DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
2010-2011 ANNUAL REPORT

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DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
FACULTY AND TRAINEE ROSTER
2010-2011

Chair

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

Vice Chairs

Thomas W. Bouldin, M.D., Professor and Vice Chair for Faculty and Trainee Development
William K. Funkhouser, M.D., Ph.D., Professor and Director of Anatomic Pathology and Associate Director of McLendon Clinical Laboratories
Herbert C. Whinna, M.D., Ph.D., Associate Professor and Director of McLendon Clinical Laboratories and Vice Chair for Clinical Services
David G. Kaufman, M.D., Ph.D., Professor and Vice Chair for Research Development

Associate Chair for Administration

Nancy H. Nye

Distinguished Professors

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 Owen Prof., 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.
Dwight A. Bellinger, D.V.M., Ph.D.
Debra A. Budwit, M.D.
John F. Chapman, Dr.P.H.
Frank C. Church, Ph.D.
William B. Coleman, Ph.D.
Marila Cordeiro-Stone, Ph.D.
Cherie H. Dunphy, M.D.
Rosann A. Farber, Ph.D.
Peter H. Gilligan, Ph.D.
Virginia L. Godfrey, D.V.M., Ph.D.
M. David Goodman, M.D.
Pamela A. Groben, M.D.
Margaret L. Gulley, M.D.
J. Ed. Hall, Ph.D. (12/31/10)
Catherine A. Hammett-Stabler, Ph.D.
H. Michael Jones, M.D.
Kathleen Kaiser-Rogers, Ph.D.
William K. Kaufmann, Ph.D.

Hyung-Suk Kim, Ph.D.
Joe N. Kornegay, D.V.M., Ph.D.
Susan T. Lord, Ph.D.
Nadia N. Malouf, M.D. (6/30/11)
Susan J. Maygarden, M.D.
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.
Karen E. Weck, M.D.
Bernard E. Weissman, Ph.D.
John T. Woosley, M.D., Ph.D.

Associate Professors
Jessica K. Booker, Ph.D.
Arlene S. Bridges, Ph.D.
Georgette A. Dent, M.D.
David Eberhard, M.D., Ph.D.
Thomas H. Fischer, Ph.D. (3/12/11)
Craig A. Fletcher, D.V.M., Ph.D.
Susan C. Hadler, M.D.
Tracy M. Heenan, D.V.M.
Ruth A. Lininger, M.D.
Christopher P. Mack, Ph.D.
Melissa B. Miller, Ph.D.
Joan M. Taylor, Ph.D.
Leigh B. Thorne, M.D.
Cyrus Vaziri, Ph.D.
Maimoona B. Zariwala, Ph.D.

Assistant Professors
Araba N. Afenyi-Annan, M.D.
Claudia M. Brady, M.H.S.
Megan J. DiFurio, M.D.
George Fedoriw, M.D.
Adil Hussein Gasim, M.D.
Oleg V. Gorkun, Ph.D.
Kevin E. Greene, M.D.
Jonathon W. Homeister, M.D., Ph.D.
Peiqi Hu, M.D.
Heike Hunt, M.D.
John P. Hunt, M.D.
Karou Inoue, Ph.D. (7/31/11)

Masao Kakoki, M.D., Ph.D.
Stephanie P. Mathews, M.D.
Christopher R. McCudden, Ph.D. (6/29/11)
C. Ryan Miller, M.D., Ph.D.
Siobhan M. O'Connor, M.D.
Kumar R. Pandya, Ph.D.
Yara A. Park, M.D.
Arlin B. Rogers, D.V.M., Ph.D.
Lori R. Scanga, M.D., Ph.D.
Dennis A. Simpson, Ph.D.
Dimitri G. Trembath, M.D., Ph.D.
Julia W. Whitaker, D.V.M.
Monte S. Willis, M.D., Ph.D.
Alisa S. Wolberg, Ph.D.
Hong Xiao, M.D.
Xianwen Yi, M.D., Ph.D.

Lecturer
Gayle C. McGhee

Instructor
Steven Holmes, B.S., M.H.S.
April E. Kemper, M.S., M.H.S.
Vincent J. Moylan, M.S., P.A. (ASCP)
Tracie L. Wagner, P.A.

Clinical Faculty (Medical Examiners)
Clay Nichols, M.D.
Deborah L. Radisch, M.D.
Samuel Simmons, M.D.
Ruth E. Winecker, Ph.D.

Faculty Emeritus
Stuart Bentley, M.D.
John D. Butts, M.D.
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.
Joe W. Grisham, M.D.
John E. Hammond, Ph.D.
William D. Huffines, M.D.
William W. McLendon, M.D.
James Pick, D.V.M.

Katherine Pryzwansky, Ph.D. (Deceased 6/8/11)
Marjorie S. Read, Ph.D.
Kinuko I. Suzuki, M.D.

Jointly Appointed Faculty

Claire M. Doerschuk, M.D. (Medicine)
Ronald J. Falk, M.D. (Medicine)
Susan A. Fiscus, Ph.D. (Microbiology)
Thomas R. Griggs, M.D. (Medicine)
Nigel Mackman, Ph.D. (Medicine)
Valerie Murrah, D.M.D., M.S. (Dental)
Timothy C. Nichols, M.D. (Medicine)
Charles M. Perou, Ph.D. (Genetics)
Gloria A. Preston, Ph.D. (Medicine)
Kathleen W. Rao, Ph.D. (Pediatrics)
Allen C. Rinas, M.S. (Medical Allied Health)
Harold R. Roberts, M.D. (Medicine)
Darrel W. Stafford, Ph.D. (Biology)
James Swenberg, D.V.M., Ph.D. (Environmental Sciences and Engineering)
Young E. Whang, M.D., Ph.D. (Medicine)
Elizabeth Wilson, Ph.D. (Pediatrics)

Adjunct Faculty

William A. Ahrens, M.D. (Carolina Pathology Group)
Peter M. Banks, M.D. (Carolinas Medical Center)
Gary A. Boorman, D.V.M., Ph.D. (NIEHS)
Mark E. Brecher, M.D. (Laboratory Corporation of American)
Robert C. Brown, M.D. (Emeritus)
Shu Huey Chaing, Ph.D. (State Dept of Health and Human Services)
Jeffrey Everitt, D.V.M. (GlaxoSmithKline)
Dana M. Fowlkes, M.D., Ph.D. (Green Spring Technology)
Delores J. Grant, Ph.D. (North Carolina Central University)
Christopher Gregory, Ph.D. (Voyager Pharmaceutical)
Wendell D. Jones, Ph.D. (Constella Health Sciences/Expression Analysis)
Scott Kilpatrick, M.D. (Forsyth Medical Center)
Suzanne L. Kirby, M.D., Ph.D.
Myla Lai-Goldman, M.D. (Laboratory Corporation of America, Retired)
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)
William R. Oliver, M.D. (East Carolina University)
Richard S. Paules, Ph.D. (NIEHS)
Dennis W. Ross, M.D., Ph.D. (Forsyth Medical Center, Retired)
Tara C. Rubinas, M.D. (Laboratory Corporation of America)
W. Eugene Sanders, M.D.

Gary J. Smith, Ph.D. (Roswell Park Cancer Institute)
Nobuyuki Takahashi, M.D., Ph.D. (Tohoku University, Sendai. Japan)
Charles H. Wallas, M.D.
Ruth F. Walters, M.D. (Laboratory Corporation of America)
Douglas C. Wolf, Ph.D., D.V.M. (EPA)

Clinical Fellows
Edward P. Ager, Ph.D. (Microbiology)
Laura Bender, Ph.D. (Clinical Chemistry)
Dana L. Cairo Tunnell, M.D. (Hematopathology)
Eric Campenot, M.D. (Nephropathology)
Steven W. Cotten, Ph.D. (Clinical Chemistry)
Mohamed Elrefael, M.D., Ph.D. (Microbiology)
Daniel T. Kleven, M.D. (Surgical Pathology)
Yasmin Lutterbie, M.D. (Cytopathology)
Norris J. Nolan, M.D. (Surgical Pathology)
Poulomi J. Pai, M.D. (TMS)
Kristin A. Pierce, M.D. (Cytopathology)
Jonathan Privette, M.D. (Forensic)
Charles Sailey, M.D. (Molecular Genetic Pathology)
Ferrin Wheeler, Ph.D. (Cytogenetics)

Co-Chief Residents
Christopher Gordon, M.D. (PGY IV) Co-Chief Resident
Andrew Laramore, M.D. (PGY IV) Co-Chief Resident
Stacey O'Neill, M.D., Ph.D, (PGY IV) Co-Chief Resident

Residents
Dana D. Baker, M.D. (PGY III)
Natalie O. Banet, M.D. (PGY III)
Lea L. Bardy, M.D. (PGY II)
Gregory D. Bianchi, M.D. (PGY II)
Shannon A. Covey, M.D. (PGY I)
Daniel L. Duncan, M.D. (PGY I)
Christopher J. Gordon, M.D. (PGY IV)
Andrew P. Laramore, M.D. (PGY IV)
Jayson R. Miedema, M.D. (PGY II)
Stacey S. O'Neill, M.D. (PGY IV)
Jessica L. Poisson, M.D. (PGY III)
Brooke Rambally, M.D. (PGY I)
Olga Speck, M.D. (PGY II)
Sara E. Wobker, M.D. (PGY I)
Kimberly J. Woodward, M.D. (PGY III)

Research Associates
Stanislav A. Bakunov, Ph.D. (Dr. Tidwell)

Svetlana M. Bakunova, Ph.D. (Dr Tidwell)
Paul D. Chastain, Ph.D. (Dr. Kaufman)
Stephanie M. Cohen, Ph.D. (Dr. Kaufman)
Feng Li, Ph.D. (Dr. Smithies)
Donald A. Patrick, Ph.D. (Dr. Tidwell)
Weihua Tang, M.D. (Dr. Gulley)

Postdoctoral Research Fellows

Barbara Cardinali, Ph.D. – (Postdoctoral Research Associate) – Dr. Susan Lord
Zhaokang Cheng, Ph.D. – (Postdoctoral Research Associate) – Dr. Joan Taylor
Lihong Huang, Ph.D. – (Postdoctoral Research Associate) – Dr. Susan Lord
Yukako Kayashima, Ph.D. – (Postdoctoral Research Associate) – Dr. Nobuyo Maeda
Dana Le Vine, D.V.M. – (Postdoctoral Research Associate) – Dr. Thomas Fischer
Qiang Lui, Ph.D. – (Postdoctoral Research Associate) – Dr. Richard Tidwell
Rita Marchi, Ph.D. – (Postdoctoral Research Associate) – Dr. Alisa Wolberg
John McNulty, Ph.D. – (Postdoctoral Trainee) – Dr. Cordeiro-Stone
Hind Muallem, Ph.D. – (Postdoctoral Trainee) – Dr. Margaret Gulley
Komaraiah Palle, Ph.D. – (Postdoctoral Research Associate) – Dr. Cyrus Vaziri
Noh Jin Park, Ph.D. – (Postdoctoral Research Associate) – Dr. Susan Lord
Yuliy Rozenberg, Ph.D. – (Postdoctoral Research Associate) – Dr. Christopher Mack
Maria Sambade, Ph.D. – (Postdoctoral Trainee) – Dr. Janiel Shields
Delisha Stewart, Ph.D. – (Postdoctoral Trainee) – Dr. Melissa Troester
Hirofumi Tomita, Ph.D. – (Postdoctoral Research Associate) – Dr. Nobuyo Maeda
Huili Wang, Ph.D. – (Postdoctoral Trainee) – Dr. Jonathon Homeister
Hui Yang, Ph.D. – (Postdoctoral Research Associate) – Dr. Volker Nickeleit
Xuebin Yang, Ph.D., M.D. – (Postdoctoral Trainee) – Dr. William Coleman
Yang Yang, Ph.D. – (Postdoctoral Research Associate) – Dr. Cyrus Vaziri
Zhigang Zhou, Ph.D. – (Postdoctoral Research Associate) – Dr. Joan Taylor

Graduate Students

Maria M. Aleman – (Predoctoral Trainee) – Dr. Alisa Wolberg
Jessica C. Cardenas – (Fellow Trainee) – Dr. Frank Church
Patricia Casbas-Hernandes – Dr. Melissa Troester
Dinuka M. DeSilva – (Predoctoral Trainee) – Dr. Young Whang
David A. Detwiler – Dr. Joe Kornegay
Michael L. Durando – (Predoctoral Trainee) – Dr. Cyrus Vaziri
Meghan Free – Dr. Ronald Falk
Rachel E. Goldsmith – Dr. Richard Tidwell (3/18/11)
Lance A. Johnson – Dr. Nobuyo Maeda
Kaitlin C. Lenhart – Dr. Joan Taylor
Kellie Rae Machlus – (Fellow Trainee) – Dr. Alisa Wolberg
Lantz C. Mackey – Dr. Jonathon Homeister
Troy A. McEachron – Dr. Frank Church and Dr. Nigel Mackman (1/11/11)
Matthew D. Medlin – Dr. Christopher Mack (10/25/10)
Avani A. Pendse – Dr. Nobuyo Maeda (11/9/10)
Adam D. Pfefferle – (Predoctoral Trainee) – Dr. Charles Perou

Amanda L. Rinkenbaugh – (Fellow Trainee) – Dr. Albert Baldwin
Jessica Rodriguez – (Fellow Trainee) – Dr. Monte Willis
Aleeza J. Roth – (Fellow Trainee) – Dr. Ronald Falk
Lisa L. Samuelson – Dr. David Gerber (3/25/11)
Rupninder Sandhu – Dr. William Coleman
Kristine M. Wadosky – Dr. Monte Willis
Chih-Hong Wang – Dr. Nobuyuki Takahashi (12/31/10)
Laura Weise Cross – Dr. Christopher Mack

RESEARCH AND SCHOLARLY ACCOMPLISHMENTS

Over the past year an excellent record of achievement in research has resulted in 254 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.

ARABA N. AFENYI-ANNAN, M.D.

Dr. Afenyi-Annan's primary research is focused on improving transfusion care for patients with sickle cell disease through 1) improving uniformity of blood bank practices, 2) identifying patients at risk for red cell immunization, and 3) developing a matched- patient-donor red cell program for pediatric sickle cell patients using African American donors from local Historically Black Colleges and Universities (HBCUs). Currently, Dr. Afenyi-Annan is in the process of producing manuscripts from several projects which include: a survey of blood bank practices in North Carolina; a descriptive study of the characteristics and motivations of African American donors from a HBCU; and a study of alloimmunization among sickle cell patients at two Comprehensive Sickle Cell Centers. Over the next year, she will strive to complete publications from these previous studies and seek NIH funding to support a matched patient-donor red cell program for pediatric sickle cell patients.

ROBERT C. BAGNELL, Ph.D.

The Bagnell laboratory - Microscopy Services Laboratory - is a UNC core facility for electron 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 341 principal investigators from 42 departments centers and programs at UNC-CH, 2 departments at Duke, 1 department at UNC-G, 1 investigator form NIEHS, and 1 investigator from Urogenix Inc. The total number of active laboratory clients now stands at 957. In the past 12 months the light microscope facilities logged 11,033 hours of use, electron microscope facilities logged 2,048 hours of use and the laboratory has performed 533 electron microscopy specimen preparations. In addition to its research role, 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. An NIH Shared Instrumentation Grant for a new transmission electron microscope was re-submitted with a requested amount of $422,000. This grant was not funded. The laboratory received $100,000 in funding from the Department of Pathology & Lab Med. to purchase an Andor FRAP system for the Olympus IX81 microscope. The laboratory received $3,000 in funding form the Department of Pathology and Lab Med to purchase two TMC vibration isolation tables.

Checklist of significant projects during this reporting period:

- Added Klaus Haun's Biosensor imaging technology to the lab services
- Added EDAX XES to FESEM

- Added Andor FRAP system to IX81
- Created ImageJ analysis program for Biosensor FRET analysis
- Created ImageJ analysis program for fibrin orientation and anisotropy
- Created ImageJ plugins to streamline sensitized emission wide field FRET analysis
- Presented poster of lab services at UNC Core Lab Day
- Presented photographs by clients at CHANL scientific Photo Contest
- Acknowledged (Steve Ray) in Cell Metabolism, Vol 13, Issue 5, pg. 517-526 "The Microbiome and Butyrate Regulate Energy Metabolism and Autophagy in the Mammalian Color" Scott Bultman Lab
- Image analysis project: Colocalization of synaptic markers (Cendra Agulhon Ken McCarthy Lab)
- Image analysis project: Cell tracking from cardiac explants (Panna Tandon – Conlon Lab)
- Image analysis project: Measurement of FISH labeling and proximity to methyl-histone (Mauro Calabrese – Teryy Magnuson Lab)
- Image analysis project: Analysis of AAV distribution in infected cells (PH Xiao – Richard Samulski Lab)
- Image analysis project: Visualizing particle internalization by cells (Chris Luft – Joe DeSimone Lab)
- Image analysis project: Analysis of drug localization in kidney (Rachel Goldsmith – Rick Tidwell Lab)
- Image analysis project: Cell tracking in scratch assays and culture (Zhigang Zhou – Joan Taylor Lab)

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

Dr. Bellinger's research interests remain in the area of hematology and cardiovascular disease. They have used a swine model for studying atherosclerosis for many years. They are using their colony of familial hypercholesterolemic pigs to study the role of hyperlipidemia and insulin resistance 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. These 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. Recent literature with a mouse KO model of factor XII indicates this coagulation protein has importance in arterial thrombosis. They are using a naturally occurring cat model deficient in factor XII to further investigate the role of factor XII in thrombosis and inflammation.

JESSICA K. BOOKER, Ph.D.

Dr. Booker's research draws from the pursuit of unusual results in clinical testing as well as the use of her expertise in clinical molecular genetics and instrumentation to collaborate with colleagues on a diverse range of projects. Current projects include the identification and characterization of novel *BRCA1* and *BRCA2* mutations, including silent and missense sequence variants that result in truncated proteins. A collaboration with Drs. Coleman and Funkhouser

utilizing DNA fingerprinting to help distinguish new primary tumors from metastases in lung and neck cancers. As Scientific Director of the Clinical Molecular Genetics Laboratory, Dr. Booker works closely with the research analysts and clinical fellows as they develop new assays for acquired and inherited diseases. New assays currently under development include PML-RARα, *MLH1* promoter methylation and custom sequencing as requested by clinicians. Assays being redesigned for improved efficiency or sensitivity include automated nucleic acid extraction, EBV, and a Fragile X assay that will ultimately eliminate the need for Southern blotting.

THOMAS W. BOULDIN, M.D.

For the coming year, Dr. Bouldin will continue to be very heavily involved in all aspects of diagnostic neuropathology, providing service for surgical neuropathology, autopsy neuropathology, the nerve biopsy service, and ophthalmic pathology. As program director of the training program in anatomic and clinical pathology, Dr. Bouldin will also be heavily involved in the oversight and direction of the Department's residency program.

CLAUDIA M. BRADY, M.H.S.

Claudia Brady's current clinical activities include instructing PGY1 through PGY4 pathology residents and second year Pathologists' Assistant students from Duke University in the Gross Room. Training includes preparation of biopsy specimens through dissection, examination, and dictation of larger and more complex surgical excisions. Emphasis is placed on thoroughness including acquiring all relevant clinical information about the case prior to dissection, proper triage, prioritization of caseload, and efficiency without compromising quality. Ms. Brady also trains all levels of PGY pathology residents and medical students on all benches in Surgical Pathology. She believes with the current faculty PAs providing all the training for the residents, they will develop good habits and mentality with a methodical approach to their patients; the surgical pathology specimens that they lay their hands on.

ARLENE S. BRIDGES, Ph.D.

Dr. Bridges' current research activities involve translational drug development. Primary research activities involve analysis of antiparasitic agents (in collaboration with Dr. Richard R. Tidwell, Director of the UNC Consortium for Parasitic Drug Development), anti-HIV agents (in collaboration with Dr. Ron Swanstrom, Director of the UNC Center for AIDS Research), and anticancer nanoparticles (in collaboration with Dr. Joseph DeSimone, Director of the Carolina Center for Cancer Nanotechnology Excellence). As Director of the ADME Mass Spectrometry Center, her role is to provide study design assistance, bioanalytical support and data interpretation to preclinical and clinical studies conducted by not only these three research groups, but to other scientists at UNC and beyond.

Last year, one goal was to pay-off the amount owed on the lease-purchase of one of the mass spectrometers in Brinkhous-Bullitt. She is proud to say that the Center has paid off all debt. Another goal was to acquire new mass spectrometers to meet the growing demand. She recently submitted a Shared Instrumentation Grant to the NIH and is awaiting her score. Finally, her goal

of increasing interest in the ADME Mass Spectrometry Center is ongoing. The recent publication of a marketing flyer in conjunction with NC TraCS and the updates to the Center website have already helped generate new users. Dr. Bridges' goals for the coming year are many. First, she hopes to continue to increase interest in the ADME Mass Spectrometry Center with continued marketing. Second, she hopes to continue to acquire new equipment, either by donation, lease-purchase, or instrumentation grants. Third, she hopes to encourage more users to cite the use of the Core in their publications and grant proposals. Fourth, she also hopes to use her positions as a member of the TraCS Core Directors Committee and as Chair of the Health Sciences Library Advisory Committee to bridge the common efforts of these two campus organizations. Fifth, and finally, she hopes to use her position as a member of the Committee to Develop HR Tracks for Core Facility Personnel to create a meaningful and fulfilling career path for herself and other Core facility personnel.

DEBRA A. BUDWIT, M.D.

Dr. Debra Budwit participates in clinicopathologic studies in the areas of gynecologic pathology, breast pathology, and cytopathology. A prior study of precursors of metaplastic breast carcinoma has been completed, data previously presented at a national meeting, with manuscript in progress, to be completed this year. Other ongoing collaborative projects in which she participates includes evaluation of current medical management protocols for patients with endometrial hyperplasia/well differentiated carcinoma, follow-up of and evaluation of management strategies for young patients with cervical intraepithelial neoplasia 2 (CIN 2), the utility of sentinel lymph node biopsy in patients with breast cancer status post neoadjuvant chemotherapy, and the utility of sentinel lymph node biopsy in patients with endometrial cancer.

JOHN F. CHAPMAN, Dr. P.H.

Dr. Chapman's responsibilities and activities at UNC continue to be primarily associated with service functions in Point of Care Testing at UNC Healthcare and the Core Laboratory section of McLendon Clinical Laboratories. Point of Care Testing remains an active and expanding activity throughout UNC Healthcare. Since beginning phased retirement, Dr. Chapman has also remained an active investigator in clinical trials sponsored by *in vitro* diagnostic (IVD) manufacturers, recently completing an external validation trial for automated HIV and Hepatitis applications. In general, he plans to remain actively engaged in laboratory and point of care service functions, as well as any translational research activities that may arise, during the remainder of his appointment here at UNC.

FRANK C. CHURCH, Ph.D.

The research area of Frank Church, Ph.D. is concerned with proteases and their inhibitors in human biology and in various disease processes (including thrombosis/vascular biology and tumor cell migration/invasion/signal transduction). His laboratory has an extensive interest in the biological principles of proteolysis and they take a two-pronged approach to research: In the first approach, Dr. Church's lab performs structure to activity studies with heparin-binding serpins (serine protease inhibitors; heparin cofactor II, protein C inhibitor, antithrombin, and plasminogen activator inhibitor-1) and the serine protease thrombin and activated protein C.

They have made substantial progress in identifying specific residues in these serpins that are important for glycosaminoglycan binding and for protease recognition. In the second approach, they are applying basic biological techniques (*in vivo, ex vivo,* and *in vitro*) to investigate newly emerging principles of proteases in biological processes, especially in venous thrombosis and breast cancer. Part of this research is directed at using mouse models of cancer and thrombosis, in an attempt to better understand Trousseau's Syndrome, the link between venous thrombosis and cancer by understanding the roles of plasminogen activator inhibitor-1 (PAI-1), urokinase, PAR-1 and PAR-2, and factor VIIa/tissue factor. Part of this work is trying to use mice genetically altered in their expression of $p16^{INK4a}$ and its relationship to senescence/aging and venous thromboembolism. Finally, they are focused on understanding the role of PAI-1 in breast cancer and the microenvironment (breast adipocytes) and the signaling systems supported by PAI-1 and by PAI-1-urokinase complex.

WILLIAM B. COLEMAN, Ph.D.

Dr. Coleman's laboratory is focused on elucidation of epigenetic mechanisms underlying human breast cancer development by examining breast cancers that exhibit high rates of gene silencing due to hypermethylation defects (which are ER-negative) and those that lack methylation-dependent gene silencing (which are ER-positive). They found that ER-negative breast cancers exhibit a hypermethylation defect characterized by overexpression of DNMT3b protein and elevated DNMT activity leading to concurrent aberrant methylation of numerous genes, and that this group significantly corresponds (~70%) to the basal subtype of breast cancer. Recent efforts have characterized the role of several microRNAs in the post-transcriptional regulation of DNMT3b. Ongoing efforts will continue to examine the molecular basis for the hypermethylation defect and investigate strategies for targeting the epigenome in the treatment of these breast cancers.

MARILA CORDIERO-STONE, Ph.D.

