Consultant, Association for the Assessment and Accreditation for Laboratory Animal Care International (AAALAC)

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

Member, ASIP Program Committee
Member, ASIP Meritorious Awards Committee

J. CHARLES JENNETTE, M.D.

Member, American Society of Nephrology Glomerular Disease Advisory Group
Member, College of American Pathologists (CAP) Renal Pathology Working Group
Member, Glomerular Disease Advisory Group, Americal Society of Nephrology
Member, Advocacy Committee, Association of Pathology Chairs
Member, Practice and Management Committee, Association of Pathology Chairs
Member, EULAR/ACR Working Group on the Definition and Classification of Vasculitis
Member, International Society Nephrology Commission for Global Advancement of Nephrology
Member, International Society of Nephrology Committee on Renal Pathology
Member, Organizing Committee for the 2015 World Congress of Nephrology, Cape Town, South Africa
Member, United States and Canadian Academy of Pathology Ambassador
Member, NIH Glomerular Disease Consortium CureGN Steering Committee
Chair, Pathology Co-Chair, NIH/NIDDK CureGN UM1
Session Co-Chair: Association of Pathology Chairs Annual Meeting, "Tapping the value of senior fellows,"- Boston, MA, July 10, 2014
Member, Renal Pathology Society Nominating and Awards Committee
Member, International Organizing Committee, 17th Vasculitis & ANCA Workshop, London

KATHLEEN KAISER-ROGERS, Ph.D.

Member, College of American Pathologists Cytogenetics Resource Committee
Co-Chair, American College of Medical Genetics Salary Survey Committee (Construction, distribution, and reporting of ACMG Salary Survey Data)

NICHOLE KORPI-STEINER, Ph.D.

Member, CLSI QMS11-A Non-Conforming Event Management Working Group
Member, Executive Committee, AACC Society for Young Clinical Laboratories
Member, Professional Practices in Clinical Chemistry Organizing Committee
Member, International Critical Point of Care Testing Symposium, Organizing Committee
Chair, AACC Point of Care Coordinator Forum Organizing Committee

STEPHANIE P. MATHEWS, M.D.

Member, ASCP PRISE committee
Members, ASCP RISE/FISHE sub-committee

SUSAN J. MAYGARDEN, M.D.

Director, UNC Anatomic and Clinical Pathology Residency Program

MARSHALL MAZEPA, M.D.

Member, HTRS Coagulation Disorders Worshop Committee
Chair, HTRS Medic Team (Task Force)

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

Member, National Cancer Institute, The Genome Atlas (TCGA), Low Grade Glioma Working Group
Member, National Cancer Institute, The Genome Atlas (TCGA), Glioblasastoma versus Low Grade Glioma Working Group
Member, American Association of Neuropathologists Awards Committee
Member, Neuro-oncology Committee, NCI Alliance for Clinical Trials in Oncology
Co-Chair, Neuro-Pathology Committee, NCI Alliance for Clinical Trials in Oncology

MELISSA B. MILLER, Ph.D.

Member, ASM, Committee on Laboratory Practices
Member, AMP, Infectious Disease Leadership Committee
Member, AMP, Clinical Practices Committee
Member, SHEA, 2015 Annual Meeting Planning Committee
Member, PASCV, Public Relations Committee
Chair, PASCV, Public Relations Committee
Chair, NIH, Antimicrobial Resistance Leadership Group, Diagnostics and Devices Subcommittee

VOLKER NICKELEIT, M.D.

Chair, Banff Working Group on Cellular Rejection and Borderline Changes
Chair, Banff Working Group on Polyomavirus Nephropathy
Session Chair, TransPath Symposium & Workshop, moderator: "Clinico-pathologic case correlations in rebal transplant recipients." Part 1 on 12/18/14, Cairo, Egypt.
Session Chair, TransPath Symposium & Workshop, moderator: "Clinico-pathologic case correlations in rebal transplant recipients." Part 2 on 12/19/14, Cairo, Egypt.
Member, Organizing Committee, Renal Pathology Society: 2nd International Workshop in Tsukuba City, Japan (March 2015)
Chair, Banff Working Group on Cellular Rejection and Borderline Changes

Chair, Banff Working Group on Polyomavirus Nephropathy

YARA A. PARK, M.D.

Member, AABB, Annual Meeting Education Program Unit
Member, American Society for Apheresis, HPC Donor Subcommittee
Member, American Society for Apheresis, Clinical Applications Committee
Member, College of American Pathologists, Transfusion Medicine Resource Committee
Member, AABB, Cellular Therapy Product Collection and Clinical Practices Subsection
Member, American Society for Apheresis, Annual Meeting Organizing Committee
Chair, American Society of Aphesism HPD Donor Subcommittee
3+
Scientific Session Co-Chair, Organizing Committee, American Society for Apheresis Annual Meeting

NIRALI M. PATEL, M.D.

Member, AABB, Annual Meeting Education Program Unit
Member, American Society for Apheresis, HPC Donor Subcommittee
Member, American Society for Apheresis, Clinical Applications Committee
Member, College of American Pathologists, Transfusion Medicine Resource Committee
Member, AABB, Cellular Therapy Product Collection and Clinical Practices Subsection
Member, AMA Young Physician Section – Delegate for the College of Americna Pathologists
ClinGen Somatic Work Group
Chair, Membership Affairs Committee, Association for Molecular Pathology
Chair, American Society for Apheresis, Annual Meeting Organizing Committee
Scientific Session Co-Chair, Organizing Committee, American Society for Apheresis Annual Meeting
Chair, American Society for Apheresis, HPC Donor Subcommittee
Session Chair/Moderator, ASFA Annual Meeting, Opening Combined Symposium

JAY S. RAVAL, M.D.

Member, American Society for Apheresis Abstract Committee
Member, American Society for Aphesis Clinical Applications Committee
Member, American Society for Apheresis Extracorporeal Photopheresis Subcommittee
Member, American Society for Aphersis Pediatric Subcommittee
Member, AABB Therapeutic Apheresis Subsection
Chair, AABB Cellular Therapy Advance Event Reporting Initiative
Chair, Thrombotic Microangiopathy Registry Network of North America
Chair, AABB Cellular Therapy Product Collection and Clinical Practices Subsection
Chair, American Society for Apheresis Education Committee
Chair, American Society for Apheresis Practioner Subcommittee
Chair, American Society for Apheresis Journal Club Subcommittee
Chair, American Society for Apheresis Online Resources Subcommittee
Chair, American Society for Aphesis Webinar Subcommittee

MARIAN A. ROLLINS-RAVAL, M.D.

Member, ASFA Clinical Applications Committee
Member, ASFA Coagulation Subcommittee

JOHN SCHMITZ, Ph,D,

Member, ASHI Directors Affairs Committee

HARSHARAN SINGH, M.D.

Renal Pathology International Meeting Committee (Renal Pathology Society)

OLIVER SMITHIES, D. Phil.

Member, Committee member of International Advisory Board for Tohoku Forum for Creativity, Sendei, JAPAN. Attended meeting of December 6, 2014

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

Member, American Association of Neuropathologists, Awards Committee
Member, Awards Committee Member American Association of Neuropathology
Member, Selection Committee for the American Medical Association (AMA) Foundation's 2015 Seed Grant Research Program
Member, Alternate, College of American Pathologists House of Delegates

KAREN WECK-TAYLOR, M.D.

Member, Clinical and Laboratory Standards Institute (CLSI) Consensus Committee on Molecular Methods
Member, Association of Molecular Pathology Nominating Committee, Solid Tumors Subdivision (elected office)
CAP liaison to the American College of Medical Genetics and Genomics (ACMG)
Member council of scientific affairs (CSA), College of American Pathologists
Chair, Biochemical and Molecular Genetics Resource Committee, College of American Pathologists
Chair, Pharmacogenetics Workgroup, College of American Pathologists
Chair, Molecular Pathology and Genomics Cluster, College of American Pathologists

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.
Chair, North Carolina Academy of Laboratory Animal Medicine, Education Committee

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

Co-Chair, Session IX: Mitochondria (Co-Chair Matt Hori). XXXIV Annual Meeting of the North American Section of the International Society for Heart Research 2014. Session XVI Stem Cells. Miami, FL.

Co-Chair, Cell Injury Workshop: Scars and Souvenirs: Inflammation and Fibrosis in the Heart, Lung, and Skin. Tuesday, March 31, 2015. 8:30-11:30 a.m. Experimental Biology 2015, Boston, MA.

Co-Chair: Society of Cardiovascular Pathology Symposium: Protein Misfolding in the Heart: Conformation Cardiomyopathies. Tuesday, March 31, 2015. 2-5 p.m. Experimental Biology 2015, Boston, MA.

Co-Chair: Der Schadenklub (Cell Injury) Scientific Interest Group Poster Discussion and Networking Session. Tuesday, March 31, 2015. 5:30-8:30 p.m. Experimental Biology 2015, Boston, MA.

ALISA S. WOLBERG, Ph.D.

Chair, International Society of Thrombosis and Haemostasis, Scientific Subcommittee on Factor XIII and Fibrinogen

Vice-Chair, American Heart Association (AHA) Arteriosclerosis, Thrombosis and VascularBiologyBrinkhous Award Committee

Member, American Heart Association (AHA) Arteriosclerosis, Thrombosis and Vascular Biology: Spring Program Committee, Women's Leadership Committee

Member, American Society for Hematology (ASH) Scientific Subcommittee on Thrombosis and Vascular Biology

MAIMOONA W. ZARIWALA, Ph.D.

Member, Panelist for the American Thoracic Society (ATS) project committee working toward standardization of clinical criteria for primary ciliary dyskinesia.
Expert Reviewer, Since May 2014: Expert Reviewer for the review article entitled "Primary Ciliary Dyskinesia" for Orphanet (www.orpha.net/) that is "the portal for rare disease and orphan drugs". Orpha number ORPHA244. First update May 2014.
Expert Reviewer, for the report entitled "Primary Ciliary Dyskinesia" for Genetics Home Reference (ghr.nlm.nih.gov) that is a guide to understanding genetic conditions which is a service of the U.S. National Library of Medicine. Last updated June 2, 2014. Currently working with them for another large update (July 2015).

Expert Reviewer, Since Dec. 2007: Expert Reviewer for the report titled "Primary Ciliary Dyskinesia" for NORD (http://www.rarediseases.org/rare-disease-information/) that is a National

Organization for Rare Disorders. Updated Nov. 26, 2008, May 31, 2012, June 4, 2012 and last updated in April 2015.

Member, Assists PCD foundation (patient advocacy group) with research questions on an ad hoc basis.

ELECTED LEADERSHIP POSITIONS

WILLIAM B. COLEMAN, Ph.D.

President, The American Society for Investigative Pathology, July 2015-Present

WILLIAM K. FUNKHOUSER, M.D.

Council Member, ADASP

KATHLEEN KAISER ROGERS, Ph.D.

Member, College of American Pathologists Cytogenetics Resource committee
Chair, American College of Medical Genetics Salary Survey Work Group

WILLIAM K. KAUFMANN, Ph.D.

Councilor, EMGS

NICHOLE KORPI-STEINER, Ph.D.

Member-at-Large, AACC Critical and Point of Care Testing Division
House of Delegates Representative, AACC North Carolina Local Section
Secretary, AACC North Carolina Local Section
Chair, AACC Point of Care Coordinatory Forem Organizing Committee

MELISSA B. MILLER, Ph.D.

Member, Council, Pan American Society of Clinical Virology

VOLKER NICKELEIT, M.D.

Member, Board of Directors/BOA, Renal Pathology Society (RPS): advisor to the president

JUDITH NIELSEN, D.V.M.

President, North Carolina Academy of Laboratory Animal Medicine

NIRALI M. PATEL, M.D.

Board of Directors, Association for Molecular Pathology
Member, AMA Young Physician Section – Delegate for the College of American Pathologist
Chair, Membership Affairs Committee, Association for Molecular Pathology

KATHLEEN W. RAO, Ph.D

Elected Member, International Standing Committee on Human Cytogenetic Nomenclature
Elected Member, Board of Directors of the American College of Medical Genetics
Vice President, Laboratory Genetics, American College of Medical Genetics
Eleced Chair of the Children's Oncology Group Cytogenetics Committee

HARSHARAN SINGH, M.D.

Secretary, Renal Pathology Society

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

Chair/Elect/Chair of the Education Committee, American Society of Investigative Pathology (ASIP), This capacity includes serice on ASIP Council and Program Committees.
Councilor, Society for Cardiovascular Pathology
International Society for Heart Research, North American Section, Cardiac Metabolism Special Interest Group Steering Committee.
Elected Chair-Elect/Chair of the Committee for Career Development, Women and Minorities (CCDWM),
Councilor, North American Section of the International Society for Heart Research (ISHR), Elected December 2014 to 6 year term (2015-2021).

ALISA S. WOLBERG, Ph.D.

Board of Councilors, International Fibrinogen Research Society
Board of Directors, North American Society of Thrombosis and Hemostasis
Vice-Chair, Chair, Gordon Research Conference, Hemostasis

MEMBER OF BOARD OF DIRECTORS OF NATIONAL/INTERNATIONAL ACCREDITATION AGENCY

JESSICA BOOKER

Member, Board of Directors, American Board of Medical Genetics and Genomics

JOHN SCHMITZ, Ph.D.

Member, Board of Directors, American Board of Medical Laboratory Immunology

Member, Board of Directors, American Society for Histocompatibility and Immunogenetics Accreditation Review Board (Program Director).
Member, Board of Directors, American College of Microbiology

MEMBER OF FDA, CDC OR COMPARABLE COMMITTEE

GEORGE FEDORIW, M.D

Member, National Institutes of Health/National Cancer Institute: Clinical Trials Planning: Biomarkers Subcommittee

.

WILLIAM K. FUNKHOUSER, M.D.

Member, Imminology Devices Panel, FDA

MARGARET L. GULLEY, M.D.

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

MELISSA B. MILLER, Ph.D.

Member, FDA, Microbiology Devices Panel
Member, Clinical and Laboratory Standards Institute, Antibicrobial Susceptibility Committee

KATHLEEN W. RAO, Ph.D.

Member, Children's Oncology Group, Infant Leukemia and T-cell ALL Committee
Committee Member, Cancer and Leukemia Group B (CALGB) Cytogenetics Review

KAREN WECK-TAYLOR, M.D.

Member, Molecular and Clinical Genetics Devices Advisory Committee

MEMBER OF NIH OR COMPARABLE STUDY SECTION

WILLIAM B. COLEMAN, Ph.D.

ad hoc External Grant Reviewer for the National Cancer Institute, National Institutes of Health, NIH Innovative Molecular Analysis Technology (IMAT) SBIR Study Section, March 2015
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, March 2015
ad hoc External Grant Reviewer for the Oak Ridge Associated Universities, Florida Department of Health Biomedical Reviews, March 2015

ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, November 2014
ad hoc External Grant Reviewer for the Lung Cancer Research Program of the Department of Defense, Congressionally Directed Medical Research Program, Concept Award Study Section (W81XWH-14-LCRP-CA), October 2014
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, July 2014
ad hoc External Grant Reviewer for the National Cancer Institute, National Institutes of Health, NIH Innovative Molecular Analysis Technology (IMAT) SBIR Study Section, July

WILLIAM K. FUNKHOUSER, M.D.

Member, UNC TRACS Institute study section

WILLIAM K. KAUFMANN, Ph.D.
Member, NCI, Cancer Biology

NOBUYO MAEDA, Ph.D.

Member, NIH, U54 Review for Pilot Centers for Precision Disease Modeling, AdHoc

MELISSA MILLER, Ph.D.

Member, NIH, Antimicrobial Resistance Leadership Group

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

Member, Study Section Reviewer, American Heart Association. Cardiac Biology BCT5.
Member, Ad hoc grant reviewer, Fondazione Telethon.
Member, Ad hoc grant reviewer, L'Agence nationale de la Recherche (ANR)
Member, Special Emphasis Panel, National Institutes of Health Internet Assisted Review (IAM) Panel ZRG1 CB-G 55. SRO: Raya Mandler, PhD. March 10, 2015.
Member, Study Section Co-Chair, American Heart Association. Cardiac Biology BCT3. Dec. 1, 2014-Present.

BERNARD E. WEISSMAN, Ph.D.

Member, NCI, Oncology Models Forum SEP
Member, DOD BCRP, Molecular Biology and Genetics-2

ALISA S. WOLBERG, Ph.D.

Member, Thrombosis BSC2, AHA

QING ZHANG, Ph.D.

Member, NCI, Molecular Oncogeneis (MONC)

Member, DOD, Molecular Biology and Genetics (MGB)
Member, Florida Dept of Health, Bankhead-Coley Cancer Research Program

SERVICE AS EDITOR OR ON EDITORIAL BOARDS

FRANK C. CHURCH, Ph.D.

Editorial Board, Thrombosis

WILLIAM B. COLEMAN, Ph.D

Associate Editor, PLoS ONE (D. Pattinson, Executive Editor), December 2011-Present
Associate Editor, BMC Cancer (M. Norton, Editor-in-Chief), February 2010-Present
Associate Editor, The American Journal of Pathology (K.A. Roth, Editor-in-Chief), October 2014-Present
Editorial Board, Current Pathobiology Reports (S.S. Monga, Editor-in-Chief), May 2012-Present
Editoral Board, Laboratory Investigation (G.P. Siegel, Editor-in-Chief), July 2007-Present
Ediotrial 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 (C.-W. Lam, Editor-in-Chief), August 2000-Present

BRIAN C. COOLEY, Ph.D.

Editorial Board, Heart Research – Open Journal
Editorial Board, Microsurgery
Editorial Board, Plastic and Aesthetic Research

LESLIE G. DODD, M.D.

Editorial Board, Diagnostic Cytopathology,
Editorial Board, Journal of American Society of Cytopathology
Editorial Board, American Journal of Clinical Pathology

WILLIAM K. FUNKHOUSER, M.D.

Editorial Board, Am J Clin Path
Milestone Editor, ASIP Pathways Newsletter
Molecular Path Section Editor, Arch Path Lab Med

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: Evidence for Genomic Applications

CATHERINE HAMMETT-STABLER, Ph.D.

Associate Editor, Clinical Biochemistry
Editorial Board, Practical Laboratory Medicine

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 Roard, American Journal of Kidney Disease
Editorial Board, Journal of Rheumatology
Editorial Board, Laboratory Investigation
Editorial Board, Clinical Nephrology
Editorial Board, Pathology Case Reviews

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

Editor, Scientific World Journal
Editor, Annals of Clinical and Experimental Hypertension

DAVID G. KAUFMAN, M.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 Reports
Editorial Board, National Academy of Clinical Biochemistry, Scientific Shorts, 2015

CHRISTOPHER MACK

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

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.

Editorial Board, Jounal of Nephrology and Hypertension, Austin Publishing Group
Editorial Board, Journal of Nephrology and Urology, Jacobs Publisher
Editorial Board, Journal of Multidisciplinary Pathology, ScienceScript LLC
Editorial Board, Annals of Clinical Cytoology and Pathology
Editorial Board, Journal of Transplantation & Stem Cell Biology (JYSCB), Avens Publishing Group
Editorial Board, World Journal of Transplantation
Editorial Board, Kidney and Blood Pressure Research

YARA A PARK, M.D.

Editorial Board, Journal of Clinical Apheresis

JAY S. RAVAL, M.D.

Editorial Board, Transfusion and Apheresis Science
Editorial Board, Therapeutic Apheresis and Dialysis
Editorial Board, Journal of Extracorporeal Technology
Editorial Board, Internaltional Journal of Blood Transfusion and Immunohematology
Editorial Board, Journal of Blood Disorders and Transfusion

Editorial Board, International Blood Research and Reviews
Editorial Board, Frontiers in Surgery: Reconstruction and Plastic Surgery

JOHN SCHMITZ, Ph.D.

Editorial Board, Clinical and Vaccine Method
Editorial Board, Joural of Immunologic Methods
Section Editor, Current Allergy and Asthma Reports

HARSHARAN K. SINGH, M.D.

Editorial Board, Journal Nephrology and Urology
Editorial Board, International Journal of Nephrology and Kidney Failure

JOAN M. TAYLOR, Ph.D.

Reviewer, Nature Communications
Reviewer, Science Signaling
Reviewer, European Molecular Biology Organization
Reviewer, Molecular and Cellular Biology
Reviewer, Journal of Biological Chemistry
Reviewer, Circulation Research
Reviewer, Cardiovascular Pharmacology
Reviewer, Journal of Molecular and Cellular Cardiology
Reviewer, Journal of Cellular Biochemistry
Reviewer, Journal of Clinical Investigation
Reviewer, Journal of Cell Science
Reviewer, Arterioscler Thromb Vasc Biol and Cell Biology International

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

Editorial Board, Journal of Neuropathology and Experimental Neurology

KAREN WECK-TAYLOR, M.D.

Associate Editor of Molecular Genetics and Pharmacogenomics, Genetics in Medicine
Editorial Board, American Journal of Pathology
Editorial Board, Journal of Molecular Diagnostics
Editorial Board, Expert Review of Molecular Diagnostics

BERNARD E. WEISSMAN, Ph.D.