Dr. Cordeiro-Stone's research program is focused on molecular mechanisms underlying the responses of human cells to DNA damage induced by solar radiation. Normal human fibroblasts and melanocytes, as well as various melanoma cell lines, are used as experimental model systems. Cultured cells are exposed to UVB and UVA wavelengths represented in ambient sunlight and their responses compared at the levels of DNA replication and repair, the intra-S checkpoint, and induced mutagenesis. Such comparison is possible through the determination of actual densities of induced DNA lesions as more accurate indices of molecular dose than the incident fluence of radiation. The etiology of skin melanomas and carcinomas are strongly connected to sun exposure, but the mechanistic roles of short (UVB) or longer (UVA) wavelengths are not clearly understood. This information is essential for the development of guidelines aiming at skin cancer prevention. Studying the function(s) of proteins involved in the regulation of DNA replication and the network of pathways that protect the human genome from genotoxic effects of DNA damage is essential for a better understanding of the pathogenesis of skin cancers with an environmental etiology.

GEORGETTE A. DENT, M.D.

Dr. Dent's research is focused on the role that enrichment activities play in the career development of medical students. She is particularly interested in the impact of international programs and graduate study in public health on educational outcomes. She is collaborating with the recently established School of Medicine Office of International Activities to investigate the impact of international service and research programs on medical student education. A manuscript describing some of this work was published in *Academic Medicine* last year. In collaboration with the School of Public Health, she is investigating the impact of training in public health on physician practice patterns and career satisfaction. A preliminary report of this work was published in the April 2008 volume of *Academic Medicine*. Goals for the future include extending the physician survey to additional alumni using social media.

MEGAN J. DiFURIO, M.D.

Dr. DiFurio's areas of subspecialty interest include cytopathology, and gynecologic and breast surgical pathology. She has provided clinical services as well as participated in clinicopathologic and translational research projects in these areas over the past year. Dr. DiFurio presented an abstract on a strategy for improving Pap test unsatisfactory rates at the annual American Society of Cytopathology meeting in November 2010 and participated with the Division of Gynecologic Oncology at UNC in a round table journal club discussion which has recently been accepted for publication in the American Journal of Obstetrics and Gynecology. Other current research projects include the following: (1) collaboration with Dr. Bae-Jump in Division of Gynecologic Oncology in the study of the effects of obesity and anti-diabetic medications (e.g., Metformin) on development of ovarian carcinoma in a mouse gene knock-out model, (2) collaboration with Dr. Van Le in Division of Gynecologic Oncology in the study of the optimal size of margins in women with squamous cell carcinoma of the vulva, (3) collaboration with Dr. Rahangdale in the Department of OB/GYN and Dr. Smith in the School of Public Health in the collection and archiving of cytology and biopsy materials from women with cervical dysplasia with the future hope of looking for factors to help predict which women will go on to develop invasive cervical carcinoma, (4) collaboration with Dr. Brewster on the Division of Gynecologic Oncology in the study of the possible presence of microbiotic organisms ion the upper GYN tract and the possible relationship to carcinogenesis, and (5) collaboration with Dr. Hackman in the Department of Otolaryngology/Head and Neck Surgery in the study of the accuracy of ultrasound guided FNA in detecting persistent disease in lymph nodes of patients with head and neck squamous cell carcinoma after definitive chemotherapy. In the next year, Dr. DiFurio hopes to continue with these research interests especially expanding her work in the area of cervical and vulvar neoplasia. She is also looking forward to continuing to help Dr. Lininger to expand the gynecologic and breast pathology outside consultation service. Other goals include continuing to provide at least 4 lectures/slide teaching sessions for the pathology residents and fellows and becoming more involved in the Reproductive Medicine course for the UNC Medical Students.

CHERIE H. DUNPHY, M.D.

Dr. Dunphy's research involves the development of distinguishing markers of diffuse large B-cell lymphoma, double-hit lymphomas, and Burkitt lymphoma by full gene expression profiling with extrapolation of immunohistochemical markers and correlation with clinical outcomes. She has established several collaborations:

1. with Dr. Ken Young, Wisconsin, regarding gene expression profiling of diffuse large B-cell lymphoma.
2. with Dr. Sandeep Dave, Duke University, regarding gene expression profiling of diffuse large B-cell lymphoma and Burkitt lymphoma.
3. with Dr. Kristy Richards, UNC, regarding diffuse large B-cell lymphoma.
4. with Dr. Kristy Richards, UNC, and Matthew Breen, NC State University, regarding FISH of dog lymphomas.

Dr. Dunphy will continue to work as an author/editor on several projects:

1. Editorship/Authorship of E-Medicine Pathology textbook for liquid and solid Hematopathology/Hermatology;
2. Authoring and editing textbook entitled Frozen Section: Lymph Node;
3. Authoring Chapter regarding Hematopathology for Medical School textbook;
4. Authoring and editing textbook entitled An Atlas of Neoplastic Hematopathology;
5. Analysis of the Significance of CD200 Expression in Plasma Cell Dyscrasias; and
6. Authoring and editing Mini-Series Topic of Myeloproliferative Neoplasms and Myelodysplastic/Myeloproliferative Overlap Neoplasms: Current Diagnosis and Therapy Authoring and Editing of Topics recently presented at the Society for Hematopathology Symposium at USCAP, 2010 entitled: Atypical and Reactive Lymphoid Proliferations Mimicking Malignant Lymphoma to be published in Seminars of Diagnostic Pathology.

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

Dr. Eberhard's laboratory space has been under renovation since his 4/17/2011 start date (He has a temporary office in the interim). The lab should be ready for use in September 2011. He has been purchasing equipment for the new lab and is posting job requirements for a Research Associate laboratory manager and a Research Technician. His ongoing activities include: "Director of Pre-Clinical Molecular Pathology" for the Cancer Genomics efforts in the Lineberger Cancer Center, develop pathology QA and tumor sample workflow (LIMS and physical sample workflow) within the LCCC, participate in clinical trial protocol development, advise in clinical development of new assays, and nanostring analysis core service. His plans and goals include: continuing and expand ongoing activities described above. Implement BSP LIMS and digital pathology for sample QA, initiate original and collaborative research focusing on solid tumor heterogeneity and how it relates to response and recurrence after therapy, digital pathology analytic approaches to define and quantitative heterogeneity, methods to facilitate molecular and genomic analyses of tumor cell subpopulations.

ROSANN A. FARBER, Ph.D.

Dr. Farber plans to write and submit a manuscript on work previously completed by members of her lab on instability of CG- and AT-repeat sequences in normal fibroblasts and mismatch-repair-deficient cancer cell lines.

GEORGE FEDORIW, M.D.

Dr. Fedoriw's research, in collaboration with Dr. Sarantopoulos (Department of Medicine), is primarily focused on further defining the role of the B cell activating factor (BAFF) in chronic graft versus host disease (cGVHD) after allogeneic bone marrow transplantation. Findings from his work were recently presented a Keystone meeting in spring of 2011. He has also investigated pathways of B cell activation in HIV associated lymphomas (funded through the UNC Center for AIDS Research), and is working to identify relevant B cell subsets in human cGVHD (funded through the NC TraCS Institute). Dr. Fedoriw also actively provides research support for collaborators in the Lineberger Cancer Center and the School of Pharmacy. His goals for the upcoming year include applying for additional funding for independent research work.

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

Dr. Fletcher will continue to provide management and veterinary clinical care for the research animals on campus as his primary function. With the new animal facilities opened on campus, the mouse census will more than double, which will significantly increase the case load. It is important for DLAM to be prepared to negotiate resources to meet current and future demands. He would like to enhance his negotiation building skills and sharpen his political acumen. Strategic planning is a tool for the university to find its competitive advantage and place within this dynamic environment. He would like to further enhance his skills in thorough strategic planning and plan execution to meet the needs of the DLAM. His acceptance into the ULEAD program will continue to develop these skills. His collaborative research programs involving study of pathogenesis of cardiovascular diseases and platelet biology will continue.

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

Dr. Funkhouser collaborates as a funded Pathologist with the Baric research group on lung morphologic changes in SARS respiratory virus vaccination models in mice.
Dr. Funkhouser collaborates with Dr. Olshan in Public Health Epidemiology on followup studies derived from the 5 year funded CHANCE study on risk factors for head and neck carcinoma in the state of North Carolina. Dr. Funkhouser collaborates with Dr. Hayes at the LCCC on projects related to inter-observer reproducibility of morphologic diagnosis of non-small cell lung carcinoma (NSCLC) and molecular subsets of the different types of NSCLC. These projects are attempting to define more accurate criteria for making the diagnoses of the different types of NSCLC, and identifying molecular subsets with statistically different natural histories or responses to therapies. Dr. Funkhouser collaborates with Dr. Coleman of the DPLM on two projects. The first is to define molecular methods for determination of neoplastic clonalityunique to each neoplasm in a given individual. Such a method would allow distinction of two morphologically similar neoplasms from one another, e.g. distinguishing a solitary pulmonary

metastasis from a new lung carcinoma. The second is a technical project, with a goal of creating a durable, reusable solid phase cDNA library in a microscale bioreactor.

PETER H. GILLIGAN, Ph.D.

There are two areas that will be pursued in the coming year. Studies to understand the microbiome of chronic lung disease in cystic fibrosis patients are ongoing. In the coming year, the focus of the work will be the role of anaerobic bacteria and on viruses in this process. The second area of investigation will be in the development of novel diagnostics for the detection of *Clostridium difficile* infections. Novel amplification technologies to detect *C. difficile* toxin genes will be evaluated.

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

Dr. Godfrey will continue to provide collaborative pathology evaluations for colleagues in the Medical School faculty, particularly members of the Lineberger Comprehensive Cancer Center. Recent and continuing projects include morphologic evaluations of: 1) pig models of atherosclerosis and Type II diabetes (Nichols), 2) Brg 1 mutant mice (Bultman), 3) dog models of hemophilia (Nichols), and 4) mouse models of choline deficiency (Ziesel). She will assist 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).

MICHAEL DAVID GOODMAN, M.D.

Dr. Goodman's primary project: Perou Breast Case Database – review of breast pathology with tissue sample selection for TMA and DNA acquisition. He is also serves as consultant in the Translational Pathology Laboratory: Pathologist assigned to project case review. He provides additional sporadic case review as needed.

OLEG V. GORKUN, Ph.D.

Dr. Gorkun is a fibrinogen expert and protein chemist. He has been using biochemistry and biophysics approaches to study fibrinogen structure and molecular mechanisms of its functioning. His current research interests lies in the area of biomechanical properties of proteins. He has developed close partnership with labs of Dr. Schoenfisch (Department of Chemistry) and Dr. Falvo (Department of Physics). With the Schoenfisch lab he pursues studies of fibrinogen mechanical behaviors on the single molecule level. He also expanded his research into the area of bacteria adhesion to plasma protein including fibrinogen. Together with Schoenfisch lab they developed an analytical method based on Atomic Force Microscopy to study interactions of plasma proteins and protein-adhesins expressed in bacteria wall. The two advantages to this method: (1) they can study protein interaction on the single molecule level, and (2) protein interactions are studied under conditions similar to dynamic environment of blood flow, where interactions are establish and survive under continuous stress of mechanical forces, generated by flow shear. Together with Dr. Falvo he investigates the molecular mechanism by which fibrin polymers (fibers in the fibrin clot) maintain their extremely high

extensibility and strain hardening. In course of studying permeability of fibrin fibers they unexpectedly discovered that fibrin fibers are permeable to such large protein as activated FXIII (6x18 nm ellipsoid). These findings imply that the fibrin fiber structure may be dynamic with large pores constantly shifting in the fiber.

KEVIN G. GREENE, M.D.

Dr. Greene is currently a subinvestigator in a clinical trial, and associated extension study, evaluating the efficacy and safety of everolimus in liver transplant recipients. He is also currently collaborating with a radiation oncologist to create digital 3D reconstructions of liver tissue to evaluate the relationship between tumor and radioactive isotope beads. Additional similar projects are anticipated for next year.

PAMELA A. GROBEN, M.D.

Dr. Groben enjoys collaborating with colleagues on translational research projects and projects that require her surgical pathology skills. She is currently working with Nancy Thomas from Dermatology looking at cutaneous melanoma. She reviews slides on melanomas and other melanocytic lesions, record the histologic features and use laser capture micro-dissection to acquire melanoma cells in small lesions so that mutations for BRAF mutations and DNA-methylation profiles can be determined. (See Thomas, "Tandem BRAF mutations in primary invasive melanoma", 2007; Thomas, "Number of nevi and early life UV exposure are associated with BRAF-mutant melanoma", 2007; Thomas, "Relationship between germline MC1R variants and BRAF-mutant melanoma in a North Carolina population based study", 2010; and Conway, "DNA-methylation profiling distinguishes malignant melanoma from benign nevi", 2011 in the publication section). Several studies are ongoing and histologic review and laser capture to acquire DNA continues to be a requirement.

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 malignancies, and 2) developing novel laboratory tests to assist in diagnosis and management of affected patients. In the past year there has been substantial progress towards these goals. They are validating two gene expression profiling systems to apply in paraffin embedded tissue, blood, plasma, serum and other specimen types. They used well-characterized paraffin embedded cell lines for analytic validation, and they are currently collecting data on primary specimens from patients with cancer, precursor lesions, and non-neoplastic controls to demonstrate clinical utility in categorizing disease using patterns of RNAs (coding and non-coding). In work of a more general nature, they teamed with researchers campus-wide to improve biobanking services for local investigators. They validated novel molecular assays for use in clinical trials and in routine patient care. This work builds on basic science discoveries and translates them to the clinical realm, reinforcing the important role of pathologists in advancing medical practice using modern molecular tools. In the coming year, they seek more funding for assay validation projects and clinical trials to gather clinical evidence of efficacy. They will continue to maximize productivity of local clinical investigators by making tissue/lab/pathologist resources available for team science.

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

Dr. Susan Hadler's efforts in the Medical School are centered around teaching and curriculum. She is involved in teaching 1st, 2nd and 4th year medical students in multiple courses, as well as Pathology and Toxicology graduate students and Physical Therapy graduate students. She serves on a number of medical school curriculum related committees. 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 support of pain management and addiction. During the past year, she has systematically determined previously undocumented cross-reactivity of the immunoassay-based drug screens used by the MCL Core Laboratory for commonly prescribed or abused drugs (or their metabolites). In addition, she continues collaborations with Drs. Robert Aris and Margaret Gourlay. Her work with Dr. Aris investigates the uptake, metabolism, and mechanism of action of immunosuppressant drugs by and within human tracheobronchial epithelial cells. The work with Dr. Gourlay continues assessing the relationship between osteoporosis and various biomarkers. Work conducted this past year suggests the previously reported association between higher concentrations of follicle stimulating hormone (FSH) and lower bone mineral density (BMD) reflects an indirect effect of body composition (lean vs fat mass) on FSH, not a direct effect of FSH on BMD.

TRACY M. HEENAN, D.V.M.

Dr. Heenan continues to provide 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 Office of Animal Care and Use (OACU) guiding principles. With escalating compliance-related responsibilities, such as increased investigator-managed animal facilities as well as offsite facilities, it will most likely be necessary to add an additional T/C Coordinator position in the next five years. OACU, like everyone on campus, has had to plan for budgetary cuts. The office has made monumental strides in reducing the amount of paper as well as the associated costs by moving to an electronic review process. They have eliminated the voluminous paper packets and members now review applications and the 1000 page semi-annual facility report electronically. During the next several years, the office will fully implement the position responsible for Grant Application/IACUC Application congruency, which has recently been approved. This will be a process requiring cooperation and buy-in from research faculty. During the next five years the office will continue to educate and advise 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. Dr. Heehan 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.

STEVEN HOLMES, M.H.S.

Steven Holmes plans to continue to instruct residents, Duke PA students and the occasional medical student in pathology and gross anatomy. He will help the residents formulate how to construct a concise/coherent gross dictation. Moreover, these dictations are legal documents; therefore, it is important to handle every specimen (simple or complex) with the same professionalism. He will delve into other aspects of the laboratory such as frozen section room coverage, ordering of supplies, and communication with appropriate personnel with respect to the troubleshooting of laboratory equipment.

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

The research of Jonathon Homeister, M.D., Ph.D. has two major goals. The first is to utilize leukocyte lineage-specific transgenic gene expression and leukocyte lineage-specific gene targeting in murine experimental models to investigate α(1,3)-fucosyltransferase (FUT) gene function in the development of atherosclerotic cardiovascular disease. They are using these mice and other mice made deficient in FUT-IV and FUT-VII in all tissues to define a role for the selectin adhesion molecules and their fucosylated ligands in the development and progression of atherosclerosis. These mouse strains will be used to continue their studies that define the selectin-dependent contribution of several leukocyte lineages to the atherosclerotic disease process. The second goal is to determine the mechanisms whereby the FUTs regulate hemostasis and thrombosis. These studies are determining 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 current research, in collaboration with Dr. Jennette, is focused on 1) investigating involvement of genetic factors in pathogenesis of ANCA induced glomerulonephritis. They recently found that anti-MPO IgG caused different severity of ANCA disease in different strains of mice, which mimics disease variation in ANCA patients. Next, they will test the ANCA-mediated disease induction in eight different founder strains and try to explore genetic basis responsible for variations in severity of disease, and hopefully to find out candidate genes and their protein products that involved in pathogenesis of the disease. 2) trying to identify specific epitopes that are targeted by pathogenic anti-MPO IgG. They have already created recombinant mouse/human MPO chimeric molecules and will use them to detect the portion of mouse MPO that is responsible for the disease induction. 3) generating PR3-ANCA disease mouse model. Success with this model would advance their understanding of mechanism of PR3-ANCA disease.

HEIKE HUNT, M.D.

Even though she was on leave for half year, Dr. Hunt has continued her research efforts and has been active teaching graduate student labs and lectures, and advancing her microRNA investigations. Unfortunately, her small grant application with the University Research Council entitled "MicroRNA expression profiles associated with prognosis and therapeutic outcome in human Hepatitis B-associated Hepatocellular Carcinoma" was not funded. Nevertheless, she has started a project investigating the microRNA expression in those hepatocellular carcinomas that arise in hemochromatosis patients. This has not previously been reported in the literature, so it should yield exciting new data. She is collaborating with a lab in Florida and they have started to extract the RNA and will hopefully have initial data on the microRNA content in the next 2 weeks. She is also continuing to work with Derek Chiang, PhD, whose specialty at UNC is gene sequencing, especially in liver diseases and liver tumors. Currently, she is scoring immunohistochemical stains of his mice livers for beta-catenin and 5-hmc. A manuscript based on their work from about a year ago has been submitted for publication. She is looking forward to returning to the office every day, so she can increase the velocity of her projects and be more accessible for her collaborators. Dr. Hunt's research goals for the next half year include preparing a Grand Rounds talk entitled "HepPar and the deathly hairpins", which will summarize the research results of her career thus far, spanning work performed in 3 continents, and preparing the manuscript of the microRNA expression profile in hemochromatosis-related HCC.

JOHN HUNT, M.D.

Although occasionally consulting on evaluation of immunohistochemical stains by various groups (e.g., Dr. Coleman's laboratory, or Dr. DeMore), there are no current formal ongoing clinical, translational, or basic research activities. Goals include completion of two or three book chapters (frozen section pathology of lymph nodes (2 chapters), molecular basis of lymphoma (one chapter) but no other research activities are planned.

ADIL HUSSEIN GASIM, M.D.

Dr. Hussein Gasim's activities include, research & clinical nephropathology cases, specially electron microscopy and immunofluorescence of the renal biopsies. He also provides instruction of medical students in UNC School of Medicine in nephrology and nephropathology. He is also involved in the following ongoing research activities:

1. C4d staining in the glomerular capillaries of renal allograft biopsies.
2. The significance of peritubular capillaries lamination, in renal allograft biopsies.
3. Virtual versus conventional light microscopy in renal pathology: Comparative survey.

The plan for the coming year is to focus more on research activities.

J. CHARLES JENNETTE, M.D.

A major portion of Dr. Jennette's recent basic research has utilized an animal model of ANCA disease discovered in his laboratory that is induced by i.v. injection of mouse anti-myeloperoxidase (anti-MPO) IgG antibodies or anti-MPO lymphocytes into mice that is mediated primarily by activation of neutrophils. Activation of the alternative complement

pathway is critically involved in the pathogenesis of disease in this model. ANCA-activated neutrophils release factors that activate complement, which in turn primes neutrophils for further activation by ANCA. These effects and other ANCA-mediated pathogenic events depend on generation of C5a by alternative pathway activation and on engagement of C5a receptors on neutrophils. Blockade of this critical pathogenic step abrogates disease induction, which suggests a possible novel therapeutic strategy in humans. Recent observations show that another receptor for C5a in addition to C5aR, i.e. C5L2, is an inhibitory rather than an activating receptor for inflammation. Knock out of this receptor worsened anti-MPO induced disease. Ongoing studies using this mouse model as well as patient samples indicate that Fc gamma receptors are involved in pathogenesis and in the modulation of disease phenotype. Genetic variations among mouse strains have a dramatic influence on disease severity. Genomic studies are underway to identify the genes responsible for these differences in disease severity. Candidate genes or genetic polymorphisms are being studied in parallel in patients with ANCA disease. Bone marrow transplant studies of anti-MPO disease have demonstrated that these genetic influences act primarily on and through bone marrow derived cells. Experiments are underway to assess the induction of disease by antibodies against specific MPO sense and anti-sense peptides. Pathogenic epitopes are being mapped using human-mouse chimeric molecules. In the mouse model, antibodies against recombinant mouse MPO are pathogenic but antibodies against recombinant human MPO are not. The Lab is preparing chimeric molecules from clones that have various segments of the murine MPO gene mixed with segments of the human MPO gene. These studies are demonstrating that some but not all of these chimeric molecules will induce antibodies that cause disease, thus identifying the portion of the MPO molecule that is the target of pathogenic antibodies.

HARVEY MICHAEL JONES, M.D.

Dr. H. Michael Jones' research activities are primarily in the history of medicine. He has submitted a chapter for an upcoming publication to be entitled *The Persisting Osler, Vol. 4.* The work is scheduled for publication in the fall of 2011. This work relates some of the interactions between Sir William Osler (the first chief of medicine at the Johns Hopkins Hospital and School of Medicine), North Carolina physician E. J. Wood of Wilmington, and Joseph Goldberger (who defined the cause of pellagra). He is chair of the local arrangements committee for the American Osler Society, the annual meeting of which will be held in Chapel Hill in April 2012. He is participating in the preparation of a video for that event emphasizing the role of mentoring in medical education. It will highlight some of UNC's best teachers and feature an interview with Dr. William McLendon about the role of W. B. MacNider at UNC.

Dr. Jones also functions as a research support pathologist with the Tissue Procurement Laboratory, assisting in the selection and quality assurance for pathologic materials that form the basis of molecular and genetic studies for other principal investigators across the campus.

KATHLEEN A. KAISER-ROGERS, Ph.D.

Research in the clinical cytogenetics laboratory involves the use of both traditional and molecular cytogenetic techniques including both fluorescence *in situ* hybridization (FISH) and single nucleotide polymorphism (SNP) microarray analysis to identify and characterize

rearrangements in their patient population. In addition to identifying copy number gains and losses in the human genome, the SNP array technology also enables them to identify long continuous stretches of homozygosity associated with uniparental disomy (the inheritance of both copies of a chromosome, or chromosome part, from a single parent) and consanguinity (matings between closely related individuals), both of which can result in genetic disease. While the microarray technology is currently being used to detect constitutional chromosome abnormalities, during the next year they hope to validate the SNP microarray technology for the detection of acquired chromosome changes in some of their oncology specimens. The laboratory also continues to serve as a resource for researchers on campus who are interested in applying cytogenetic techniques to their research projects

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

Dr. Kakoki has recently generated mice with low expression (approximately 10% mRNA of wildtype) of TGFβ1 by the targeted replacement of the 3' untranslated region (UTR) of *Tgfb1* with that of *Fos* on a pure C57BL/6 genetic background. He has found that the TGFβ1 hypomorphic mice develop hypertension, impaired diuresis/natriuresis with normal creatinine clearance, primary aldosteronism, aneurysm in the ascending aorta and dilated cardiomyopathy. All of these unexpected results elucidate important novel roles of TGFβ1 in the cardiovascular homeostasis (manuscript in preparation). He plans to study the mechanisms whereby low TGFβ levels cause these cardiovascular diseases and is now asking grant supports for this purpose.

Next, he studied that the effect of the genetically low levels of TGFβ1 on diabetic nephropathy, using Akita male mice, a mouse model of type I diabetes. The TGFβ1 insufficiency does not significantly change glucose or insulin levels in the plasma, but it reverses urinary output of albumin and renal fibrotic changes in Akita mice. The low levels of TGFβ1 also decrease urinary excretion of water and glucose in Akita diabetes, which in turn suppress the intake of food and water as well. These results suggest that TGFβ1 plays a major role in developing many features of diabetes including albuminuria, polyuria, glucosuria, polydipsia and bullimia. He plans to study the mechanisms for these findings, hypothesizing that the uptake of sodium, glucose, albumin is increased by activation of Na^+,K^+-ATPase by low levels of TGFβ1 in proximal tubules. Since the targeted *Tgfb1*^{low} allele is convertible into high expressing *Tgfb1*^{high} allele, he plans to phenotype TGFβ1 globally and conditionally hypermorphic mice as well.

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

He is studying the temporal order of replication during the S phase using high throughput DNA sequencing. Initial studies are aimed at validating the methodology by verifying the location of the DNA replicated in the first hour of the S phase as found in his earlier studies involving the cloning of the early replicating DNA. He is also attempting to use this methodology to identify the sites of the origins of DNA replication from throughout the genome. He is also using studies of extended single DNA fibers to discover the locations of origins of DNA replication in early replicating regions. The single DNA fiber technique has also been applied to the quantification and location of sites of DNA damage in DNA and the alterations of DNA replication resulting from DNA damage. Efforts are ongoing to develop automated techniques for analysis of fluorescently-labeled newly-replicated DNA fibers and his collaborators and he are patenting this

process and seeking commercial partners of other funding for its further development. There are studies planned to evaluate the translational application of this process to assess "cell stress" in cells obtained from patients. In parallel studies, techniques have been developed to assess extended chromatin fibers and demonstrate sites of DNA replication or DNA damage together with the ability to localize multiple proteins simultaneously at these sites of replication or repair. These studies have been shown to provide the temporal pattern of association of these proteins in addition to their localization

His other studies of reconstructed human endometrial tissue in co-culture have a more clinical/translational focus. Co-cultures of endometrial cells structured to resemble normal endometrium and endometrial intraepithelial neoplasia (EIN) have been used to assess differences in gene expression in the two states using cDNA microarrays. Immunohistochemical studies using antibodies selected based on the findings from microarray analysis are being assessed on tissue microarrays of normal, hyperplastic, EIN and invasive neoplastic endometrium. The goal of these studies is to develop an immunohistochemical test that can aid in the distinction between benign endometrial hyperplasias and EIN, which can be a difficult diagnosis to make based only on H&E stained slides. He has plans for preclinical studies to assess methods to modulate the chemotherapeutic effectiveness of arsenic trioxide (As_2O_3) in advanced endometrial cancer. These studies will use co-cultures to assess the status of a pathway providing protection against the effects of As_2O_3 and determine whether this pathway can be inhibited to enhance the effects of As_2O_3. He also has plans to determine whether the process of implantation of the human embryo in the endometrium can be simulated by adjusting the hormonal status of the endometrial co-cultures and determining whether they provide an appropriate surface for the attachment of embryonic human trophoblastic cells. If this model can be validated it may prove useful for studies of certain forms of female sterility and aid in development of strategies for their correction.

WILLIAM K. KAUFMANN, Ph.D.

Dr. Kaufmann's research is focused on the mechanisms of chromosomal instability in melanoma. Studies are monitoring components of the DNA damage response in normal human melanocytes and melanoma cell lines to identify protective elements of DNA metabolism that function in normal melanocytes but are degraded in melanomas. The p53-dependent G1 checkpoint response to DNA damage was found to be degraded in 64% of melanoma cell lines, the p53-independent G2 checkpoint response was degraded in 33% of melanoma lines, and the intra-S checkpoint response to UV-induced DNA damage was found to be fully functional in all melanoma lines tested. This result may speak to the fact that the intra-S checkpoint is indispensible and performs an essential function during DNA replication to stabilize DNA replication forks that are stalled at natural replication barriers. Future studies will focus on targeting this checkpoint for selective killing of cancer cells. Goals in the upcoming year are to renew funding for their work.

APRIL KEMPER, M.H.S.

Currently, Ms. Kemper is providing one-on-one training to 1st year pathology residents and overseeing grossing by the 2nd, 3rd, and 4th year residents. She believes her love of pathology, enthusiasm and systematic approach to grossing has helped to provide a great learning

environment. This year they (the PAs) are conducting bimonthly and monthly gross conferences. She hopes that the conferences will provide the residents with the opportunity to learn gross pathology in a fun interactive environment. She also plans to continue working with her co-workers to reduce turnaround time, minimize labeling and grossing errors, reduce the number of cassettes submitted per case and implement new methodologies to aid in physician training and patient care.

HYUNG-SUK KIM, Ph.D.

Dr. Kim continues to study complex genetic diseases using various animal models that were generated by gene targeting techniques. The resulting animals show genetic factors to play a key role in disease. To understand homeostatic response to genetic changes, Dr. Kim developed molecular phenotyping procedures based on gene expression using high-throughput real time RT-PCR methods. His results demonstrated the method's power for recognizing subtle phenotypic changes in animals even with minimal genetic differences. Using this powerful technique, Dr Kim (as a core director of gene expression study) has been collaborating with researchers in many fields, mainly cardiovascular disease with Drs. Smithies and Maeda group, kidney problems with Drs. Arendshorst, Coffman (Duke Univ.), Williams (Temple Univ.) and Sharma (UCSD). Heart failure with Dr. Meissner, neurogical disease with Dr. O'Connor (UCSD). His goal is more development for characterization of animal models, such as molecular and physiological phenotype.

JOE N. KORNEGAY, D.V.M., Ph.D.

Dr. Kornegay plans to continue his own hypothesis-driven projects, focusing particularly in three areas: (1) Use of autologous cells that have been corrected using a lentivirus-minidystrophin construct to treat GMRD dogs. In the context of these studies, they have developed a strong collaboration with Nancy Allbritton, the chair of biomedical engineering focused on use of a unique micropallet technology to isolate muscle and other stem cells. This has become the central thrust of David Detwiler's PhD project. Another graduate student, Nick Dobes, is now involved in these studies. Dr. Allbritton focused her R01 renewal in this area, using the dog as a model for translational studies; however, the grant was not funded. Resubmission is planned. (2) Genomic-phenotypic correlation in GRMD dogs to better characterize the basis for phenotypic variation. A graduate student, Peter Nghiem, has made considerable progress on these studies, with two papers nearing completion/submission. They will continue to collaborate with Eric Hoffman at Children's National Medical Center in DC. (3) Mechanisms contributing to muscle hypertrophy in GRMD dogs. They plan to submit a R01 for these studies this fall.

Because of ongoing concerns about the animal facilities, Dr. Kornegay has accepted a faculty position at Texas A&M and will be transitioning this fall. The canine colony will probably be moved to A&M in January 2012.

RUTH A. LININGER, M.D.

Dr. Lininger is a surgical pathologist who is a specialist in gynecologic and breast pathology. She enjoys teaching residents, fellows, medical students, and graduate students and sharing what

she has learned. She works with medical colleagues in multidisciplinary conferences to help to identify the best treatment and care for patients. Her research interests have become more clinical during her career. She participates in collaborative studies, primarily in gynecologic research on molecular markers in endometrial cancer and infertility states. She also has entrepreneurial interests and has a growing private outside consult service focusing in gynecologic and breast pathology and is a consultant for difficult gynecologic and breast pathology cases for two regional reference laboratories. She enjoys helping to bring new diagnostic tests to the special procedures laboratory, and also enjoys the business and fiscal aspects inherent of running a surgical pathology laboratory where she provides input on billing, charging, and other fiscal issues.

SUSAN T. LORD, Ph.D.

Dr. Lord's research is focused on the coagulation protein fibrinogen. Their studies aim to provide insight into the molecular mechanisms that mediate fibrinogen's functions with the long term goal of providing basic information relevant to the prevention, diagnosis or treatment of disease. Their current studies examine the mechanisms that control fibrin clot formation. They have examined an interesting new variant fibrinogen which is a hybrid between the human protein and chicken fibrinogen. The hybrid fibrinogen is the first to show normal assembly during the first phase of fibrin clot formation, but nearly complete absence of the second stage. They have submitted a manuscript describing these findings. They have developed new techniques to address this question, including dynamic light scattering. These experiments have been productive. These data were presented at the ASH meeting and the ISTH meeting held in July 2011. They also continued to examine the role of FXIII in controlling clot formation. They have developed the assays and reagents to monitor the kinetics and thermodynamics of these reactions. These data were also presented at the ISTH meeting in July 2011. They are currently writing manuscripts on both these projects.

Their studies on the strength and elasticity of fibrin clots and fibrin fibers continue to be productive. Michael Falvo, in the Department of Physics at UNC-Chapel Hill, and Dr. Lord have received NSF support for 3 years starting in August 2010. In these studies they measure the forces needed to stretch and break individual fibrin fibers and small networks. Their studies have shown that the remarkable mechanical properties of fibrin likely stem from an unfolded region of fibrinogen, called the αC region. These experiments were described in the publication in the Biophysical J. They have synthesized variant fibrinogens to test the hypothesis that changes in specific segments within this region will lead to changes in the elasticity and extensibility of fibrin fibers. Dr. Falvo, Dr. Gorkun, and Dr. Lord published a review article on this subject in Biophysical Chemistry. They submitted a multi-PI proposal to NIH in Feb. 2011.

CHRISTOPHER P. MACK, Ph.D.

The overall goal of the Dr. Mack's lab is to identify the signaling pathways and transcription mechanisms that regulate smooth muscle cell (SMC) differentiation. They have recently shown that nuclear localization of the myocardin family 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 recently identified the histone demethylase, jmjd1a, as an MRTF-A interacting protein, and a relatively new and exciting research focus is on the epigenetic control of SMC-specific transcription. The identification of the chromatin modifications that regulate SMC-specific transcription is a major goal as is the identification of the chromatin modifying factors that mediate these effects. They hope that their *in vitro* and *in vivo* studies will lead to therapeutic targets for several cardiovascular pathologies that involve altered SMC phenotype.

NOBUYO MAEDA, Ph.D.

Apolipoprotein E plays a central role in lipoprotein metabolism and is required for the efficient receptor-mediated clearance from plasma of chylomicron remnants and VLDL-remnants by the liver. ApoE deficient mice as well as mice expressing human apoE isoforms instead of mouse apoE have provided them tools to develop a deep understanding of the genetic factors underlying atherosclerosis for some years. The apoE-/- mice in two inbred strains (C57BL and 129) develop atherosclerotic plaques at different rates at different locations of their aorta. There are also differences in geometric parameters of aorta between these strains. To test a hypothesis that genetic factors determining aortic geometry determines susceptibility to plaque development, they have been conducting Quantitative Trait Loci analyses of F2 mice between 129apoE-/- and B6apoE-/- mice and between 129apoE-/- and DBAapoE-/- mice. The second project is to determine the mechanism by which different apoE isoforms in humans influence lipid metabolism, metabolic syndrome and cardiovascular incidents. They have recently found that the mice with human apoE4 isoform are resistant to high fat-induced obesity compared to mice with apoE3. However, adipose tissues in mice with apoE4 show reduced functionality, and mice develop diet-induced insulin resistance earlier than apoE3 mice. Moreover effect of rosiglitazone, an insulin sensitizer, on adipocyte differentiation is blunted in mice with apoE4 compared to mice with apoE3. They are currently investigating the isoforms-specific interaction of apoE with PPARγ during adipocyte differentiation and how it impacts to the susceptibility to atherosclerosis.

NADIA A. MALOUF, M.D.

Dr. Nadia Malouf is ending her academic career with what she believes may be an important contribution to the understanding of human adult-derived stem cell to transit from a "stemness" state to a differentiated state. She found that a Ca2+ dependent calmodulin binding transcription activator, CAMTA1, to be critical for the early commitment of adult-derived stem cells to a myocardial lineage. She furthermore found that the role of Ca2+ signaling evidenced by activation of the Ca2+dependent –Calcineurin-NFAT-RCAN1 pathway is involved in the same process. The latter has recently been reported to be critical for the exit of ES cells from the stem cell state. As CAMTA1 is a very recently recognized transcription factor in mammalian cells, its role in ES cell differentiation has not been examined. Dr. Malouf's research lead her to report that Ca2+ signals in stem cells cause up-regulation in the expression of CAMTA1 and activation of the NFAT pathway. Together these transcription factors trigger commitment of adult-derived stem cells to a myocardial lineage. As it is difficult to discriminate between exit from stemness and phenotype commitment she hypothesizes that CAMTA1 like NFAT may have an important role ushering a stem cell out of "stemness".

SUSAN J. MAYGARDEN, M.D.

Susan Maygarden, M.D., continues to be involved in clinical and translational research in cytopathology and prostate pathology. She works with scientists and clinicians at Roswell Park Cancer Institute, Buffalo, NY in submitting a prostate SPORE grant that will be collaborative with UNC, Roswell Park, and Louisiana State University. Her role is working with tissue procurement at UNC in collecting prostate samples, and assisting in grading and scoring tumors. In clinical research, she is interested in the role of cytopathology in classifying tumors and adding to diagnostic yield of operative cases. She has completed studies with Dr. Scanga on classifying renal tumors by cytology, with Dr. Greene on classifying lung tumors by cytology, and with Dr. Pierce and Dr. Veermachaneni on immediate cytologic interpretation of needle biopsies and bronchial brushings during endobronchial ultrasound guided procedures.

CHRISTOPHER R. McCUDDEN, Ph.D.

Although Dr. McCudden will be leaving UNC in June 2011, there is substantial research work to write up from his years in the Department. The four abstracts will all be submitted as manuscripts in the short term, two have already been drafted (B2-transferrrin and V8 Capillarys). He also intends to maintain collaborations with colleagues in the Department regarding serum protein electrophoresis projects and development of new biomarkers for cachexia.

GAYLE C. McGHEE

Gayle McGhee works closely with the Pathologists to assist with any needed requirements toward teaching responsibility. This responsibility includes working with the Director of Medical Student Teaching in the Department to provide materials or computer support for lectures and labs. Also, she is responsible for providing gross organs and helps schedule laboratory coverage for labs and gives support to them in preparation for lab or lecture. She provides help for the Director in preparation of quizzes and exams to be placed in Sakai for testing purposes. She continues to work closely with autopsy personnel to maintain and gain additional teaching material for the departments needs. Changes in autopsy volume continue to change so it is important that the autopsy personnel and Ms. McGhee work more effectively together. All gross specimens that are saved for teaching are collected and cataloged, inventoried, filed appropriately, preserved and accessible by log system or computer search. The scanning of virtual microscopy is now a vital part in teaching. She continues to scan slides and collect more interesting slide cases for use in teaching. They have made their virtual images available to all faculty by placing in a spreadsheet with diagnosis and important information as to retrieval of the virtual images. The volume has increased this year with more scanning for research projects.

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

Dr. Miller's current activities are focused on translational research involving comparative genomics analysis of glioblastomas (GBM) from both humans and genetically-engineered mice (GEM). The main goals of this work are to 1) develop a protein-level molecular classification of human GBM with distinct response to the current standard-of-care therapy (temozolomide +

radiation (TMZ-XRT)); 2) define the impact of engineered genetic alterations and secondary genetic events on astrocytoma subtype-specification in GEM; and 3) determine molecular signatures of GEM GBM after TMZ-XRT.

The Translational Pathology Laboratory (TPL) continues to grow, both in terms of services offered and the volume of services provided to UNC investigators. They have acquired several new pieces of equipment and analysis software packages, including a CRi/Caliper Life Sciences Nuance multi-spectral imaging camera and associated inForm analysis software, the Definiens XD Developer and Tissue Studio image analysis software, and upgraded Aperio Spectrum image and data management software available at https://tpl-spectrum.med.unc.edu. In calendar year 2010, they provided services to 63 investigators (up from 52 in 2009) and 18 clinical trials. Diagnostic slides and FFPE tissue blocks were pulled from the UNCH Surgical Pathology archives on 939 patient cases. Over 13,000 unstained tissue sections, 2,400 H&E stained slides, and 4,400 IHC/IF stained slides were prepared. Over 15,000 slides were scanned on the Aperio ScanScope XT and ScanScope FL systems and over 3,700 quantitative slide analyses have been performed. Their services have been included in over 20 grant applications and 12 peer-reviewed publications.

MELISSA B. MILLER, Ph.D.

Dr. Melissa Miller's major interests reside in the use of molecular technology to improve clinical infectious disease testing and, further, to use these technologies to explore the epidemiology of viral infections and antimicrobial resistance in bacterial infections. During the past year, Dr. Miller and colleagues completed and published a multi-year study of the prevalence and risk factors of MRSA carriage in child care centers in North Carolina and Virginia. In addition to the continued study of the molecular epidemiology of community-associated MRSA, she has begun researching the prevalence of heteroresistant vancomycin-intermediate *S. aureus* (hVISA) using clinical isolates. In collaboration with colleagues in the School of Pharmacy, she has initiated risk factor analyses and outcome studies for patients identified as having an infection due to hVISA. Dr. Miller's laboratory serves as the core laboratory for the molecular characterization of MRSA isolated from cystic fibrosis patients in two collaborative multi-center studies with Dr. Muhlebach in the Department of Pediatrics. In addition, she is also is employing and comparing a variety of molecular technologies, including microarrays and sequencing technologies, in the clinical diagnosis and epidemiology of respiratory viral infections, the molecular diagnosis of sepsis, and the detection of drug resistant *Mycobacterium tuberculosis.*

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

Mr. Moylan is currently involved in three research activities. He is a co-investigator in a recently funded NCTracs research grant entitled *Characterization of Brain White Matter Development using High Resolution Diffusion Tensor Imaging with Histologic Confirmation.* He will be assisting Drs. Joe Kornegay, Hongyu An, and Diane Armao. The second project is 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 third and final project is the *CIMA (Comprehensive Individual Molecular Atlas) project* that is being coordinated through the Carolina Center for

Genomic Sciences. This project involves harvesting and dissection of all human body organs from a previously consented donor. Additionally, he is working with Dr. Howard Reisner on developing a searchable autopsy digital image database for use by appropriate departmental staff. 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 and Aylsworth and other medical student related teaching projects as they become available.

VOLKER R. NICKELEIT, M.D.

The research activities of Dr. Nickeleit focus on different aspects of renal allograft pathology. 1) Adjunct markers (in particular tubular MHC-class II expression and capillary C4d deposition) for the diagnosis of cellular and humoral graft rejection episodes in kidney and liver grafts are under investigation. 2) A major research effort addresses polyomavirus infections in kidney allograft recipients. 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). Negative staining electron microscopy on voided urine samples and the search for three-dimensional polyomavirus clusters, "Haufen", have proven in pilot analyses to be highly robust diagnostic methods with negative and positive predictive values of greater than 90%. Extended prospective studies are currently conducted in order to validate the initial findings further. Additional *in vitro* and *in vivo* (mouse) studies are under way or in the planning stage to elucidate mechanisms underlying the formation of Haufen and to find alternative, diagnostically relevant ways of "Haufen" detection.

JUDITH N. NIELSEN, D.V.M.

Dr. Nielsen's collaboration with Dr. Nancy Raab-Traub from the Lineberger Cancer Center in her studies of Epstein Barr Virus LMP influence on tumor formation in mice has resulted in a second paper submitted for publication describing the work demonstrating that the Epstein-Barr virus LMMP1 and LMP2A function cooperatively to promote carcinoma development in her mouse carcinogenesis model. She has also continued collaboration with Dr. Kirsten Nielsen, a faculty member in the Department of Microbiology, School of Medicine at the University of Minnesota, who is studying pathogenesis of Cryptococcus neoformans in a mouse model. This collaboration has resulted in the funding of an R01 grant in which she will serve as a collaborator. In addition, a three-way collaboration with Dr. Beverly Koller at UNC has begun, using Dr. Koller's knock-out mice to identify key steps in the establishment and progression of cryptococcal infection. It is hoped that preliminary studies will result in preparation and submission of further R01 grants. She has recently collaborated with Dr. Sha Chang in preparation of an R01 grant to validate development of new imaging and treatment modalities for cancer, using the pig model to test and validate new state-of-the-art CT imaging equipment. Dr. Xiaochen Lu, a Research Specialist under the supervision of Dr. Craig Fletcher and Dr. Nielsen have completed setting up the DLAM Molecular Diagnostic Testing Laboratory and they are now beginning to use his assays to track outbreaks of mouse parvovirus, mouse hepatitis virus, helicobacter and pinworms in our mouse colonies at UNC. It is hoped that they will find

this more efficient and cost effective than use of referral laboratories. These facilities can also be used for research activities by their faculty.

SIOBHAN O'CONNOR, M.D.

Dr. Siobhan O'Connor is currently reviewing cases for project LCCC 9830, for which over 800 new breast cancer cases have been collected. Tumor is being cored from paraffin-embedded tissue to be used for molecular studies and tissue microarrays. As part of this study, genetic variability in breast cancer is being investigated in relation to how it affects response to various chemotherapy regimens. This tissue will also be available for Dr. O'Connor to develop her own projects. Also, she is expecting to receive 20% salary support from the breast SPORE and will work on additional projects in collaboration with the oncologists and Dr. Charles Perou. Dr. O'Connor is working with Dr. John Woosley on educational videos for the AAMC, which will result in publications, the first of which is on acute chorioamnionitis.

KUMAR PANDYA, Ph.D.

Dr. Pandya's primary interest lies in understanding the molecular networks underlying complex genetic switches *in vivo* in response to development and pathological stimulations. During his postdoctoral tenure, he has focused on investigating the cellular and molecular basis of heart failure, with an emphasis on changes occurring at the level of individual myocytes. He generated multiple gene-targeted mouse-models that express multiple fluorescent proteins as indicators of hypertrophy-responsive genes. His work has demonstrated that multiple pathological features of cardiac hypertrophy such as the MHC switch, MEF2 activation, and altered beta-adrenergic responsiveness occur in discrete subsets of, rather than uniformly in all, myocytes. His current work is focused on uncovering the degree (both qualitative and quantitative) to which various pathological facets manifest in individual cells, with the long term goal of identifying the *in-vivo* effectors and attendant transcriptional pathways of pathological switches. His work is also focused on determining the epigenomic landscapes in heart failure and investigating the roles of chromatin modifying factors (brahma and brahma related gene1) in heart development and failure.

He attained his first faculty position in January, 2011, and since then he was awarded an internal research grant from UNC. He has also submitted an R21, and plans to submit an R01 in fall 2011, and an AHA research award in January, 2012.

YARA A. PARK, M.D.

Dr. Park's research focuses on thrombotic thrombocytopenic purpura (TTP), specifically the causes and exacerbating factors. Currently, she is investigating the role of infection in both the initial presentation of TTP as well as exacerbations during treatment. She is also looking into the role of B cell activating factor in the pathogenesis of TTP with Stefanie Sarantopolous and Yuri Fedoriw. Additionally, she is the co-PI for the UNC site of the Transfusion Medicine and Hemostasis Clinical Trials Network grant.

KATHLEEN W. RAO, Ph.D.

In April 2011, Dr. Kathleen Rao was elected Chair of the Children's Oncology Group Cytogenetics Committee – term to begin July 1, 2011. Over 100 Cytogenetics laboratories in the US and foreign countries participate in COG Cytogenetics studies. Non-US labs include laboratories in Canada, Australia, New Zealand, Ireland, and Switzerland. The Children's Oncology Group (COG) is the world's largest, cooperative children's cancer research group.

HOWARD M. REISNER, Ph.D.

Dr. Reisner enjoys teaching and the preparation of course related material. The ability to design and execute a course on one's own (such as the Dental General Pathology and the Undergraduate Mechanisms of Disease Class) allows for creativity, some degree of authority along with the responsibility. One is likely to deserve the student comments one receives (and his continue to be been quite good). His work with the Aperio Image Analysis platform has led to collaboration in a project with Dr. Nancy Thomas, Drs. Singh and Nickeleit and others. He has been involved in a research project with one of Dr. Tidwell's former graduate students (Rachel Goldsmith) which led to a number of publications and will continue to undertake projects involving new educational materials in collaboration with Dr. Woosley. The most recent involves adapting an Ajax/Seadragon browser for use with pathology images. Dr. Reisner plans to complete two pathology textbooks during the coming year.

ARLIN B. ROGERS, D.V.M., Ph.D.

Dr. Rogers' lab is focused in host/environment interactions in chronic liver disease (especially cancer), with a special interest in the role of gender on disease progression. They are concentrating their current efforts on the impact of cell signaling and epigenetic remodeling with a special emphasis on STAT5 in hepatocarcinogenesis using mouse models and cell culture systems. These studies may reveal the molecular mechanisms accounting for marked gender disparity in human HCC, and will suggest new biomarkers and interventional targets. Goals for the coming year include procuring an R01 and initiating animal studies to complement their investigation of STAT5 and inflammatory signaling in hepatocyte cultures. In addition to his primary research activities, Dr. Rogers collaborates widely as a veterinary pathologist and co-investigator within DPLM and SOM on experiments using mouse models to study chronic inflammatory disease and/or cancer.

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

Dr. Scanga's current clinical service activities include anatomic pathology signout in the areas of both surgical and cytopathology. She has signed out over three thousand anatomic pathology cases since she began clinical service as faculty including surgical pathology, outside surgical pathology consults, gynecologic cytology, fine needle aspirations, exfoliative cytology, and outside cytology consults. Also, she has covered frozen sections and surgical pathology call. She started clinical service in the areas of cytology and gynecological surgical pathology, and has since added service on the ENT surgical pathology bench. Her clinical service on the ENT bench will surpass her clinical service weeks on gynecologic pathology in the next six months. In

the first half of the 2011-2012 academic year, she will be on ENT service for six weeks, gynecologic pathology for five weeks (both benign and oncologic gynecology services), and cytology for six weeks. The surgical pathology areas of both ENT and gynecologic pathology are complementary to her cytology service, and plan to continue with signing out all four of these service benches. Her research goals include publishing her work studying kidney fine needle aspirations which she recently published as an abstract in Cancer Cytopathology entitled "Utility of Fine Needle Aspiration and Core Biopsy with Touch Prep in the Diagnosis of Renal Lesions" and presented as a poster at a national meeting of the American Society of Cytopathology 58th Annual Scientific Meeting in Boston, November 12-16, 2010. She received IRB approval of this project and she is writing a manuscript to publish this work in an anatomical pathology journal. She enjoyed teaching medical students in the MS2 Reproductive Medicine Block and will continue to teach in this block. She enjoys teaching around the scope sessions to residents and will continue to teach residents in formal teaching lectures and at the microscope during sign out.