Editorial Board, Genetics Research International, Journal of Cellular Physiology and Lung Cancer, Targets and Therapy

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

Section Editor, Archives of Pathology & Laboratory Medicine, Clinical Effectiveness and Economics
Editorial Board, Biological Markers and Guided Therapy
Editorial Board, World Journal of Cardiology
Editorial, Expert Opinion of MolecularDiagnostics
Editorial Board, International Journal of Molecular Sciences
Editorial Board, Cardiovascular System
Editorial Board, American Journal of Physiology – Endocrine and Metabolism
Editorial Board, Expert Opinion on Medical Diagnostics
Editorial Board, Cardiovascular Pathology
Editorial Board, Journal of Hypertension: Open Access
Editorial Board, American Journal of Pathology
Editorial Board, Journal of Molecular and Cellular Cardiology
Associate Editorial Board, American Journal of Cardiovascular Disease

ALISA S. WOLBERG, Ph.D.

Member, Editorial Board, Arterioscl, Thromb, Vasc Biol
Review Editorial Board, Frontiers in Hematology, Frontiers in Medicine

INVITED LECTURES AT STATE/NATIONAL AND INTERNATIONAL MEETINGS

WILLIAM B. COLEMAN, Ph.D.

American Society for Investigative Pathology, Annual Meeting, April 2015, Boston, MA
Oral Presentation: "Differential responses to hormone therapy among ER+/PR+/HER2- breast cancers that differentially express the estrogen response signature." R. Sandhu, J.S. Parker, C.K. Anders, and W.B. Coleman (Presenter)
American Society for Investigative Pathology, Annual Meeting, April 2015, Boston, MA
Oral Presentation: "Molecular classification predicts outcome among patients with ER+/PR+/HER2- breast cancers." R. Sandhu, J.S. Parker, C.K. Anders, and W.B. Coleman (Presenter)
Dr. Susan Love Research Foundation 8th International Symposium on the Breast, February 2015, Santa Monica, CA
Oral Presentation: "Contributions of field cancerization to breast cancer heterogeneity." W.B. Coleman (Presenter)

BRIAN C. COOLEY, Ph.D.

The Use of Femoral Vein Electrolytic Injury with Intravital Fluorescence Imaging in Venous Research: American Venous Forum Palm Springs, CA, Feb. 27, 2015
The Use of Femoral Vein Electrolytic Injury in Venous Thrombosis, International Society on Thrombosis and Haemostasis, Toronto, Canada, June 21, 2015

LESLIE G DODD, M.D.

"Introduction to Sarcoma" Campbell University Osteopathic School, Feb 3, 2015
ENT Grand Rounds: "Sarcomas of the Head and Neck region", March 18, 2015

DAVID A. EBERHARD, M.D., Ph.D.

"Evaluating the Clinical Utility of Laboratory Developed Tests (LDTs)", Institute of Medicine National Cancer Policy Forum's Workshop on Policy Issues in the Development and Adoption of Molecularly Targeted Therapies for Cancer, Washington, DC, November 10-11, 2014.

GEORGE FEDORIW, M.D.

American Society of Clinical Pathology Annual Meeting, Nodular Lymphocyte Prominent Hodgkin Lymphoma. Tampa, FL, October 9th, 2014
United States and Canadian Academy of Pathologists Annual Meeting. Hematopathology Specialty Conference. Follicular Lymphoma: the WHO and the where. March 25th, 2015.
Yale University School of Medicine, Department of Laboratory Medicine Grand Rounds. Establishing a Collaborative Lymphoma Research Program in Sub-Saharan Africa. April 22nd, 2015.
University of Michigan Department of Pathology and Laboratory Medicine. Establishing Clinical and Research Collaborations in Sub-Saharan Africa. January 26th, 2015
USCAP Annual Meeting: Hematopathology Proffered Abstract Moderator

PETER GILLIGAN, Ph.D.

NYC Branch ASM, 2014 Sept,
Mountain AHEC Nov 2014
Wake AHEC Dec 2014
How Clinical Microbiologists impact the care of Cystic Fibrosis Patients. SEACM, Richmond, VA March 2015
Laboratory diagnosis of Clostridium difficile infection: Still crazy after all these years. General Meeting of the American Society for Microbiology May 2015
Clostridium difficile Infection: Is Molecular Detection Sufficient? UNC Pathology Continuing Education Course Chapel Hill, NC May 2015

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

What's Your Diagnosis? 7th RTP Rodent Pathology Course, Raleigh, NC 9/22/14

KEVIN E. GREENE, M.D.

Lecture on Pathology of the Liver, 2nd year medical students, Campbell University, February 2014.

MARGARET GULLEY, M.D.

"Molecular Surgical Pathology for the Practicing Pathologist", 9 lectures in a continuing medical education course, American Society for Clinical Pathology, Nashville, May 18-20, 2015.
"Genomic Assays in Alliance Trials", Alliance for Clinical Trials in Oncology Pathology Committee, Rosemont, Nov, 2014
"Implications of TCGA Gastric Cancer Genomic Findings for Alliance Trials", Alliance for Clinical Trials in Oncology GI Committee, Rosemont, Nov, 2014
"Integrated Translational Science Centers", Alliance for Clinical Trials in Oncology Translational Research Program Executive Committee, Rosemont, Nov, 2014
"Quality Assurance Standards for Laboratory Tests", Alliance for Clinical Trials in Oncology Sequencing Committee, Rosemont, Nov, 2014
"Molecular oncology diagnostics in resource-limited settings". First International Conference in Cancer Bioinformatics in Central America, San Salvador, Oct 16, 2014
"Genomic Analysis of Breast Cancer". First International Conference in Cancer Bioinformatics in Central America, San Salvador, Oct 15, 2014
"Molecular Diagnosis", Pathology Update: State-of-the-Art Diagnostic Approaches to Surgical Pathology, 3 lectures in a continuing medical education course, American Society for Clinical Pathology, Chicago, July 24, 2014.
"Genomic assays for breast cancer patient care and for phase 1 trials", UNC Breast Journal Club, Oct 21, 2014.
"Genomic Assays to classify and monitor gastrointestinal cancer", UNC GI Oncology Clinical/Translational Research Seminar, UNC Chapel Hill, Sept 8, 2014.
"New Molecular Oncology Lab Tests", Hematology/Oncology Conference, UNC Chapel Hill, Aug 11, 2014.

CATHERINE HAMMETT-STABLER, Ph.D.

Using the Laboratory – Beyond Toxicology. UNC Psychiatry Residence Conference, February 25, 2015.

TRACY HEENAN, D.V.M.

March 19, 2015, Public Responsibility in Medicine and Research IACUC Conference, Boston, MA; Workshop B13: Program Review and Facility Inspections (Program Oversight Track)

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

"Alpha(1,3)-fucose-dependent leukocyte trafficking modulates inflammation, immunity, and atherosclerosis" American College of Veterinary Pathologists, Marriot Marquis Atlanta, November 9, 2014
Session Chair, Blood Vessel Club, March 29, 2015

J. CHARLES JENNETTE, M.D.

Invited Lecture, American Society of Nephrology Kidney Week, "The Power and Limitations of the Microscope: It Looks like FSGS but Walks like MCD", Philadelphia, November 14, 2014
Invited Lectures (3): International Academy of Pathology Congress, "Atypical Hemolytic Uremic Syndrome", "Systemic and Renal Vasculitis – New Classification" and "UgA Nephropathy", Bangkok, Thailand, October 5th and 6th, 2014.
Visiting Professor: Division of Nephrology, Grand Rounds: "Pathogenesis of ANCA Disease with Clinical and Treatment Correlations", Indiana University School of Medicine, Indianapolis, IN, September 11, 2014.
Invited Lecture (2), Columbia University Postgraduate Review Course: Renal Biopsy in Medical Diseases of the Kidney, "Rapidly Progressive Glomerulonephritis and ANCA" and "IdA Nephropathy and IgA Vasculitis", New York, NY, July 16, 2014
Invited Lectures, Cleveland Clinic Nephrology Update, "From Dropsy to Lipoid Nephrosis to Podocytopathy: Advances in Understanding Minimal Change Disease and Focal Segmental Glomerulosclerosis", Clinicopathologic Case Presentation, Renal Biopsy Case Presentations, Cleveland, OH, May 15-16, 2015
Invited Lecture: 17th International Vasculitis and ANCA Workshop, "The Role of Pathology in the Classification and Diagnosis of ANCA Vasculitis", London, UK, April 21, 2015.
Invited Lecture: 2015 World Congress of Nephrology, "Rapidly Progressive Glomerulonephritis: Influence of Geography on Etiology", Cape Town, South Africa, March 15, 2015.
Invited Lectures (4): 42nd Miami Pediatric Nephrology Seminar and 2nd Renal Pathology Course, IgM-C1Q Nephropathies, MPGN/DDD/C3 Nephropathy, Lupus Nephritis, Anti-GBM, ANCA Glomerulonephritis and Vasculitis, Miami, FL, March 5, 2015.
Visiting Professor: Division of Nephrology, Grand Rounds, "Vasculitis and Glomerulonephritis Caused by Antineutrophil Cytoplasmic Autoantibodies (ANCA): History, Clinical and Pathologic Diagnosis, Pathogenesis and Therapeutic Implications", Brown University School of Medicine, Providence, RI, February 6, 2015.

KATHLEEN KAISER-ROGERS, Ph.D.

"Structural Chromosome Rearrangements" UNC-Greensboro Genetic Counseling students
Problem solving conference, UNC-Greensboro Genetic Counseling students
"Molecular Cytogenetics" UNC-Greensboro Genetic Counseling students
Problem solving conference, UNC-Greensboro Genetic Counseling students

MEHMET KESIMER, Ph.D.

Mucociliary Clarence Consortium PIs meeting Bethesda Maryland June 2-4 2015
Invited speaker, "Airway mucin dynamics in response to infection and inflammation" in Mucins in Health and Disease, Robinson College, Cambridge, UK. July 18 2015.

NICHOLE KORPI-STEINER, Ph.D.

Annual Meeting American Association for Clinical Chemistry, "Point of Care testing dashboard for the lab and end user", Chicago, IL July 2014

Fall Focus, “Point of Care Testing Loulook: Practicing risk is good management”, Gastonia, NC, October 2014
Critical and Point of Care Testing International Symposium, “Comparison of Point of care activated clotting time systems in different clinical settings in a large academic medical school”, San Diego, CA, September 2014.
Urgent, STAT, Super STAT, ASAP! Achieving timely lab testing for the Emergency Department
Cardiac Troponin Testing and Chest Pain Patients: Exploring the Shades of Gray
“Neck-xt” Exploration: Intraoperative Parathyroid Hormone Testing During Surgical Parathyroidectomy
Serum Protein Tumor Marker Assays: A Need for Constant Vigilance
Chemotherapy in the Infusion Clinic: Patient Electrolyte Imbalance Considerations
Is My Patient Vitamin D Deficient? The Rise and Pitfalls of “Sunshine Vitamin” Testing

THOMAS T. LAWTON, M.D.

Georgian-Smith D and Lawton TJ. Post Core Biopsy Management of High Risk Breast Lesions (Instructional Course) ARRS Breast Imaging Symposium, New Orleans, LA; Feb 8, 2015.
Georgian-Smith D and Lawton TJ. Radiology-Pathology Correlation Case Management (Instructional Course) ARRS Annual Meeting, Toronto, Ontario; April 22, 2015.

CHRISTOPHER MACK, Ph.D.

A novel look at RhoA-dependent gene expression in smooth muscle
University of Toronto, Dept of Physiology, November 14, 2014
Epigenetic regulation of vascular smooth muscle differentiation
University of Kentucky, SAHA Cardiovascular Research Center, October 13, 2014

NOBUYO MAEDA, Ph.D.

Tohoku University School of Medicine, Sendai Japan, Dec 8, 2014
Tohoku University, School of Pharmacology, Sendai Japan, Dec 9, 2014
Annual Retreat of the International Graduate Program in "Molecular Biology and Medicine of the Lung" Max Planck Institute, Rauischholzhausen Germany. June 25, 2015.

STEPHANIE MATHEWS, M.D.

UNC ENT Grand Rounds, December 10, 2014

MARSHALL A. MAZEPA, M.D.

Wake Forest University, Department of Physics, “Thrombotic Thrombocytopenic purpura and hemolysis”, Winston-Salem, NC. July 2014
East Carolina University, Department of Nephrology, “Thrombotic Thrombocytopenic purpura: taper vs. no taper in therapeutic plasma exchange”, June 2014

MELISSA B. MILLER, Ph.D.

Association for Molecular Pathology, 2014 Annual Meeting, "Impact of molecular infectious disease testing on clinical outcomes," National Harbor, MD, November 15, 2014.
Southeastern Association for Clinical Microbiology, 36th Annual Meeting, "Molecular infectious disease testing: something for everyone," Durham, NC November 8, 2014
Eastern Pennsylvania Branch of the American Society for Microbiology, 44th Annual Symposium, "Norovirus gastroenteritis and the use of multiplex nucleic acid amplification panels for detection of enteric viruses, parasites and bacteria," Philadelphia, PA, November 7, 2014.
Interscience Conference on Antimicrobial Agents and Chemotherapy (international), 54th Annual Meeting, Meet the Experts Session, "MALDI-ToF Mass Spectrometetry and Laboratory Workflow", Washington, DC, September 7, 2014.
Interscience Conference on Antomicrobial Agents and Chemotherapy (international), 54th Annual Meeting, Workshop, "Introduction to MALDI-ToF Mass Spectrometry and VITEK MS," Washington, DC, September 5, 2014
Becton Dickinson Research Meeting, "Performance of the BD MAX Enteric Bacterial Pathogen Test compared to the Luminex xTAG Gastrointestinal Pathogen Panel," Quebec City, Canada, August 21, 2014
Nanophere Webinar: Each Hour Counts: The Clinical aand Economic Case for Rapid Sepsis Diagnostics, "Impact of the use of Verigene BC-GP on treatment optimization for patients with streptococcal and enterococcal bacteremia," July 17, 2014
UNC School of Nursing, Continuing Education Program: Pediatric Sexual Assault Training, "STI Testing in Pediatrics," November 5, 2014.
Interscience Conference on Antomicrobial Agents and Chemotherapy (international), 54th Annual Meeting, Workshop, MALDI-ToF Mass Spectrometry in Clinical Microbiology: Advanced Applications Workshop (1/2 day), Washington, DC, September 5, 2014
Interscience Conference on Antomicrobial Agents and Chemotherapy (international), 54th Annual Meeting, Workshop, MALDI-ToF Mass Spectrometry in Clinical Microbiology: Fundamentals and Live Demonstration Workshop (1/2 day), Washington, DC, September 5, 2014.
American Society for Microbiology, 115th General Meeting, Symposium, "Beyond verification: optimizing utilization, technology and workflow of molecular multiplex tests," New Orleans, LA, June 1, 2015.
Society for Healthcare Epidemiology of America, Spring 2015 Conference, "Impact of molecular diagnostics on antimicrobial stewardship," Orlando, FL, May 14, 2015.
UNC Department of Pathology and Laboratory Medicine, Annual CME Course, Current Molecular Tests: This is Not Your Parent's Pathology Practice, "Molecular Virology: Faster, Cheaper, Better," May 2, 2015.

VOLKER NICKELEIT, M.D.

TransPath Symposium & Workshop: "Zero hour biopsies and donor diseases." December 2014, Cairo, Egypt
TransPath Symposium & Workshop: "BK nephropathy and post-transplant infections." December 2014, Cairo, Egypt

TransPath Symposium & Workshop: "Clinico-pathologic case correlations in renal transplant recipients." December 2014, Cairo, Egypt
23rd Annual Meeting of the German Transplant Society (DTG): "Polyomavirusnephropathie nach Nierentrabsplantation: Zeit zur Neuorientierung." October 2014, Mannheim, Germany.
Indian Society of Renal & Transplantation Pathology (ISRTP), 10th annual conference: "General aspects of rejection pathology". July 2015, Kochi, India –
Indian Society of Renal & Transplantation Pathology (ISRTP), 10th annual conference: "Infections in renal allografts". July 2015, Kochi, India –
Glomerular-Disease Collaborative Network meeting (GDCN 29th annual conference): "Renal transplant biopsy work-up and diagnosis for private practice nephrologists: a potpourri". April 2015, Chapel Hill, NC, USA
Glomerular-Disease Collaborative Network meeting (GDCN 29th annual conference): "Renal biopsy case discussions with pathologic and clinical correlations". April 2015, Chapel Hill, NC, USA
ISN World Congress of Nephrology: "Renal transplant pathology". March 2015, Cape Town, South Africa –
ISN World Congress of Nephrology: "Renal transplant infections and drug toxicity". March 2015, Cape Town, South Africa –
Second International Renal Pathology Conference (joint meeting of the Renal Pathology Society, the Japanese Renal Pathology Society, and the Japanese Society of Nephrology): "BK-Virus associated nephropathy and classification: an update." March 2015, Tsukuba City, Japan –

YARA A. PARK, M.D.

"Hemolytic Disease of the Fetus and Newborn from the Blood Bank Perspective", North Carolina Association of Blood Bankers Fall Workshop, 2014
"Fundamentals of Transfusion Medicine", University of North Carolina Hospitals, Department of Anesthesia Grand Rounds, 2014
Transfusion Medicine Overview-Part 2, UNC Department of Obstetrics and Gynecology, Division of Maternal Fetal Medicine, 2015

NIRALI PATEL, M.D.

"Massively Parrallel Sequencing in Cancer: Current Applications and Future Directions". UNC Institute of Pharmacogenomics abd Individualized Therapy Seminar: Chapel Hill, NC, October 14, 2014

KATHLEEN W. RAO, Ph.D.

You Do the Review! COG Cytogenetics Workshop April 25, 2015
Meiosis and Mitosis and Cytogenetic Nomenclature; UNCG /Genetic Counseling Pgm

JAY S. RAVAL, M.D.

AABB Product and Collection and Clinical Practices Subsection Online Journal Club, "Allogeneic donor demographic variables that impacts apheresis HPC collection," November

2014
AABB Annual Meeting, “HPC Infusion-Associated Adverse Events”, Philadelphia, PA, October 2014
AABB Annual Meeting, “Getting Aquainted with Platelet-Rich Plasma”, Philadelphia, PA, October 2014
Wake Forest University Department of Physics, “Thrombotic thrombocytopenic purpura and hemolysis”, Winston-Salem, NC, July, 2014
East Carolina Universitym Department of Nephrology, “Thrombotic thrombocytopenic purpura: taper vs. no taper in therapeutic plasma exchange”, June 2014
ASFA Review Session Course, “Donor Apheresis – Technical”, ASFA Annual Meeting, San Antonio, Tx, 5/2015
29th Annual Meeting of the Glomerular Disease Collaborative Network, “Therapeutic Apheresis in Glomerular Disease,” 4/2015
North Carolina School of Science and Mathematics, “Physicians and Ethics: End of Life Issues in Apheresis Medicine,” 2/2015
ASFA Online Journal Club, “Evaluation of donor factors contributing to plateletpheresis yields among apheresis platelet donors”, 1/2015
Department of Dermatology Faculty and Housestaff Continuing Education Series, “Use of Apheresis Technology to Treat Dermatologic Disorders,” 4/2015
Department of Family Medicine, “Introduction to Blood Banking and Transfusion Medicine”, 4/2015
Division of Pediatric Critical Care Medicine Continuing Education Conference, “Tandem Extracorporeal Membrane Oxygenation and Therapeutic Plasma Exchange”, 2/2015
Invited Lecturer, UNC Hospitals Lab Week Continuing Education Conference Series, “Non-Immunohematologic Transfusion Reactions,” 4/2015
Bone Marrow Transplantation Education Series: Beyond the Basics Course, “Therapeutic Plasma Exchange and Extracorporeal Photopheresis in BMT,” 4/2015
Bone Marrow Transplantation Education Series: Beyond the Basics Course, “Stem Cell Collection: Focus on Apheresis,” 4/2015

JOHN SCHMITZ, Ph.D.

American Society for Histocompatibility and Immunogenetics Annual Meeting Inspectors Training Workshop. “Feedback for Inspectors on the ASHI Accreditation Process”. Denver, CO. October 20, 2014.
Webinar for CLIAC Advisory Working Group on Virtual Crossmatching. “Virtual Crossmatching” August 18, 2014.
American society for Histocompatibility and Immunogenetics Regional Workshop, May 1, 2015, San Antonio, TX. “What to expect when you’re expected an ASHI inspection”.
American society for Histocompatibility and Immunogenetics Regional Workshop, May 2, 2015, San Antonio, TX. “Virtual Crossmach: Where do we stand”.
American society for Histocompatibility and Immunogenetics Regional Workshop, June 19, 2015. Philadelphia, PA,“What to expect when you’re expected an ASHI inspection”.
American society for Histocompatibility and Immunogenetics Regional Workshop, June 20, 2015. Philadelphia, PA, “Virtual Crossmach: Where do we stand”.

HARSHARAN SINGH, M.D.

Case Presentation in: Renal Biopsy: Clinical Correlations Conference. The American Society of Nephology Annual Meeting, November 11-16, 2014. Philadelphia, PA

Acute Tubular Injury. World Congress of Nephrology. March 13-17, 2015, Cape Town, South Africa.
Electron Microscopy in Transplant Pathology. 2nd International Renal Pathology Meeting, March 3-7, 2015 Tsukuba City, Japan.
Renal Transplantation Case presentation. 2nd International Renal Pathology Meeting, March 3-7, 2015 Tsukuba City, Japan.
Session Chair, Renal Transplant Pathology Session. World Congress of Nephrology. March 13-17, 2015, Cape Town, South Africa.
Session Chair, Renal Transplant Pathology Session. 2nd International Renal Pathology Meeting, March 3-7, 2015 Tsukuba City, Japan.