JOHN L. SCHMITZ, Ph.D.

Dr. Schmitz's current and upcoming research activities are focused in the areas of HIV Immunology and Transplant Immunology. With the successful re-competition of the UNC CFAR Dr. Schmitz' CFAR Immunology Core will be funded for 5 years as part of this effort (2011 – 2016). In addition to the support provided to HIV researchers at UNC and Duke University, Dr. Schmitz has been awarded 3 contracts with the National Marrow Donor Program to provide laboratory infrastructure and testing services for clinical trials of bone marrow transplant in HIV patients. In addition, Dr. Schmitz is conducting 2 vendor sponsored clinical evaluations of HIV testing method including a rapid diagnostic test and a point of care CD4 test. In the upcoming year, Dr. Schmitz will have 3 additional contracts with Becton Dickenson to support HIV related clinical studies of a CD4 testing method and to conduct a pediatric CD4 normal range study in collaboration with Dr. Steiner from Pediatrics. In the context of transplant immunology Dr. Schmitz continues to collaborate with clinical transplant colleagues on defining the role of HLA antibody in liver transplant recipients. In addition, Dr. Schmitz's laboratory is participating in a multicenter study describing the natural history of alloantibody production post-transplant in solid organ recipients. This work is being performed as a study for the 2012 International Histocompatibility Workshop. Dr. Schmitz is also planning to collect peripheral blood lymphocytes from these same patients to assess B cell phenotypes and function with the goal of applying for TRACS funding to study the regulation of B cell responses in allotransplant recipients. This work will be done in collaboration with UNC investigators studying the role of B cell responses in graft versus host disease.

DENNIS A. SIMPSON, Ph.D.

Dr. Simpson's research, in collaboration with Dr. Kaufmann, is currently focused on understanding how normal human melanocytes respond to exposure to ultraviolet light and how this response protects the cells from changes that result in melanoma. To do this he has developed a novel system to measure the viability of melanocytes after UV exposure and he has adapted the Tet regulation system for use in melanocytes to allow the controlled expression of important oncogenes such as mutant B-Raf. Over the next year he hopes to get a measure of the

UV induced mutation frequency of melanocytes and a determination as to how protective melanin is to a melanocyte as opposed to a keratinocyte.

HARSHARAN K. SINGH, M. D.

Dr. Singh will continue to work further in the characterization and development of a novel, non-invasive, diagnostic test to diagnose a major infectious complication post kidney transplantation known as polyomavirus nephropathy. This new diagnostic technique developed by Dr. Singh and her colleagues at UNC avoids invasive biopsy procedures, and could potentially have profound implications for the care of kidney allograft recipients worldwide. Currently, this test requires the use of electron microsocopy. New methods including ELISA assays and flow imaging techniques are being evaluated to eliminate the necessity of using electron microscopy for test performance. The clinical impact of this novel discovery will continue to be confirmed in a multi-center prospective study with unrestricted funding from Astellas Pharma, US Inc. for which UNC Nephropathology is the lead investigative center. The Division of Nephropathology is also the lead investigator with centers participating from the US, Canada, and Europe in developing an International Consensus Classification of Polyomavirus nephropathy. Initial results from this work will be presented at the International Banff Meeting, Paris, France, in June 2011.

SCOTT V. SMITH, M.D.

Dr. Smith's current clinical activities are focused in surgical pathology with broad emphasis in pediatric, ENT, thoracic, genitourinary, prostate, cardiovascular, pancreaticobiliary, endocrine, bone, and soft tissue pathology. Dr. Smith's research interests are clinical translational studies in solid pediatric tumors. He has undertaken collaborations with Dr. Julie Blatt and Dr. Ian Davis in the Division of Pediatric Hematology Oncology in the Department of Pediatrics. He is working with Dr. Ian Davis in Pediatric Oncology on genome-wide identification of active regulatory elements in fresh and archival human cancers.

OLIVER SMITHIES, Dr. PHIL

Dr. Smithies' research has been working towards understanding genetic factors that influence hypertension and kidney damage in diabetics - conditions with strong genetic and environmental components. Currently, they have shown that genetic changes which affect the level of expression of the genes coding for angiotensinogen (AGT), or for renin, or the type 1a receptor for angiotensin II (Atr1a), or the endothelial form of nitric oxide synthase (eNOS), or the atrial natriuretic factor (ANF) or two of its receptors (NPRA and NPRC), all affect blood pressures in the mouse. Surprisingly, comparable changes in the gene coding for the angiotensin converting enzyme (ACE) do not alter blood pressures. This finding led them to their most recent work which uses animal models to understand the genetic basis for differences in the risk of kidney damage in diabetic individuals. Additionally, Dr. Smithies is using gold nanoparticles to test his hypothesis that the glomerular basement membrane is the place where the kidney separates differently sized macromolecules.

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). She is interested in studying cardiac and vascular development as well as mechanisms involved in heart failure, atherosclerosis, 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 development. Plans for 2011/2012 are listed below

Cardiac: One of their lines exhibits sudden death after pressure overload that is associated with the redistribution of FAK to cell-cell junctions. They are using a proteomics approach coupled with telemetry to uncover the mechanisms by which alterations in integrin signaling may promote arrhythmia.

Skeletal: They have uncovered a novel pathway that is regulated by beta dystroglycan and likely plays a critical role in the pathogenesis of muscular dystrophy. They are exploring new concepts with respect to how muscle cells differentiate and fuse in the hopes of creating new compounds that will be effective in blocking muscle wasting that occurs in a multitude of diseases.

Smooth: They are particularly interested in defining the mechanisms that regulate the induction and recruitment of smooth muscle cells from the epicardium to the coronary vasculature. They have data that implicate LIM domain containing proteins in this process and will continue to develop animal models to precisely define their role(s) in this important developmental process.

LEIGH B. THORNE, M.D.

Dr. Thorne's clinical duties currently include attending for the Molecular Genetics Lab and the Autopsy service as well as Director of Autopsy Services. Translational research activities continue with her involvement in the LCCC Tissue Procurement Facility. They continue working towards development of a universal/global consent in conjunction with the UNC Health Registry with the goal of consenting all potential cancer patients who visit the NC Cancer Hospital. New in the upcoming year is the revival of the breast cancer rapid autopsy program. She hopes that this will be successful and eventually expand to include other tumor types. Dr. Thorne will also continue to focus on raising the standards of the LCCC TPF by bringing the facility into compliance with the NCI Best Practices Guidelines as they expand to include smaller institutions in North Carolina.

RICHARD R. TIDWELL, Ph.D.

Dr. Tidwell will continue the collaboration with the Genomics Institute of Novartis Research Foundation (GNF). This collaboration has allowed the Tidwell led Consortium for Parasitic Drug Development (CPDD) to access to a library of over 300,000 small molecules to screen and optimize for development as treatments for late stage human African trypanosomiasis (HAT). This developmental program is being funded under the current Gates Foundation Grant and supplemented by GNF scientist and facilities. In addition, work continues on another Gates

funded grant to determine mechanism of toxicity for new drug candidates to treat HAT. This grant is a collaborative study with the Hamner Institute for Drug Safely. This grant's ultimate goal is to uncover specific markers to predict renal and liver toxicity of new classes of molecules. An R01 grant proposal entitled "Novel Approaches to Ensure Safety of Promising New Drugs for Sleeping Sickness" was submitted to NIH during the past year. Although the grant received mixed reviews ranging from all ones by one review to twos and threes by another review it was not funded. This proposal is being rewritten in response to reviewers' comments and will be resubmitted in 2012. At the invitation of the NIH, Dr. Tidwell submitted a P01 proposal entitled "Development of New Molecular Scaffolds to Treat Stage 2 Sleeping Sickness" in the spring of 2011. This proposal is in collaboration with the University of Washington with a requested direct cost budget of $3,657,354 spanning a five year period. A joint venture is current being negotiated between the University of North Carolina (for the CPDD) and Developing World Health (DWH). Once this JV is completed with this Scottish based non-profit, DWH will assume the role of raising money for the CPDD. Finally, they continue their collaboration with Bayer Animal Health to jointly research new drugs to treat animal diseases.

MICHAEL D. TOPAL, Ph.D.

Michael Topal's current research involves 1) helping The Cancer Genome Atlas project in its goal to characterize gene expression in many types of tumor samples, and 2) bioinformatics analysis of gene organization in human viruses. The rest of his time is spent on administrative initiatives associated with basic and translational science core facilities at UNC, as described in Section E, and as Faculty Director of the Genomics and Mammalian Genotyping core facilities. The coming year will see discussions to build a regional genomics institute concentrating on high throughput sequencing, to reform HR policies concerning core directors and staff, to centralize core facilities on campus and to provide centralized management of the facilities, and to build a web portal that will be transformative in its ability to educate clinical researchers about research infrastructure applicable to clinical samples.

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

Dr. Trembath is currently investigating novel markers for the diagnosis and prognosis of brain tumors, in collaboration with Dr. Ryan Miller. Dr. Trembath also wants to develop collaborations with researchers in the neurosciences investigating animal models of developmental neurologic disorders such as autism.

CYRUS VAZIRI, Ph.D.

Dr. Vaziri's major goal is 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 identify novel areas for future research and to initiate new projects that will provide vehicles for extramural funding. To this end, he has initiated trans-disciplinary studies with several colleagues at UNC including Dr. Bill Janzen (School of Pharmacy), Dr. Jim Swenberg (CEHS), and Dr. Monte Willis (Pathology). The collaborative drug discovery project with Dr. Janzen has resulted in an award from the UCRF ($187K) and a graduate student working on this project (Alicia Greenwalt) has procured support from the Program in Translational Medicine.

Two grant applications to support the collaborative projects with the Swenberg lab have been submitted to the NIEHS and a collaborative proposal with Dr. Willis for submission to the NIH is in preparation.

TRACIE WAGNER, B.S., P.A.

Ms. Wagner 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. She has also implemented the banking of prostate cancer from prostatectomy specimens, which before she came, were not getting banked at all. She has become the clinical instructor of the Frozen Section Room. She has standardized the work flow and implemented the lean concept. She is now the sole instructor responsible for training all first year residents as well as assisting/training 2nd-4th year residents and fellows in the frozen section room.

KAREN E. WECK, M.D.

Dr. Weck's recent research efforts are focused on developing pharmacogenetic testing to predict response to drug therapy. Her laboratory is collaborating in several clinical trials at UNC to study the clinical utility of pharmacogenomic guided therapy. One ongoing clinical trial is a prospective randomized study to determine the utility of pharmacogenomic guided dosing of warfarin, incorporating genotyping for variants in the *VKORC1* and *CYP2C9* genes associated with altered warfarin response. Dr. Weck is a member of the International Warfarin Pharmacogenomics Consortium, whose goals are to study the effect of clinical and genetic factors on warfarin response and to devise a pharmacogenomic dosing algorithm for warfarin. This work has resulted in two recent publications. Plans are underway to further analyze genomic and clinical factors associated with warfarin response in different ethnic populations including African Americans. In addition, Dr. Weck has collaborated with a group in Brazil to identify *VKORC1* mutations associated with warfarin resistance. Dr. Weck is also a co-investigator in a multicenter collaborative clinical trial to study the efficacy of CYP2D6 genotype-guided dosing for tamoxifen in breast cancer that includes UNC and several other sites across North Carolina. The preliminary results of this trial indicated that CYP2D6 genotype-guided dosing of tamoxifen resulted in normalization of plasma concentration of endoxifen, the active metabolite of tamoxifen, in women who are CYP2D6 intermediate metabolizers. The tamoxifen trial has been expanded to include 500 women across North Carolina, with escalated recruitment of African American and Hispanic women. Dr. Weck is also collaborating with investigators in the Departments of Cardiology to conduct a clinical trial on the efficacy of CYP2C19 genotype-guided dosing for clopidogrel.

Another major effort is translation of new knowledge of the genetic causes of disease into diagnostic testing. Dr. Weck's laboratory has developed mutation testing for genes associated with primary ciliary dyskinesia, X-linked Alport syndrome, and focal segmental glomerulosclerosis (FSGS). The goal is to better characterize the spectrum, incidence and genotype-phenotype correlation of mutations associated with disease and to develop clinical testing in those genes with clinical utility. The UNC Molecular Genetics Laboratory is now one of the only laboratories in the country that offers clinical genetic testing for mutations associated

with these diseases. Finally, efforts are underway to incorporate whole exome sequencing technology for clinical diagnosis. Dr. Weck collaborated on a study to evaluate the accuracy of massively parallel sequencing for detection of genetic variants associated with primary ciliary dyskinesia, published recently in the journal Genetics in Medicine. She is co-investigator on two new NIH grant submissions to continue this work.

BERNARD E. WEISSMAN, Ph.D.

Dr. Weissman's current research focuses upon the role of aberrant chromatin remodeling in cancer development. Specifically, his laboratory concentrates upon loss of activity of the SWI/SNF chromatin remodeling complex in the development of non-small lung carcinoma, a cancer strongly associated with environment pollution, small particle exposure and smoking and malignant rhabdoid tumor, a rare pediatric cancer. Previous studies from Dr. Weissman's laboratory have shown that inactivation of individual components of the complex alter gene expression through changes in chromatin organization. Furthermore, the loss of SWI/SNF complex may induce epigenetic instability in cancer cells leading to gene silencing via a mechanism independent of DNA methylation. Current studies focus upon understanding how loss of SWI/SNF complex remodeling activity alters signaling of major signaling pathways associated with cancer development including the WNT, NFkB, and KEAP/NRF2 pathways. The laboratory employs cell culture and genetically engineered mouse models combined with the latest molecular genetic techniques including ChIP-seq and MNase-seq to address these questions.

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

Dr. Whinna's research interest is in how the normal process of hemostasis occurs in time and space to plug an injury site without causing pathologic thrombosis in the entire vasculature. First, this involved basic protein chemistry studies on the structure-function aspects of thrombin inhibition by the serine protease inhibitors antithrombin III and heparin cofactor II (PhD thesis work). Next, he began engineering and testing of chimeric antithrombin molecules that combine favorable properties of sometimes diverse naturally occurring molecules that can act when and where it is most desirable (postdoctoral and early faculty work). As part of the testing of these engineered antithrombins he established and refined thrombosis models in mice and has been using these models to study the effects of not only the molecules he has engineered, but also (through collaborations) other naturally occurring and synthetic molecules. He has shown previously unreported pathophysiologic differences in two of the most widely used models of thrombosis in mice, which have important implications for studies utilizing these models and the conclusions drawn from them. Most recently, he has developed improved murine hemostasis models that can be correlated with know phenotype in human disease. These models are being used to test the effects of both pro- and anti-coagulant compounds in order to delineate both normal and pathologic hemostasis. Additionally, these models are being applied in mouse models of human disease to investigate both pathophysiologic mechanism and possible treatments.

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

Dr. Whitaker will continue to provide veterinary clinical care for the research animals on campus as her primary function. With the new animal facilities opened on campus, the mouse census will more than double, which will significantly increase the case load. She will also continue 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, for which Dr. Whitaker has submitted grant applications this year. Her interest and specialty training in aquatic animal medicine will continue to be used to support the aquatic research species on campus. She will also continue to be involved in teaching and training of laboratory animal residents in the Research Triangle area through the new Research Triangle Laboratory Animal Training Program seminar, Pathology graduate students on animal models, and investigators and laboratory staff on the use of animals in research. She will continue to co-chair the Southeastern location of the International Mock Board Exam Coalition for the ACLAM board exam and to serve as Interim Associate Director of Veterinary Services.

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

The Willis laboratory investigates the role of the ubiquitin proteasome system in the pathophysiology of cardiac hypertrophy and heart failure. Cardiac hypertrophy develops in response to biomechanical stress most commonly from extrinsic pressures such as hypertension, valvular heart disease, or myocardial infarction. The development of cardiac hypertrophy results in metabolic and structural changes in cardiomyocytes. One metabolic change prominent during adaptive cardiac hypertrophy involves a switch from utilization of fatty acids as an energy source; while fatty acid oxidation is not detrimental to the healthy heart, during prolonged periods of stress fatty acid intermediates contribute to free radical stress. Instead, the stressed heart relies on glucose utilization, allowing reduced oxidative stress, a metabolic switch widely believed to preserve cardiac function in cardiac hypertrophy and heart failure. Recently, the peroxisome proliferator-activated receptor (PPAR) family of nuclear receptor transcription factors has been shown to regulate the cardiac switch from fatty acid to glucose energy at the level of gene transcription. As such, decreasing PPAR-α levels in the setting of cardiac hypertrophy reduces expression of "bad" or "lipotoxic" fatty acid oxidative enzymes while simultaneously enhancing those responsible for "good" glucose oxidation. Identification of the factors that regulate PPAR mediated metabolic adaptation during the development of cardiac hypertrophy and heart failure would open up new therapeutic options for preserving heart function. The Willis laboratory has recently identified that the cardiac ubiquitin ligase Muscle Ring Finger-1 (MuRF1) is an essential regulator of the adaptive changes in metabolism that accompany cardiac hypertrophy and heart failure. They have further identified that MuRF1 specifically interacts with and inhibits PPAR-α activity, by changing its nuclear localization via mono-ubiquitination and nuclear export, which is consistent with PPAR inhibition accompanying adaptive cardiac hypertrophy. In the next year, the focus of the laboratory will be on determining the how MuRF1 regulates nuclear export of nuclear receptors as well as how its own expression is regulated transcriptionally through external forces. These studies will establish the molecular mechanisms by which characteristic shifts in metabolism occur in response to cardiac stress and lead to heart failure.

RUTH E. WINECKER, Ph.D.

The laboratory is currently researching the implications of post mortem redistribution of SSRI's in death investigations. There is one planned publication and one planned abstract from this research for 2011-2012. The laboratory recently submitted an abstract on metaxalone involved deaths for presentation at AAFS in Feb 2012. A manuscript of this research is currently being prepared. Also, manuscripts for research already conducted and presented at scientific meetings in 2010-2011 are currently in preparation. Topics include levetiracetem and buprenorphine.

ALISA S. WOLBERG, Ph.D.

The major goals of Alisa Wolberg, PhD, are to: 1) examine cellular, biochemical, and biophysical features that modulate thrombin generation, and 2) determine how the pattern of thrombin generation dictates clot formation, structure, and stability. Dr. Wolberg's group has made substantial progress towards both goals during this year. They have used *in vitro* assays and developed novel *in vivo* models of thrombosis and thrombolysis to examine how plasma hypercoagulability and vessel injury promotes thrombus formation. Their studies suggest pathogenic roles for cell-derived microvesicles in clot formation, and correlate thrombus formation and stability with extent of vessel injury. Their techniques for measuring fibrin formation and stability may provide important information on the therapeutic dosing window of novel thrombolytic and hemostatic agents.

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

Dr. Woosley has continued and expanded his research in GI and Liver pathology. He is the study pathologist in a large (~800 cases) population-based study of colon cancer in 33-counties of North Carolina examining traditional dietary and lifestyle risk factors, access and utilization of health services; and polymorphisms of carcinogen metabolizing enzymes. As a companion study, they have enrolled some of these subjects in a national colorectal cancer family registry that will have the potential to identify genetic markers for colon cancer risk. A major objective of this study is to determine why African-Americans with colon cancer fare more poorly than Caucasian Americans. A follow-up proposal dealing with the same issues for rectal cancer has also been funded. In addition, Dr. Woosley continues his scholarly activity on the technology of pathology education.

HONG XIAO, M.D.

Dr. Xiao's major research goal, in collaboration with Dr. Jennette, is by using their innovative mouse models of antineutrophil cytoplasmic autoantibody (ANCA) induced glomerulonephritis (ANCA disease), to advance the understanding of mechanism of the ANCA mediated autoimmune disease. Her current focus on studies: (1) testing involvement of Fcγ receptors and alternative complement pathway in pathogenesis and therapeutic interventions in ANCA disease mouse model, such as by blockage of Fcγ receptors or C5a receptors with specific antibodies or small molecule inhibitors, which may have important implications for therapies of human diseases; (2) inducing experimental ANCA disease models by neutrophil antigens in addition to MPO protein, such as Proteinase-3 (PR-3) and lysosomal membrane protein-2(LAMP-2), or

different portions of MPO for identifying specific epitopes that are targeted by pathogenic anti-MPO antibodies; (3) investigating genetic basis for variations in severity of ANCA disease among different strains of mice, which mimics disease variations in ANCA patients and trying to identify candidate genes and their protein products responsible for the differences in disease severity, which might be new markers for disease activity and potential targets for novel therapeutic strategy in humans.

XIANWEN YI, M.D., Ph.D.

Dr. Yi's studies in collaboration with Dr. Maeda, focused on antioxidant animal models for effective treatment of diabetic nephropathy and inflammation. After successfully creating these mouse models, putting them through initial tests and conducting other research *in vitro*, his research is becoming fruitful. He published two articles within the last year and another manuscript has been accepted. His work is gradually being recognized in the diabetic research field. He has received five manuscript review requests from different journals and an invited talk for a national meeting in the past few months. He successfully received an innovative grant from American Juvenile Diabetes Research Foundation recently. He also submitted a R01 grant application last month and currently, he is preparing another R01 application in a different research project. He hopes he can make more contributions to research in their department in the coming year.

MAIMOONA B. ZARIWALA, Ph.D.

Dr. Zariwala's research is focused in several areas: (1) Test for new candidate genes for primary ciliary dyskinesia, (2) To test new patients for known gene mutations, (3) Continue to expand the CLIA approved clinical genetic test panel for Primary Ciliary Dyskinesia, (4) Provide consultation and ongoing support to the Molecular Pathology Lab for clinical genetics test panel for Primary Ciliary Dyskinesia, and (5) Decipher possible genetic causes of idiopathic bronchiectasis that is not related to the CF or environmental causes. Dr. Zariwala's laboratory has made significant progress towards each of these goals in the last year. The work on *DNAH11* mutation profiling is complete and manuscript is under revision. Collaboration is ongoing with Dr. Omran in Germany on the newly identified PCD-causing genes *CCDC39*, *CDC40* and previously known *DNAH5* mutation profiling. The replication work on *DNAH5* and *CCDC40* is near complete and additional mutations have been identified from our patient cohort. Ongoing collaboration with the national and international laboratories through the Primary Ciliary Dyskinesia consortia, additional patient material is acquired and tested for known genes and mutations, as well as for defining novel mutations. Additionally, Dr. Zariwala is involved with Drs. Evans, Weck and Berg to test the possible usage of the next generation sequencing technology in the clinical setting and manuscript is already published. Through the collaboration formed with Drs. Shendure, Nickerson and Bamshad at Seattle Genomic Sequencing Center, work on Whole-Exome sequencing of 24 unrelated PCD patients is continued. Of these 24 samples, they identified a novel founder mutation in 3 families with Ashkenazi Jewish ethnicity in the previously known *DNAI2* gene. Additionally, they found mutations in the known *DNAH5* gene in two families and *RSPH9* in one family. Furthermore, Dr. Zariwala identified TWO NOVEL PCD causing genes from this cohort. Mutation Profiling of novel genes identified additional patients harboring mutations, thus these are indeed PCD-causing genes. Functional

analysis of splice mutations in the genes revealed that mutations were affecting splicing machinery. Further work on novel genes is underway. Additionally, with the group in Seattle, Dr. Zariwala carried out Whole-exome sequencing in 24 samples from 17 families with non-CF bronchiectasis. Many of these patients have some overlap with PCD phenotype and/or idiopathic bronchiectasis. The initial analysis revealed TWO NOVEL cilia related genes in two families that had non-classic PCD phenotype. Large scale mutation profiling and further characterization work is underway. Additionally, the data analysis and validation studies of whole-exome sequencing for PCD as well as non-CF bronchiectasis group is ongoing in patients where genetic causes are not yet identified. Moreover, Dr. Zariwala has formed collaboration with Dr. Hildebrandt (University of Michigan) and Dr. Cecilia Lo (University of Pittsburg) to carry out whole-exome sequencing in additional ~50 PCD families, and that work is underway. In a nutshell, 4 novel cilia related genes have been identified in the past year and additional work is ongoing to find new targets for PCD and non-CF bronchiectasis. The success of this test will open the door for expanded clinical tests as early diagnosis will allow early intervention and will improve clinical outcome of classic and non-classic PCD as well as idiopathic bronchiectasis. This study will also represent a significant step forward in the application of new approaches to genetically heterogeneous disorders in humans.

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. The blocks are 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. 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. 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/gu) has continued and receives excellent student comments. These "mini-pathology" lab sessions are most successful when presented before the more medical sections of the laboratory (when such exist) and are designed so as 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 although somewhat reduced remains acceptable. Several blocks incent attendance via a variety of grading schemes. In addition, an introduction to Pathology as a medical career is now part of the Tools block. This allows an additional venue for interested students to meet our faculty. In addition, several of our more junior faculty have used this and laboratory/lecture participation as an opportunity to meet students. Twelve video podcasts presenting overviews of introductory laboratory are available to

the first block and were noted as helpful by students. The availability of gross organ specimens in the small group sessions continues to 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. The revised on-line web-based quiz system (MedStars) was used pathology evaluations and was a tremendous improvement over the older system.

The Tools Block (Block 1) now includes the entire Introduction to Pathology (General Pathology) sequence and is taught in conjunction with Radiology. We have added to additional small group sessions (vascular and developmental pathology) and have integrated radiology material in all of the "workshops"; a process which will be continued this year. An autopsy experience run through the hard work of the Office of the Chief Medical Examiner and coordinated by Dr. Reisner is now part of the Clinical Case Block.

Dr. Reisner has attempted to aid 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. All blocks used computer based virtual microscopy rather than glass slides and microscopes to present histopathological material and the availability of a new Aperio scanner with 40X capabilities has allowed the extension of VM technology to the area of hematopathology. Images are provided online via a specialized image server which also serves as the repository for image files. Student acceptance continues to be excellent and a far greater interest in histopathology was noted to be present during laboratory sessions. The Aperio viewer (Imagescope) continues to be preferred by students to a virtual slide viewer used in histology. We have recently updated the image server to allow viewing of images on alternative devices such as Mac computers and iPads. In addition limited use has been made of Silverlight technology to allow integrated use of "zoomable" images on Sakai pages.

General Pathology Sequence (in Block 1): The course consists of ten lecture sessions covering general pathology and six workshop sessions using virtual microscopy and gross organ demonstrations·. Laboratories were staffed by both Ph.D. and M.D. faculty so as to afford students the opportunity to meet both research and clinical faculty. Virtual microscopy images were presented using the image server. It is that the additional workshop and lectures presented this year provided a more coherent introduction to aspects of pathology necessary for an understanding of subsequent material. Each laboratory session included a short at home open-book examto 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 5th 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 and the expanded use of introductory laboratory "podcasts" has proven both useful and popular. Two multiple choice exams were used as evaluation tools along with short "extra credit" exercises added this year to a surprising degree of enthusiasm. In general, course comments and ratings have continued to be excellent.

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. One sample podcast (in pulmonary pathology) has been produced for testing purposes.

MOLECULAR AND CELLULAR PATHOLOGY GRADUATE PROGRAM

William B. Coleman, Ph.D., Director of Graduate Studies
Jonathan W. Homeister, M.D., Ph.D., Associate Director of Graduate Studies

The graduate student body of the Molecular and Cellular Pathology Graduate Program individually and collectively accumulated a number of significant accomplishments during the past year. Eight students successfully completed the Ph.D. program (Jason Doherty, Rachel Goldsmith, Mark Gramling, Mehmet Karaca, Troy McEachron, Matt Medlin, Avani Pendse, and Chih-Hong Wang), and one student completed the M.S. degree (Lisa Samuelson). With these graduates, the Molecular and Cellular Pathology Graduate Program has produced 166 total graduates and 119 Ph.D. graduates since 1954. For the most part, the recent Ph.D. graduates have immediate plans to continue their professional development through postdoctoral research (Rachel Goldsmith – NIEHS; Mark Gramling – Vanderbilt University; Mehmet Karaca – NIEHS; Troy McEachron – St. Jude Children's Research Hospital; Chih-Hong Wang – University of California at San Diego), additional training (Avani Pendse – Pathology Residency Program at UNC Hospital), or industrial science positions (Jason Doherty – New Orleans BioInnovation Center; Matt Medlin – Vascular Pharmaceuticals Inc.). The Biological and Biomedical Sciences Program (BBSP) continues to admit excellent graduate students, many of whom are interested in the Molecular and Cellular Pathology Graduate Program. During Summer 2010, Fall 2010, and Spring 2011, faculty members associated with the Molecular and Cellular Pathology Ph.D. Program hosted 18 laboratory rotation experiences for 11 individual students (among 9 faculty laboratories). This was comparable to the success of the 2009-2010 rotations (with 17 laboratory rotation experiences for 12 individual students) and the 2008-2009 rotations (with 18 laboratory rotation experiences for 15 individual students). In June 2011, two rising second year students officially joined the Molecular and Cellular Pathology Ph.D. Program, including Pamela Lockyer, and Bethany Walton. These new students will work with Drs. Cam Patterson, and Alisa Wolberg, respectively. Over the initial three years of the BBSP the Molecular and Cellular Pathology graduate program has recruited a total of 14 students. In addition, Julie Gambone (MD, PhD students) joined our program to work with Dr. Nigel Mackman.

In the period spanning 2010-2011, graduate students contributed to numerous publications in peer-reviewed journals and published abstracts, many with a graduate student as first author, and several with multiple graduate students as co-authors. In addition, several graduate students were recognized for their research excellence with awards. At the 2010 Molecular and Cellular Pathology Annual Research Symposium (September 2010), Amanda Rinkenbaugh received the

award for best poster presentation by a graduate student and Jessica Cardenas received the award for best oral presentation by a graduate student. Lantz Mackey and Jessica Rodriguez received Student Travel Awards from the *American Society for Investigative Pathology* (to attend Experimental Biology 2011). Research support for students in Molecular and Cellular Pathology was provided by several sources. Maria Aleman, Adam Phefferle, Amanda Rinkenbaugh, and Aleeza Roth were supported by the Environmental Pathology Training Program. Dinuka De Silva was supported by the Cancer Biology Training Program. Kaitlin Lenhart, Jessica Cardenas, and Jessica Rodriguez were supported by the Integrative Vascular Biology Training Program. In addition, several students applied for extramural predoctoral fellowships from the American Heart Association, the Department of Defense, the NIH, or other funding agencies. Lance Johnson and Kellie Machlus were supported by predoctoral fellowships from the American Heart Association, and Jessica Cardenas has recently been awarded a predoctoral fellowship from the American Heart Association. Michael Durando was supported by a predoctoral fellowship from the NIEHS. Lantz Mackey was supported by a GEM Fellowship. In addition, several students were supported by funds from the Department of Pathology and Laboratory Medicine or other units of the UNC Graduate School or School of Medicine. Jessica Rodriguez was partially supported by the *William R. Kenan Jr. Fellowship*. During 2009-2010, two students were recognized as Robert H. Wagner Scholars in Molecular and Cellular Pathology: Amanda Rinkenbaugh and Mark Gramling. Six Molecular and Cellular Pathology Ph.D. students (Patricia Casbas-Hernandez, Meghan Free, Amanda Rinkenbaugh, Jessica Rodriguez, Aleeza Roth, Rupan Sandhu) are HHMI Fellows participating in the Program in Translational Medicine.

During the last year, the Graduate Student Seminar Series (that began in fall of 2001) continued to showcase the excellent research of the graduate trainees. During spring 2007, the seminar series was moved to Tuesday at noon and became a luncheon seminar to enhance attendance. This modification of seminar schedule has been very successful. The spring 2011 Seminar Series featured presentations by ten Molecular and Cellular Pathology Ph.D. students, one Masters student, and one postdoctoral fellow from the Department. 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 2010. Jessica Cardenas (from Dr. Frank Church's laboratory) gave a presentation entitled "*The Role of p16INK4a-Mediated Cellular Senescence in Venous Thromboembolism*," Maria Aleman (from Dr. Alisa Wolberg's laboratory) gave a presentation entitled "*Differential Contributions of Monocyte- and Platelet-derived Microparticles Towards Thrombin Generation and Fibrin Formation and Stability*," and Michael Durando (from Dr. Cyrus Vaziri's laboratory) gave a presentation entitled "*Pol eta and Rad18 Cooperate to Facilitate Repair and Replication of Environmentally-induced DNA Damage*." This series provides a valuable opportunity for students, faculty, and staff to learn more about graduate student research that is ongoing in the department. In September of 2010, the seventh Marc J. Mass, Ph.D., Memorial Distinguished Lecture was held, featuring Dr. Tyler Jacks (David H. Koch Professor of Biology, Director, Koch Institute for Integrative Cancer Research, Investigator, Howard Hughes Medical Institute, Massachusetts Institute of Technology). Dr. Jack's lecture was entitled "*Molecular Analysis of Lung Cancer Progression*." In the summer of 2010, the graduate students selected Dr. Jonathon W. Homeister as the 2010 recipient of the ***Joe W. Grisham Award for Excellence in Graduate Student Teaching***. The award was

presented in September 2010 at the home of Dr. J. Charles Jennette. In other activities, the graduate students have continued to have regular outings to local restaurants for informal discussions related to the graduate program and their research.

RESIDENCY TRAINING PROGRAM IN PATHOLOGY

Thomas W. Bouldin, M.D., Director

The Department of Pathology and Laboratory Medicine currently sponsors a residency training program in anatomic and clinical pathology. The Program is fully accredited by the American Council on Graduate Medical Education (ACGME). A full description of the Program, including the curriculum and current trainees, is on the departmental web site (**http://www.med.unc.edu/pathology/residency-program-in-pathology** /).

The educational goals and philosophy of the residency program are to (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; and (3) Provide an educational experience sufficient to ensure that all residents develop skill levels expected of a new practitioner in the six ACGME-defined competencies (patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

The Program offers a four-year, combined anatomic and clinical pathology residency, with ample opportunities for research and post-residency fellowship training in a wide range of subspecialty areas in pathology. The Program was reviewed by the Residency Review Committee of the American Council for Graduate Medical Education and was awarded "Continued Full Accreditation" in October, 2009.

The Program requires that all residents take combined training in anatomic pathology and clinical pathology. The first three years of the Program are focused on core training in anatomic pathology (AP) and clinical pathology (CP). The curriculum is organized to intermingle AP and CP core rotations within each of the first three years of training The fourth year of the Program permits the trainee great flexibility. The fourth year of the training program includes six months of elective rotations in AP, CP or pathology research, so that the resident can concentrate on his or her particular interests. Overall, there are nine months of elective rotations interspersed within the four-year training program.

The Department of Pathology and Laboratory Medicine has a strong commitment to providing funding and faculty support for resident research. Funding for resident research projects comes from a variety of sources, including NIH research or training grants, NIH Individual Research Service Awards, and other fellowships. To encourage basic research, the Department offers a one-year research fellowship, available on a competitive basis, to post-residency trainees in the Department of Pathology and Laboratory Medicine. The fellowship pays a stipend to the resident commensurate with the fellow's level of training; and will also provide a $5,000 bench fee to the laboratory of the trainee's research advisor. The research must be focused on discovering or elucidating basic mechanisms of disease. More applied/correlative/clinical research experiences

can be obtained in the various clinical fellowships available to pathology residents. Dr. William Funkhouser is the director of this research fellowship.
The Department provides all residents in the training program with an individual study carrel, a light microscope, and a computer. The computer is fully loaded with appropriate software, connected to the internet, and fully supported by the UNC Hospitals' computer-support staff. The residency program currently accepts four new residents per year into the four-year general residency training program. There were 15 residents in the residency program in 2010–11, and there will be 16 residents in the Program in 2011–12. Additionally, there were two trainees in our post-residency surgical pathology fellowship program, six trainees in ACGME-accredited clinical subspecialty residencies (fellowships), and five postdoctoral trainees in clinical laboratory medicine fellowships (accredited by other agencies) in 2010–11. UNC Hospitals funded 14 of the training positions in the general residency program in 2010–11, with the remaining residency and fellowship funding coming from the Department. As of July 1, 2011, UNC Hospitals will fund 15 of the residency positions.

In 2010–11, 324 applicants applied through the Electronic Residency Application Service (ERAS®) for the four PGY1 training positions offered. The Department invited 54 of these 324 applicants for an interview, and 43 came to Chapel Hill for an interview. Thirty-nine of these interviewees were listed in the 2011 National Resident Match, which is conducted by the National Resident Matching Program. The Department filled all four PGY1 positions in the 2011 Match from within the group of top-listed applicants on the Program's Match list.

SUBSPECIALTY FELLOWSHIP TRAINING PROGRAM

CLINICAL CHEMISTRY FELLOWSHIP

CATHERINE A. HAMMETT-STABLER, Ph.D., DIRECTOR
LAURA M. BENDER, Ph.D., FELLOW, 2010-2011
STEVEN W. COTTEN, Ph.D., FELLOW, 2010-2011
(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. Fellows receive two-years of intensive training in both the analytical and clinical aspects of clinical chemistry and are prepared to enter laboratory medicine in clinical service, educational, or research roles. Two fellows began their training July 2010. Steven Cotton, PhD (Pharmaceutical Sciences, Eshelman School of Pharmacy, UNC, 2010) was recruited to the UNCH funded position, while Laura Bender, PhD (Department of Cancer Biology, Wake Forest University, 2005) joined the program as the recipient of the Past-President's Scholarship (Van Slyke Foundation of the American Association of Clinical Chemistry). During this year they have contributed to 4 abstracts, 4 chapters, and 6 manuscripts. The Clinical Chemistry Fellowship is directed by Catherine Hammett-Stabler, Ph.D., DABCC.

CLINICAL MICROBIOLOGY FELLOWSHIP

PETER H. GILLIGAN, Ph.D., DIRECTOR
EDWARD P. AGER, Ph.D., FELLOW, 2010-2011
MOHAMED ELREFAEI, M.D., Ph.D., FELLOW, 2010-2011

The Department of Pathology and Laboratory Medicine and UNC Hospitals sponsors the Clinical Microbiology Training Fellowship, which is a two-year training program accredited by the committee on Post-doctoral Education Programs of the American College of Microbiology. The 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 three week external rotation at the State Laboratory of Public Health. The Clinical Microbiology Fellowship is directed by Peter H. Gilligan, Ph.D.

CLINICAL MOLECULAR GENETICS FELLOWSHIP

JESSICA K. BOOKER, Ph.D., DIRECTOR
FERRIN WHEELER, Ph.D., FELLOW, 2010-2011

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. The Molecular Diagnostic Laboratory at UNC Hospitals provides experience with tests including cystic fibrosis, fragile X mental retardation, hemochromatosis, factor V Leiden and prothrombin, α1-antitrypsin deficiency, MCAD deficiency, connexin 26 and 30 mutations, Prader-Willi and Angelman syndromes, primary ciliary dyskinesia, EBV, CMV, 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 Jessica Booker, Ph.D. There was one fellow in the training program in 2010-2011.

CLINICAL MOLECULAR PATHOLOGY FELLOWSHIP

MARGARET L. GULLEY, M.D., DIRECTOR
CHARLES SAILEY, M.D., FELLOW 2010-2011
(http://www.pathology.unc.edu/fellowsp/molecular_path.htm)

The Department of Pathology and Laboratory Medicine and University of North Carolina Hospitals sponsors a one-year fellowship in Molecular Genetic Pathology. The training program is accredited by the ACGME to train one fellow annually. Trainees gain a working knowledge of molecular procedures including Southern blot, *in situ* hybridization/FISH, DNA sequencing,

protein truncation test, DNA amplification, tissue macrodissection and other cell enrichment procedures, and array technologies including gene expression profiling and single nucleotide polymorphism (SNP) chips. These modern molecular technologies are applied in a wide spectrum of clinical settings including cancer, inherited disease, infectious disease, HLA-typing, identification, and pharmacogenetics. The fellow analyzes and interprets molecular data from clinical cases and composes reports that are relied on for patient management. 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. The program is directed by Margaret L. Gulley, MD with support from many other faculty and staff. More information is found at, (http://www.med.unc.edu/pathology/clinical-fellowships/molecular-genetic-pathology-fellowship).

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 UNC Cytogenetics laboratory is a full service laboratory, processing over 3600 specimens annually, for both constitutional and oncology cytogenetic analysis, including CVS, amniocentesis, peripheral blood, bone marrow, tumors, tissue biopsies, and paraffin sections. Fellows are trained in a variety of techniques, including tissue culture, chromosome banding and analysis, FISH, and high resolution chromosomal microarray. The Clinical Cytogenetics Fellowship is directed by Kathleen W. Rao, Ph.D.

CYTOPATHOLOGY FELLOWSHIP
SUSAN J. MAYGARDEN, M.D., DIRECTOR
YASMIN I. LUTTERBIE, M.D., FELLOW, 2010-2011
KRISTIN A PIERCE, M.D., FELLOW 2010-2011

Cytopathology was fortunate to have two excellent fellows, Dr. Yasmin Lutterbie, M.D. and Dr. Kristen Pierce, M.D. The fellowship this year was expanded to include immediate interpretations by fellows for adequacy for most FNAs after November. This provided an opportunity for graduated responsibility, and freed up the faculty to assist on simultaneous FNAs and other duties in the laboratory.

FORENSIC PATHOLOGY FELLOWSHIP
DEBORAH L. RADISCH, M.D., MPH, DIRECTOR
JONATHAN D. PRIVETTE, M.D., FELLOW, 2010-2011

The 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 fully accreditation Council for Graduate Medical Education

(ACGME) and is under the direction of the Chief Medical Examiner for the State if 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 readily available within the Department of Pathology and Laboratory Medicine and the School of Medicine and Dentistry. Ancillary laboratory studies, including clinical chemistry, microbiology, and special histology, are provided by the Department of Laboratory Medicine. Forensic anthropology, crime lab technology, and other training experiences are also provided. The Forensic Pathology Fellowship is directed by Deborah L. Radisch, M.D., MPH. There was one fellow in the training program in 2010-2011.

HEMATOPATHOLOGY FELLOWSHIP

CHERIE H. DUNPHY, M.D., DIRECTOR
DANA L. CAIRO TUNNELL, M.D., FELLOW, 2010-2011

The Department of Pathology and Laboratory Medicine (McLendon Clinical Laboratories) and UNC Hospitals sponsor a broadly based, one-year training program in hematopathology. The program is directed by full-time hematopathologists and is fully accredited by the ACGME. The program has been highly successful in attracting high-quality applicants with a broad range of backgrounds, interests, and career goals. As part of a large, prestigious academic department of pathology, there is a tendency to favor applicants with academic backgrounds and/or inclinations, although the program itself is primarily training oriented. The departmental philosophy, which is shared by the Hematopathology program, is that pathology is a diverse field of endeavor, and that individual contributions may be made in many ways. Hematopathology is a diverse specialty, employing a wide variety of technologies, and our Fellowship program is organized in such a way as to provide appropriate training in all of these areas, while 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 (1,000 CBCs/day), the evaluation of peripheral blood smears, bone marrow, and lymph node biopsies, and involvement in the various procedures, conventionally grouped together as special hematology.

The following represent specific written competency-based goals and objectives of the Hematopathology Fellowship at UNC-Chapel Hill: (a) development of proficiency in normal and abnormal peripheral blood cell morphology, body fluid examination, and bone marrow and lymph node diagnostics, (b) familiarity with applications of flow cytometric immunophenotyping to Diagnostic Hematopathology (c) familiarity with procedures, principles, and quality assurance in analytical hematology, (d) development of familiarity with cytogenetic and molecular abnormalities in hematolymphoid malignancies, and (e) development of an approach to clinical and laboratory evaluation of patients with disorders of thrombosis or hemostasis. The Division of Hematopathology prepares comprehensive diagnostic reports on all hematolymphoid samples, incorporating morphological, special stains, immunohistochemical, flow cytometric, cytogenetic, and molecular genetic data. The Hematopathology Fellowship Program works closely with other laboratory areas to provide practical training in diagnostic flow cytometry, cytogenetics, blood coagulation, and molecular hematopathology. Fellows attend regularly scheduled didactic sessions (including “around the scope” didactic sessions and

faculty lectures). Fellows also present at and participate in a wide range of regularly scheduled multidisciplinary, clinicopathologic conferences and are actively involved in interactions with clinicians, including frequent consultations. They also play a crucial role in teaching hematopathology to medical students, as well as to pathology and hematology and oncology residents. The fellow is responsible for the smooth running of the Diagnostic Hematopathology Service, when assigned to this service, and is actively involved in all specimen work-ups and diagnostic reports of this service. The fellow is given graduated responsibilities on the Hematopathology Diagnostic service, depending on their individual level of competence, so that he/she may practice at the level of junior faculty by the end of the fellowship training. Supervision is provided on a daily basis by the attending hematopathologist with the Program Director also continually available and on-site. Competence is measured objectively by the fellow's participation in two Hematopathology in-service examinations administered by the American Society of Clinical Pathology- one at the beginning of the training period (September) and one at the end of the training period (May). While the fellowship is geared primarily to the diagnosis of hematolymphoid disorders, research activities are strongly encouraged, with numerous research opportunities available within the Division of Hematopathology and the Pathology Department as a whole. The Hematopathology fellows have been very active in presenting at national meetings and in scholarly activities with resultant journal publications. The goals and objectives of the Hematopathology Fellowship program are distributed to the fellows. The Hematopathology Fellowship is directed by Cherie H. Dunphy, M.D. There was 1 fellow in the training program in 2010-2011. The Hematopathology Fellowship Program currently has permanent approval from the ACGME for 2 fellowship positions annually.

NEPHROPATHOLOGY FELLOWSHIP

VOLKER R. NICKELEIT, M.D., DIRECTOR
ERIC CAMPENOT, M.D., FELLOW, 2010-2011

The Department of Pathology and Laboratory Medicine sponsors a one-year fellowship in renal pathology. One or two fellows are accepted into the program. The fellows are directly involved in the diagnostic evaluation of over 1700 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). Part of the fellows' responsibility is to organize clinico-pathologic and biopsy review conferences for medical faculty and housestaff, and to teach 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. Research projects focus on the pathogenesis of glomerulonephritides, allograft rejection and polyomavirus infections. All state-of-the-art facilities (including laser microdissection) are available in the department. Appropriate research studies are funded by intramural support for the division of nephropathology. 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.

NEUROPATHOLOGY FELLOWSHIP

THOMAS W. BOULDIN, M.D., DIRECTOR through December 31, 2010
(http://www.pathology.unc.edu/fellowsp/neuropath.htm)

The Department of Pathology and Laboratory Medicine and UNC Hospitals has sponsored a broadly based, two-year fellowship in diagnostic and experimental neuropathology since 1980. The training program has been under the direction of Dr. Bouldin and was fully accredited by the Accreditation Council for Graduate Medical Education (ACGME). Due to a waning interest in subspecialty training in Neuropathology by Pathology residents in recent years, the Department voluntarily closed the fellowship program on December 31, 2010.

SURGICAL PATHOLOGY FELLOWSHIP

WILLIAM K. FUNKHOUSER, M.D., Ph.D., DIRECTOR
DANIEL T. KLEVEN, M.D., FELLOW, 2010-2011
NORRIS J. NOLAN, M.D., FELLOW, 2010-2011

The Department of Pathology and Laboratory Medicine sponsors a one-year fellowship in diagnostic Surgical Pathology. The training program focuses on surgical pathology, with correlative exposure to cytopathology, cytogenetics, electron microscopy, immunohistochemistry, and molecular genetic pathology. During the first 6 months, the fellow reviews and dictates inside cases on all service benches for 4 months, reviews /dictates outside cases and gives associated conferences for 1 month, and has 1 month of elective time. The fellow is credentialed by the hospital during the fall, and repeats the 6 month cycle above as a faculty instructor, now with independent signout responsibilities. Therefore, 2 months of elective time are available during the year for completion of a relevant research project. Finally, there is an option for integration of the Surgical Pathology and Molecular Genetic Pathology Fellowships in serial order, for the benefit of fellows interested in an academic career in molecular surgical pathology.

TRANSFUSION MEDICINE FELLOWSHIP

ARABA N. AFENYI-ANNAN, M.D., M.P.H., DIRECTOR
YARA A. PARK, M.D.
POULOMI PAI, M.D., FELLOW, 2010-2011

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

projects include epidemiology and pathogenesis of thrombotic thrombocytopenic purpura (TTP) and multiple studies within the NIH funded Transfusion Medicine/Hemostasis Clinical Trials Network, of which we are one of 17 participating sites. The Transfusion Medicine fellowship is directed by Araba Afenyi-Annan, M.D., M.P.H. The fellow during 2010-2011 was Poulomi Pai, M.D. During her fellowship, she conducted a research project aimed at improving comprehensive care for sickle cell patients in a chronic exchange program. The abstract from her project was accepted to the annual meeting of the American Society for Apheresis. The abstract entitled, "Comprehensive Review of Sickle Cell Disease Patients on Chronic Exchange Transfusion Therapy Improves Patient Management", was presented as an oral abstract presentation.

GRAND ROUNDS SEMINARS 2010-2011

GRAND ROUNDS ORGANIZING COMMITTEE: MARGARET L. GULLEY (CHAIR), MEMBERS: THOMAS W. BOULDIN, M.D. and JOE N. KORNEGAY, M.D.

As has been the case in years past, the Department of Pathology and Laboratory Medicine Grand Rounds seminar series was well attended during the academic year 2010-11. The primary goals of this series is twofold: 1) to provide a venue for the dissemination of current basic science and clinical research information relevant to departmental academic activities and 2) to promote interaction and the opportunity for collaboration between Pathology faculty, residents, postdoctoral fellows, graduate students, and clinical fellows, and other members of the UNC community. Additionally, we use Grand Rounds as a venue for faculty presentations needed 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.