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

UNC 2015 CME Event "Current Molecular Tests: This is Not your Parent's Pathology Practice" May 2nd, 2015. "Glioma Genetics: Adieu to the Microscope?
Pathology of Epilepsy: UNC Department of Neurology 5/12/2015
Eye pathology: To Residents in UNC Department of Ophthalmology 5/27/2015

KAREN WECK-TAYLOR, M.D.

"Laboratory Performance Revealed: 10 years of CAP Molecular Genetics Proficiency Testing Surveys," Association for Molecular Pathology Annual Meeting, Washington, DC, November 13, 2014.
"Diagnosing Genetic Diseases Using Exome Sequencing," Personized Diagnostics Virtual Conference, American Association of Clinical Chemistry, October 29, 2014.
"NextGen Sequencing: clinical applications and research discovery at UNC," Duke/UNC Melanoma Retreat, David Thomas Center, Durham, NC September 12, 2014.
"Clinical genomic-based research at UNC," UNC Hematology/Oncology Scientific Retreat, Rizzo Center, Chapel Hill, NC, September 5, 2014
Transplant Educational Conference Series, May 13, 2015. "Understanding HLA Antigens, Alleles and Epitopes"
"Pharmacogenomics" Duke University Dept of Genetics, April 8, 2015

DAVID C. WILLIAMS, M.D

Presented "Myeloid Neoplasia: Integrated Histo- Immuno-Genomics" at Current Molecular Tests: This is Not Your Parent's Patholopgy Practice, Chapel Hill, NC, May 2, 2015

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

UNC Pathology and Laboratory Medicine Grand Rounds. Novel therapeutic approaches targeting fibrosis in post myocardial infarction remodeling and heart failure. November 20, 2014
AHA Scientific Sessions Annual Meeting. The ibiquitin proteasome system in the heart. Session Title: The Alzheimer's Theory of Heart Failure. Chicago, IL, November 18, 2014

Case Western Department of Physiology & Biophysics Seminar. The role of Muscle Ring Finger (MuRF) proteins in the regulation of diabetic cardiomyopathy and metabolism in vivo. Cleveland, OH. November 25, 2014.
2014 Postdoctoral Preparation Institute: Career Transitions. Advancing Biomedical Research Workforce Diversity. Funded by NIGMS. Bethesda Mariott Hotel and Conference Center, Bethesda, MD. Talk entitled: Notiating the Job Offer: 15 Things to Consider. June 6, 2014
XXXIV Annual Meeting of the North Ameican Section of the International Society for Heart Research 2014. Thursday, May 15, 2014 Session XVI Stem Cells. Talk entitled: Role of Cardiac Muscle Ring Finger-1(MuRF1), MuRF2, and MuRF3 in Regulating PPAR transcription factors in vivo and Non-targeted analysis of novel and redundant metabolomics changes. Miami, FL.
ISHR-North American Section Meeting. June 9, 2015 at 2:40 p.m. Title: "Muscle Ring Finger-1 (MuRF1) Enhances Autophagic Flux In vivo". Session: IX: Proteotoxicity & Heart Failure. Seattle, WA.
Experimental Biology 2015, Cell Injury Workshop: Scars and Souvenirs: Inflammation and Fibrosis in the Heart, Lung, and Skin. Scars on my Heart: Understanding the Molecular Pathogenesis of Cardiac Fibrosis as a Therapeutic Target. Tuesday, March 31, 2015. Experimental Biology 2015, Boston, MA.
East Carolina University, Department of Physiology Seminar Series. Protein Quality Control in Heart Failure: Lessons from Bag3-Related Myofibrillar Cardiomyopathy and Diabetic Cardiomyopathy. Greenville, NC. May 28, 2015.
Wake Forest University Baptist Medical Center, Critical Care Medicine Seminar. Cardiac Muscle Ring Finger-2 in the regulation of diabetic cardiomyopathy and metabolism in vivo. Winston-Salem, NC. December 19, 2014.

ALISA S. WOLBERG, Ph.D.

"Fibrinogen, factor XIII, and red blood cells: novel mechanisms in thrombosis", XXV Congress of International Society on Thrombosis and Haemostasis, State of the Art Lecture, Toronto, Canada, June 2015.
"Novel insight into the role of fibrin(ogen)", 61st Meeting of the International Society on Thrombosis and Haemostasis, Scientific Subcommittee on Animal Models of Thrombosis, Toronta, Canada, June 2015.
"Red cell thrombi", 12th FASEB: Proteases in Hemostasis and Vascular Biology, Keystone, CO, June 2015
"Fibrinogen, factor XIII and red blood cells in venous thrombosis", Gordon Research Conference on Hemostasis, Waterville Valley, NH, June 2014
"Factor XIII as a determinant of thrombosis", 60th Meeting of International Society on Thrombosis and Haemostasis, Scientific Subcommittee on Animal Models of Thrombosis, Milwaukee, WI, June 2014.

DIRECTOR OF CONTINUING EDUCATION COURSES

JESSICA BOOKER, Ph.D.

"Combining CNV with NGS Identifies New Gene Associated with Developmental Delay" Current Topics in Medical and Human Genetics Conference, 10/16/14
"Far From the Tree", Current Topics in Medical and Human Genetics Conference, 6/12/14

LESLIE G. DODD, M.D.

"Update to Sarcoma Classification: How do we signout Sarcoma now?" American Society of Cytopathology Workshop, November 17, 2014

GEORGE FEDORIW, M.D.

"Introduction to Hematopathology: Hem/Onc physician Extenders" November 12, 2014
Practical and Effective Hematopathology: ASCP Educational Course (May 2-4th)

WILLIAM K. FUNKHOUSER, M.D.

UNC CME Course, May 2015
Director, ASCP Educational Course, Molecular Surgical Pathology, May 18-20, 2015

KEVIN E. GREENE, M.D.

Grand Rounds, Pathogenomics of Gastric Cancer, tandem presentation with Peggy Gulley, June 4, 2015.

MARGARET L. GULLEY, M.D.

"Molecular Diagnosis", Pathology Update: State-of-the-Art Diagnostic Approaches to Surgical Pathology, American Society for Clinical Pathology, Chicago, July 24, 2014.
Course Director, Annual UNC Department of Pathology and Laboratory Medicine Symposium, Chapel Hill NC, May 2, 2015.

CATHERINE A. HAMMETT-STABLER, Ph.D.

Director, Urine Drug Testing in the Addiction Setting. Addiction Medicine Conference. The Governor's Institute on Substance Abuse. Asheville, NC. April 19-10, 2015. (2 sessions)

J. CHARLES JENNETTE, M.D.

Course Co-Director: ASN Kidney Week Pre-Course: Fundamentals of Renal Pathology, Lectures: "Anatomy, Histology and Pathologic Evaluation of the Kidney," "Crescentic Glomerulonephritis," "Vasculitides," and "Diabetic Nephropathy," Philadelphia, PA, November 11-12, 2014.

Course Director and Moderator, 2015 World Congress of Nephrology, "Renal Pathology Primer", Cape Towm, South Africa, March 13, 2015
Moderator, Introduction to Renal Pathology, 42nd Miami Pediatric Nephrology Seminar and 2nd Renal Pathology Course, Miami, FL, March 5, 2015.

NICHOLE KORPI-STEINER, Ph.D.

AACC Professional Practice in Clinical Chemistry: Supporting Patient Care from Cradle to Grave, Philadelphia, 4/26/15-4/30/15
Moderator, AACC High Risk Pregnancy & Delivery session, AACCProfessional Practice in Clinical Chemistry, Philadelphia, PA. April 26, 2015
Moderator, Neonatal and Pediatric Testing session, AACC Professional Practice in Clinical Chemistry, Philadelphia, PA. April 26, 2015
Moderator, Outpatient Care: Pain Management, AACC Professional Practice in Clinical Chemistry, Philadelphia, PA. April 26, 2015

THOMAS T. LAWTON, M.D.

ASC G, Farshid G, Lawton TJ. Ten Diagnoses in Breast Pathology You Cannot Afford to Miss (Short Course) USCAP 104th Annual Meeting, Boston, MA; March 27, 2015

MELISSA B. MILLER, Ph.D.

Co-Chair, Molecular Virology Workshop, 22nd Annual Workshop, Pan American Society for Clinical Virology, Daytona Beach, FL, April 25, 2015 (6h)

VINCENT J. MOYLAN, JR.

Guest Lecturer: "The Techniques of Brain Removal with Forensic Correlation."
Department of Physician Assistant Studies,ELON University, Master of Science, Physician Assistant Studies, PA S 510, Basic Science/Neuroanatomy,February 16, 2015

VOLKER NICKELEIT, M.D.

Session Chair, Second International Renal Pathology Conference (joint meeting of the Renal Pathology Society, the Japanese Renal Pathology Society, and the Japanese Society of Nephrology). March 2015, Tsukuba City, Japan (moderator and 'expert round table panelist')
Session Chair, Indian Society of Renal & Transplantation Pathology (ISRTP), 10th annual conference: moderator- "slide seminar on allograft pathology," July 2015, Kochi, India
Nephropathology laboratory staff CME, 1/27, 8.30-9.30: Pathology of common renal diseases visited at the multi headed scope.

YARA A PARK, M.D.

DPLM Grand Rounds, "Pursuit of Prognostic Markers in TTP," February 2015

NIRALI PATEL, M.D.

Massively Parallel Sequencing: The Genomic Microscope. At UNC Department of Pathology and Laboratory Medicine: Current Molecular Tests: This is Not Your Parent's Pathology Practice. Chapel Hill, NC. May 2, 2015.
Current Topics in Medical and Human Genetics: January 29, 2015 and May 28, 2015.

LI QIAN, Ph.D.

American Society of Nephrology (ASN) Kidney Week 2015, San Diego, CA
Session "Uremic cardiomyopathy: what we know and where we are going?"
Mending a broken heart by reprogramming fibroblasts.
International Society for Heart Research (ISHR) Annual Meeting of the North American Section, "Heart Failure: 21st Century Research and Therapeutics," Seattle, WA
Barriers to Direct Cardiac Reprogramming
22nd Weinstein Cardiovascular Development Conference, Boston, MA
Controversies and trends in cardiac development (speaker and panelist)
American College of Cardiology (ACC) 64th Annual Scientific Session, San Diego, CA
Cardiac Reprogramming: from mouse to human
Keystone Symposium on Molecular and Cellular Biology: Heart Disease and Regeneration Insights from Development, Copper Mountain, Colorado, USA
Stoichiometry of Gata4, Mef2c and Tbx5 Influences the Efficiency and Quality of Icm Reprogramming

KATHLEEN W. RAO, Ph.D.

Children's Oncology Group Cytogenetic Workshop, ST. Louis MO, Apr 24-25, 2015

JAY S. RAVAL, M.D.

Course Co-Director, AABB Annual Meeting, "HPC Infusion Adverse Event Reporting", Philadelphia, PA, October 2014
UNC DPLM Grand Rounds, "The Pursuit of Prognostic Markers in Thrombotic Thrombocytopenic Purpura," 2/2015
Lecturer, UNC Hospitals Apheresis Nursing Staff, "Therapeutic Plasma Exchange for Kidney Diseases," 5/2015
Lecturer, UNC Hospitals, Hematopoietic Progenitor Cell Laboratory Staff, "HPC Collection," 1/2015

JOHN L. SCHMITZ, Ph.D.

Clinical Immunology Lunch and Learn. February 3, 2015: "Selection of Bone Marrow Transplant Donors"
Red Cross Lunch and Learn: "BMT Donor Selection"
Red Cross Lunch and Learn: "Virtual Crossmatching"

Red Cross Lunch and Learn, May 12, 2015: "HLA Epitopes in Transplant and Transfusion"

OLIVER SMITHIES, D.Phil.

Speaker, 64th Lindau Nobel Laureate Meeting, Lindau, GERMANY, "Where do ideas come from?" June 29 – July 4, 2014 (speaking on July 3, 2014)
Lecture, Le due Culture, at Biogem, Ariano Irpino, ITALY, "From gels to genes: 60 years as a scientist," September 3 – September 10, 2014
Speaker at Colloquium, Jozef Stefan Institute, University of Ljubljana, SLOVENIA, "Where do ideas come from?" September 10, 2014
Speaker at Google, San Francisco, CA, "Where do ideas come from?" October 2, 2014
Speaker at Genentech, San Francisco, CA, "Where do ideas come from?" October 3, 2014
Speaker at Tohoku Forum for Creativity, "Where do ideas come from?" December 2 -11, 2014
Speaker at 2014/15 Annual Pharmacology Graduate Student Invited Speaker event at Dalhousie University, Halifax, NOVA SCOTIA, "Where do ideas come from?" May 4 – 6, 2015
Keynote speaker at the Max Planck Institute Annual Retreat, held at Rauischholzhausen Castle, GERMANY, June 23 - 25, 2015

LEIGH B. THORNE, M.D.

Molecular Journal Club, December 9, 2014

KAREN E. WECK, M.D.

"Whole Exome Sequencing: Opening the floodgates", UNC Pathology CME event, May 2, 2015
Molecular Pathology Journal Club, Jan 13, 2015
Genetics Journal Club, April 16, 2015
Department of Pathology Grand Rounds, May 7, 2015

ALISA S. WOLBERG, Ph.D.

Biogen Idec. "Fibrinogen, factor XIII and red blood cells in venous thrombosis: novel mechanisms, novel therapeutic targets?" Boston, MA, April, 2015
University of North Carolina, Department of Pathology and Laboratory Medicine Grand Rounds, "Venous Thromboembolism: questions and answers from the clinic and the bench," (CME) Chapel Hill, NC, March 19, 2015
Research Triangle Institute Seminar Program, "Fibrinogen, factor XIII and red blood cells in venous thrombosis: novel mechanisms, novel therapeutic targets?" Research Triangle Park, NC, August 28, 2014

MAIMOONA A. ZARIWALA, Ph.D.

Evolving Genetic Picture in PCD, PCD foundation conference: San Francisco, CA, September 18, 2014
Genetics of PCD (to be presented), PCD foundation conference: Minneapolis, MN, 8/27/2015

QING ZHANG, Ph.D.

Keystone Hypoxia, Study of EglN2 prolyl hydroxylase in breast cancer, Dublin, Ireland, May 15, 2015

SERVICE ON UNC AND UNCH COMMITTEE

JAMES TODD AUMAN, Ph.D.

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

DWIGHT A. BELLINGER, D.V.M., Ph.D.

Member, Institutional Biosafety Committee
Member, Institutional Animal Care and Use Committee

JESSICA K. BOOKER, Ph.D.

Chair, Credentials Committee

FRANK C. CHURCH, Ph.D.

Committee member, School of Medicine Admissions Committee
Member, TEC Task Force on Curriculum Delivery Committee Member
Member, TEC Task Force to Develop Assessment and Remediation Plan Committee Member
Member, TEC Task Force to Develop Weekly Foundation Phase Schedule Committee Member
Member, TEC SOM Foundation Phase Curriculum Development Committee Member
Member, "Teaching Champions" Medical Education Committee
Member, "Carolina 101" faculty for visiting high school students/family to visit UNC-CH:
Member, Morehead-Cain Foundation, Central Selection Committee
Member, University Research Council (URC) Proposal Reviewer
Member, Curriculum Committee for Medical School Year 2 (CC2)

WILLIAM B. COLEMAN, Ph.D.

Member, BBSP Pathogenesis Admissions Committee, November 2012-October 2014
Member, BBSP NCGC Admissions Committee, November 2014-October 2015,
Member, Executive Committee for the Pathobiology and Translational Science PhD Program

GEORGETTE A. DENT, M.D.

Member, First Year Course Directors Committee
Member, Second Year Course Directors Committee
Member, Third and Fourth Year Course Directors Committee
Member, Student Promotions Committee

Member, Curriculum Operations Committee
Member, Translational Education at Carolina (TEC) Foundation Phase Committee
Member, TEC Application Phase Committee
Chair, Hospital Infection Control Committee

DAVID A. EBERHARD, M.D., Ph.D.

Member, UNC Tissue Procurement Facility (TPF) External Advisory Committee
Member, UNC Heme-Onc Tissue Procurement Committee (HOTPC)
Member, UNC Committee for the Communication of Genetic Research Results (CCGR)

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, Hematology/Oncology tissue procurement committee

WILLIAM K. FUNKHOUSER, Jr., M.D.

Member, Clinical Advisory Committee, DPLM

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

Member, Animal Program Master Planning, Executive Committee, 2015
Member, UNC Search Committee for Assistant Dean, SOM Planning Office, 2014-15
Member, UNC Search Committee for Director of the Office of Industry Contracting, 2014-15
Member, UNC Search Committee for Facilities Engineering Director, 2015
Member, Institutional Animal Care and Use Committee (IACUC), 2015
Member, Institutional Biosafety Committee (IBC), 2015
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
Member, National Gnotobiotic Rodent Resource Center, Advisory Board Member, 2014-present
Member, National Gnotobiotic Rodent Resource Center, Executive Committee, 2014-present
Member, Mutant Mouse Regional Resource Center-UNC; Internal Advisory Committee, 2014-present

PETER GILLIGAN, Ph.D.

Member, Faculty Council Committee
Member, MD/PhD Advisory Committee
Member, UNC Transportation Committee
Chair, Admission School of Medicine Committee
Member, Post-tenure review committee for the School of Medicine.

KEVIN GREENE, M.D.

Member, 2nd Year Curriculum Committee (CC2)
Member, Cytology Clinical Competency Committee

MARGARET GULLEY, M.D.

Member, UNC School of Medicine Post-tenure review committee
Member, TraCS (CTSA) Translational Advancements Resource committee
Member, UNC Pathology Residency Education Committee, Director of Molecular Pathology
Member, Executive Directors Advisory Group, UNCH McLendon Clinical Laboratories
Member, Tenure and Promotion Committees (ad hoc), Dept of Pathology and Laboratory Medicine
Member, UNC Lineberger Comprehensive Cancer Center and Univ Cancer Research Fund Clinical Genetics Advisory Group

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

Member, Medical School TEC Foundations Committee
Member, 2nd Year Curriculum Committee (Medical School)
Member, Dental School Curriculum Committee
Member, Dental School 1st Year Teaching Committee
Member, Assessment Revision Committee (Dental School)

CATHERINE HAMMETT-STABLER, Ph.D.

Member, Health Sciences Advisory Committee on Appointments and Promotions
Member, School of Medicine 2nd year Course Directors, 2004-present
Chair, School of Medicine Full Professor Appointment, Promotion, Tenure Committee, 2013-2015

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 Associate Veterinary Director,
Division of Laboratory Animal Medicine (DLAM)
Member, Vendor Request for Proposal DLAM Master Plan
Member, Vice Chancellor for Research (VCR) Compliance Task Force
Chair, IACUC/DLAM Leadership Committee
Founder and Co-Chair, Network of Laboratory Animal Coordinator [NLAC] Steering Committee

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

Member, BBSP Executive Committee
Member, Department of Pathology and Laboratory Medicine Research Advisory Committee

J. CHARLES JENNETTE, M.D.

Member, UNC Healthcare System Exective 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, UNCHC Clinical Budget Reduction Committee
Member, Carolina Value Labor Solution and Implementation Team
Member, Learning Environment and Patient Care Experience, UNC-HC Committee
Member, Clinical Chairs' Committee

DAVID G. KAUFMAN, M.D.

Chair, UNC, Radiation Safety Committee
Chair, SOM, Jefferson Pilot and Woods award Selection Committee

WILLIAM K. KAUFMANN, PH.D.

Chair, Research Advisory Committee

MEHMET KESIMER, Ph.D.

Member, UNC Committee on Scholarship, Awards, and Student Aid
Member, Prelim Exam Committee, Department of Pathology and Internal 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
Chair, IRB, IACUC, SOM, Admissions Committee

JIANDONG LIU, Ph.D.

Member, Search Committee, Faculty Director of Microscopy Research Core Laboratory, DPLM
Member, Search Committee, Research Assistant Professor Position, DPLM

CHRISTOPHER MACK, Ph.D.

Member, UNC McAlister Heart Institute Executive Committee
Member, IVB Training Grant Executive Committee
Chair, IVB Training Grant Selection Committee

NOBUYO MAEDA, Ph.D.

Member, Pathology Research Advisory Committee
Member, DLAM Advisory Committee
Member, DLAM Faculty Recruitment Committee

SUSAN MAYGARDEN, M.D.

Member, GME Committee
Member. UNC Pathology Residency

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

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

MELISSA B. MILLER, Ph.D.

Member, Anti-infective Subcommittee of the Pharmacy and Therapeutics Committee, UNC Health Care
Member, Hospital Infection Control Committee, UNC Health Care

Chair, School of Medicine, Associate Professor Appointments, Promotions and Tenure Committee
Member, School of Medicine, Associate Professor Appointments, Promotions and Tenure Committee
Member, School of Medicine, Health Sciences Advisory Committee

JUDITH NIELSEN, D.V.M.