To accommodate speaker and audience needs, Grand Rounds follows a flexible format. The presenters may choose a traditional format in which there is a single presenter; or when appropriate, as when integrating basic and clinical research or two or more disciplines, some choose to share the time with a collaborator or trainee. Presentations are usually 45 minutes, followed by a question-and-answer session. The committee strives to assure a range of experimental, clinical and surgical pathology subjects are appropriated and evenly covered. The topics are dependent upon speaker availability and while many presentations are usually related to the presenter's research interests, some include scientific reviews of pertinent areas in clinical medicine, translational research, and/or basic science. The following list of 2010-11 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 2010

DATE	***SPEAKER/AFFILIATION***	***TITLE***
08/26/2010	Harsharan K. Singh, MD Associate Professor, Dept. of Pathology	*"Haufen are Novel Urinary Biomarkers of Polyomavirus Nephropathy: The Rocky Road from Bench to Bedside"*

	and Laboratory Medicine, UNC-CH	
09/16/2010	Kathleen A. Kaiser-Rogers, PhD and Laboratory of Medicine, of Pediatrics, and of Genetics, UNC-CH	*"The Impact of Microarray Testing on The Field of Clinical Cytogenetics".*
09/23/2010	Masao Kakoki, MD, PhD Assistant Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Bradykinin, Diabetic Complications and Senescence"*
09/30/2010	Thomas H. Fischer, PhD Associate Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Rehydrated, Lyophilized Platelets for Hemostasis"*
10/21/2010	Joe N. Kornegay, DVM, PhD Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Translational Lessons Learned from a Canine Model of Duchenne Muscular Dystrophy"*
10/28/2010	Christopher R. McCudden, PhD, DABCC, NRCC, FACB Assistant Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Monoclonal Gammopathies: New Treatments, New Challenges"*
11/11/2010	Nancy L. Allbritton, MD, PhD Professor and Chair, Joint Dept. of Biomedical Engineering, UNC-CH and North Carolina State University	*"UNC/NCSU Biomedical Engineering & Microfabricated Analysis Systems"*
11/18/2010	*Fernando Pardo-Manuel de Villena, PhD Associate Professor, Dept. of Genetics and Director, Program in Systems Genetics, UNC-CH*	*"Genetic Analysis of Complex Traits in the Emerging Collaborative Cross"*
12/09/2010	James A. Swenberg, DVM, PhD Professor, Depts. of Environmental Sciences and Engineering, of Pathology and Laboratory Medicine, and of Nutrition, UNC-CH	*"Inhalation-specific and Endogenous Formaldehyde DNA Adducts: Testing the Biological Plausibility of Leukemia"*

SPRING 2011

DATE	***SPEAKER/AFFILIATION***	***TITLE***
01/06/2011	Susan S. Smyth, MD, PhD Professor of Cardio Vascular Medicine, Depts. of Internal Medicine, of Physiology, and of Molecular Pharmacology, The University of	*"Lysophospholipid Signaling in the Vasculature: Implications for Health and Disease"*

	Kentucky and Lexington VA Medical Center	
01/20/2011	William K. Kaufmann, PhD Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Cancer, Genetic Instability and the DNA Damage Response"*
01/27/2011	Gregg A. Dean, DVM, PhD, DACVP Professor and Director, Center for Comparative Medicine and Translational Research, College of Veterinary Medicine, North Carolina State University	*"Innate Immune Defects and AIDS-Related Opportunistic Infections: What Can we Learn from the FIV/Cat Model?"*
02/10/2011	George (Yuri) Fedoriw, MD Assistant Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"BAFF and B-cells in Hematolymphoid Disorders"*
02/17/2011	Nizar Chahin, MD Clinical Assistant Professor, Dept. of Neurology, UNC-CH	*"Pathological Classification of Inflammatory Myopathy"*
02/24/2011	Monte S. Willis, MD, PhD Assistant Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Muscle Ring Finger-1 Regulation of Cardiomyocyte Size and Oxidative Metabolism by Its Interactions with Nuclear Receptors"*
03/17/2011	Kristy L. Richards, MD, PhD Assistant Professor, Depts. of Medicine and of Genetics, UNC-CH & Steven E. Suter, VMD, PhD, DACVIM Assistant Professor, Dept. of Oncology and Medical Director, Canine Bone Marrow Transplant Unit, North Carolina State University	*"Teaching the Old Dogs New Tricks: Comparative Oncology in the Genomic Era"*
03/24/2011	Arlin B. Rogers, DVM, PhD Assistant Professor, Dept. of Pathology and Laboratory Medicine, UNC-CH	*"Biology of Sex-Dependent Liver Cancer"*
03/31/2011	Kevin Gardner, MD, PhD Senior Investigator, National Cancer Institute, Bethesda, MD	*"Transcriptional Regulation of the BRCA1 Early Onset Breast Cancer Gene by a Metabolic Switch"*
04/14/2011	Jessica C. Cardenas, PhD, Candidate Pathology and Laboratory Medicine Graduate Student Research Day	*"The Role of p16INK4a-Mediated Cellular Senescence in Venous Thromboembolism"*

	Frank C. Church, Advisor	
	Maria M. Aleman, PhD Candidate, Alisa Wolberg, Advisor	*"Differential Contributions of Monocyte- and Platelet-derived Microparticles Towards Thrombin Generation and Fibrin Formation and Stability"*
	Michael L. Durando, PhD Candidate, Cyrus Vaziri, Advisor	*"Poleta and Rad18 Cooperate to Facilitate Repair and Replication of Environmentally-induced DNA Damage"*
04/21/2011	Pathology and Laboratory Medicine Residents and Fellows Research Day Natalie Banet, MD AP/CP Resident, PGY3	*"Expression Profiling of Paraffin-embedded Lymphoepithelioma-like Carcinoma of the Uterine Cervix using Nanostring Arrays Reveals no Evidence of Epstein-Barr Virus Infection"*
	Jayson R. Miedema, MD AP/CP Resident, PGY2	*"Image and Statistical Analysis of Melanocytic Histology: A Novel Technique in a Challenging Area"*
	Poulomi J. Pai, MD Transfusion Medicine Fellow, PGY5	*"Optimizing Care in Sickle Cell Patients on Chronic Exchange Transfusion Therapy"*
05/12/2011	Ethan J. Anderson, PhD Assistant Professor, Depts. of Pharmacology & Toxicology & Cardiovascular Sciences, Brody School of Medicine, East Carolina Heart Institute	*"PUFAs, H202 and Ca2+: Mediators of Cardiac Health and Disease that Converge on the Mitochondria"*
05/19/2011	Caterina M. Gallippi, PhD Assistant Professor, Joint Dept. of Biomedical Engineering, UNC-CH and North Carolina State University	*"Pre-Clinical and Clinical Acoustic Radiation Force (ART) Ultrasound Imaging"*

ENVIRONMENTAL PATHOLOGY TRAINING PROGRAM

The Environmental Pathology Training Program seeks to develop scientists who discover mechanisms by which environmental substances affect cellular processes to cause disease. The program trains scientists to combine an understanding of the pathogenesis of human diseases and expertise in appropriate research methods to study these diseases. The research focus of the program is on the mechanisms of pathogenesis of diseases for which environmental exposures

are critical factors. Traditional program strengths included the role of environmental factors in the pathogenesis of cancer and their role in DNA damage and repair, reflecting the expertise of the faculty mentors. This program, which is currently in year 35 of support from the National Institute of Environmental Health Sciences, has 6 slots for postdoctoral fellows and 6 slots for predoctoral trainees. During this past year all training slots on the Environmental Pathology Training Program were filled.

Some postdoctoral candidates learn about our training program by viewing our website, by reading our advertisements in national journals, or through interviews at job placement services of national societies. Others candidates have been referred to the program by prominent investigators in environmental pathology. The program gained a national recognition as one of the premier postdoctoral training programs in this field. Trainees accepted by the program typically come from fine graduate programs in related fields from around the country. Unique features of this Program were that a number of our trainees have had M.D. or D.V.M. degrees or were members of underrepresented minority groups. Several trainees supported by this institutional grant have subsequently obtained individual postdoctoral research training grants. In recent years three postdoctoral trainees have received individual training grants from the NIH and the DOD, and another has received a K08 Award from the NIH. Trainees typically have found appropriate transitional positions and permanent jobs. One of the trainees recently completing support from the program went directly to a faculty position in environmental sciences. Predoctoral trainees are chosen from among the applicants accepted into the IBMS/BBSP graduate program who select a Program faculty member as their mentor. Most of them have chosen to seek their Ph.D. in Molecular and Cellular Pathology. Predoctoral trainees are selected from among those expressing an interest in environmental research projects of the training program mentors. Typically, one or two predoctoral students are chosen per year, usually the best among the candidates interested in the work of training grant preceptors.

In May 2009, a competitive renewal application was submitted for the Environmental Pathology Training Grant. That application did not receive a good enough priority score to be funded, but an additional year of trainee support was provided to continue the Program while a revised application was prepared. An extensively revised application attempting to address the reviewers' criticism was prepared for submission in May 2010. Because the prior criticism thought that there was too much emphasis on environmental carcinogenesis the membership of the Training Program was broadened to include virtually all NIEHS awardees on campus whose work on environmental studies focused on pathogenesis. In the 2010 application many new NIEHS-funded investigators were added so that only 25% of the faculty members in the 2010 application had been participants in the 2005 application. Several new areas of environmental research had been incorporated (pulmonary, renal, and cardiovascular diseases influenced by environmental factors) to dilute the focus on environmental carcinogenesis. Despite vast changes in the revised grant application the review did not get a good enough priority score to be funded. We believe that the reviewers thought that the research being pursued by the selected postdoctoral, and more importantly, predoctoral trainees was not sufficiently focused on the role of environmental factors in the pathogenesis of diseases. Consequently, the Training Grant will be terminated.

The NIEHS appears to be inclined to support trainees with further eligibility for NRSA training for at least one year beyond their previous appointment date if it falls before June 30, 2011. We will not, however, be able to appoint new trainees to fill slots that become open. It remains unclear whether it will be possible to renew support for trainees after June 30, 2011. A budget to support the eligible trainees has been submitted to the NIEHS and we are awaiting the official approval of the plan.

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 produce 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 10-11, the laboratory is projected to contribute 84 million dollars to UNC Hospital's operating margin.

Outreach has created a Client Services area that began operation in April. This consolidated area provides customers with one point of contact for McLendon Laboratories. This has been a great benefit to the Core laboratory and the Microbiology Laboratory as it frees technologists to focus on testing rather than answering the telephone. Outreach has also brought the courier activity in house and has branded the vehicles and provided uniforms with the McLendon Laboratory logo for the drivers. Service to customers has improved and customers are now aware of the entity providing the service. A new marketing position has been added and marketing efforts will begin in June.

McLendon Laboratories is in the process of implementing several IT initiatives that, when completed, will greatly enhance service by decreasing turnaround time and automating processes. In Surgical Pathology, the implementation of Advanced Bar Coding and Tracking software will provide the last component of a completely bar coded system, from specimen grossing through the cutting and staining process to the sign out of the report. Autoverification has been completed in the Core Laboratory for Hematology and Blood Gases reducing reporting time and decreasing the opportunity for transcription errors.

SURGICAL PATHOLOGY (Histology/Special Procedures Labs)
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 consultations specimens. In 2010, 28,438 cases were diagnosed, including 2819 outside cases, representing an

unchanged year-over-year faculty caseload. Increasing case complexities make it challenging to sign out all cases with residents each day, so we expanded 5 non-Derm SP benches to 7 non-Derm SP benches in Fall 2010, as follows: The Breast/Benign GYN bench was split into separate Breast and Benign GYN benches. The GI/Liver bench was split into separate GI/Liver small biopsies and GI/Liver resections. The separate Dermpath bench (the 6th SP bench), mostly melanoma re-excisions, was folded into the Dept. of Dermatology.

New faculty members joined us in 2010, including sign-out faculty (Drs. Greene, Scanga, O'Connor, and DiFurio) and PA faculty (Ms. Kemper, Mr. Holmes). Dr. Greene signs out GI pathology and Cytopathology. Dr. Scanga signs out GYN, ENT, and Cytopathology. Drs. O'Connor and DiFurio sign out Breast, GYN, and Cytopathology. We said farewell to Ms. Boland in May 2010, when she changed to a PA job at Duke, and hired experienced gross room PAs from Rex (Ms. Kemper) and Duke (Mr. Holmes). We continue our system for credentialing of Surgical Pathology Fellows in the fall, with transition to final signout responsibility as Instructors in the spring. This gives us flexibility in the spring to cover faculty extended leave or departure.

Goals for 2011 include validation of a remote-controlled microscope for doing off-site frozen section diagnosis, installation of an X-ray machine for selective sampling of breast specimens, and evolution to seamless barcoding of cases from accessioning to case signout.

The histology laboratory is commensurately busy. We are fortunate that the Laboratory is well-led by Ms. Maglione, and that it is well-managed by Ms. Deloney. 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 signout. Lean analysis of immunohistochemistry workflow has reduced turnaround time for receipt of immunohistochemical stains. Challenges for 2011 are to automatically measure 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
SUSAN J. MAYGARDEN, M.D., DIRECTOR

The cytopathology laboratory workload and cytotechnology staffing has remained stable. Cytotechnologists continue to assist in adequacy assessments for fine needle aspirations performed by radiologists and surgeons, and during this year have gained sufficient experience and confidence to make adequacy assessments for axillary lymph nodes and thyroid cases independently. This has improved turn-around time for multiple concurrent procedures. Our two

cytology fellows, Dr. Kristin Pierce and Dr. Yasmin Lutterbie, have performed in an exemplary manner. Both will complete the fellowship on June 30, 2011.

The UNC cytotechnology school has been closed by the university because of budgetary issues, and the director, Mr. Allen Rinas, is retiring June 30, 2011. The cytopathology laboratory is in the process of moving part of its operations into the cytotechnology school space and expanding the prep portion of the lab to accommodate new equipment.

We were fortunate to add four new faculty members in cytology (all of whom participate in the surgical pathology service as well): Drs. Lori Scanga, Kevin Greene, Siobhan O'Connor and Megan DiFurio. They join Drs. Susan Maygarden and Debra Budwit.

AUTOPSY PATHOLOGY
LEIGH B. THORNE, M.D., DIRECTOR

We recognize the autopsy as a valuable medical procedure for assessing quality of patient care, evaluating clinical diagnostic accuracy, determining therapeutic effectiveness, increasing understanding of pathobiology, augmenting clinical and basic research, and for medical education. The autopsy is used as a critical investigative tool to discern the cause and natural history of disease, to educate medical students and residents, and as an integral component of patient care. The large variety of cases encountered provides a rich learning environment. UNCH Autopsy Service continues to provide valuable information to clinicians and families of patients. In 2010, a total of 121 autopsies were performed including 35 pediatric cases. A multidisciplinary committee was formed in 2009-2010 to address issues with decedent care in general. The mission 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. Ultimately, the goal is to create a decedent care coordinator to facilitate the entire process. The committee continues to advocate the development of this program which has not yet been funded. In addition to our clinical mission, the service continues to serve as an important resource for researchers at UNC. In this fiscal year, the breast cancer rapid autopsy program will be revived, with support provided through grants from Dr. Lisa Carey.

MOLECULAR PATHOLOGY
MARGARET L. GULLEY, M.D., DIRECTOR

The Molecular Genetics Laboratory performs assays on DNA or RNA to aid physicians 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://labs.unchealthcare.org/directory/molecular_pathology/index_html. Research and development is an important component of our clinical and academic mission 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 enrolled in the Masters in Molecular Diagnostic Sciences program. 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 that is targeted at pathology residents and also accepts a wide range of interested medical professionals. Further information on our clinical, educational and research efforts in molecular pathology is found at:
http://www.med.unc.edu/pathology/faculty/biosketch-of-dr-margaret-gulley

Molecular pathology is growing rapidly as clinicians increasingly use molecular tools for diagnosis and management. Clinical assays added to our test menu in the past year include:

1. *IDH1* and *IDH2* mutations to 1) assess prognosis in glioma (all grades), 2) assist in differential diagnosis of glioma and other neoplastic or reactive lesions in brain tissue, and 3) assess prognosis of AML in conjunction with other clinicopathologic variables.
2. A novel cytomegalovirus (CMV) DNA viral load assay to measure the virus in plasma specimens.
3. *MGMT P450 2C19 (CYP2C19)* gene promoter methylation to predict outcome in a high grade glioma (anaplastic astrocytoma or glioblastoma) patient being considered for therapy with an alkylating agent, or glioma patient being considered for temozolamide therapy.
4. Gene expression profiling, and gene copy number measurement using ultradense arrays targeting every human gene (Affymetrix or Agilent platforms) or medium density Q-PCR panels measuring up to 384 genes or transcripts at once (Roche LC480 platform), including the potential to target human and pathogen genes in the same test panel. These assays are used in clinical trials and, once validated to be analytically sound and clinical useful, they may be implemented in CLIA-certified labs to help make medical decisions.

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 modern molecular technologies and to validate these novel assays. Major Equipment in the clinical molecular genetics lab: Roche LightCycler 2.0 and 480 real-time PCR instruments, 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, Agilent array scanner, Affymetrix array scanner, RoboSep, and UVP gel documentation system. Faculty are Margaret L. Gulley MD, Karen Weck MD, Bill Funkhouser MD PhD, Leigh Thorne MD, Jessica Booker PhD, Maimoona Zariwala PhD and Rosann Farber PhD. The fellows as of July 1 2010 are Chuck Sailey MD and Ferrin Wheeler PhD. Our excellent staff includes six medical technologists, three research scientists, a supervisor, and an office support assistant.

TRANSFUSION MEDICINE, APHERESIS, TRANSPLANT SERVICES

Transfusion Medicine (Blood Bank, Platelet Donor Program, Apheresis)

YARA A. PARK, M.D., DIRECTOR

The Transfusion Medicine Service (TMS) was inspected and reaccredited by CAP, AABB, FDA, and FACT within the past year. Dr. Yara Park assumed the role of Medical Director of TMS. Using data from our performance improvement process, TMS added myomectomies as a type and screen procedure to the Standard Surgical Blood Ordering Schedule. TMS recently completed a comprehensive computer upgrade which included an operating platform change.

The Apheresis unit saw increased procedure volumes, particularly in hematopoietic progenitor cell (HPC) collection which were increased ~30%. Additionally, Apheresis, in conjunction with the Bone Marrow Transplant program, has been approved to be a National Marrow Donor Program apheresis collection site to collect HPC products from volunteer donors. All physician apheresis procedure notes are now being done in WebCIS to allow easier access to the information. The Blood Donation Program began to incorporate patients in the recognition of the donation program by having the t-shirt design be one that was created by a patient or family member and plan on this being an annual event. Currently, the Blood Donation Program is preparing for a major computer upgrade.

CLINICAL MICROBIOLOGY, IMMUNOLOGY LABORATORIES
PETER H. GILLIGAN, Ph.D., DIRECTOR

The Clinical Microbiology/Immunology Laboratory has continued to expand its test menu and test volumes through the addition of new assays and new instrumentation. We have been able to enhance service to our clinicians and patients while maintaining our training mission. One of the major accomplishments of Dr. John Schmitz, in the Immunology section, was the modification of our HIV testing algorithm with the implementation of the new HIV Ag/Ab Combo test. This test detects both HIV antibody and p24 antigen simultaneously allowing the laboratory to better detect acute HIV infection while maintaining excellent detection of chronic infection. This new algorithm eliminated the tedious task of "pooling" HIV negative sera for HIV quantitative PCR testing to detect acute infection significantly improving turnaround times. This same technology has also replaced the standard rapid HIV test for blood/body fluid exposures to provide the benefit of detecting acutely infected source patients.

The Immunology section also expanded our allergy testing menu by establishing a new childhood allergy panel. This panel is marketed to General Practitioners to improve diagnosis and treatment of patients that present to primary care clinicians with allergy-like symptoms. Before the implementation of this new panel, we have seen a 24% increase in test volume from this time last year.

The Immunology section added new instrumentation, the Diasorin Liaison. This system, our third random access platform enables us to run 12 assays that were previously performed on an outdated, batch mode instrument, or were done manually. This system also allowed us to bring some testing in-house that was previously sent to a Reference Laboratory.

Under the guidance of Dr. Melissa Miller in the Molecular Microbiology section, another major accomplishment was the implementation of a molecular test for qualitative detection of *Mycobacterium tuberculosis* complex DNA by PCR. Rapid identification of *Mycobacterium tuberculosis* complex DNA in smear positive samples is useful in both beginning appropriate therapy for an individual patient and for instituting appropriate infection control measures on a hospital and community basis.

They were also able to offer a new, rapid PCR test for the laboratory diagnosis that detects both Influenza A and B viruses. Results are available 7 days/week, 24 hrs/day with a targeted turnaround time of 90 minutes upon receipt of the specimen in the laboratory. We were also able

to offer a "traditional" Influenza PCR test for inpatients and those locations that did not require a rapid turnaround time. During the 2010-11 "flu season" (Dec-April), the laboratory staff performed 1,025 Rapid Flu tests, 1,385 traditional flu tests and 2,262 Respiratory Viral Panel molecular tests.

The Molecular Microbiology section brought in new instrumentation, the Abbott M2000 system. This improved platform replaced the Roche Ampliprep system. This system fully automates HIV, HCV, HBV improving workflow and turnaround times.

The PNA FISH Yeast Traffic Light test was implemented in our Specimen Processing/Rapid Procedures area for rapid identification of *Candida* species from positive blood culture bottles. The test is performed on slides using specimens taken directly from positive blood culture bottles. The ability to rapidly report *Candida albicans* by PNA FISH allows clinicians to safely treat patients with fluconazole instead of with one of the more expensive anti-fungals. The estimated institutional cost savings is $1,800 per candidemia patient. When comparing results of positive patients before and after implementation of PNA-FISH, *Candida* species were identified 4 days sooner with PNA-FISH and antimicrobials changes, if needed, could be made approximately 2 days sooner.

They worked very closely with the Emergency Department physicians to review data from patients that had a urine sample submitted for both urinalysis and urine culture. Their goal was to see if we could reliably use urinalysis results to limit unnecessary urine cultures (i.e. screen out the "negatives"). As a result of these efforts, Urinalysis with Culture Reflex testing began in the Emergency Department on April 11, 2011. In patients meeting certain criteria, a clinician in the ED may order a "urinalysis with culture reflex" test. The urinalysis is performed first and only set up for culture if defined parameters are positive. This has been met with great enthusiasm by the clinicians in that setting.

Finally, they continue their extensive training and educational mission within the laboratory. They taught a full complement of Clinical Laboratory Science students at both the BS and MS levels. They continue to train our clinical pathology residents and fellows in both Medical Microbiology and Medical Laboratory Immunology. They had the largest number of students ever in the Clinical Pathology elective, PATY 417. Their daily infectious disease teaching rounds are a popular component of the training of fellows in that discipline. Finally they continue our clinical microbiology training of the pediatric residents twice weekly.

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

In July of 2010, Phlebotomy Services began the new fiscal year having completed the previous fiscal year under budget. With the arrival of the new house staff we saw some increase in utilization of the 4AM draw causing delays. This was fairly quickly remediated by contacting the chief residents and nurse managers and asking them to "coach" the interns on how best to utilize our service. They have noticed greater utilization on the 10PM draw. Currently, they average 58.3% of test results from the 4AM draw available by 6AM and 96.3% available by 8AM. On May 1, 2011 we adjusted their staffing to improve turn-around-time of the 4AM

collections. They determined that their overnight shift (10PM-7AM) only averaged 2-3 collections between Midnight and 3AM. They eliminated the overnight shift and redirected those employees to the 3 AM shift.

Phlebotomy Services worked successfully with ISD to get the linear barcode that is available on the patient armband formatted for use with our phlebotomy scanners. Previously, they were using the 2D barcode containing the billing number on the armband and unable to use the patient MR for unique patient identification. They are now able to use the MR number. Also, the issue of the 2D barcode being too small for scanning has been resolved. The linear barcodes are larger and more clearly printed on the armbands. This increases patient safety and decreases the time spent by the phlebotomist in automating the identification process.

Blood Culture contamination rates continue to be a source of pride for Phlebotomy Services. Currently, they average a total BC contamination rate for Phlebotomy Services of 0.67%. Total contamination rate house wide is currently averaging well below 2%, our institutional bellmark. Phlebotomy Services was recognized at the March 15, 2011 Department Heads Meeting as having the lowest Blood Culture contamination in the nation. In addition, to low contamination rates for Blood Cultures, they have also decreased our average of unjustified delays in collecting blood cultures to 0.5%. Therefore, only 0.5% of the time is a blood culture delayed due to a reason within the control of Phlebotomy Services.

Since December 2010, Phlebotomy Services has participated on a Carolina Care team focused on improving patient responses for the question "courtesy of the person who took blood" on the Press-Ganey patient survey. The team has focused on identifying the percentage of nurse collections vs. phlebotomy collections, and identifying strategies such as allowing the unit NA's to wake the patients and perform vitals along with the blood collection so that patients are not disrupted multiple times. Also, by created Words that Work, or phrases that can standardize communications and responses to patients in order to help improve the scores.
Phlebotomy Services participated in the design and pilot training of a new "Customer Service 101 and 201" course, which will soon be required for all staff. They were happy to be asked to assist in the design of the program and its beta testing.

Since September 2011, Phlebotomy Services has been involved with the Materials Procurement Committee and Infection Control in evaluating the current butterfly wing-set devices for safety. In December 2009, they switched to the SMITHS device, it being "in vein" safety activated. Unfortunately, the device is not easy to use and has resulted in increased needle sticks among nursing staff that do not use these devices as frequently as Phlebotomy Services. They have participated in the evaluation of another device and have agreed to change our device to accommodate nursing despite the fact that their staff have had no trouble adapting to the SMITHS device and have not experienced increased needle sticks with it.