Member, IACUC
Member, IACUC Animal Concern Subcommittee
Member, Lab Animal Enrichment Committee
Member, NLAC Steering Committee
Member, DLAM Leadership Committee
Member, DLAM Advisory Committee
Member, LCCC Animal Studies Core Advisory Committee
Chair, Search Committee for Assoc. Professor Pathology and Laboratory Medicine/Senior Veterinarian, Assoc. Director, DLAM

SIOBHAN O'CONNOR, M.D.

Member, AP/CP Residency Program Clinical Competency Committee

YARA A. PARK, M.D.

Chair, Pharmacy and Therapeutics Committee

LI QIAN, Ph.D.

Member, UNC Core Facility Advocacy Committee (CFAC)
Member, Department Graduate Student Education Committee
Member, Department Graduate Student Executive Committee
Member, UNC School of Medicine Assistant Professor Advisory Committee (APAC)
Member, Department Research Advisory Committee (RAC)
Member, Organizing Committee, UNC IVB/MNI Annual Symposium
Member, Co-Chair, Organizing Committee, MHI Seminar Series
Member, Faculty Speaker/Interviewer, BBSP Graduate Student Recruitment
Member, Faculty Mentoring Committee, UNC Human Pluripotent Stem Cell Core
Member, Search Committee for UNC CBP/MHI Faculty
Member, Search Committee for NCSU/UNC Regenerative Medicine Faculty
Chair, Pathology Preliminary Examination Committee

KATHLEEN W. RAO, Ph.D.

Member, Education Committee for MS Curriculum
Member, Curriculum Operations Committee

Member, Block 9 course Committee
Member, Executive Committee of the SOM Academy of Educators
Co-Chair, MS Second Year Curriculum Committee

JAY S. RAVAL, M.D.

Member, AP/CP Residency Program Clinical Competency Committee
Member, UNC Honor Council
Member, Living Donor Kidney Transplant Committee
Member, Pulmonary Transplant Committee
Member, Bone Marrow/Hematopoietic Progenitor Cell Transplant QA/QI Committee
Member, Transfusion Medicine Service and Transplant Service Laboratories QA Committee
Member, Sicle Cell Disease Patient Committee
Member, Faculty Information Technology Advisory Panel
Member, Non-Trama Massive Transfusion Protocol
Chair/Co-Director, Clinical Pathology/Laboratory Medicine Housestaff Conference
Chair, Transfusion Medicine Fellowship Program Clinical Compency Committee

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

Member, TMS/Immunology Quality Improvement Committee

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

CAP Inspector, The University of Pennsylvania, June 28-30, 2015

SCOTT V. SMITH, M.D.

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

JOAN TAYLOR, Ph.D.

Member, Core Facilities Advisory Committee
Member, Animal Models Core Oversight Committee
Member, Department of Pathology, Research Advisory Committee
Member, School of Medicine Strategic Planning Committee (SP3)
Member, School of Medicine Imaging Task Force
Member, McAllister Heart Institute, Executive Committee
Member, McAllister Heart Institute, Leadership Committee
Member, School of Medicine Conflict of Interest Committee
Chair, Search Committee Faculty Director for MSL

MICHAEL D. TOPAL, Ph.D.

Member, Vice Dean of Research Management Team
Member, Imaging Task Force

Chair, UNC Core Facilities Advocacy Committee

CYRUS VAZIRI, Ph.D.

Member, Research Advisory Committee (Dept. of Pathology)
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, Grand Rounds Organizing Committee
Chair, Research Misconduct Inquiry Committee (Chair)
Chair, Junior Faculty Mentoring Committee for Dr. Scott Williams (Chair)

KAREN WECK-TAYLOR, M.D.

Member, Department of Pathology Research Advisory Committee
Member, NC TraCS Institute/CTSA Translational Advancements Resource Committee

BERNARD E. WEISSMAN, Ph.D.

Member, MSL Director Search Committee, DPLM
Member, Executive Committee, Curriculum in Toxicology

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

Member, UNCH POC Committee,
Member, UNCH Transfusion Committee
Member, UNCH MSEC
Member, UNCH Credentials Committee
Member, EPIC Committee
Member, ELIP Committee

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

Member, Institutional Animal Care and Use Committee (IACUC)

DAVID C. WILLIAMS, M.D.

Member, UNCSeq Molecular Tumor Board

ALISA S. WOLBERG, Ph.D.

Member, UNC Thrombosis and Hemostasis Program Seminar Series
Member, McAlister Heart Institute Executive Committee

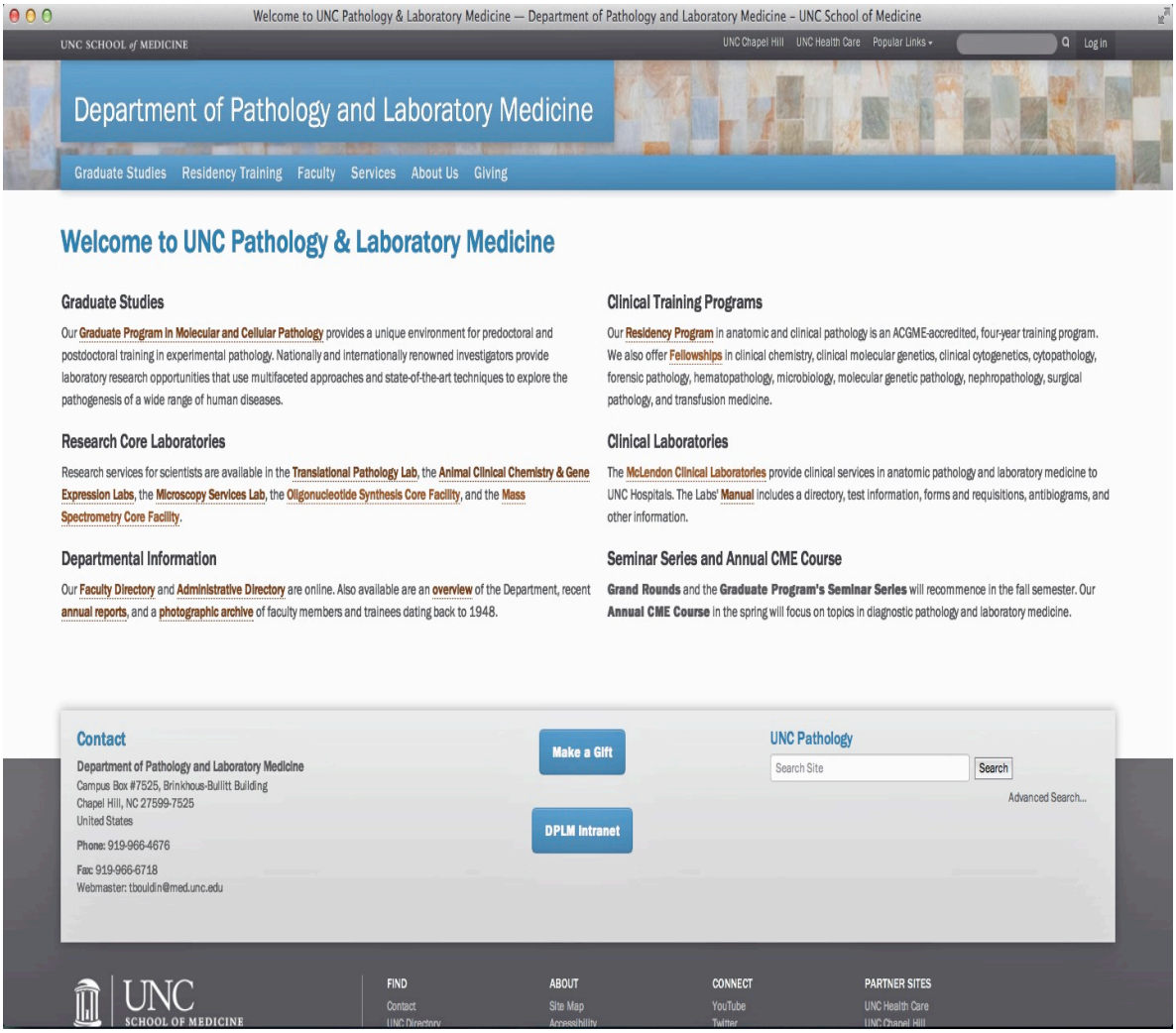
QING ZHANG, Ph.D.
Member, Assistant professor advisory committee
Member, Pathology Preliminary Exam Committee

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.

DEPARTMENT WEB SITE

The Departmental web site (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 web site is a comprehensive, detail-rich resource for those seeking information about the educational, research, and clinical training programs of the Department. The web site 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 web site also provides an overview of the Department, including its history, recent annual reports, administrative directory, and photographic archive. The web site is on a server maintained by the UNC School of Medicine. Dr. Thomas Bouldin is the webmaster and authors the web pages for the faculty and clinical training programs. Dr. Jonathon Homeister authors the web pages for the graduate program.



PUBLICATIONS

Department of Pathology and Laboratory Medicine
School of Medicine
University of North Carolina at Chapel Hill
July 1, 2014 – June 30, 2015

JAMES TODD AUMAN, Ph.D.

The Cancer Genome Atlas Network (J.T. Auman, member of Genome Characterization Center), Genomic Classification of Cutaneous Melanoma. Cell: 161, 1681-1696, 2015.

The Cancer Genome Atlas Network (J.T. Auman, member of Genome Characterization Center), Comprehensive, Integrative Genomic Analysis of Diffuse Lower-Grade Gliomas. New England Journal of Medicine: 372, 2481-2498, 2015.

The Cancer Genome Atlas Network (J. T. Auman, member of Genome Characterization Center), Comprehensive genomic characterization of head and neck squamous cell carcinomas. Nature: 517, 576-582, 2015.

The Cancer Genome Atlas Research Network (J. T. Auman, member of Genome Characterization Center), Integrated genomic characterization of papillary thyroid carcinoma. Cell: 159, 676-690, 2014.

Parfenov M., C.S. Pedamallu, N. Gehlenborg, S.S. Freeman, L. Danilova, C.A. Bristow, S. Lee, A.G. Hadjipanayis, E.V. Ivanova, M.D. Wilkerson, A. Protopopov, L. Yang, S. Seth, X. Song, J. Tang, X. Ren, J. Zhang, A. Pantazi, N. Santoso, A. W. Xu, H. Mahadeshwar, D.A. Wheeler, R.I. Haddad, J. Jung, A.I. Ojesin, N. Issaeva, W.G. Yarbrough, D.N. Hayes, J.R. Grandis, A.K. El-Naggar, M. Meyerson, P.J. Park, L. Chin, J.G. Seidman, P.S. Hammerman, R. Kucherlapati and The Cancer Genome Atlas Network (J. T. Auman, member of Genome Characterization Center). Characterization of HPV and host genome interactions in primary head and neck cancers. Proceedings of the National Academy of Sciences U S A: 111, 15544-9, 2014.

Davis C.F., C.J. Ricketts, M. Wang, L. Yang, A.D. Cherniack, H. Shen, C. Buhay, H. Kang, S.C. Kim, C.C. Fahey, K.E. Hacker, G. Bhanot, D.A. Gordenin, A. Chu, P.H. Gunaratne, M. Biehl, S. Seth, B.A. Kaipparettu, C.A. Bristow, L.A. Donehower, E.M. Wallen, A.B. Smith, S.K. Tickoo, P. Tamboli, V. Reuter, L.S. Schmidt, J.J. Hsieh, T.K. Choueiri, A.A. Hakimi, The Cancer Genome Atlas Research Network (J. T. Auman, member of Genome Characterization Center), L. Chin, M. Meyerson, R. Kucherlapati, W.Y. Park, A.G. Robertson, P.W. Laird, E.P. Henske, D.J. Kwiatkowski, P.J. Park, M. Morgan, B. Shuch, D. Muzny, D.A. Wheeler, W.M. Linehan, R.A. Gibbs, W.K. Rathmell, C.J. Creighton. The somatic genomic landscape of chromophobe renal cell carcinoma. Cancer Cell: 26, 319-30, 2014.

K. A. Hoadley, C. Yau, D. M. Wolf, A. D. Cherniack, D. Tamborero, S. Ng, M. D. M. Leiserson, B. Niu, M. D. McLellan, V. Uzunangelov, J. Zhang, C. Kandoth, R. Akbani, H. Shen, L. Omberg, A. Chu, A. A. Margolin, L. J. van't Veer, N. Lopez-Bigas, P. W. Laird, B. J. Raphael, L. Ding, A. G. Robertson, L. A. Byers, G. B. Mills, J. N. Weinstein, C. Van Waes, Z. Chen, E. A. Collisson, The Cancer Genome Atlas Research Network (J. T. Auman, member of Genome Characterization Center), C. C. Benz, C. M. Perou, and J. M. Stuart. Multiplatform Analysis of 12 Cancer Types Reveals Molecular Classification within and across Tissues of Origin. Cell: 158; 929-944, 2014.

The Cancer Genome Atlas Research Network (J. T. Auman, member of Genome Characterization Center), Comprehensive molecular profiling of lung adenocarcinoma. Nature: 511, 543-550, 2014.

C ROBERT BAGNELL, JR., Ph.D.

Hathaway CK, Gasim AM, Grant R, Chang AS, Kim HS, Madden VJ, Bagnell CR Jr, Jennette JC, Smithies O, Kakoki M. Low TGFβ1 expression prevents and high expression exacerbates diabetic nephropathy in mice. Proc Natl Acad Sci U S A. 2015 May 5;112(18):5815-20. doi: 10.1073/pnas.1504777112. Epub 2015 Apr 20.PMID: 25902541

Hathaway CK, Grant R, Hagaman JR, Hiller S, Li F, Xu L, Chang AS, Madden VJ, Bagnell CR, Rojas M, Kim HS, Wu B, Zhou B, Smithies O, Kakoki M. Endothelin-1 critically influences cardiac function via superoxide-MMP9 cascade. Proc Natl Acad Sci U S A. 2015 Apr 21;112(16):5141-6. doi: 10.1073/pnas.1504557112. Epub 2015 Apr 6. PMID: 25848038

Yamane D, McGivern DR, Wauthier E, Yi M, Madden VJ, Welsch C, Antes I, Wen Y, Chugh PE, McGee CE, Widman DG, Misumi I, Bandyopadhyay S, Kim S, Shimakami T, Oikawa T, Whitmire JK, Heise MT, Dittmer DP, Kao CC, Pitson SM, Merrill AH Jr, Reid LM, Lemon SM. Regulation of the hepatitis C virus RNA replicase by endogenous lipid peroxidation. Nat Med. 2014 Aug;20(8):927-35. doi: 10.1038/nm.3610. Epub 2014 Jul 27. PMID: 25064127

DWIGHT A. BELLINGER, D.V.M., Ph.D.

Cantore A, Ranzani M, Bartholomae CC, Volpin M, Valle PD, Sanvito F, Sergi LS, Gallina P, Benedicenti F, Bellinger D, Raymer R, Merricks E, Bellintani F, Martin S, Doglioni C, D'Angelo A, VandenDriessche T, Chuah MK, Schmidt M, Nichols T, Montini E, Naldini L. Liver-directed lentiviral gene therapy in a dog model of hemophilia B. Sci Transl Med. 2015 Mar 4;7(277):277ra28. doi: 10.1126/scitranslmed.aaa1405. PMID: 25739762

Maile LA, Busby WH, Gollahon KA, Flowers W, Garbacik N, Garbacik S, Stewart K, Nichols T, Bellinger D, Patel A, Dunbar P, Medlin M, Clemmons D. Blocking ligand occupancy of the αVβ3 integrin inhibits the development of nephropathy in diabetic pigs. Endocrinology. 2014 Dec;155(12):4665-75. doi: 10.1210/en.2014-1318. Epub 2014 Aug 29. PMID: 25171599

LeVine DN, Birkenheuer AJ, Brooks MB, Nordone SK, Bellinger DA, Jones SL, Fischer TH, Oglesbee SE, Frey K, Brinson NS, Peters AP, Marr HS, Motsinger-Reif A, Gudbrandsdottir S, Bussel JB, Key NS. A novel canine model of immune thrombocytopenia: has immune thrombocytopenia (ITP) gone to the dogs? Br J Haematol. 2014 Oct;167(1):110-20. doi: 10.1111/bjh.13005. Epub 2014 Jul 8. PMID: 25039744

Sherman A, Schlachterman A, Cooper M, Merricks EP, Raymer RA, Bellinger DA, Herzog RW, Nichols TC. Portal vein delivery of viral vectors for gene therapy for hemophilia. Methods Mol Biol. 2014;1114:413-26. doi: 10.1007/978-1-62703-761-7_27.PMID: 24557919

THOMAS W. BOULDIN, M.D.

Armao D, Bouldin, T: Pathology of the Nervous System in Pathology, A Modern Case Study, H.M. Reisner(ed), McGraw-Hill Education, New York, New York, 2014, pp. 567-594.

Bouldin, T.W.: The Peripheral Nervous System. In: Rubin's Pathology: Clinicopathologic Foundations of Medicine, 7th ed., D.S. Strayer and E. Rubin (eds.), Wolters Kluwer Health, Baltimore, MD, 2015, pp. 1402–1411.

DEBRA A. BUDWIT, M.D.

Rahangdale L, Budwit D, Asgari D, Ohadugha AL. Manual liquid-based Cytology: A clinical pilot study of VitroPrep™ cytology processing kit. Acta Cytol. 2014; 58(4):373-377. Doi 10.1159/000365876.PMID: 25196804

FRANK C. CHURCH, Ph.D.

Chappell EP, Church FC. Drugs that affectblood coagulations, fibrinolysis, and hemostasis. Side Effects of Drugs Annual. 2014;(36):529-53

Rein-Smith, C.M. and F.C. Church. Emerging pathophysiological roles for fibrinolysis. Current Opinion in Hematology, Curr Opin Hematol. 2014 Sep;21(5):438-444. PMID: 24977437.

Rein-Smith, C.M., J.C. Cardenas, T.J. Zuber, D.M. Monroe and F.C. Church. Mice overexpressing the tumor suppressor $p16^{INK4a}$ have skin defects and impaired wound healing in an excisional dermal wounding model. In preparation.

Rein-Smith, C.M., H.C. Whinna, L. LeFrapper, R.R.. Tidwell, D.M. Monroe, and F.C. Church. Screening and optimization of cationic benzaminidine-like molecules as anticoagulants. In preparation.

Gramling, M.W., C.M. Rein-Smith and F.C. Church (2012) Inhibition of plasminogen activator inhibitor-1 sensitizes urokinase expressing breast cancer cells to apoptosis and cytotoxic chemotherapeutics. In preparation.

Rein-Smith, C.M. and F.C. Church, Vascular response to injury and disease in "On Disease: A Modern Approach to Pathology." McGraw Hill. Publication date of 2014.

Cardenas, J.C., C.M. Rein-Smith and F.C. Church. Overview of Blood Coagulation and the Pathophysiology of Blood Coagulation Disorders. Encyclopedia of Cell Biology, 2015 In press.

WILLIAM B. COLEMAN, Ph.D.

Sandhu, R., Roll, J.D., Rivenbark, A.G., and Coleman, W.B. (2015) Dysregulation of the epigenome in human breast cancer: Contributions of gene-specific DNA hypermethylation to breast cancer pathobiology and targeting the breast cancer methylome for improved therapy. Am. J. Pathol. 185:282-292.

Coleman, W.B. (2015) Genomic catastrophe and neoplastic transformation. Am. J. Pathol. 185:1846-1849.

Effects of Exercise on Hypertension: From Cells to Physiological Systems, L.S. Pescatello (ed.), Molecular and Translational Medicine, W.B. Coleman and G.J. Tsongalis (Series Editors), Humana Press – Springer (New York, NY), ISBN 978-3-319-17075-6, c2015.

Diagnostic Molecular Pathology, W.B. Coleman and G.J. Tsongalis (eds.), Academic Press - Elsevier (San Diego, CA), 2015 (In Press). (30 Chapters, 62 Contributors).

The Molecular Basis of Human Cancer, Second Edition, W.B. Coleman and G.J. Tsongalis (eds.), Humana Press – Springer (New York, NY), 2015 (In Press). (54 Chapters, 75 Contributors).

Laboratory Exercises in Molecular Pathology, J.W. Homeister, W.B. Coleman, and G.J. Tsongalis (eds.), Academic Press - Elsevier (San Diego, CA), 2015 (In Preparation).

Molecular Pathology: The Molecular Basis of Human Disease, Second Edition, W.B. Coleman and G.J. Tsongalis (eds.), Academic Press - Elsevier (San Diego, CA), 2015 (In Preparation).

Rivenbark, A.G. and Coleman, W.B. (2015) Disease and the genome: Genetic, developmental, and neoplastic disease. In: Pathology: A Modern Case Study, H.M. Reisner (ed.), McGraw-Hill, New York, pp 1-19.

Rivenbark, A.G. and Coleman, W.B. (2014) An introduction to the conspicuous and distinguishing characteristics of neoplasms. In: Pathobiology of Human Disease: A Dynamic Encyclopedia of Disease Mechanisms (R.N. Mitchell and L.M. McManus, Editors-in-Chief), Academic Press – Elsevier (San Diego, CA), pp. 349-366 (http://dx.doi.org/10.1016/B978-0-12-386456-7.01901-8).