They just completed training the UNC second year medical students on how to obtain a blood specimen by venipuncture during their clinical cases course which is the capstone of their 2nd year. They have engaged in this program since 2005. The students appreciate the opportunity to have a phlebotomist give them the tools of the trade and to observe their practice session. They

also continue to provide phlebotomy clinical training for students from four local community colleges, and for any clinical personnel including nurses or residents who request it. Phlebotomy Services is also involved in several projects that are just getting underway to improve service to our outpatients. The first, is working with the staff in the Oncology Clinics on patient throughput. Infusion patients will now have their blood drawn by nurses from indwelling ports in the phlebotomy lab. Phlebotomy will assist with the paperwork to facilitate moving the patient through the system. Second, they are working with the HUB registration staff to design a more patient friendly flow at the ACC. Finally they will be working with ISD and the Transplant Clinic to improve the throughput of their patients by piloting advance outpatient orders in the hospital computer.

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

All sections of the Core Laboratory services (clinical chemistry, hematology, coagulation, urinalysis, special coagulation, and referral testing) have seen continued growth in the 2010-2011 fiscal year. The area receives 4500 samples per day, and expects to report >5 million test results this year. The introduction of the enGen™ Laboratory Automation System Quality at the end of the last fiscal year provided opportunities to focus on quality improvement initiatives. These include Six Sigma projects to reduce in-processing time for all samples and streamline the processes involved in electrophoresis interpretation and reporting. The introduction of genetic-based screening for cystic fibrosis as part of the newborn screening program in North Carolina resulted in the expected increase in sweat chloride confirmation testing. A quality initiative undertaken with phlebotomy demonstrated a 97.5% success rate in the collection of an adequate sample from this population. The laboratory is completing the validation of the new IRIS urinalysis system with enhanced reporting software that will allow for more efficient results reporting. Additionally, a study streamlining urine culture workflow has been initiated between the divisions of infectious disease, microbiology, and the emergency department. Autoverification was introduced into the hematology area to improved efficiency and reduce turn-around-times. The section has completed evaluation of the Cellavision automated digital cell morphology system and plans to introduce the system in the following months. Special chemistry has developed and introduced several new LC-tandem MS-based methods including vitamin D and buprenorphine and metabolite. Methods for opiate confirmations and free T3's are in the final stages of development and evaluation. The Laboratory expanded the ambassador program with the selection and training of 6 new ambassadors to service units within the hospital. Twenty technologists began participating in the new mentoring program. The continuing education program was expanded to provide 2-3 opportunities each month. Marsha Owens received the first CARE Award for Excellence.

HEMATOPATHOLOGY
CHERIE H. DUNPHY, M.D., DIRECTOR

The volume and complexity of cases has continued to increase in this Division since the recent move into the recently completely, state-of-the-art North Carolina Cancer Hospital. The annual in-house bone marrow volume is >2,000 and the lymphomas-evaluation case volume is approximately 750. Outside review of Hematopathology diagnostic cases has also continued to

increase as these reviews are necessary for patients being referred to UNC for therapy. Additional immunohistochemical and flow cytometric markers are continuously being added to the diagnostic repertoire for this Division, which remains on the cutting-edge of diagnostic Hematopathology. The Division looks forward to incorporating 6-color flow cytometry into clinical practice, which will allow better definitions of hematolymphoid neoplasms on conceivably smaller numbers of neoplastic cells. The Division has benefitted from the new faculty additions, including Drs. George (Yuri) Fedoriw, John Hunt, and Stephanie Mathews.

SPECIAL COAGULATION LABORATORY
HERBERT C. WHINNA, M.D., Ph.D., DIRECTOR

The laboratory has completed a move to new space in the UNC Cancer Hospital to allow for departmental growth in both our and other areas. We continue to perform special studies testing for UNC researchers as well as pharmaceutical and equipment companies generating additional revenue for UNCH with little increased cost/overhead. Faculty and staff regularly participate in interdepartmental conferences, allowing us to optimize patient care and safety as well as plan for the development and implementation of new testing in the future.

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

The caseload for the Cytogenetics Laboratory continued to grow in FY10-11 with increases seen primarily in our oncology FISH case load. At the current time, the laboratory offers over 30 different interphase FISH assays, most of which are designed to diagnose or monitor specific genetic abnormalities associated with cancer. Most recently we have validated the ALK break apart assay for the identification of the ALK inversions and variant rearrangements that are seen in some patients with non-small cell lung cancer.

On June 1st of 2010 the Cytogenetics laboratory replaced the 105,000 probe oligonucleotide microarray with a high resolution 1.8 million probe whole genome SNP microarray for evaluation of patients with developmental disabilities, dysmorphic features and congenital anomalies. The SNP array enables us to detect not only copy number changes, but also long continuous stretches of homozygosity associated with uniparental disomy (the inheritance of both copies of a chromosome, or chromosome part, from a single parent) and consanguinity (matings between closely related individuals), both of which can result in genetic disease. In response to the American College of Medical Genetics practice guidelines published in November of 2010 recommending microarray testing be performed as a first tier postnatal test for patients developmental disabilities and/or congenital anomalies, the laboratory now offers the option of a 5 cell or a 20 cell karyotype in conjunction with microarray testing.

We continue to characterize the chromosome rearrangements of some of our more interesting patients using both traditional and molecular cytogenetic techniques including both fluorescence in situ hybridization (FISH) and array CGH. The rearrangements and corresponding phenotypes observed in four of our patients were reported in poster form at the March 2011 American College of Medical Genetics Meeting.

The Cytogenetics Laboratory continues to actively participate in the cancer cooperative groups (CALGB and COG). During the past year, the UNC Cytogenetics Laboratory was a top performer among the Children's Oncology Group approved laboratories, with two consecutive 6 month periods of 100% abnormality detection and submission acceptance. Dr. Rao continues as a member of the CALGB (Cancer and Leukemia Group B) Cytogenetics Committee and was recently elected Chair of the Cytogenetics Committee for the Children's Oncology Group (term to begin July 1, 2011). She also continues in her roles as a member of the Board of Directors of the American College of Medical Genetics and of the ISCN (International Standing Committee for Cytogenetic Nomenclature).

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

Major Projects from the past fiscal year for LIS included ACC lab interface implementation, Rex Hospital HPV interface, several new instrument interfaces and auto-verification implementation for the Coag and Hematology areas in Core Lab. The Softlab upgrade is nearing completion and CoPath was upgraded to version 3.2 in preparation for Advanced Barcoding & Tracking (AB&T). Synoptic Reporting implementation was completed for CoPath, with synoptic worksheet phase-in to begin after AB&T implementation is completed.

Upcoming projects include CoPath AB&T (currently underway), Softlab migration to Oracle database and Softlab hardware upgrade. We will also begin our partnership with RCM e-Services for Outreach billing which will include implementation of SoftA/R, SoftWeb and SoftExpress modules for the SoftLab system. Also scheduled is implementation of a computer system for the HLA lab.

NEPHROPATHOLOGY LABORATORY
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 transplant related disorders. More than 1,700 renal specimens (native & transplant biopsies and nephrectomies) from over 200 nephrologists throughout the state, region and the world are analyzed annually. During the 2010 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 additionally by immunohistochemistry. Thus, the actual number of procedures that are performed on renal specimens by far exceeds 5000 per year. The Division of Nephropathology is involved in clinical, translational and basic research on renal diseases, especially glomerulonephritides and diseases seen in renal allografts. The research activities are supported by extramural grants and are facilitated by an extensive database and archival system that currently includes data from approximately 30,000 renal specimens, 15,000 serum samples, and 1000 urine samples. Currently, one US pathologist and one pathology post doctoral research associate from Sudan are being trained on how to manage and

organize a nephropathology laboratory. The UNC nephropathology faculty is also heavily engaged in continuous education series enhancing the diagnostic skills of pathologists and nephrologists, such as short courses at the annual USCAP meetings, the Columbia Presbyterian post graduate course on nephropathology in New York, or the 'Nephropathologiekurs Volhard-Fahr' in Mannheim, Germany. The Division of Nephropathology is sponsoring and co-organizing the upcoming *15th International Vasculitis & ANCA Workshop* in Chapel Hill. It is closely allied with the UNC Kidney Center and 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 has supported several new laboratory initiatives this year including the development and implementation of Vitamin D testing by Mass Spec, opiate confirmations, the addition of HE4 tumor markers. In addition they continue their six sigma, Lean and kaizen activities including the addition of 5 new green belts who have completed training and one new black belt. In addition, all employees in the area have completed yellow belt training. This has equipped the area to complete a green belt project that is saving the hospital $15,000 per month in previously lost revenue, a kaizen event in the Molecular area that has improved work flow and space utilization, a green belt project in Core Laboratory to refine the work flow in the processing area. Members of the group have also participated on a hospital wide committee to evaluate and purchase new software for accessing MSDS information. The new product will benefit and improve information for the entire hospital.

CLINICAL NEUROPATHOLOGY SERVICE AT UNC HOSPITALS
THOMAS W. BOULDIN, M.D., DIRECTOR

Diagnostic services in neuropathology are provided at UNC Hospitals by C. Ryan Miller, MD, PhD; Dimitri G. Trembath, MD, PhD; and Thomas W. Bouldin, MD. Dr. Bouldin is the director of the Division of Neuropathology. Neuropathology services include diagnostic surgical neuropathology, autopsy neuropathology, forensic neuropathology, nerve biopsy interpretation, and ophthalmic pathology. The surgical neuropathology service and autopsy service provide sufficient neuropathology specimens to allow the Department of Pathology and Laboratory Medicine to provide a rich training experience in diagnostic neuropathology for the Department's residents in anatomical and clinical pathology. The volume of surgical neuropathology cases has continued to increase and become more complex over the last five years, due in part to the growth of the clinical neurosurgical service, the expansion of the Neuro-Oncology programs at UNC Hospitals, and the opening of the North Carolina Cancer Hospital.

The Neuropathology faculty members attend and are active participants in the weekly Neuro-Oncology Multidisciplinary Conference at UNC Hospitals. A complete listing of the clinical conferences conducted by the neuropathology faculty is as follows:

Brain Cutting Conference (Autopsy Service) Weekly

Muscle and Nerve Biopsy Conference	Weekly
Clinical Neurosciences Conference	Monthly
Ophthalmic Pathology Signout Conference	Weekly
Multidisciplinary Neuro-oncology Conference	Weekly

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 community. The service has grown to serve over 70 clients in the research triangle area including hospitals, UNCH hospital clinics, Triangle Physician Network practices, UNCH P&A clinics, skilled nursing facilities, private physician practices and home health agencies. Twenty-six of the serviced providers perform some level of point of care testing (from waived to moderately complex) and four of the sites are CAP accredited. Last year Outreach continued serving over 100,000 patients and processed over 570,000 tests.

Outreach continued with the implementation of the administratively approved business plan. Four vehicles were obtained through the Medical Foundation. Five couriers were hired (four full-time and one part time), routes developed and MCL begin performing pickups in December of 2010 expanding to the current service level of all routine pickups. Additional leadership positions were filled to provide expanded management support (Supervisor) and business development (Physician Liaison). A planned call center staffed with four employees that was started. The call center centralizes incoming calls to core laboratory, Microbiology and Outreach and is open from 7 am – 8 pm, M-F.

Outreach completed its Green Belt project focusing on one physician's ordering/coding practices and in working with that physician dramatically reducing write-offs. Based on this experience Outreach will begin to expand these learned best practices to other providers and clinics. The ambulatory care center laboratory opened in April of 2011 and provides an extended menu of tests to support the operating room expansion. The moderately complex laboratory located at Carolina Point 2 expanded its test menu to include chemistry, urinalysis and additional point of care tests to support the Urgent Care clinic that opened May of 2011. Planning is continuing for a physician office building in Hillsborough. The facility will have laboratory support for both the clinics and an urgent care clinic.

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

The HLA and Flow Cytometry (FCL) Laboratories have undertaken steps to enhance the efficiency of laboratory operations to enhance service to our clinicians and patients with continued maintenance of our teaching mission.

The FCL completed validations and has implemented an in house developed test for oxidative burst for use in the diagnosis of Chronic Granulomatous Disease as well as for Paroxysmal Nocturnal Hemoglobinuria. The implementation of these tests has improved patient care by

providing more robust and timely analyses. The FCL, working with Dr. Dunphy, is also beginning validations of 6-color flow analysis for immunophenotyping of hematologic malignancies. The anticipated implementation in the next fiscal year will enhance capabilities of analyzing samples with limited cellularity as well a providing a more detailed analysis of cellular phenotypes.

The HLA laboratory has taken several steps to enhance efficiency, customer service and quality of laboratory testing activities. The laboratory has contracted with an outside organization (Path-Tech) that provides sample collection kits (blood and buccal cell) to transplant donors around the country for shipment to the laboratory for HLA testing. Transplant coordinators can now order these kits to be sent to individuals via an online interface instead of working through laboratory staff. This service provides a previously unavailable tracking mechanism for follow up on samples that have not been received in the expected time frame, improves timeliness of sample acquisition and saves laboratory technologist time. Along with this improvement, the laboratory has implemented a modification to its buccal cell extraction protocol to improve the rate of successful collections from 70 to 85% in terms of DNA concentration. In addition, the laboratory has completed validations of a saliva collection kit that will replace the buccal kits in the next fiscal year. The rate of recovery of adequate DNA is improved with these kits. The laboratory has evaluated a new technology for HLA typing of deceased donors using real time PCR. This method will be implemented in the next fiscal year to replace the current SSP method because of the significantly shorter run time of the real time assay which will shorten the number of hours needed for on call HLA typing services. Finally, the laboratory is working with the Bone Marrow Transplant Service to implement a database program, Transchart, for reporting HLA typing results. This program, which will interface with the Soft LIS, will improve data reporting for BMT patients and provide a computerized final report mechanism to replace the current manually generated BMT reports by the laboratory.

Finally, the Transplant Laboratories continue their extensive training and educational mission within the Hospital. The FCL and HLA laboratories provided rotations for CLS students, and the Immunology, Allergy/Immunology and Molecular Pathology Fellows. In addition, transplant coordinators receive didactic training on laboratory technologies as do TMS, Nephrology and Surgery Fellows. Finally, the laboratories provided educational services to a large number of Medical Students in the PATY417 elective.

MUSCLE PATHOLOGY LABORATORY
LEIGH B. THORNE, M.D., DIRECTOR

For several years, this core provided processing and histochemical staining for frozen muscle biopsies received in the UNCH Dept of Surgical Pathology. Approximately 80-100 muscle biopsies were performed each year at UNCH. Beginning July 2010, the muscle pathology services were transferred from the Pathology department to McLendon Clinical Laboratories.

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

Due to rapid growth of the Bone Marrow Transplant program, the Hematopoietic Progenitor Cell lab processed a record number of products this year. The lab was inspected and re-accredited by CAP, AABB, FDA, and FACT within the past year. Renovations are almost complete on an expanded work area which will house the liquid nitrogen freezers. In conjunction with the Bone Marrow Transplant program, the lab developed a new process and form to ensure the correct and prompt determination of allogeneic donor eligibility by both the clinical program and the laboratory.

CORE AND SERVICE LABORATORIES

MICROSCOPY SERVICES LABORATORY
C. ROBERT BAGNELL, Jr., Ph.D., DIRECTOR

The Bagnell laboratory - Microscopy Services Laboratory - is a UNC core facility for electron 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 341 principal investigators from 42 departments centers and programs at UNC-CH, 2 departments at Duke, 1 department at UNC-G, 1 investigator form NIEHS, and 1 investigator from Urogenix Inc. The total number of active laboratory clients now stands at 957. In the past 12 months the light microscope facilities logged 11,033 hours of use, electron microscope facilities logged 2,048 hours of use and the laboratory has performed 533 electron microscopy specimen preparations. In addition to its research role, 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. An NIH Shared Instrumentation Grant for a new transmission electron microscope was re-submitted with a requested amount of $422,000. This grant was not funded. The laboratory received $100,000 in funding from the Department of Pathology & Lab Med. to purchase an Andor FRAP system for the Olympus IX81 microscope. The laboratory received $3,000 in funding form the Department of Pathology & Lab Med to purchase two TMC vibration isolation tables.

Checklist of significant projects during this reporting period:

- Added Klaus Haun's Biosensor imaging technology to the lab services
- Added EDAX XES to FESEM
- Added Andor FRAP system to IX81
- Created ImageJ analysis program for Biosensor FRET analysis
- Created ImageJ analysis program for fibrin orientation and anisotropy
- Created ImageJ plugins to streamline sensitized emission wide field FRET analysis
- Presented poster of lab services at UNC Core Lab Day
- Presented photographs by clients at CHANL scientific Photo Contest

- Acknowledged (Steve Ray) in Cell Metabolism, Vol 13, Issue 5, pg. 517-526 "The Microbiome and Butyrate Regulate Energy Metabolism and Autophagy in the Mammalian Color" Scott Bultman Lab
- Image analysis project Colocalization of synaptic markers (Cendra Agulhon Ken McCarthy Lab)
- Image analysis project Cell tracking from cardiac explants (Panna Tandon – Conlon Lab)
- Image analysis project Measurement of FISH labeling and proximity to methyl-histone (Mauro Calabrese – Teryy Magnuson Lab)
- Image analysis project Analysis of AAV distribution in infected cells (PH Xiao – Richard Samulski Lab)
- Image analysis project Visualizing particle internalization by cells (Chris Luft – Joe DeSimone Lab)
- Image analysis project Analysis of drug localization in kidney (Rachel Goldsmith – Rick Tidwell Lab)
- Image analysis project Cell tracking in scratch assays and culture (Zhigang Zhou – Joan Taylor Lab)

LASER CAPTURE MICRODISSECTION CORE FACILITY
C. ROBERT BAGNELL, Jr., Ph.D., DIRECTOR

This facility is part of the Microscopy Services Laboratory. LCM is a method for collecting very small regions of tissue or specific cells for use in "omic" analyses. The facility houses a Zeiss PALM LCM and an Arcturus PIX-Cell II LCM, a Leica CM 1850 cryostat, and a ventilation hood for staining and dehydration. Over the past 12 months, the LCM systems were utilized by eight investigators (Joan Taylor, John Wright, Yi Zhang, Lesley Marson (now with Urogenicx), David Clemmons, Silviana Barros, Kristina Abel, and Pam Groben) for a total of 254 hours.

TRANSLATIONAL PATHOLOGY LABORATORY (TPL)
C. RYAN MILLER, M.D., Ph.D., FACULTY DIRECTOR

The Translational Pathology Laboratory (TPL) continues to grow, both in terms of services offered and the volume of services provided to UNC investigators. We have acquired several new pieces of equipment and analysis software packages, including a CRi/Caliper Life Sciences Nuance multi-spectral imaging camera and associated inForm analysis software, the Definiens XD Developer and Tissue Studio image analysis software, and upgraded Aperio Spectrum image and data management software available at https://tpl-spectrum.med.unc.edu. In calendar year 2010, we provided services to 63 investigators (up from 52 in 2009) and 18 clinical trials. Diagnostic slides and FFPE tissue blocks were pulled from the UNCH Surgical Pathology archives on 939 patient cases. Over 13,000 unstained tissue sections, 2,400 H&E stained slides, and 4,400 IHC/IF stained slides were prepared. Over 15,000 slides were scanned on the Aperio ScanScope XT and ScanScope FL systems and over 3,700 quantitative slide analyses have been performed. Our services have been included in over 20 grant applications and 12 peer-reviewed publications.

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 microliter 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 20l 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. From June 2011, the facility will provide the new service of multiplexed biomarker immunoassays for cancer biomarkers, cell signaling phosphoprotein detection, endocrine diseases, cardiovascular diseases, cytokine/chemokine detection. Recently, the new MAGPIX instrument having development of Luminex technology with magnetic beads has been purchased.

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 1,000 disease-related gene assays have been developed to detect their expression levels in mice, human, and rat, 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 research. More than thirty principal investigators from ten different departments are currently using this research core facility.

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.

ADME MASS SPECTROMETRY CENTER
ARLENE S. BRIDGES, Ph.D., DIRECTOR
RICHARD R. TIDWELL, Ph.D., CHAIR, ADVISORY BOARD

As Director of the ADME Mass Spectrometry Center, Dr. Bridges' role is to provide study design assistance, bioanalytical support, and date interpretation to preclinical and clinical studies conducted by investigators at UNC and beyond. Center capabilities include quantitation by triple quadrupole mass spectrometry, molecular weight determination by ion trap mass spectrometry, and identification of novel metabolites by both types of equipment.

With regards the equipment, the Center maintains:
1. an Applied Biosystems API4000 triple quadrupole mass spectrometer
2. an Applied Biosystems API3000 triple quadrupole mass spectrometer
3. a Thermo-Scientific Quantum Ultra triple quadruple mass spectrometer
4. an Agilent 1100 MSD ion-trap mass spectrometer
5. five Agilent HPLCs, each with diode array (UV) and fluorescence detectors

The Center supports the work of UNC principal investigators in the Schools of Medicine, Pharmacy, and Public Health and in the College of Arts and Sciences. Primary research activities involve analysis of antiparasitic agents (in collaboration with Dr. Richard Tidwell), antibiotic and antiviral agents (in collaboration with Dr. Angela Kashuba), and anticancer nanoparticles (in collaboration with Drs. Joseph DeSimone and William Zamboni). In addition, the Center has collaborates long-distance with researchers from Duke University, East Carolina University, North Carolina Central University, and the University of Puerto Rico. Work conducted by the Center varies from simultaneously quantifying seventeen different antiretrovirals in human plasma/semen/breast milk/cervicovaginal fluid, to determining the kinetics of enzymatic reactions, to identifying novel metabolites in complex biological matrices, to determining novel bioactive compounds in dietary and herbal mixtures. Overall, users log over 200,000 hours of instrument time annually.

Over 30 students, post-doctoral fellows and faculty from across the UNC campus have been trained in the safe and effective use of the analytical equipment in the Center. More than 50 peer-reviewed publications have been written using data generated in the Center. Dr. Bridges is waiting for the results of an NIH Shared Instrumentation Grant that, if successful, will enable the Center to purchase a much needed quantitative, high resolution mass spectrometer.

FACULTY AND SENIOR STAFF CHANGES

ARABA AFENI-ANNAN, M.D., was on leave December 8, 2010 through June 30, 2011.

CLAUDIA M. BRADY, M.H.S., was promoted to Assistant Professor effective May 1, 2011.

MEGAN J. DIFURIO, M.D., was appointed Assistant Professor effective August 18, 2010. She serves as attending pathologist and focuses on diagnostic pathology, cytopathology and surgical pathology.

DAVID A. EBERHARD, M.D., Ph.D., was appointed Associate Professor and Member, Lineberger Comprehensive Cancer Center effective April 15, 2011. Using pathology and genetic techniques, he performs translational research studies for transfer of research from the bench to the bedside.

THOMAS H. FISCHER, Ph.D., changed to Adjunct Associate Professor effective March 12, 2011.

ADIL HUSSEIN GASIM, M.D., was promoted to Assistant Professor effective June 1, 2011. He participates in pathologic and clinical research on kidney diseases.

PETER H. GILLIGAN, Ph.D., changed his primary academic appointment to the Department of Pathology and Laboratory Medicine effective April 1, 2011. He holds a joint appointment (secondary) as Professor of Microbiology and Immunology.

KEVIN E. GREENE, M.D., was appointed Assistant Professor effective July 1, 2010. He serves as attending pathologist in surgical pathology and focuses on gastrointestinal and liver pathology.

PAMELA A. GROBEN, M.D., was appointed Professor, 25% FTE, effective July 1, 2010, to serve as attending pathologist in surgical pathology and provide pathologic interpretation of skin samples as a board certified dermatopathologist. She will also collaborate in research studies.

J. EDWIN HALL, Ph.D., retired from State service on December 31, 2010.

STEVEN HOLMES, B.S., M.H.S., was appointed Assistant Professor effective July 1, 2010. He serves as Pathologists' Assistant.

HEIKE HUNT, M.D., was on leave July 1, 2010 through September 26, 2010 and January 1, 2011 through June 30, 2011.

JOHN HUNT, M.D., was on leave September 28, 2010 through October 18, 2010

KATHLEEN KAISER-ROGERS, Ph.D., was promoted to Professor effective May 1, 2011.

APRIL E. KEMPER, M.S., M.H.S., was appointed Assistant Professor effective July 1, 2010. She serves as Pathologists' Assistant.

SARA KOENIG, M.D., resigned December 2010, to accept a position at the University of New Mexico.

ROMMEL P. LU, M.D., was appointed Assistant Professor effective July 8, 2011. He serves as attending pathologist in Transfusion Medicine.

STEPHANIE P. MATHEWS, M.D., was appointed Assistant Professor, 20% FTE, effective November 1, 2010. She serves as attending pathologist in hematopatology.

CHRISTOPHER R. MCCUDDEN, Ph.D., resigned his position effective June 29, 2011 to return to his home country, Canada.

CLAY NICHOLS, M.D., was appointed Professor effective July 1, 2011. He is Deputy Chief Medical Examiner, Office of the Chief Medical Examiner for the State of North Carolina.

SIOBHAN M. O'CONNOR, M.D., was appointed Assistant Professor effective July 1, 2010. She serves as attending pathologist in surgical pathologist and cytopathology with a focus on breast pathology.

KUMAR R. PANDYA, Ph.D., was appointed Assistant Professor effective January 1, 2011 for collaborative research with Oliver Smithies, D.Phil.