Coleman, W.B. and Tsongalis, G.J. (2015) Basic concepts in molecular pathology – Introduction to molecular testing in human disease. In: Diagnostic Molecular Pathology, W.B. Coleman and G.J. Tsongalis (eds.), Academic Press - Elsevier, San Diego, CA, (In Press).

Coleman, W.B. and Tsongalis, G.J. (2015) Laboratory approaches in molecular pathology – Polymerase chain reaction and other amplification techniques. In: Diagnostic Molecular Pathology, W.B. Coleman and G.J. Tsongalis (eds.), Academic Press - Elsevier, San Diego, CA, (In Press).

Coleman, W.B and Grisham, J.W. (2015) The molecular basis of liver cancer. In: The Molecular Basis of Human Cancer, Second Edition, W.B. Coleman and G.J. Tsongalis (eds.), Humana Press - Springer, New York, (In Press).

Coleman, W.B and Tsongalis, G.J. (2015) The role of genomic instability in the development of human cancer. In: The Molecular Basis of Human Cancer, Second Edition, W.B. Coleman and G.J. Tsongalis (eds.), Humana Press - Springer, New York, (In Press).

Coleman, W.B and Tsongalis, G.J. (2015) Cancer epidemiology: Incidence and etiology of human neoplasms. In: The Molecular Basis of Human Cancer, Second Edition, W.B. Coleman and G.J. Tsongalis (eds.), Humana Press - Springer, New York, (In Press).

BRIAN C. COOLEY, Ph.D.

Lee N, Daley RA, Cooley BC. Rat posterior facial vein interpositional graft: a more relevant training model. Microsurgery. 2014;34:653–656.

Sehgal A, Barros S, Ivanciu L, Cooley B, Qin J, Racie T, Hettinger J, Carioto M, Jiang Y, Brodsky J, Prabhala H, Zhang X, Attarwala H, Hutabarat R, Foster D, Milstein S, Charisse K, Kuchimanchi S, Maier MA, Nechev L, Kandasamy P, Kel'in AV, Nair JK, Rajeev KG, Manoharan M, Meyers R, Sorensen B, Simon AR, Dargaud Y, Negrier C, Camire RM, Akinc A. An RNAi therapeutic targeting antithrombin to rebalance the coagulation system and promote hemostasis in hemophilia. Nat Medicine. 2015;21:492-497.

Cooley BC. Experimental vein graft research: a critical appraisal of models. Heart Res Open J 2015;2:53-59. http://dx.doi.org/10.17140/HROJ-2-110

Cooley BC. Murine arterial thrombus induction mechanism influences subsequent thrombodynamics. Thromb Res [in press]

Ellery PER, Maroney SA, Cooley BC, Luyendyk JP, Zogg M, Weiler H, Mast AE: A balance between TFPI and thrombin-mediated platelet activation is required for murine embryonic development. Blood [in press]

GEORGETTE A. DENT, M.D.

The Five C's: Dr. Georgette Dent, University of North Carolina School of Medicine*, The Medical Commecement Archive, Volume 1, 2014:*
http://themspress.org/index.php/commencement/article/view/68

LESLIE G. DODD, M.D.

Layfield LJ, Dodd L, Factor R, Schmidt RL. Malignancy risk associated with diagnostic catagories defined by the Papanicolaou Society of Cytopathology pancreaticobiliary guidelines. Cancer Cytopathol 122:420-7,2014.

Dodd LG, Bui MM. Atlas of Soft tissue and Bone Pathology with histologic, radiographic and cytologic correlation. Demos Medical: New York; publish date: December 2014.

Dodd LG, Wei S, Siegal GP. Optimal Handling of bone tumor specimens. Methods Mol Biol 2014

Dodd LG, Hertel J. Needle biopsy of mesenchymal lesions of the head and neck: Evolving concepts and new strategies for diagnosis. Semin Diagn Pathol 2014 (December) ;14:116-6.

Dodd LG, Jiang S, Rao K, Bui MM. Pleomorphic liposarcoma: a cytologic study of five cases. Diagn Cytopathol 2015;Feb 43:138-43.

Dodd LG. Cytopathology Program Directors ROSE survey. ASC Bulletin, March 2015, volume LII, X-XI

DAVID A. EBERHARD, M.D., Ph.D.

Zhao X, Wang A, Walter V, Patel NM, Eberhard DA, Hayward MC, Salazar AH, Jo H, Soloway MG, Wilkerson MD, Parker JS, Yin X, Zhang G, Siegel MB, Rosson GB, Earp HS 3rd, Sharpless NE, Gulley ML, Weck KE, Hayes DN, Moschos SJ. Combined Targeted DNA Sequencing in Non-Small Cell Lung Cancer (NSCLC) Using UNCseq and NGScopy, and RNA Sequencing Using UNCqeR for the Detection of Genetic Aberrations in NSCLC. PLoS ONE 2015; 10(6): e0129280. doi:10.1371/journal.pone.0129280.

Zhao X, Wang A, Walter V, Patel NM, Eberhard DA, Hayward MC, Salazar AH, Jo H, Soloway MG, Wilkerson MD, Parker JS, Yin X, Zhang G, Siegel MB, Rosson GB, Earp HS 3rd, Sharpless NE, Gulley ML, Weck KE, Hayes DN, Moschos SJ. Combined Targeted DNA Sequencing in Non-Small Cell Lung Cancer (NSCLC) Using UNCseq and NGScopy, and RNA Sequencing Using UNCqeR for the Detection of Genetic Aberrations in NSCLC. PLoS ONE 2015; 10(6): e0129280. doi:10.1371/journal.pone.0129280.

Salama ME, Eberhard DA, Potts SJ: Markers Used for Visualization and Quantification of Blood and Lymphatic Vessels, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 5, pp. 79-85.

Potts SJ, Eberhard DA, Salama ME: Practical Approaches to Microvessel Analysis: Hotspots, Microvessel Density and Vessel Proximity, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 6, pp. 87-100.

McGinniss MJ, Eberhard DA, Wharton Jr KA: Next Generation Sequencing (NGS) in Anatomic Pathology Discovery and Practice, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 17, pp. 219-257.

Heise C, Brousset P, Fu T, Eberhard DA, Slack GW, Laurent C, Gascoyne RD: Implementing a Multi-Analyte Immunohistochemistry Panel into a Drug Development Program, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 23, pp. 345-358.

Potts SJ, Eberhard DA, Wharton Jr KA: Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, 375 pages.
Salama ME, Eberhard DA, Potts SJ: Markers Used for Visualization and Quantification of Blood and Lymphatic Vessels, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 5, pp. 79-85.

Potts SJ, Eberhard DA, Salama ME: Practical Approaches to Microvessel Analysis: Hotspots, Microvessel Density and Vessel Proximity, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 6, pp. 87-100.

McGinniss MJ, Eberhard DA, Wharton Jr KA: Next Generation Sequencing (NGS) in Anatomic Pathology Discovery and Practice, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 17, pp. 219-257.

Heise C, Brousset P, Fu T, Eberhard DA, Slack GW, Laurent C, Gascoyne RD: Implementing a Multi-Analyte Immunohistochemistry Panel into a Drug Development Program, in Potts SJ, Eberhard DA, Wharton Jr KA (eds), Molecular Histopathology and Tissue Biomarkers in Drug and Diagnostic Development, Springer New York, 2015, Chapter 23, pp. 345-358.

GEORGE FEDORIW, M.D.

Immunohistochemistry is a rare finding in dendritic cell and histiocyte-derived tumors. Leukemia & Lymphoma. 2014 Sep 22:1-6. [Epub ahead of print]

Gopal S, Fedoriw Y, Montgomery ND, Kampani C, Krysiak MS, Sanders M, Dittmer DP, Liomba G. Multicentric Castleman disease in Malawi. Lancet. 2014 Sep 20;384 (9948):1158

Nicol MR, Emerson CW, Prince HMA, Nelson JA, Fedoriw Y, Sykes C, Geller EJ, Patterson KB, Cohen MS, Kashuba ADM. Translational evaluation of oral antiretrovirals for HIV prevention in women. JAIDS. (accepted for publication)

Dunphy CH, Fedoriw G, Mathews S. Hematopathology in Pathology A Modern Case Study, 1st Edition. Reisner H (ed.), McGraw-Hill Education, 2015.

Montgomery N, Graham T, Krysiak R, Kampani C, Liomba NG, Gopal S, Fedoriw Y. Comparison of eosinophil density in staging bone marrow biopsies from Malawi and the United States. *Pathology International.* (accepted for publication: 4/25/15)

Frick A, Fedoriw Y, Richards KL, Damania B, Parks B, Suzuki O, Benton CS, Chan E, Thomas RS, Wiltshire T. Immune cell-based screening assay for response to anticancer agents: applications in pharmacogenomics. *Pharmacogenomics and Personalized Medicine.* 2015 Feb 26;8:81-98.

Thompson CG, Bokhart MT, Sykes C, Adamson L, Fedoriw Y, Luciw P, Muddiman DC, Kashuba ADM, Rosen EP. Visualization of Efavirenz distribution in acute HIV reservoirs by mass spectrometry imaging. *Antimicrobial Agents and Chemotherapy*. *Antimicrobial Agents and Chemotherapy*. 2015 Mar 2. pii: AAC.04952-14. [Epub ahead of print]

Walker MP, Stopford CM, Rabinowitz AD, Goldfarb D, Yan F, Fedoriw Y, Richards KL, Damania B, Major MB. A Gain-of-function genetic screen reveals FOXP1 as an activator of Wnt/B-catenin signaling. *Science Signaling*. 2015 Feb 3; 8(362).

Nicol MR, Emerson CW, Prince HMA, Nelson JA, Fedoriw Y, Sykes C, Geller EJ, Patterson KB, Cohen MS, Kashuba ADM. Models for predicting effective HIV chemoprevention in women. *Journal of Acquired Immune Deficiency Syndromes.* 2015 Apr 1;68(4):369-76.

Frick A, Fedoriw Y, Richards KL, Damania B, Parks B, Suzuki O, Benton C, Chan E, Thomas R, Wiltshire T. Identifying genes that mediate anthracycline toxicity in immune cells. *Frontiers Pharmacology.* 2015 April 15; 6:62.

Fedoriw Y, Free ME, Rollins-Raval MA. Peripheral blood regulatory T cell monitoring after solid organ transplantation. *International Clinical Cytometry Society Newsletter* (accepted 4/8/15)

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

George NM, Whitaker J, Vieira G, Geronimo J, Bellinger DA, Fletcher CA, Garner JP. Antioxidant Therapies for Ulcerative Dermatitis: A Potential Model for Skin Picking Disorder. PLoS ONE, 2015 (vol & issue): pone.0132092.

Marshall SA, Rinker JA, Harrison LK, Fletcher CA, Herfel TM, Thiele TE. Assessment of the Effects of 6 Standard Rodent Diets on Binge-Like and Voluntary Ethanol Consumption in Male C57BL/6J Mice. Alcoholism: Clinical and Experimental Research 2015 Jun 25. doi: 10.1111/acer.12773.

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

Pathak V, Kuhn JM, Durham C, Funkhouser WK, Henke DC. "Macrolide use leads to clinical and radiological improvement in patients with cryptogenic organizing psneumonia". Ann Am Thor Soc 11:87-91, 2014. Acc No. 24460438.

Zhao N, Wilkerson MC, Roberts P, Lee CB, Parsons AM, Thorne LB, Haithcock BE, Grilly-Alson JE, Stinchcombe TE, Funkhouser WK, Wong KK, Sharpless NE, Hayes DN. Lung Ca (in press). Accession No. 25224251.

Kimple AJ, Austin GK, Shah RN, Welch CM, Funkhouser WK, Zanation AM, Shockley WW. Polymorphous low-grade adenocarcinoma: A case series and determination of recurrence. Laryngoscope (in press). Acc. No. 25229805.

Hawkins A, Guttentag SH, Deterding R, Funkhouser WK, Goralski JL, Chatterjee S, Mulageta S, Beers MF. "a Non-BRICHOS SFTPC mutant (SP-C173T) linked to interstitial lung Disease promotes a late block in macroautophagy disrupting cellular proteostasis and mitophagy". Am J Physiol Lung Cell Mol Physiol (in press). Acc. No. 25344067.

Wynder and Graham, ASIP Milestones article, Feb 2015

PETER GILLIGAN, Ph.D.

Gilligan PH. 2014. Contemporary approaches for the laboratory diagnosis of *Clostridium difficile* infections. Seminars in Colon and Rectal Surgery 25: 137-142.

Schwab U, Abdullah LH, Perlmutt OS, Albert C, Davis CW, Arnold RR, Yankaskas JR, Gilligan P, Neubauer H, Randall SH, Bouucher RC. 2014 Localization of *Burkholdria cepacia* complex Bacteria in Cystic fibrosis lungs and interactions with *Pseudomonas aeruginosa* in Hypoxie lungs. Infect. Immun. (in press).

Gilligan PH, Shapiro DS, Miller, MB. Cases in medical microbiology and infectious diseases. 4th edition. ASM Press, Washington, DC (590 pages)

Panagea T, D. H. Pincus, D. Grogono, M. Jones, J. Bryant, J. Parkhill, R. A. Floto, P. Gilligan 2015. *Mycobacterium abscessus* Complex Identification with Matrix-Assisted Laser Desorption Ionization Time of Flight (MALDI-TOF) Mass Spectrometry. J. Clin. Microbiol. 53(in press)

Gilligan P. H. 2015. Optimizing the laboratory diagnosis of *Clostridium difficile* infection. Clinics Lab Medicine (in press)

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

Donohoe DR, Holley D, Collins LB, Montgomery SA, Whitmore AC, Hillhouse A, Curry KP, Renner SW, Greenwalt A, Ryan EP, Godfrey V, Heise MT, Threadgill DS, Han A, Swenberg JA, Threadgill DW, Bultman SJ. 2014. A gnotobiotic mouse model demonstrates that dietary

fiber protects against colorectal tumorigenesis in a microbiota- and butryrate-dependent manner. *Cancer Discover*. Dec; 4(12): 1387-97. PMID: 25266735.

PAMELA A. GROBEN, M.D.

Berwick M, Reiner AS, Paine S, Armstrong BK, Kricker A, Goumas C, Cust AE, Thomas NE, Groben PA, et.al. Sun exposure and melanoma survival: A GEM study. Cancer Epidemol Biomarkers Prev. 2014; 23;2145-52.

1.Carson CC, Moschos SJ, Edmiston SN, Darr DB, Nikolaishvili-Feinberg N, Groben PA, et.al., IL2 inducible Tcell kinase, a novel therapeutic target in melanoma. Clin Cancer Res 2015;21:2167-76.

2. Thomas NE, Kricker A, Waxweiler WT, Dillon PM, Busman KJ, From L, Groben PA, et.al.; GEM study Group. Comparison of clinicopathologic features and survival of histopathologically amelanotic and pigmented melanoma: a population based study. Cancer, Epidemiol Biomarkers Prev 2014;150:1306-314.

MARGARET L. GULLEY, M.D.

Gulley ML, Morgan DR: Molecular Oncology Tests in Resource-Limited Settings. J Molec Diagn 2014; 16:601-611

Parfenov M for the Cancer Genome Atlas Network. Characterization of HPV and host genome interactions in primary head and neck cancers. Proc Natl Acad Sci U S A 2014; 111(43):15544-9

Bass AJ for the Cancer Genome Atlas Research Network: Comprehensive Molecular Characterization of Gastric Adenocarcinoma. Nature 2014; 513:202-209

Prat A, Lluch A, Albanell J, Barry WT, Fan C, Chacón JI, Parker JS, Calvo L, Plazaola A, Arcusa A, Seguí-Palmer MA, Burgues O, Ribelles N, Rodriguez-Lescure A, Guerrero A, Ruiz-Borrego M, Munarriz B, López JA, Adamo B, Cheang MC, Li Y, Hu Z, Gulley ML, Vidal MJ, Pitcher BN, Liu MC, Citron ML, Ellis MJ, Mardis E, Vickery T, Hudis CA, Winer EP, Carey LA, Caballero R, Carrasco E, Martín M, Perou CM, Alba E. Predicting response and survival in chemotherapy-treated triple-negative breast cancer. Br J Cancer 2014;111: 1532-41

Pearlstein MV, Zedek DC, Ollila DW, Treece A, Gulley ML, Groben PA, Thomas NE: Validation of the VE1 immunostain for the BRAF V600E mutation in melanoma. J Cutan Pathol 2014; 41(9):724-32

Gulley ML: Genomic Assays for Epstein-Barr Virus-Related Gastric Adenocarcinoma. Experimental & Molecular Medicine, 47:e134, 2015. PMID: 25613731

Ma SD, Xu X, Plowshay J, Ranheim EA, Burlingham WJ, Jensen JL, Asimakopoulos F, Tang W, Gulley ML, Cesarman E, Gumperz JE, Kenney SC: LMP1-deficient Epstein-Barr virus

mutant requires T cells for lymphomagenesis. J Clin Invest, 125:304-15, 2014. PMID:25485679

The Cancer Genome Atlas Research Network: Comprehensive genomic characterization of head and neck squamous cell carcinomas. Nature, 517(7536):576-82, 2015. PMID: 25631445
Gulley ML: Clinical Practice: Molecular Pathology. In Pathology: A Modern Case Study. H Reisner (ed.), McGraw-Hill Professional, Burr Ridge, IL, 2014

CATHERINE A. HAMMETT-STABLER, Ph.D.

Hammett-Stabler CA. How Good is that Sample? Verifying the Integrity of Biobank Samples. Clin Biochem. 2015;48: 363.

Beamon C, Carlson L, Rambally B, Berchuck S, Gearhart M, Hammett-Stabler C, Strauss R. Predicting Neonatal Respiratory Morbidity by Lamellar Body Count and Gestational Age. J Perinat Med. 2015, pii:/j/jpme.ahead-of-print/jpm-2014-0310/jpm-2014-0310.xml.

Kyle PB, Fuller DC, Garg U, Hammett-Stabler CA, Hoess E, Langman LJ, Legatt D, Pesce A, Watson ID, Wu A. *C52-A3 Toxicology and Drug Testing in the Clinical Laboratory; 3rd Edition* Clinical and Laboratory Standards Institute. Wayne, PA, 2015, 37 pages.

JOHANN D. HERTEL, M.D.

Dodd LG, Hertel J. Needle biopsy of mesenchymal lesions of the head and neck: Evolving concepts and new strategies for diadnosis. Semin Diagn Pathol. 2014 Dec 19 (epub)

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

Mackey LC, Homeister JW. Targeted molecular therapeutics for the treatment of atherosclerosis. In Atherosclerosis; risk mechanism and therapy, Wang H, and Patterson C (eds). John Wiley and Sons. In press, 2014 33 typed pages.

Czernuszewicz TJ, Homeister JW, Caughey MC, Farber MA, Fulton JJ, Ford PF, Marston WA, Vallabhaneni R, Nichols TC, Gallippi CM. Non-invasive in Vivo Characterization of Human Carotid Plaques with Acoustic Radiation Force Impulse Ultrasound: Comparison with Histology after Endarterectomy. Ultrasound Med Biol. 2015 Mar;41(3):685-97. doi: 10.1016/j.ultrasmedbio.2014.09.016. Epub 2015 Jan 22

J. CHARLES JENNETTE, M.D.

McInnis EA, Badhwar AK, Muthigi A, Lardinois OM, Allred SC, Yang J, Free ME, Jennette JC, Preston GA, Falk J, Ciavatta DJ. Dysregulation of Autoantigen Genes in ANCA-Associated Vasculitis Involves Alternative Transcripts and New Protein Synthesis. J Am Soc Nephrol. 2014; [Epub ahead of print]

Malone AF, Phelan PJ, Hall G, Cetincelik U, Homstad A, Alonso A, Jiang R, Lindsey T, Wu

G, Sparks MA, Smith SR, Webb NA, Kalra P, Adeyemo A, Shaw AS, Conlon PJ, Jennette JC, Howell DN, Winn MP, Gbadegesin RA, A high frequency of gereditary nepnritid with rare col4a3/col4a4 variants erroneously included in a familial FSGS cohort. Kidney Int 2014; [Epub ahead of print]

Jennette JC, Olsen JL, Silva FG, D'Agati (eds); Heptinstall's Pathology of the Kidney, Volumes 1 and 2, 7th Edition, Wolters Klewer, Philadelphia, 2015, Vol. 1&2, 1592 pages

Jennette JC, Falk RJ. The Role of Pathology in the Classification and Diagnosis of ANCA Associated Vasculitis. Nephron 2015;129 (suppl 2):26-29.

Jennette JC, Falk RJ. ANCAs Are Also Antimonocyte Cytoplasmic Autoantibodies. Clin J Am Soc Nephrol. 2015;10:4-6

Chang EH, Gasim AH, Kerber ML, Patel JB, Glaubiger SA, Falk RJ, Jennette JC, Otey CA. Palladin is Upregulated in Kidney Disease and Contributes to Epithelial Cell Migration after Injury. Sci Rep. 2015;5:7695

Hathaway CK, Gasim AM, Grant R, Chang AS, Kim HS, Madden VJ, Bagnell CR Jr, Jennette JC, Smithies O, Kakoki M. Low TGFβ1 expression prevents and high expression exacerbates diabetic nephropathy in mice. Proc Natl Acad Sci U S A. 2015; Epub ahead of print

Reynolds J, Preston GA, Pressler BM, Hewins P, Brown M, Roth A, Alderman E, Bunch D, Jennette JC, Cook HT, Falk RJ, Pusey CD. Autoimmunity to the alpha 3 chain of type IV collagen in glomerulonephritis is triggered by 'autoantigen complementarity'. J Autoimmun. 2015;59:8-18.

Pathak V, Kuhn J, Gabriel D, Barrow J, Jennette JC, Henke DC. Use of Activated Factor VII in Patients with Diffuse Alveolar Hemorrhage: A 10 Years Institutional Experience. Lung. 2015; Epub ahead of print

Jennette JC, Weimer ET, Kidd J. Vasculitis in Henry's Clinical Diagnosis and Management by Laboratory Methods, 23rd ed, R McPherson, M Pincus (eds), Elsevier, St. Louis, 2016, Chapter 32, in press, 88 pages

Pendergraft III WF, Nachman PH, Jennette JC, and Falk RJ: Primary Glomerular Disease in Brenner and Rector's The Kidney, 10th Edition, BM Brenner (ed), W. B. Saunders, Philadelphia, 2016; Chapter 32, in press

Brant EJ, Gasim A, McGregor J, Jennette JC, Falk RJ, Pendergraft WF. Systemic Vasculitis and the Kidney: ANCA Vasculitis and Glomerulonephritis in The Vasculitides, DS Younger, ed., Nova Science Publishers, 2015, Chapter 14, 261-276

Jennette JC, Falk RJ, Gasim AHM. Nomenclature and Pathologic Features of Vasculitides, in The Vasculitides, DS Younger, ed., Nova Science Publishers, 2015, Chapter 7, 121-144

Jennette, JC, The Kidney in Rubin's Pathology: Clinicopathologic Foundations in Medicine, 7th Edition, Strayer DS (ed), Wolters Kluwer, 2015, Chapter 22, 203-958.

Jennette JC, Gasim AH: Pathology of Medical Renal Disease, in On Disease: A Modern Approach to Pathology, H. Reisner (ed), McGraw-Hill, 2015, Chapter 12, 297-327.

KATHLEEN A. KAISER-ROGERS, Ph.D.

Patel M, Gomez NC, McFadden AW, Moats-Staats B, Wu S, Rojas A, Sapp T, Simon JM, Smith SV, Kaiser-Rogers K, Davis IJ. PTEN deficiency mediates a reciprocal response to IGF1 and mTOR inhibition. Mol Cancer Res. 2014 Jul 3.[Epub ahead of print]

Parrott A, James J, Goldenberg P, Hinton RB, Miller E, Shikany A, Aylsworth AS, Kaiser-Rogers K, Ferns SJ, Lalani SR, Ware SM. Aortopathy in the 7q11.23 microduplication syndrome. *Am J Med Genet*. 2015 Feb;167A(2):363-70

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

Matsuki K, Hathaway CK, Lawrence MG, Smithies O, Kakoki M. The role of transforming growth factor b1 in the regulation of blood pressure. Curr Hypertens Rev. 2014; 10(4):223-38.
Matsuki K, Hathaway CK, Chang AS, Smithies O, Kakoki M. Transforming growth factor beta1 and aldosterone. Curr Opin Nephrol Hypertens. 2015; 24(2):139-44.

Hathaway CK, Grant R, Hagaman JR, Hiller SK, Li F, Xu L, Chang AS, Madden VJ, Bagnell CR Jr., Rojas M, Kim HS, Wu B, Zhou B, Smithies O, Kakoki, M. Endothelin-1 critically influences cardiac function via superoxide-MMP9 cascade. *Proc Natl Acad Sci U S A*. 2015; 112(16):5141-6.

Hathaway CK, Gasim AMH, Grant R, Xu L, Chang AS, Kim HS, Madden VJ, Bagnell CR Jr., Jennette JC, Smithies O, Kakoki, M. Low TGFβ1 expression prevents and high expression exacerbates diabetic nephropathy in mice. *Proc Natl Acad Sci U S A*. 2015; 112(18):5815-20.

DAVID G. KAUFMAN, M.D.

Smith-Roe SL, Nakamura J, Holley D, Chastain PD, Rosson GB, Simpson DA, Ridpath JR, Kaufman DG, Kaufmann WK, Bultman SJ. SWI/SNF Complexes are Required for Full Activation of the DNA-Damage Response. Octotarget 2014 (published online)

WILLIAM K. KAUFMANN, Ph.D.

Simpson, DA, Lemonie, N, Morgan, DS, Gaddameedhi, S and Kaufmann, WK. Oncogenic BRAF(V600E) Induces Clastogenesis and UVB Hypersensitivity, 2015, *Cancers*, in press

Kaufmann, WK: Systems biology of DNA damage responses. In Rebecca C. Fry, Editor, "Systems Biology in Environmental Toxicology and Health", Elsevier, Amsterdam, 2015, pp 207-224.

HYUNG-SUK KIM, Ph.D.

Hathaway CK, Gasim AM, Grant R, Chang AS, Kim HS, Madden VJ, Bagnell CR Jr, Jennette JC, Smithies O, Kakoki M. Low TGFβ1 expression prevents and high expression exacerbates dia betic nephropathy in mice. Proc Natl Acad Sci USA. 2015, 112 (18): 5815

Hathaway CK, Grant R, Hagaman JR, Hiller S, Li F, Xu L, Chang AS, Madden VJ, Bagnell CR, Rojas M, Kim HS, Wu B, Zhou B, Smithies O, Kakoki M. Endothelin-1 critically influences cardiac function via superoxide-MMP9 cascade. Proc Natl Acad Sci USA. 2015, 112 (16): 5141

NICHOLE L. KORPI-STEINER, Ph.D.

Milhorn D and Korpi-Steiner N. Using a simulation model to assess risk of false negative point-of-care urinary human chorionic gonadotropin (hCG) results due to high-dose hook interference. Clin Biochem 2015; 48(3):99-104.

THOMAS J. LAWTON, M.D.

Lawton TJ, Acs G, Argani P, et.al. Interobserver variability by pathologists in the distinction between fibroadenomas and phyllodes tumors. Int J Surg Pathol 2014;Aug26 (epub ahead of print)

Georgian-Smith D, Lawton T (eds): Breast Imaging and Pathlogic Correlations: A Pattern-Based Approach. Philadelphia: Wolters-Kluwer, 2014

O'Connor SM and Lawton TJ. Can Molecular Subtyping Be Used To Guide Metastatic Screening in Breast Cancer? (Invited Editorial) AJCP 2015; 143(4):468-70.

JIANDONG LIU, Ph.D.

Wang L., Liu Z., Yin C., Zhou Y., Liu J., Qian L. (2015). Improved generation of induced cardiomyocytes using a polycistronic construct expressing optimal ratio of Gata4, Mef2c and Tbx5. J Vis Exp. (in press)

Guo C., Deng Y., Liu J., Qian L. (2015). Cardiomyocyte-specific role of miR-24 in promoting cell survival. J Cell Mol Med. 19:103-12.

Wang L., Liu Z., Yin C., Asfour H., Chen O., Li Y., Bursac N., Liu J., Qian L. (2015). Stoichiometry of Gata4, Mef2c, and Tbx5 influences the efficiency and quality of induced cardiac myocyte reprogramming. Circ Res. 116:237-244.

Vogler G., Liu J., Iafe T.W., Migh E., Mihály J., Bodmer R. (2014). Cdc42 and formin activity control non-muscle myosin dynamics during Drosophila heart morphogenesis. J Cell Biol. 206:909-922.

CHRISTOPHER P. MACK, Ph.D.

Rozenbeg YM, Tesfu D, Musunuri S, Taylor JM, Mack CP. DNA methylation of a GC repressor element in the SM MHC promoter facilitates binding of the Notch-associated transcription factor, RBPJ/CSL1. *Arterioscler Thromb Vasc Biol.* 2014; 34(12):2624-31.

Lenhart KC, Becherer AL, Li J, Xiao X, McNally EM, Mack CP, Taylor JM. GRAF1 promotes ferlin-dependent myoblast fusion. *Dev Biol* 2014; 393(2):298-311.

Mack CP. Fibroblasts. In: Atherosclerosis: cellular, molecular and biochemical mechanisms and therapy (Wang and Patterson, eds.) Wiley and Sons Inc., Hoboken, NJ, 2014.

NOBUYO N. MAEDA, Ph.D.

Moore SM, Zhang H, Maeda N, Doerschuk CM, Faber JE. Cardiovascular risk factors cause premature rarefaction of the collateral circulation and greater ischemic tissue injury.Angiogenesis. 2015 Jul;18(3):265-81. doi: 10.1007/s10456-015-9465-6. Epub 2015 Apr 11. PMID: 25862671

Kayashima Y, Makhanova NA, Matsuki K, Tomita H, Bennett BJ, Maeda N. Identification of aortic arch-specific quantitative trait loci for atherosclerosis by an intercross of DBA/2J and 129S6 apolipoprotein E-deficient mice. PLoS One, 2015 Feb 17;10(2):e0117478. doi: 10.1371/journal.pone. 2015. PMID: 25689165, PMC PMC4331513.

Smithies O, Lawrence M, Testen A, Horne LP, Wilder J, Altenburg M, Bleasdale B, Maeda N, Koklic T. Stable oligomeric clusters of gold nanoparticles: preparation, size distribution, derivatization, and physical and biological properties. Langmuir. 2014 Nov 11;30(44):13394-404. doi: 10.1021/la5032637. Epub 2014 Oct 29. PMID: 25317930, PMCID: PMC4230385

Huang ZH, Reardon CA, Getz GS, Maeda N, Mazzone T. Selective Suppression of Adipose Tissue ApoE Expression Impacts Systemic Metabolic Phenotype and Adipose Tissue Inflammation. J Lipid Res. J Lipid Res. 2015 Feb;56(2):215-26. doi: 10.1194/jlr.M050567. PMID: 25421060; PMCID: PMC4306677

Franceschini N, Hu Y, Reiner AP, Buyske S, Nalls M, Yanek LR, Li Y, Hindorff LA, Cole SA, Howard BV, Stafford JM, Carty CL, Sethupathy P, Martin LW, Lin DY, Johnson KC, Becker LC, North KE, Dehghan A, Bis JC, Liu Y, Greenland P, Manson JE, Maeda N, Garcia M, Harris TB, Becker DM, O'Donnell C, Heiss G, Kooperberg C, Boerwinkle E. Prospective Associations of Coronary Heart Disease Loci in African Americans Using the MetaboChip: The PAGE Study. PLoS One. 2014 Dec 26;9(12):e113203. doi: 10.1371/journal.pone.0113203. eCollection 2014. PMID: 25542012, PMC4277270

Perez-Diaz S. Johnson LA, Dekoon RM, Moreno-Navarrete, Alxate O, Fernandez-Real, Maeda N, Arbones-Mainer JM. FASEB J. 2014 May 8 PMID: 24812087, PMCID: PMC4101648

Hiller S, Dekroon R, Xu L, Robinette J, Winnik W, Alzate O, Simington S, Maeda N, Yi X. α-Lipoic acid protects mitochondrial enzymes and attenuates lipopolysaccharide-induced hypothermia in mice. Free Radic Biol Med. 2014 Mar 24;71C:362-367. PMID: 24675228, PMCID: PMC3988092

STEPHANIE P. MATHEWS, M.D.

Rauch J, Mathews S, Foster M. Myelodysplastic Syndromes: Classification, Features, Diagnosis, and Treatment Options. Medscape Reference. Available at http://reference.medscape.com/features/slideshow/myelodysplastic-syndromes. October 2014

Dunphy C, Fedoriw Y, Mathews S: Hematopathology in Reisner (ed.), Pathology a Modern Case Study, 1st edition, McGraw-Hill Professional, October 2014, Chapter 14.

SUSAN MAYGARDEN, M.D.

Maygarden SJ, Urologic Pathology of the lower urinary tract, male GU system and Kidney Pathology (chapter 13), in Pathology, A Modern Case Study, Howard Reisner (ed), McGraw Hill Education Lange series, New York, 2014.

MARSHALL MAZEPA, M.D.

Raval JS, Mazapa MA, Brecher ME, Park, YA. How we approach an acquired thrombotic thrombocytopenic purpura patient. Transfusion. 2014 Oct;54(10):2375-82

Raval JS, Mazepa MA, Russell, SL, Immel CC, Whinna HC, Park YA. Passive reporting greatly underestimates the rate of transfusion associated circulatory overload after platelet transfusion. *Vox Sang* 2015; doi: 10.1111/vox.12234 [Epub ahead of print]

Peedin AR, Mazepa MA, Park YA, Weimer ET, Schmitz J, Raval JS. Two cases of asymptomatic massive fetomaternal hemorrhage. *Transfus Apher Sci* 2015; pii:S1473-0502(15)00005-1. doi:10.1016/j.transci.2015.01.004. [Epub ahead of print]

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

McNeill RS, Vitucci m, Wu J, Miller CR. Contemporary murine models in preclinical astrocytoma drug development. Beuro-oncology. 16(X):X. D)!: 10.1093/neuonc/nou288. Sep 2014. PMID: 25246428

Galvao RP, Kanina A, McNeill RS, Harbin JE, Forman O, Verhaak RGW, Nishuyama A, Miller CR, Zong H. Transformation of quiescent adult Oligodendrocyte precursor cells into malignant glioma through a multi-step reactivation process. Proceedings of the National Academy of Science USA. 111(40):E4214-23 Oct 2014. PMID: 25246577

Song G, Darr D, Santos CM, Ross M, Valdivia A, Jordan J, Midkiff BR, Cohen SM, Feinberg NN, Miller CR, Tarrant TK, Rogers AB, Dudley AC, Perou CM, Zamboni WC. Effects of tumor microenvironment heterogeneity on nanoparticle disposition and efficacy in breast cancer tumor models. Clinical Cancer Research. DOI: clincanres. 0493.2014. Sep 2014. PMID:25231403

Kimura M, Lee Y, Miller R, Castillo M. Glioblastoma multiforme: relationship to subventricular zone and recurrence. Neuroradiology Journal. 26(5):542-547 Oct 2013. PMID: 24199814

Carson CC, Moschos SJ, Edmiston SN, Darr DB, Nikoliashvili-Feinberg N, Groben PA, Zhou X, Kuan PF, Pandy S, Chan KT, Jordan JL, Hao H, Frank JS, Hopkinson DA, Gibbs DC, Alldredge VD, Parrish E, Hanna SC, Berkowitz P, Rubenstein DS, Miller CR, Bear JE, Ollila DW, Sharpless NE, Conway K, Thomas NE. IL-2 inducible T-cell kinase, a novel therapeutic target in melanoma. Clinical Cancer Research. 21(9):2167-76 May 2015. PMID: 25934889

Karginova O, Siegel MB, Adamo B, Deal AM, Van Swearingen AED, Nikolaishvili-Feinberg N, Parker JS, Santos CM, Darr D, Bash R, Sandison K, Zamboni WC, Miller CR, Anders CK. Efficacy of carboplatin alone and in combination with ABT888 in intracranial murine models of BRCA-mutated and BRCA-wild-type triple negative breast cancer. Molecular Cancer Therapeutics. Mar 2015. DOI:10.1158/1535-7163.MCT-14-0474. PMID: 25824335

Prabhu A, Sarcar B, Miller CR, Kim SH, Nakano I, Forsyth P, Chinnaiyan P. Ras-mediated modulation of pyruvate dehydrogenase activity regulates mitochondrial reserve capacity and contributes to glioblastoma tumorigenesis. Neuro-oncology. Feb 2015. DOI:10.1093/neuonc/nou369. PMID: 25712957

MELISSA B. MILLER, Ph.D.

Dunn JJ, and Miller MB. "Emerging respiratory viruses other than influenza". Clin Lab Med, 2014, 34:409-430.

Champion EA, Miller, MB, Popowitch EB, Hobbs MM, Saiman L, Muhlebach MS; for the STAR-CF Study Team. Antimicrobial susceptibility and molecular typing of MRSA in cystic fibrosis. Ped Pulmonol, 2014, 49:230-237.

Nelson JAE, Hawkins JT, Schanz M, Mollan H, MillerMB, Schmitz JL, Fiscus SA. "Comparison of the GenProbe Aptima HIV-1 and Abbott HIV-1 qualitative assays with the Roche Amplicor HIV-1 DNAassay for early infant diagnosis using dried blood spots". J Clin Vir, 2014, 60:418-421.

Lippencott CK, Miller MB, Van Rie A, Sena AC, Stout JE. "Complexities of Xpert MTB/RIF testing in a low-burden setting" Int J Tuberc Lung Dis. 2014, in press

Persing DH, Tenover FC, Tang Y-W, Nolte FS, Hayden RT, Van Belkum A, Miller MB, Ieven G, (eds). Molecular Microbiology; Diagnostic Principles and Practice, 3rd edition, ASM Press, Washington, DC, 2015. Role: Co-Editor

Roshdy DG, Tran A, Lecroy N, Alby K, Zeng D, Ou F-S, Daniels LM, Weber DJ, Miller MB. Impact of microarray-based assay for the identification of positive blood cultures for treatment optimization for patients with streptococcal and enterococcal bacteremia. J Clin Microbiol, 2015, 53:1411-1414.

Muhlebach MS, Heltshe SL, Popowitch EB, Miller MB, Thompson V, Kloster M, Ferkol T, Hoover WC, Schechter MS, Saiman L; the STAR-CF Study Team. Multicenter observational study on factors and outcomes associated with different MRSA types in children with cystic fibrosis. Ann Am Thorac Soc, 2015 Mar 6 [Epub ahead of print; PMID 25745825].

Alby K, Miller MB. Molecular detecion of respiratory viruses is superior to conventional methods. ASCP LabQ, 2015;CL6, pp. 1-13.

Couturier MR, Miller MB for the ASM Public and Scientific Affairs Board Committee on Laboratory Practices. Interim laboratory guidance for handling/testing specimens from cases or suspected cases of hemorrhagic fever virus; 3 pages, https://www.asm.org/images/PSAB/Ebola9-10-14.pdf.

Pentella M, Miller MB for the ASM Public and Scientific Affairs Board Committee on Laboratory Practices. A practical guidance document for the detection of Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV); 3 pages, http://www.asm.org/images/MERSGuidance.pdf.

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

Sendor, A.B., Hacker, K.E., Chen, S., Corona, A.L., Sen, O., Chiang, D., Snavely, A., Rogers, A.B., Montgomery, S.A., Rathmell. W.K., & McRee, A.J. Von Hippel-Lindau status influences phenotype of liver cancers arising from PTEN loss. Gastrointest. Cancer 2015; 5:1-11. PMID: 25844041

Gerding, J.C., Gilger, B.C., Montgomery, S.A., & Clode, A.B. Presumed primary ocular lymphangiosarcoma with metastasis in a miniature horse. Vet Ophthalmol. Jan 9, 2015. Epub ahead of print. PMID: 25581559.

Burrack, K.S., Montgomery, S.A., Homann, D., & Morrison, T.E. CD8+ T Cells control Ross River Virus infection in musculoskeletal tissues of infected mice. J. Immunol. 2015; 194:678-89. PMID:25488988

VOLKER R. NICKELEIT, M.D.

Singh HK, Reisner H, Derebail VK, Kozlowski T, Nickeleit V. Polyomavirus: Quantitative urinary polyomavirus-Haufen testing accurately predicts the degree of intra-renal viral disease. Tranplantation 2014 (in press)

Jennette JC, Nickeleit V. Anti-Glomerular Basement Membrame Glomerulonephitis and Goodpasture's Syndrome. In "Heptinstall's Pathology of the Kidney", 7th Edition, chapter 15,

Jennette, Olsen, Sylva, D'Agati (eds), Wolter Kluwer publisher (Philadelphia, Baltimore, New York), pp 657-684, 2014

Nickeleit V, Mengel M. Colvin RB. Renal Transplant Pathology. In "Hepinstall's Pathology of the Kidney", 7th edition, Chapter 29, Jennette, Olsen, Silva, D'Agati (eds), Wolter Kluwer publisher (Philadelphia, Baltimore, New York), pp 1121-1460, 2014

Nickeleit V, Singh HK. Vascular Pathology. In "Anatimic Pathology Board Review" Lefkowitch J (ed), Saunders – Elsevier (Philadelphia PA), 2nd edition (in press)

Nickeleit V, Singh HK. Polyomaviruses and disease: is there more to know than viremia and viruria? *Curr Opin Organ Transplant* 20(3):348-358, 2015

Jain K, Gupta A, Singh HK, Nickeleit V, Kshirsagar AV. Bile cast nephropathy. *Kidney Int* 87(2):484, 2015

JUDITH N. NIELSEN, D.V.M.

Weisner DL, Sprecht CA, Lee CK, Smith KD, Mukaremera L, Lee ST, Lee CG, Elias JA, Nielsen JN, Boulware DR, Bohjanen PR, Jenkins MK, Levitz SM, Nielsen K, (2015) Chitin Recognition via Chitotriosidase Promotes Pathologic Type-2 Helper T Cell Responses to Cryptococcal Infection. PLOS Pathogens 11(3):e 1004701, DOI:10.1371/journal.ppat.1004701 March 12, 2015.

YARA R. PARK, M.D.

Sloan SR, Andrzejewski CJr, Aqui NA, Kiss JE, Krause PJ, Park YA. Role if therapeutic apheresis in infectious and inflammatory diseases: Current knowledge and unanswered questions. J Clin Apher 2014,doi: 10.1002/jca.21370.

Raval JS, Mazepa MA, Brecher ME, Park YA. How we approach an acquired thrombotis thrombocytopenic purpura patient. Transfusion 2014, doi: 10,1111/trf.12794.

Watanaboonyongcharoen P, Whinna HC, Park YA. Interferon-□ is not elevated in idiopathic thrombotic thrombobocytopenic purpura. J Clin Apher 2014, doi: 10.1002/jca.21322

Choe E, Rao KV, Wood W, Covington D, Armistead PM, Coghill J, Serody J, Gabriel D, Jamieson K, Park YA, Raval JS, Shea T. Effectiveness of an algorithm based approach to the utilization of plerixafor in patients undergoing chemotherapy based stem cell mobilization, Biol of Blood and Marrow Transplant2014; 20: 1056-1073.

Raval JS, Mazepa MA, Russell, SL, Immel CC, Whinna HC, Park YA. Passive reporting greatly underestimates the rate of transfusion associated circulatory overload after platelet transfusion. *Vox Sang* 2015; doi: 10.1111/vox.12234 [Epub ahead of print]

Steiner ME, Ness PM, Assmann SF, Triulzi DJ, Sloan SR, Delaney M, Granger S, Bennett-Guerrero E, Blajchman MA, Scavo V, Carson JL, Levy JH, Whitman G, D'Andrea P, Pulkrabek S, Ortel TL, Bornikova L, Raife T, Puca KE, Kaufman RM, Nuttall GA, Young PP, Youssef S, Engelman R, Greilich P, Miles R, Josephson CD, Bracey A, Cooke R, McCullough J, Hunsaker R, Uhl L, McFarland JG, Park Y, Cushing MM, Klodell CT, Karanam R, Roberts PR, Dyke C, Hod EA, Stowell CP. Effects of Red-Cell Storage Duration on Patients Undergoing Cardiac Surgery. *New England Journal of Medicine* 2015; 372: 1419-1429.

Peedin AR, Mazepa MA, Park YA, Weimer ET, Schmitz J, Raval JS. Two cases of asymptomatic massive fetomaternal hemorrhage. *Transfus Apher Sci* 2015; pii:S1473-0502(15)00005-1. doi:10.1016/j.transci.2015.01.004. [Epub ahead of print]

Steiner ME, Ness PM, Assmann SF, Triulzi DJ, Sloan SR, Delaney M, Granger S, Bennett-Guerrero E, Blajchman MA, Scavo V, Carson JL, Levy JH, Whitman G, D'Andrea P, Pulkrabek S, Ortel TL, Bornikova L, Raife T, Puca KE, Kaufman RM, Nuttall GA, Young PP, Youssef S, Engelman R, Greilich P, Miles R, Josephson CD, Bracey A, Cooke R, McCullough J, Hunsaker R, Uhl L, McFarland JG, Park Y, Cushing MM, Klodell CT, Karanam R, Roberts PR, Dyke C, Hod EA, Stowell CP. Effects of Red-Cell Storage Duration on Patients Undergoing Cardiac Surgery. *New England Journal of Medicine* 2015; 372: 1419-1429.

Peedin AR, Mazepa MA, Park YA, Weimer ET, Schmitz J, Raval JS. Two cases of asymptomatic massive fetomaternal hemorrhage. *Transfus Apher Sci* 2015; pii:S1473-0502(15)00005-1. doi:10.1016/j.transci.2015.01.004. [Epub ahead of print]

NIRALI M. PATEL, M.D.

Montgomery ND, Parker JS, Eberhard DA, **Patel NM**, Weck KE, Sharpless NE, Hu Z, Hayes DN, Gulley ML. Identification of Human Papillomavirus Infection in Cancer Tissue by Targeted Next Generation Sequencing. Appl Immunohistochem Mol Morphol. Accepted for publication April 7, 2015.

LI QIAN, Ph.D.

Chen O. and Qian L. (2015) Direct Cardiac Reprogramming: Advances in Cardiac Regeneration. Biomed Res Int. doi:10.1155/2015/580406

Qiang Z. and Qian L. (2015) Induced cardiomyocytes from non-myocytes for cardiac repair. Ch J Hypertens. 23, 206-209

Wang L., Liu Z., Yin C., Asfour H., Chen O., Li Y., Bursac N., Liu J. and Qian L. (2015) Stoichiometry of Gata4, Mef2c and Tbx5 influences the efficiency and quality of iCM reprogramming. Circ Res. 116(2), 237-244

-Editor's Pick, highlighted on cover, previewed in Muraoka et al Circ Res 116:216-218

Guo C., Deng Y., Liu J. and Qian L. (2015) Cardiomyocyte-specific role of miR-24 in

promoting cell survival. J Cell Mol Med 19, 103-112

JAY S. RAVAL, M.D.

Massive transfusion protocol activation does not result in preferential use of older red blood cells. McDaniel LM, Triulzi DJ, Cramer J, Zuckerbraun BS, Peitzman AB, Raval JS, Neal MD. J Blood Transfus. 2014;2014:32867,doi:10.1155/2014/32867. PMID:25295222.

Development of a clinically significant ADAMTS13 inhibitor in a patient with hereditary thrombotic thrombocytopenic purpura. Raval JS, Padmanabhan A, Kremer Hovinga JA, Kiss JE. Am J Hematol 2014 Sep 13. Dol: 10.1002/ajh.23851. PMID: 25219856

Cardiac Injury Is A Common Postmortem Finding in Thrombotic Thrombocytopenic Purpura Patients: Is Empiric Cardiac Monitoring and Protection Needed? Nichols L, Berg A, Rollins-Raval MA, Raval JS. Ther Apher Dial. 2014 Sept 4. Doi: 10.1111/1744-9987.12191. PMID: 25196220.

Complications following an unnecessary peri-operative plazma transfusion and literature review. Raval JS, Waters JH, Triulzi DJ, Yazer MH. Asian J Transfu Sci. 2014 Jul;8(2):139-41. Doi: 10.4103/0973-6247. 137458. PMID:25161359.

How we approach an acquired thrombotic thromdocytopenic purpura patient. Raval JS, Maazepa MA, Brecher ME, Park YA. Transfusion. 2014 Oct;54(10):2375-82. Doi: 10.1111/trf.12794. PMID: 25070750.

Does early ambulation increase the risk of pulmonary embolism in deep vein thrombosis? Areview of the literature. Pillai AR, Raval JS. Ho,e Healthc Nurse. 2014 Jun;32(6):336-42. Doi: 10.1097/NHH.0000000000000087. PMID: 24887269

Design of asymmetric particles containing a charged interior and a neutral surface charge: comparative study on in vivo circulation if polyelectrolyte. Chen K, Xu J, Luft JC, Tian S, Raval JS, DeSimone JM. J Am Chem Soc. 2014Jul 16;136(28): 9947-52. doi: 10.1021/Ja50393n. PMID: 24941029

State of the Art: Massive Transfusion. McDaniel LN, Etchill EW, Raval JS, Neal MD. Transfus Med. 2014 Jun 24(3); 138-44. Doi: 10.1111/tme.12125. PMID: 24889802 2015

Raval JS, Mazepa MA, Russell SL, Immel CC, Whinna HC, Park YA. "Passive reporting greatly underestimates the rate of transfusion-associated circulatory overload after platelet transfusion." Vox Sang. 2015;108(4):387-392. PMID: 25753261

Smith M, Triulzi DJ, Yazer MH, Rollins-Raval MA, Waters JH, Raval JS. "Implementation of a simple electronic of a simple electronic transfusion alert system decreases inappropriate ordering of packed red blood cells and plasma in a multi-hospital health care system." Transfus Apher Sci. 2014;51(3):53-58. PMID: 25458903

Peedin AR, Mazepa MA, Park YA, Weimer ET, Schmitz JL, Raval JS. "Two cases of asymptomatic massive fetomaternal hemorrhage." Transfus Apher Sci. 2015; Epub ahead of print. PMID: 25736586

Lim MY, Raval JS, Richards KL, Zeidner JF, Foster MC. Lenalidomide-associated hemolytic anemia. Leuk Lymphoma. 2015; Epub ahead of print. PMID: 25644743

MARIAN ROLLINS-RAVAL, M.D.

Cardiac Injury Is A Common Postmortem Finding in Thrombotic Thrombocytopenic Purpura Patients: Is Empiric Cardiac Monitoring and Protection Needed? Nichols L, Berg A, Rollins-Raval MA, Raval JS. Ther Apher Dial. 2014 Sept 4. Doi: 10.1111/1744-9987.12191. PMID: 25196220.
Lim MY, McCarthy T, Chen SL, Rollins-Raval MA, Ma AD. "Importance of Pharmacokinetic Studies in the Management of Acquired Factor X Deficiency." Eur J Haematol. 2015 Mar 17. doi: 10.1111/ejh.12548 (Epub ahead of print)

Smith M, Triulzi DJ, Yazer MH, Rollins-Raval MA, Waters JH, Raval JS. "Implementation of a simple electronic transfusion alert system decreases inappropriate ordering of packed red blood cells and plasma in a multi-hospital health care system." Transfusion and Apheresis Science. 2014 Dec;51(3):53-8.

Fedoriw Y, Free ME, Rollins-Raval MA. "Peripheral blood regulatory T cell monitoring after solid organ transplantation." International Clinical Cytometry Society Newsletter (accepted 4/8/15)

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

Mizuguchi Y, Specht S, Isse K, Sasatomi E, Lunz JG, Takizawa T, Demetris AJ. Breast Tumor Kinase/Protein Tyrosine Kinase 6 (Brk/PTK6) Activity in Normal and Neoplastic Biliary Epithelia. J Hepatol. 2015 Mar 11. [Epub ahead of print]

Reynolds AR, Furlan A, Fetzer DT, Sasatomi E, Borhani AA, Heller MT, Tublin ME. Infiltrative hepatocellular carcinoma: what radiologists need to know. Radiographics. 2015 Mar-Apr;35(2):371-86.

Demetris AJ, Crawford JM, Isse K, Minervini MI, Nalesnik MA, Rubin E, Randhawa PS, Sasatomi E, Pathology of Liver and Hematopoietic Stem Cell Transplantation in Surgical Pathology of the GI Tract, Liver, Biliary Tract and Pancreas, 3rd Edition, Odze and Goldblum (eds), Elsevier, Philadelphia, 2015

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

Joshi K, Huang B, Scanga L, Buchman C, Chera BS. Postoperative radiotherapy for diffuse pigmented villonodular synovitis of the temporomandibular joint. *Am J Otolaryngol* 2015; 1:106-13.

JOHN L. SCHMITZ, Ph.D

Tebo AE, Detrick B, Hamilton RG, Khanolkar A, O'Gorman MR, Schmitz JL, Abraham RS. Clinical laboratory immunology: an indispensable player in the laboratory medicine. Am J Clin Pathol. 2014 Oct;142(4):437-44.

Nelson JAE, Tyler Hawkins J, Schanz M, Mollan K, Miller MB, Schmitz JL, and Fiscus SA. 2014. Comparison of the Gen-Probe Altima HIV-1 and Abbott HIV-1 Qualitative Assays with the Roche Amplicor HIV-1 DNA Assay for Early Infant Diagnosis Using Dried Blood Spots. J Clin Viol. 2014. 60:418-421.

Schmitz JL, Weimer E, Basic Principles and Instrumentation of Flow Cytometry in Integrated Hematopahtology Morphology and FCI with 1HC. Dunphy C (ed), ASCP Press, Hong Kong, 2014.

Bunch DO, Mendoza CE, Aybar LT, Kotzen ES, Colby KR, Hu Y, Hogan SL, Poulton CJ, Schmitz JL, Falk RJ, Nachman PH, Pendergraft WF, McGregor JG. Gleaning relapse risk from B cell phenotype: decreased CD5+ B cells portend a shorter time to relapse after B cell depletion in patients with ANCA-associated vasculitis. Ann Rheum Dis. 2015; Published Online First 30 April 2015

Peedin AR, Mazepa MA, Park YA, Weimer ET, Schmitz JL, Raval JS. Two cases of asymptomatic massive fetomaternal hemorrhage. Transfus Apher Sci. 2015; Published online First 26 January 2015

HARSHARAN K. SINGH, M.D.

Singh HK, Reisner HM, Derebail VK, Kozlowski T, Nickeleit V: Quantitative Urinary Polyomavirus-Haufen Tresting Accurately Predicts the Degree of Intra-Renal Viral Disease. Transplantation. 2014 Sep 25. [Epub aahead of print]

Renal Involvement in Polyarteritis Nodesa, Kawaysu Arteritis, and Giant Cell Arteritis in Jennette JC, Olson JL, abd Silva FG, D'Agati V (eds), Heptinstall's Pathology of the Kidney, 7th Edition, Wolters Kluwer, Philadelphia, 2014, Chapter 17, pp. 715-738.

Nickeleit V and Singh HK. Polyomaviruses and disease: is there more to know than viremia and viruria? Curr Opin Organ Transplant. 2015 Jun;20(3):348-58

SCOTT V. SMITH, M.D.

Patel M, Gomez NC, McFadden AW, Moats-Staats BM, Wu S, Rojas A, Sapp T, Simon JM, Smith SV, Kaiser-Rogers K, Davis IJ: PTEN deficiency mediates a reciprocal to IGF1 and MTOR inhibition. Molecular Cancer Research, July 3, 2014.

O'Connor W, Quintana MT, Smith SV, Willis MS, Renner J.: The Hypermetabolic Giant: 18F-FDG avid Giant Cell Tumor identified on PET-CT. J Radiology Case Reports 8(6): 27-38, 2014

OLIVER SMITHIES, D.Phil.

Hathaway CK, Gasim AM, Grant R, Chang AS, Kim HS, Madden VJ, Bagnell CR Jr, Jennette JC, **Smithies O**, Kakoki M. Low TGFβ1 expression prevents and high expression exacerbates diabetic nephropathy in mice. Proc Natl Acad Sci U S A. 2015 May 5;112(18):5815-20. doi: 10.1073/pnas.1504777112. Epub 2015 Apr 20. PMID: 25902541, PMCID: PMC4426439

Hathaway CK, Grant R, Hagaman Jr, Hiller S, Li F, Xu L, Chang AS, Madden VJ, Bagnell CR, Rojas M, Kim HS, Wu B, Zhou B, Smithies O, Kakoki M. Endothelin-1 critically influences cardiac function via superoxide-MMP9 cascade., Proc Natl Acad Sci USA, 2015, Apr 6, pii: 201504557. PMID: 25848038, PMCID: PMC4413291.

Matsuki K[1], Hathaway CK, Chang AS, Smithies O, Kakoki M. Transforming growth factor beta1 and aldosterone. Curr Opin Nephrol Hypertens. 2015 Mar; 24(2): 139-44. PMID: 25587902

Matsuki K, Hathaway CK, Lawrence MG, Smithies O, Kakoki M. The role of transforming growth factor beta 1 in the regulation of blood pressure. Curr Hypertens Rev. 2014; 10:223-38. PMID: 25801626

Smithies O[1], Lawrence M, Testen A, Home LP, Wilder J, Attenburg M, Bleasdale B, Maeda N, Koklic T. Stable oligomeric clusters of gold nanoparticles: preparation, size distribution, derivatization, and physical and biological properties. Langmuir 2014; Nov 11;30(44): 13394-404. PMID: 25317930

Smithies O, Coffman T, A Conversation with Oliver Smithies. Annu. Rev. Physiol. 2015 DOI 10-1146, Vol 77: 1-11. February 2015

Gitschier J, The Whole of a Scientific Career: An Interview with Oliver Smithies, PLOS Genetics, DOI: 10.1371 May 28, 2015

Production podcast interview, People Behind the Science, "A Pathologist's Path to Paramount Discoveries in Protein Separation and Genetic Recombination" April 27, 2015

Video production for Thanks To My Teacher, LLC, Chapel Hill, NC, interview with Dr. Smithies, April 17, 2015

Video production, Interview with Dr. Smithies for Carolina Week, UNC TV, April 9, 2015

Published in an online newsletter, 'The Conversation', an article, "Nobel laureate: for inspiration, I take to the sky and fly with birds." July, 2014

JOAN M. TAYLOR, Ph.D.

Lenhart KC, Becherer AL, Li J, Xiao X, McNally EM, Mack CP and **Taylor JM**. GRAF1 promotes ferlin-dependent myoblast fusion. *Dev. Biol.* Dev Biol. 2014 Sep 15;393(2):298-311. doi: 10.1016/j.ydbio.2014.06.025. PMID:25019370

Staus DP, Weise-Cross L, Mangum KD, Medlin MD, Mangiante L, **Taylor JM**, Mack CP. Nuclear RhoA Signaling Regulates MRTF-dependent SMC-specific Transcription. Am J Physiol Heart Circ Physiol. *Heart Circ Physiol* 2014; 307(3):H379-90.PMID: 24906914 PMCID:PMC4121646

Rozenberg JM, Tesfu DB, Musunuri S, Taylor JM, Mack CP. DNA Methylation of a GC Repressor Element in the Smooth Muscle Myosin Heavy Chain Promoter Facilitates Binding of the Notch-Associated Transcription Factor, Recombination Signal Binding Protein for Immunoglobulin κ J Region/CSL1. *Arterioscler Thromb Vasc Biol*. 2014; 34(12):2624-31. PMID:25324571 PMCID:PMC4239181

LEIGH B. THORNE, M.D.

"Alterations of LKB1 and KRAS and Risk of Brain Meteastasis: Comprehensive Characterization by Mutation Analysis, Copy Number. And Gene Expression in Non-Small Lung Carcinoma Lung Cancer" has been accepted for publication in Lung Cancer. Zhao N, Wilkerson MD, Shah U, Yin X, Wang A, Hayward MC, Roberts P, Lee CB, Parsons AM, Thorne LB, Haithcock BE, Grilley-Olson JE, Stinchcombe TE, Funkhouser WK, Wong KK, Sharpless NE, Hayes DN. Lung Cancer. 2014 Aug 30. pii: S0169-5002(14)003358-4, doi:10.1016/j.lungcan.2014.08.013.[Epub ahead of print]PMID: 252224251.

Cancer Genome Atlas Research Network (listed as one collaborators). The somatic genomic landscapt of chromophobe renal cell carcinoma. Cancer Cell, 2014 Sep8;26(3):319-30. Doi: 10.1016/j. ccr.2014.07.014. Epub 2014 Aug 21. PMID: 25155756.

Cancer Genome Atlas Research Network (listed as one collaborators). Comprehensive molecular profiling of lung adenocarcinoma. Nature, 2014 Jul 31; 511(7511):543-50. Doi: /nature13385. Epub 2014 Jul 9. PMID: 25079552.

Cancer Genome Atlas Network (listed as collaborator). Comprehensive genomic characterization of head and neck squamous cell carcinoma. Nature. 2015 Jan 29;517(7536):576-82. doi: 10.1038/nature14129. PMID: 25631445

Cancer Genome Atlas Research Network (listed as collaborator).Integrated genomic characterization of papillary thyroid carcinoma. Cell. 2014 Oct 23;159(3):676-90. doi: 10.1016/j.cell.2014.09.050.PMID: 25417114

RICHARD R. TIDWELL, Ph.D.

Thuita JK, Wolf KK Murilla GA, Bridges AS, Boykin DW, Mutuku JN, Liu Q, Jones SK, Gem CO, Ching S, Tidwell RR, Wang MZ, Paine MF, Brun R. Chemotherapy of second stage human

African trypanosomiasis: comparison between the parenteral diamidine DB829 and its oral prodrug DB868 in vervet monkeys. PLoS Negl Trop Dis. Feb 5, 2015; 9(2):e0003409. Doi:10. 137/journal.pntd.0003409. eCollection 2105. PMID: 25654243.

Wenzler T, Yang S, Patrick DA, Braissant O, Ismail MA, Tidwell RR, Boykin DW, Wang MZ, Brun R. In vitro and in vivo evaluation of 28DAP010, a novel diamidinefor the treatment of second stage African sleeping sickness. Antimicrob Agents Chemother. 2014 58(7):4452-4463. PubMed PMID:24867978.

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

Kaiser-Rogers K, Trembath D, Miller CR. In-situ hybridization: Encyclopedia of the Neurological Sciences, Second Edition, Robert B. Daroff and Michael J. Aminoff (Eds), Academiic Press, June 2014

Bailey CE, Peck BA, Weiser M, Lee SE, Gipson GR, Iyer VB, Sartor RB, Herfarth HH, Long MD, Hansen JJ, Isaacs KL, Trembath DG, Rahbar R, Sadiq, TS, Furey TS, Sethupathy P, Sheikh, SZ. microRNAs classify different disease behavior phenotypes of Crohn's disease and may have prognostic utility *Inflammatory Bowel Diseases* (accepted)

CYRUS VAZIRI, Ph.D.

Zlatanou A, Sabbioneda S, Miller ES, Greenwalt A, Aggathanggelou A, Maurice MM, Lehmann AR, Stankovic T, Reverdy C, Colland F, **Vaziri C,** Stewart GS. (2015) USP7 is essential for maintaining Rad18 stability and DNA damage tolerance. *Oncogene* May 11. doi: 10.1038/onc.2015.149. [Epub ahead of print]

Nevis KR, Raiford KL, **Vaziri C,** Cook JG. (2015) Events at DNA replication origins and genome stability. In 'Systems biology of cancer' Cambridge University Press Editor: Sam Thiagalingam Chapter 4, pp. 35-55

KAREN E. WECK, M.D.

Aziz N, Zhao Q, Driscoll DK, Funke B, Gibson JS, Grody WW, Hegde MR, Hoeltge GA, Leonard DGB, Merker JD, Nagarajan R, Palicki LA, Robetorye RS, Schrijver I, Weck, KE, Voelkerding KV. College if American Pathologists' Laboratory Standards for Next Generation Sequencing Clinical Trials. Arch Pathol Lab Med Aug, 2014 [epub ahead of print].

Lyon E, Schrijver I, Weck KE, Ferreira-Gonzalez A, Richards CS, Palomaki GE. Molecular Genetic Testing for Cystic Fibrosis: Laboratory Performance on the College of American Pathologists External Proficiency Surveys, Genet Med 2014 Jul 31. [epub ahead of print].

Shapiro AJ, Weck KE, Chao KC, Rosenfeld M, Nygren AOH, Knowles MR, Leigh MW, Zariwala MA. Cri du Chat syndrome and primary ciliary dyskinesia: a common genetic cause on chromosome 5p. J Pediatr. 2014 Oct;165(4):858-61. PMID:25066065

Palomaki GE, Ashwood ER, Weck KE. A flawed challenge but valid recommendation: a response to Takoudes and Hamar. Ultrasound Obstet Gynecol. 2015 Jan;45(1):117. PMID: 25557844
NL Couser, MM Masood, NT Strande, A K M. Foreman, K Crooks, KE Weck, M Lu, K C Wilhelmsen, M Roche, JP Evans, JS Berg, C M Powell. The Phenotype of Multiple Congenital Anomalies-Hypotonia-Seizures Syndrome 1: Report and Review. Am J Med Genet A. 2015 Apr 29. [Epub ahead of print]. PMID: 25920937

Lee K, Berg JS, Milko L, Crooks K, Lu M, Bizon C, Owen P, Wilhelmsen KC, Weck KE, Evans JP, Garg S. High Diagnostic Yield of Whole Exome Sequencing in Participants with Retinal Dystrophies in a Clinical Ophthalmology Setting.Am J Ophthalmol. 2015 Apr 21. [Epub ahead of print] PMID: 25910913

Hertz DL, Snavely AC, McLeod HL, Walko CM, Ibrahim JG, Anderson S, Weck KE, Magrinat G, Olajide O, Moore S, Raab R, Carrizosa DR, Corso S, Schwartz G, Peppercorn JM, Evans JP, Jones DR, Desta Z, Flockhart DA, Carey LA, Irvin WJ Jr. In Vivo Assessment of the Metabolic Activity of CYP2D6 Diplotypes and Alleles. Br J Clin Pharmacol. 2015 Apr 24. [Epub ahead of print]. PMID: 25907378

Lee JA, Lee CR, Reed BN, Plitt DC, Polasek MJ, Howell LA, Cicci JD, Tasca KE, Weck KE, Rossi JS, Stouffer GA. Implementation and evaluation of a CYP2C19 genotype-guided antiplatelet therapy algorithm in high-risk coronary artery disease patients. Pharmacogenomics. 2015 Mar;16(4):303-13. PMID: 25823779

BERNARD E. WEISSMAN, Ph.D.

Melanie, MF, Roth, JJ, Hutt-Cabezas, M, Busse, TM, Kaur, H, Price A, Maynard, R, Rubens, J, Taylor, I, Mao, X-G, Xu, J, Kuwahara, Y, Allen, SJ, Erdreich-Epstein, A, Weissman, BE, Orr, BA, Eberhart, CG, Biegel, JA and Raabe, H. Disrupting LIN28 in atypical teratoid rhabdoid tumors reveals the importance of the mitogen activated protein kinase pathway as a therapeutic target. Oncotarget, 2015. 6:3165-77.

Kaur, H, Hutt-Cabezas, M, Weingart, M, Xu, J, Kuwahara, Y, Erdreich-Epstein, A, Weissman, BE, Eberhart, CG and Raabe, EH. The chromatin modifying protein HMGA2 promotes atypical teratoid rhabdoid cell tumorigenicity. Journal of Neuropathology & Experimental Neurology, 2015. 74:177-85.

Orvis, T, Hepperla, A, Walter, V, Song, S, Simon, J, Parker, J, Wilkerson, MD, Desai, N, Major, MB, Hayes, DN, Davis, IJ and Weissman, B. Inactivation of the SWI/SNF complex ATPase BRG1/SMARCA4 leads to gene silencing during non-small cell lung cancer development. Cancer Research, 2014. 74:6486-98. doi: 10.1158/0008-5472.CAN-14-0061. Epub 2014 Aug 12.

Wei, D, Goldfarb, D, Song, S, Cannon, C, Sakellariou-Thompson, D, Emanuele, M, Major, MB, Weissman, BE and Kuwahara, Y. SNF5/INI1 Deficiency Redefines Chromatin Remodeling Complex Composition During Tumor Development. Molecular Cancer Research. 2014. 12:1574-85. doi: 10.1158/1541-7786.MCR-14-0005. Epub 2014 Jul 9.

Biegel, JA, Busse, TM and Weissman, BE SWI/SNF Chromatin Remodeling Complexes and Cancer. American Journal of Medical Genetics Part C: Seminars in Medical Genetics, 2014. Sep166C:350-66. doi: 10.1002/ajmg.c.31410. Epub 2014 Aug 28.

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

"Passive reporting greatly underestimates the rate of transfusion-associated circulatory overload after platelet transfusion". Raval JS, Mazepa MA, Russell SL, Immel CC, Whinna HC, Park YA. Vox Sang. 2015 May;108(4):387-92. doi: 10.1111/vox.12234. Epub 2015 Mar 6.

JULIA W. WHITAKER, D.V.M.

George NM, Whitaker J, Vieira G, Geronimo J, Bellinger DA, Fletcher CA, Garner JP. Antioxidant Therapies for Ulcerative Dermatitis: A Potential Model for Skin Picking Disorder. PLoS ONE, (*vol & issue*): pone.0132092.

DAVID WILLIAMS, M.D.

Walavalkar NM, Cramer JM, Buckwald WA, Scarsdale JN, Williams DC, Jr., Solutions structure and intramolecular exchange of methyl-cytosine binding domain protein 4 (MBD4) on DNA suggests a mechanism to scan for mCpG/TpG mismatches. Nuc. Acids Res., 2014 Sep; 42(17):11218-11232.

Desai, MA, Webb, HD, Sinanan, LM, Scarsdale, JN, Walavalkar, NM, Ginder, GD, Williams, DC, Jr. An intrinsically disordered region of methyl-CpG binding domain protein 2 (MBD2) recruits the histone deacetylase core of the NuRD complex. Nuc. Acids Res., 2015; 43(6):3100-3113.

Li, W, Tang, W, Teves, ME, Zhang, Z, Zhang, L, Li, H, Archer, KJ, Peterson, DL, Williams, DC, Jr., Strauss, JF, 3rd, Zhang, Z. A MEIG1/PACRG complex in the manchette is essential for building the sperm flagella. Development, 2015; 142(5):921-930.

White ER, Sun L, Ma Z, Beckta JM, Danzig BA, Hacker DE, Huie M, Williams DC, Edwards RA, Valerie K, Glover JNM, Hartman MCT. Peptide Library Approach to Uncover Phosphomimetic Inhibitors of the BRCA1 C-Terminal Domain. ACS Chem Biol., 2015; epub Feb 5.

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

Xu L, Yates CC, Lockyer P, Xie L, Bevilacqua A, He J, Lander C, Petterson C, Willis MS: MMI-0100 inhibits cardiac fibrosis in myocardial infarction by direct actions on cardiomyocytes and fibroblasts via MK2 inhibition. J Mol Cell Card. 2014 Sep 22. pii: S002-2828(14)00292-2. doi: 10.1016/j.yjmcc.2014.09.011. [Epub ahead of print] PMID 25257914).

Banerjee R, He J, Spaniel C, Quintana MT, Wang Z, Bain J, Newgard CB, Muehlbauer MJ, Willis MS: Non-targeted metabolomics analysis of cardiac Muscle Ring Finger-1(MuRF1), MuRf2, and MuRF3 in vivo reveals novel and redundant metabolic changes. Metabolomics.DOI 10.1007/211306-014-0695-1.

Gwathmey TM, Willis MS, Tatreau J, Wang S, McCudden CR: Clinical Relevance of Trace Bands on Serum Electrophoresis in Patients without a History of Gammopathy. J Int Fed Clinc Chem. In press, 14 November 2014.

Li J, Lange LA, Duan Q, Lu Y, Singleton AB, Zonderman AB, Evans MK, Li Y, Taylor HA, Willis MS, Nalls M, WilsonJG, Lange EM: Genome-wide admixtureand association study of serum iron, ferritin, transferrin saturation and totl iron binding capacity in African Americans. Humm Mol Genet. 2014 Sept 15pii: ddu454 [Epub ahead of print] (PMID 25224454)

O'Connor W, Quintana M, Smith S, Willis MS, Renner J: The hypermetabolic giant: 17F-FdG avid giant cell tumor identified on PET-CT. J Rad Case Reports. 8(6):27-38, 2014 (doi: 10.3941/jrcr.v816.1328).

McCormich M, Collins C, Makarewich, Chen Z, Rojas M, Willis MS, Houser S, Tzima E: Platelet endothelial cell adhesion molecule-1 mediates endothelial-cardiomyocyte communication and regulates cardio function. J Am Heart Assoc. In press, 17 June 2014.

Couch ME, Dittus K, Toth MJ, Willis MS, Guttridge DC, George JR, Chang EY, Gourin CG, Der-Torossian H: Cancer Cachexiz Update in Head and Neck Cancer: Pathophsiology and Treatment. Head Neck. 2014 Mar 14.doi: 10.10002/hed.23696. [Epub ahead of print] (PMID 24634283).

Parry TL, Melehani JH, Ranek MJ, Willis MS: Functional amyloid signaling via the inflammasome, necrosome, and signalosome: New therapeutic targets in heart failure. *Front. Cardiovasc. Med*. 2:25. doi:10.3389/fcvm.2015.00025.

Schisler JC, Ronnebaum S, Madden M, Channell M, Campen M, Willis MS: Endothelial inflammatory transcriptional responses to an altered plasma exposome following inhalation of diesel emissions. *Inhal Tox*. Inhal Toxicol, Early Online: 1–9. DOI: 10.3109/08958378.2015.1030481.

Schisler JC, Grevengoed TJ, Pascual F, Cooper DE, Ellis JM, Paul DS, Willis MS, Patterson C, Jia W, Coleman RA: Cardiac Energy Dependence on Glucose Increases Metabolites Related to Glutathione and Activates Metabolic Genes Controlled by Mechanistic Target of Rapamycin. *JAHA*. Epub 2015 Feb 24;4(2). pii: e001136. doi: 10.1161/JAHA.114.001136 (PMID 25713290).

Burk LM, Wang K-H, Wait JM, Kang E, Willis M, et al. (2015) Delayed Contrast Enhancement Imaging of a Murine Model for Ischemia Reperfusion with Carbon Nanotube Micro-CT. PLoS ONE 10(1): e0115607. doi:10.1371/journal.pone.0115607.

Xie L, Pi X, Wang Z, He J, Willis MS, Patterson C: Depletion of PHD3 protects heart from ischemia/reperfusion injury by inhibiting cardiomyocyte apoptosis. *J Mol Cell Cardiol*, 2015 Jan 26. pii: S0022-2828(15)00019-X. doi: 10.1016/j.yjmcc.2015.01.007. [Epub ahead of print].

Lange E, Li J, Lange L, Sabourin J, Duan Q, Valdar W, Willis M, Li Y, Wilson J: Genome-wide and Exome-wide Association Study of Serum Lipoprotein (a) in the Jackson Heart Study. *J Hum Genet*. In press, 18 March 2015.

ALISA WOLBERG, Ph.D.

Aleman MM, Byrnes JR, Wang J-G, Tran R, Lam WA, Di Paola J, Mackman N, Degen JL, Flick MJ, Wolberg AS. 2014. Factor XIII activity mediates red blood cell retention in venous thrombi. *J Clin Invest*, 124(8):3590-600. PMID: 24983320, PMCID: 4109540
Wang Y, Reheman A, Spring CM, Kalantari J, Marshall AH, Wolberg AS, Gross PL, Weitz JI, Rand ML, Mosher DF, Freedman J, Ni H. 2014. Plasma fibronectin supports hemostasis and regulates thrombosis. *J Clin Invest*, 124(10):4281-93. PMID: 25180602

Brummel-Ziedins KE, Wolberg AS. 2014. Global assays of hemostasis. *Curr Opin Hematol*, 21(5): 395-403. PMID: 25054908

Levy JH, Szlam F, Wolberg AS, Winkler A. 2014. Clinical use of the activated partial thromboplastin time and prothrombin time for screening: a review of the literature and current guidelines for testing. *Clin Lab Med*, 34(3): 453-77. PMID: 25168937

Bucay I, O'Brien III ET, Wulfe SD, Superfine R, Wolberg AS, Falvo MR, Hudson NE. 2015. Physical determinants of fibrinolysis in single fibrin fibers. *PLOS ONE*, 10(2): e0116350. PMID: 25714359

Aleman MM, Holle LA, Stember KG, Devette CI, Monroe DM, Wolberg AS. 2015. Cystamine preparations exhibit anticoagulant activity. *PLOS ONE*,10(4):e0124448, PMID: 25915545

Wolberg AS, Levy JH. 2015. Factor XIII: one more critical factor for hemostasis. *Anesth Analg Case Rep*, 4(9):125-6, PMID: 25909778

Wolberg AS, Rosendaal FR, Weitz JI, Jaffer IH, Agnelli G, Baglin T, Mackman N. 2015. Venous thrombosis. *Nature Reviews Dis Pri,* 1:15006

Gebhart J, Laszkovics C, Poschm F, Ay C, Reitter-Pfoertner SE, Haslacher H, Muszbek L, Wolberg AS, Pabinger I. 2015. Plasma clot properties in patients with a mild to moderate bleeding tendency of unknown cause. *Annals Hematol,* 94(8):1301-10. PMID: 25971840

Walton BL, Byrnes JR, Wolberg AS. 2015. Fibrinogen, red blood cells, and factor XIII in venous thrombosis. *J Thromb Haem*, 13(Suppl 1):S208-15. PMID: 26149026

Krebs CR, Li L, Wolberg AS, Oldenburg, AL. 2015. A portable blood clot micro-elastometry device based on resonant acoustic spectroscopy. *Rev Sci Instruments*, in press

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

Dellon ES, Speck O, Woodward K, Covey S, Rusin S, Shaheen NJ, Woosley JT. Distribution and variability of Esophageal eosinophilia in patients undergoing upper endoscopy. Mol Patho. 2014 Sep 12. Doi: 10.1038/modpathol.2014.110. [Epub ahead of print].

Wolf WA, Cotton CC, Green DJ, Hughes JT, Wooslwy JT, Shaheen NJ, Dellon ES. Steriod therapy for eosinophilic esophagitis: Predictors of response and treatment of steroid-refractory patients. Clin Gastroenterol Hepatol. 2014 Jul 30. PMID:25086190

Dellon ES, Speck O, Woodward K, Covey S, Rusin S, Gebhart JH, Woosley JT, Shaheen NJ. Markers of Eosinophilic Inflammation for Diagnosis of Eosinophilic Esophagitis and Proton Pump Inhibitor-Responsive Esophageal Eosinophilia: A Prospective Study. Clin Gastroentrol Hepatol. 2014 July 30 PMID:2493367.

Al Ansari N, Kim BS, Srirattanapong S, Semelka CT, Ramalho M, Altun E, Woosley JT, Calvo B, Semelka RC. Mass-forming cholangiocarcinoma and adenocarcinoma of unknown primary: can they ve distinguished on liver MRI? Abdom Imaging. 2014 Jun 15

MAIMOONA B. ZARIWALA, Ph.D.

Zariwala MA, Knowles MR, Leigh MW. Primary Ciliary Dyskinesia: In: Pagon RA, Bird TD, Dolan CR, Stephens K, Adam MP, editors. GeneReviews™ [Internet]. Seattle (WA): University of Washington, Seattle; 1993-. 2015. Initial posting Jan 24, 2007, update history Jun 13, 2007; Feb 1, 2008; Oct 6, 2009; Sep 15, 2011; Nov 10, 2011; Jan 12, 2012, Mar. 8, 2012; Jun 7, 2012; Last update: Feb 13, 2013; Current update submitted: July 6, 2015.

Shapiro AJ, Zariwala MA, Ferkol T, Davis SD, Sagel SD, Dell SD, Rosenfeld M, Olivier KN, Milla C, Daniel SJ, Kimple AJ, Manion M, Knowles MR, Leigh MW, the Genetic Disorders of Mucociliary Clearance Consortium. Diagnosis, Monitoring, and Treatment of Primary Ciliary Dyskinesia: PCD foundation consensus recommendations based on state of the art review. Pediatr Pulmonol 2015 (under revision)

Marshall CR, Scherer SW, Zariwala MA, Lau L, Paton TA, Stockley T, Jobling RK, Ray PN, Knowles MR, FORGE Canada Consortium, Hall DA, Dell SD, Kim RH. Whole exome sequencing and targeted copy number analysis in Primary Ciliary Dyskinesia. G3 Genes Genom Genet 2015 Jul 2. pii: g3.115.019851. doi: 10.1534/g3.115.019851. [Epub ahead of print].

Shapiro A, Tolleson-Rinehart S, Zariwala M, Knowles M, Leigh M. The prevalence of clinical features associated with primary ciliary dyskinesia in a heterotaxy population: results of a web-based survey. Cardiol Young. 2015 Apr;25(4):752-9.

Fedick AM, Jalas C, Treff NR, Knowles MR, Zariwala MA. Carrier frequencies of eleven mutations in eight genes associated with primary ciliary dyskinesia in the Ashkenazi Jewish population. Mol Genet Genomic Med. 2015 Mar;3(2):137-42.

Davis SD, Ferkol TW, Rosenfeld M, Lee HS, Dell SD, Sagel SD, Milla C, Zariwala MA, Pittman JE, Shapiro AJ, Carson JL, Krischer JP, Hazucha MJ, Cooper ML, Knowles MR, Leigh MW. Clinical features of childhood primary ciliary dyskinesia by genotype and ultrastructural phenotype. Am J Respir Crit Care Med. 2015 Feb;191(3):316-24.

Lin J, Yin W, Smith MC, Song K, Leigh MW, Zariwala MA, Knowles MR, Ostrowski LE, Nicastro D. Cryo-electron tomography reveals ciliary defects underlying human RSPH1 primary ciliary dyskinesia. Nat Commun. 2014 Dec 4; 5:2527. (Online Journal)

Shapiro A, Davis S, Ferkol T, Dell S, Rosenfeld M, Olivier K, Sagel S, Milla C, Zariwala MA, Wolf W, Carson JL, Hazucha MJ, Burns K, Robinson B, Knowles M, Leigh M. Laterality defects other than situs inversus totalis in primary ciliary dyskinesia: Insights into situs ambiguous and heterotaxy. Chest. 2014 Nov;146(5):1176-86.

Shapiro AJ, Weck KE, Chao KC, Rosenfeld M, Nygren AO, Knowles MR, Leigh MW, Zariwala MA. Cri du Chat syndrome and primary ciliary dyskinesia: A common genetic cause on chromosome 5p. J Pediatr. 2014 Oct;165(4):858-61.

Lobo J, Zariwala MA, Noone PG. Primary ciliary dyskinesia. Semin Respir Crit Care Med. 2015 Apr;36(2):169-79. Review.

Lobo LJ, Zariwala MA, Noone PG. Primary ciliary dyskinesia. QJM. 2014 Sep;107(9):691-9. Review.

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Zheng X, Zhai B, Koivunen P, Shin SJ, Lu G, Liu J, Geisen C, Chakraborty AA, Moslehi JJ, Smalley DM, Wei X, Chen X, Chen Z, Beres JM, Zhang J, Tsao JL, Brenner MC, Zhang Y, Fan C, Depinho RA, Paik JH, Gygi SP, Kaelin WG Jr* and Zhang Q*. Prolyl hydroxylation by EglN2 destabilizes FOXO3a by blocking its interaction with the USP9x deubiquitinase. Genes&Development, 2014 Jul 1; 28(13): 1429-44 (*: co-correspondent) PMC4083087

Lu G, Zhang Q, Huang Y, Song J, Tomaino R, Ehrenberger T, Lim E, Liu W, Bronson RT, Bowden M, Brock J, Krop IE, Dillon DA, Gygi SP, Mills GB, Richardson AL, Signoretti S, Yaffe MB and Kaelin WG Jr. Phosphorylation of ETS1 by Src family kinase member prevents its recognition by the COP1 tumor suppressor. Cancer Cell, 2014, Aug 11; 26(2): 222-234 PMC4169234