LORI R. SCANGA, MD., Ph.D., was appointed Assistant Professor effective July 1, 2010. She serves as attending pathologist in surgical pathology and cytopathology with focus on gynecologic diseases.

JOHN SCHMITZ, Ph.D., was promoted to Professor effective August 1, 2010.

HARSHARAN K. SINGH, M.D., was promoted to Professor effective June 30, 2011.

LEIGH B. THORNE, M.D., was promoted to Associate Professor effective May 1, 2011.

RUTH F. WALTERS, M.D., was appointed Adjunct Assistant Professor effective July 1, 2011.

KAREN E. WECK, M.D., was promoted to Professor effective July 1, 2010.

ALISA S. WOLBERG, Ph.D., was promoted to Associate Professor effective July 1, 2011.

MAIMOONA B. ZARIWALA, Ph.D., was promoted to Associate Professor effective February 1, 2011.

SPECIAL HONORS AND AWARDS

WILLIAM B. COLEMAN, Ph.D.

2011 Blue Faery Award for Excellence in Liver Cancer Research from Blue Faery – The Adrienne Wilson Liver Cancer Association, April 2011

MARILA CORDEIRO-STONE, Ph.D.

Dr. Cordeiro-Stone was asked by two graduates, one from the Curriculum in Toxicology and another from the Department of Biochemistry and Biophysics, to participate in hooding them at the May 7th 2011 Commencement Ceremony.

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

Sophomore Basic Sciences Teaching Award, Awarded by the UNC Medical Class of 2013
2011 White Coat Ceremony UNC Medical School: Coater

CATHERINE A. HAMMETT-STABLER, Ph.D.

AACC Outstanding Speaker Award, 2010

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

Dr. Fletcher was accepted into the Office of Human Resources, University Leadership Education and Development (ULEAD) program that provides an opportunity to develop highly skilled and motivated leaders prepared to meet the challenges of the University's changing environment. The program's goals include: (1) increasing awareness of your professional strengths and developmental needs through assessment and coaching, (2) expanding the knowledge, skills, and abilities critical to those in a changing University environment through a range of experiential and classroom sessions.

JUDITH NIELSEN, D.V.M.

2010 Citation in Faculty of 1000 Biology: evaluations for Okagaki LH, Strain AK, Nielsen JN, Charlier C, Baltes NJ, Chretien F, Heitman J, Dromer F, Nielsen K, (2010) Cryptococcal Cell Morphology Affects Host Cell Interactions and Pathogenicity. PLoS Pathog 6 (6): e1000953. Doi:10.1371/journal.ppat.1000953: e1000953
http://f1000biology.com/article/id/3866963/evaluation

KUMAR R. PANDYA, Ph.D.

Dr. Pandya received the 2010 Commitment to Service Award for Unique Contributions in the areas of mentoring, service, or leadership – UNC Office of Post Doctoral Affairs.

JOAN M. TAYLOR, Ph.D.

2011 Star Heel Award

ELECTED LEADERSHIP POSITIONS

WILLIAM B. COLEMAN, Ph.D.

Secretary-Treasurer, The American Society for Investigative Pathology, July 2007-Present

CHERIE H. DUNPHY, M.D.

President, North Carolina Pathology Society (through April 9, 2011)

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

Council Member, Associate Director Anatomy Surgical Pathology (ADASP)

PETER H. GILLIGAN, Ph.D.

Dean, American College of Microbiology
Board of Goverors, American Academy of Microbiology

CATHERINE A. HAMMETT-STABLER, Ph.D.

President, Americal Association of Clinical Chemistry
President, National Registry of Certified Chemists

J. CHARLES JENNETTE, M.D.

Past-President, Association of Pathology Chairs

HARVEY MICHAEL JONES, M.D.

Board of Governors, American Osler Society

SUSAN T. LORD, Ph.D.

Board of Councilors, International Fibrinogen Research Society

CHRISTOPHER P. McCUDDEN, Ph.D.

Executive Committee: North Carolina Section of the American Association for Clinical Chemistry

JUDITH NIELSEN, D.V.M.

North Carolina Academy of Laboratory Animal Medicine, President-Elect 2 yrs.

VOLKER R. NICKELEIT, M.D.

Councilor, Executive Committee, Renal Pathology Society

KATHLEEN W. RAO, Ph.D.

Executive Committee, International Standing Committee and Human Cytogenetic Nomenclature
Executive Committee, Board of Directors, American College of Medical Genetics (ACMG)

HOWARD M. REISNER, Ph.D.

Councilor, UMED

JOHN L. SCHMITZ, Ph.D.

President, Association of Medical Laboratory Immunologists

HARSHARAN K. SINGH, M.D.

Vice Secretary, Renal Pathology Society, January-December 2010
Secretary, Renal Pathology Society, January 2011 – June 30, 2011

KAREN E. WECK, M.D.

Chair, Training and Education Committee, Association for Molecular Pathology

JULIA W. WHITAKER, D.V.M.

Board of Directors, North Carolina Academy of Laboratory Animal Medicine

RUTH E. WINECKER, Ph.D.

Chair, AAFS, Toxicology Section Program Chair
Secretary, AAFS, Toxicology Section Secretary
Board of Directors, ABFT, Board of Directors

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

Member at Large, Association of Pathology Chairs

LEADERSHIP POSITIONS

JOHN F. CHAPMAN, Dr.P.H.

Chair, CCT Committee, NRCC
Member (Advisor), CLSI Subcommittee on Serem Indices

WILLIAM B. COLEMAN, Ph.D.

Council, The American Society for Investigative Pathology
Finance Committee Chair, The American Society for Investigative Pathology
Finance Committee, Federation of American Societies for Experimental Biology
Publications Committee, The American Society for Investigative Pathology
Divisional Oversight Committee, The American Society for Investigative Pathology
Membership Committee, The American Society for Investigative Pathology
Education Committee, The American Society for Investigative Pathology

MARILA CORDEIRO-STONE, Ph.D.

Member, Society of Toxicology, Career Resource and Development (CRAD) Committee (May1, 2009 to April 30, 2012)
Interim Director, Curriculum in Toxicology
Director of Graduate Studies, Curriculum in Toxicology

CHERIE H. DUNPHY, M.D.

Chair, College of American Pathologists Diagnostic Immunology Resource Committee
Chair, College of American Pathologists Hematology/Hematopathology Competency Dictionary Page Working Group, August, 2010-present

ROSANN A. FARBER, Ph.D.

Judge, Annual DNA Day Essays, American Society for Human Genetics

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

Co-Chair, International Mock Board Exam Coalition for the American College of Laboratory Animal Medicine Board Exam, 2010
Interim Associate Director, Division of Laboratory Animal Medicine:
Senior Clinical Veterinarian

MARGARET L. GULLEY, M.D.

Chair, Topics Committee, Evaluation of Genomic Applications in Practice and Prevention (EGAPP) Stakeholder's Group

Chair, Epithelial Cell Section, 14th International Symposium on Epstein-Barr virus Associated Diseases, Birmingham, UK September 2010

TRACY HEENAN, D.V.M.

Council Member, Certification of Professional IACUC Administrators (CPIA)
Chair, CCPIA Leadership Committee
Chair, CCPIA Exam Item Review
Ad hoc consultant. Association for the Assessment and Accreditation for Laboratory Animal Care International (AAALAC)

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

Section Chair, 13th Biennial Medwest Platelet Conference. Inflammation and Cardiovascular Disease.
Session Chair, American Society for Investigative Pathology, Symposium Chair

J. CHARLES JENNETTE, M.D.

Chair, APC Nominating Committee
Session Chair, International Pediatric Nephrology Association Renal Pathology Pre-Course for Pediatric Nephrologists, "Nephritic Syndrome", New York, NY, August 2010
Session Chair, Renal Pathology Society Satellite Meeting ar the XXVIII International Congress of the International Academy of Pathology, "Infectious Kedney Diseases", Sao Paulo, Brazil, October 2010

HARVEY MICHAEL JONES, M.D.

Chair, American Osler Society, Program Committee
Chair, American Osler Society, Publications Committee

KATHLEEN A. KAISER-ROGERS, Ph.D.

Chair, American College of Medical Genetics Salary Survey Committee

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

Chair, Society of Toxicology, Scientific Liaison Task Force

SUSAN T. LORD, Ph.D.

Chair, International Society of Thrombosis and Haemostasis, Scientific Program Organizing Committee for XXII Congress

CHRISTOPHER McCUDDEN, Ph.D.

Round Table Chair, "Career Perspectives for Young Scientists". Journee Internationales de Biologie, Paris, France, November 2010
Chair, Society for Young Clinical Laboratorians, American Asociation for Clinical Chemistry

MELISSA B. MILLER, Ph.D.

Session Chair, 50th Interscience Conference on Antimicrobial Agents and Chemotherapy, "Best Practices in the Laboratory Diagnosis of Sexually-transmitted infections," Interactive Symposium, Boston, MA, September 2010

Session Chair, American Society for Microbiology, 111th General Meeting, Core Curriculum, May 23, 2011

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

Member, National Cancer Institute, The Cancer Genome Atlas (TCGA), Glioblastoma Disease Working Group (DWG)
Member, Scientific Advisory Committee, National Functional Genomics Center

JUDITH NIELSEN, D.V.M.

American College of Laboratory Animal Medicine, Exam Review Committee, 3 yrs.

VOLKER R. NICKELEIT, M.D.

Session Chair, ASN 2010: Clinico-Pathologic Correlation Conference, November 2010
Banff- Group: Chair of Working Group / Task Force on "Polyomavirus Nephropathy Classification"

ARLIN B. ROGERS, D.V.M., Ph.D.

Chair, ACVP, Annual Meeting Plenary Session
Co-Chair, ASIP, Liver Workshop
Faculty Director, Animal Histopathology Core

JOHN L. SCHMITZ, Ph.D.

Chair, Credentials Committee: American Board of Medical Laboratory Immunology
Co-Chair, ASHI Accreditation Review Board

JOAN M. TAYLOR, Ph.D.

Chair, AHA, Early Career Development Committee

RICHARD R. TIDWELL, Ph.D.

The Bill and Melinda Gates Foundation, Initiative on Public-Private Partnerships for Health (IPPPH)
World Health Organization, Drug Development, Preclinical and Clinical Studies; Treatment and Drug Resistance section for the World Health Organizations Scientific Working Group on African Trypanosomiasis Product Development Partnerships for Neglected Global Health Medicines for Malaria Ventures, Expert Scientific Advisory Committee

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

Chairman, Scientific Subcommittee on Plasma Coagulation Inhibitors of the International Society for Thrombosis and Hemostasis

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

Co-Chair, International Mock Board Exam Coalition for the American College of Laboratory Animal Medici**n**e Board exam review

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

Chair, Nomination Committee, National Sigma Xi Research Society
Chair, Program Committee for Experimental Biology, American Society of Investigative Pathologists

MEMBER OF BOARD OF DIRECTORS OF NATIONAL/INTERNATIONAL ACCREDITATION AGENCY

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Member, National Registry of Certified Chemists

GEORGETTE A. DENT, M.D.

Member, Liaison Committee on Medical Education

CATHERINE A. HAMMETT-STABLER, Ph.D.

Member, BOD, National Registry of Certified Chemists

MELISSA B. MILLER, Ph.D.

Member, Board of Governors, American College of Microbiology

JOHN L. SCHMITZ, Ph.D.

Member, American Society of Histocompatibility and Immunogenetics Accreditation Review Board
Member, American Board of Medical Laboratory Immunology

MEMBER OF FDA, CDC OR COMPARABLE COMMITTEE

JOHN F. CHAPMAN, Jr., Dr.P.H.

Member, (Advisor) CLSI Subcommittee on Serum Indices

FRANK C. CHURCH, Ph.D.

Organizer for the 6th International Meeting on Serpins, planned for October, 2011, UNC-CH

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

Member, Medical Devices Advisory Committee

CHRISTOPHER R. McCUDDEN, Ph.D.

Member, Sub-Committee on Serum Indices in the Clinical Laboratory. Clinical Laboratory Standards Institute (CLSI)

MELISSA B. MILLER, Ph.D.

Member, FDA Microbiology Devices Panel

VOLKER R. NICKELEIT, M.D.

Member: OPTN/UNOS Ad Hoc Disease Transmission Advisory Committee

KATHLEEN W. RAO, Ph.D.

Member, Children's Oncology Group Cytogenetics Central Review Committee
Member, Children's Oncology Group, Infant Leukemia Committee
Member, Cancer and Leukemia Group B (CALGB) Cytogenetics Review Committee

JOHN L. SCHMITZ, Ph.D.

Member, United Network for Organ Sharing (UNOS) Histocompatibility Committee

KAREN E. WECK, M.D.

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

ALISA S. WOLBERG, Ph.D.

Member, FDA, Steering Committee, Workshop on IGIV and Thrombosis, "Risk Mitigation Stratigies to Address Potential Procoagulant Activity in Immune Globulin Products", 2011

MEMBER OF NIH OR COMPARABLE STUDY SECTION

ARABA N. AFENYI-ANNAN, M.D., M.P.H.

NHLBI Sickle Cell Disease Guidelines Expert Panel

FRANK C. CHURCH, Ph.D.

Member of American Heart Association, Council on Arteriosclerosis, Thrombosis and Vascular Biology Council Leadership Committee, Mid-Atlantic Region (Vice-Chair, 2006; Chair 2007-2010)

Clinical and Experimental Therapy Study Section 3, Department of Defense, Federal Breast Cancer Idea Grants.

WILLAM B. COLEMAN, Ph.D.

ad hoc External Grant Reviewer for the National Cancer Institute, National Institutes of Health, NCI-F Manpower and Training Study Section, September 2010
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, October 2010
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Prevention Special Emphasis Panel, May 2011
ad hoc External Grant Reviewer for the National Institutes of Health, Clinical and Translational Imaging Study Section, May 2011
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Diagnostics and Treatment SBIR/STTR Study Section, June 2011
ad hoc External Grant Reviewer for the National Institutes of Health, Cancer Biology and Therapeutics Study Section, June 2011

GEORGETTE A. DENT, M.D.

Member, American Society of Hematology Committee on Promoting Diversity
Member, External Reviewer for the Annual Meeting of the Association of American Medical Colleges

CHERIE H. DUNPHY, M.D.

Active Pathologist Reviewer, Children's Oncology Group
Active Pathologist Reviewer, Cancer and Leukemia Group B (CALGB)

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

NCI, Clinical Assay Development Program, 2011-2012

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

Member, Special Emphasis Panel Ad Hoc (June 16-18, 2010)

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

Member, UNC TRACS Study Section

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

IMAT Study Section, National Cancer Institute, June 2010

JOE N. KORNEGAY, D.V.M., Ph.D.

Ad hoc Reviewer, NIH-NHEB1, K99/R00 NIH Pathway to Independence Applications
Member, Muscular Dystrophy Association, Medical Advisory Committee, Grant Review Sessions, October 2010 and May 2011
Ad hoc Reviewer, Dutch Parent Project Muscular Dystrophy, April, 2010

SUSAN T. LORD, Ph.D.

Member, College of CSR Reviewers

CHRISTOPHER P. MACK, Ph.D.

Member, NHLBI, Minearlcorticoid receptor, role in cardiovascular disease

HOWARD M. REISNER, Ph.D.

Member, ITRS Final Review panel Louisiana Board of Regents

Scientific Auditor for CRDF/NSF grants in the Ukraine and Georgia. On site review/audit.
Reviewer, Twenty-first Century Fund, State of Indiana

ARLIN B. ROGERS, D.V.M., Ph.D.

NCRR, Special Emphasis Panel: Pathobiology of Emerging Pathogens in Laboratory Animals

RICHARD R. TIDWELL, Ph.D.

NIH, NIAID, ICTDR. Human African Trypanosomiasis: Strategic Research Direction

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

Ad hoc Grant Reviewer, South African Medical Research Council
Ad hoc Grant Reviewer, The Wellcome Trust

BERNARD E. WEISSMAN, Ph.D.

Member, NIH/CSR, Cancer Genetics

ALISA S. WOLBERG, Ph.D.

Member, Amer Heart Assn, Thrombosis/Throm BSCT2,
Member, NIH, Special Emph Panel/SRG 2011/05 HLBP S

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Associate Editor, Archives of Pathology and Laboratory Medicine
Associate Editor, Haematologia
Associate Editor, Case Reports in Medicine
Associate Editor, International Journal of Medical and Biological Frontiers

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Editorial Board, e-Medicine Pathology

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Associate Editor, MBio
Editorial Board, Diagnostic Microbiology and Infectious Diseases
Editorial Board, Journal of Pediatric Infectious Diseases

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Section Editor – Pathology, Journal of Nephrology
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Editorial Board, Archives of Pathology and Laboratory Medicine
Editorial Board, Clinical and Diagnostic Laboratory Immunology
Editorial Board, Clinical Journal of the American Society of Nephrology
Editorial Board, Journal of Rheumatology
Editorial Board, Kidney International
Editorial Board, Laboratory Investigation
Editorial Board, Pathology Case Reviews

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

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Editorial Board, Diagnostic Microbiology and Infectious Disease

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

Editorial Board, Brain Pathology
Editorial Board, Brain Research Bulletin

JUDITH NIELSEN, D.V.M.

Ad hoc reviewer: JAALAS, January, 2011

VOLKER R. NICKELEIT, M.D.

Editorial Board, Kidney and Blood Pressure Research
Editorial Board, Nephrology Dialysis Transplantation Educational eTOC
Editorial Board, World Journal of Transplantation

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Editorial Board, Veterinary Pathology

JOHN L. SCHMITZ, Ph.D.

Editorial Board, Clinical and Vaccine Immunology
Editorial Board, Journal of Immunologic Methods

JOAN M. TAYLOR, Ph.D.

Editorial Board, ISRN Cell Biology

DITMITRI G. TREMBATH, M.D., Ph.D.

Editorial Board, Journal of Neuropathology and Experimental Neurology

KAREN E. WECK, M.D.

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

BERNARD E. WEISSMAN, Ph.D.

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

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

Editorial Advisory Board, Assistant Editor, Laboratory Medicine
Editorial Board, American Journal of Physiology – Heart and Circulatory Physiology
Editorial Board, Journal of Molecular and Cellular Cardiology
Editorial Board, Skeletal Muscle

ALISA S. WOLBERG, Ph.D.

Associate Editor, *Arteriosclerosis, Thrombosis, and Vascular Biology* Special Issue on Venous Thromboembolism: 2011
Editorial Board Member, Arteriosclerosis, Thrombosis, and Vascular Biology
Advisory Board Member, Journal of Thrombosis and Haemostasis

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

Editorial Board, Human Pathology

XIANWEN YI, M.D., Ph.D.

Editorial Board, European Journal of Pharmacology
Editorial Board, The Journal of Nutrition

INVITED LECTURES AT STATE/NATIONAL AND INTERNATIONAL MEETINGS

WILLIAM B. COLEMAN, Ph.D.

COBRE Center for Cancer Research Development and Center for Stem Cell Biology Symposium, September 2010, Rhode Island Hospital, Providence, RI
Oral Presentation: "Targeting the epigenome for improved treatment of basal-like breast cancers." W.B. Coleman (Presenter)
XXX National Congress of the Italian Society of Pathology, October 2010, University of Salerno, Salerno, Italy
Oral Presentation: "Small hepatocyte-like progenitor cells in liver regeneration." W.B. Coleman (Presenter)
American Society for Investigative Pathology, Annual Meeting, April 2011, Washington, DC
Oral Presentation: "Hidden in plain sight: How biology reveals new ways to treat breast cancer." W.B. Coleman (Presenter)

MARILA CORDIERO-STONE, Ph.D.

Special scientific symposium in honor of Dr. Rogerio Meneghini at the University of São Paulo (December 18, 2010, São Paulo, SP, Brazil): Responses to UV-induced DNA damage in human S phase cells. Invited by Dr. Carlos F. M. Menck

GEORGETTE A. DENT, M.D.

"GSA Hot Topic Session: MSPE/LCME", AAMC Annual Meeting, Washington, DC
"Go with the Flow: The Use of Flow Cytometry in Diagnostic Hematopathology", presented at the University of Missouri of Medicine, November 2010

CHERIE H. DUNPHY, M.D.

"HEMA, Applications of Flow Cytometry to Myeloid Neoplasms", The University of Texas Health Science Center, San Antonio, TX, July 2010

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

The C.L. Davis, DVM Foundation and the North Carolina Association of Laboratory Animal Medicine Workshop in Laboratory Animal Medicine, Thursday, May 13, 2010, North Carolina State University, College of Veterinary Medicine, Raleigh, NC

PETER H. GILLIGAN, Ph.D.

Molecular Screening for MRSA: Impact on Patient Care, American Association of Clinical Chemists, July, 2010
The Laboratory Perspection on the Value of In Vitro Synergy Testing ICAAC, Boston, MA, September, 2010Update on Clinincal Microbiology, MAHEC with video-feed to Area L, Greensboro, Eastern and Wake AHEC, Ashville, NC, September 2010
The Rode of the Laboratory in the Detection and control of Multi-Drug Resistant Staphylococcus Aureus, Bioconference Live Videoconference, October 2010
So you THINK you know Microbiology? NYC ASM, New York, NY, November 2010
Infectious Disease Conferences x 3, Jan, Feb (fellows only), June

MARGARET L. GULLEY, M.D.

"Taking advantage of human and viral expression profiles in blood, biopsy, and gastric juices for early diagnosis and management of gastric cancer". NCI Gastric and Esophageal Cancee Meeting. Bethesda, May 16, 2011.
"Molecular Surgical Pathology for the Practicing Pathologist", Educational Course (9 talks), American Society for Clinical Pathology, San Francisco, April 13-15, 2011.
"Sarcoma" and "EBV Associated Disease", Association for Molecular Pathology Board Review Course, Bethesda, April 29-30, 2011.
"Molecular tools to diagnose, monitor and predict outcome in cancer patients: Applications to Epstein-Barr virus-related malignancy". Grand Rounds of the East Carolina University Department of Pathology, March 14, 2011.

CATHERINE A. HAMMETT-STABLER, Ph.D.

Collaboration with the Pain Medicine Clinic, AACCF New Jersey Local Section, November 2010
The State of TDM: A Retrospective Review. AACC Southeast Local Section, November 2010
Osteoporosis in 2010/ Michigan Local Section, November 2010
Laboratory Medicine Support of Pain Management – Beyond Urine Drug Testing. Australasian Association of Clinical Biochemistry and Australian Institute of Medicial Scientists; Perth, Australia, October 2010
What's in this Urine? Australasian Association of Clinincal Biochemists/Australian Institute of Medical Scientists; Perth, AU, October 2010
Understanding the Needs of the Pain Clinic. AACC Ohio Valley Local Section, Indianapolis, IN. October 2010
Enhancing Toxicology Support of Pain Management. AACC Capital Local Section, Baltimore, MD, September 2010

Boning Up on the Use of Biological Markers in Osteoporosis. AACC North Carolina Local Section. Chapel Hill, NC, September 2010
Support Your Local Pain Clinic – the Laboratory's Role. AACC Pacific North West Local Section. Portland, OR. August 2010
Therapeutic Drug Monitoring 2010: Where Do We Need to Go? Department of Laboratory Medicine; Cliniques Universitaires St-Luc; Brussels, Belgium, Spetember 2010
Survivor: Plants vs the World. Kaiser Permanente NW Laboratory. Portland, OR. August 2010
So You Think You Know What Those Results Mean? Palliative and Supportive Care Journal Club. June 2010
Opportunities and Challenges in Laboratory Support of a Pain Management Program. Contemporary Issues in Clinical TDM/Tox. Chicago, IL. April 29, 2011
Was it a Poisoning? Toxicology in the Clinical Setting. The Curriculum in Toxicology Seminar Series; January 31, 2011.

TRACY HEENAN, D.V.M.

Heenan, Tracy, Faculty Workshop A12 (double session), IACUC Administrators Share and Compare Ideas and Processes (*IACUC Administration/Management and Process* Track), March 31, 2011, Public Responsibility in Medicine and Research (PRIM&R) IACUC Conference – Chicago, IL

Heenan, Tracy, Faculty Workshop B18 (workshop), Training Programs for Personnel at Large Institutions (*Qualifications and Training* Track), March 31, 2011; PRIM&R IACUC Conference – Chicago, IL

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

"Applying for Peer Reviewed Funding" Career Development Workshop and Breakfast. Transition to Principal Investigator. EB2011, Washington D.C., April 10, 2011

HEIKE HUNT, M.D.

"Pancreas Tumors", Tufts University Medical Center, Baystate Medical Center, Springfield, MA, October 2010

JOHN HUNT, M.D.

Unexpected presentations of hematolymphoid neoplasms in non-lymphoid surgical specimens, Thursday, March 10, 2011; Dept of Pathology (St. Michael's Hospital, Toronto, Ontario)

J. CHARLES JENNETTE, M.D.

American Society of Nephrology Renal Week Postgraduate Education Course: Basic Renal Pathology – from Bedside to Bench, "IgA Nephropathy". "Diabetic Glomerulosclerisis", "Crescentric Glomerulonephritis", and "Vasculitis", Denver, CO, November 2010

American Society of Nephrology Renal Beek Postgraduate Education Course: Glomerulonephritis Update: "Pathology of Rapidly Progressive Glomerulonephritis" and "Pathology and Classification of Lupus Nephritis and IgA Nephropathy", Denver, CO, November 2010
Renal Pathology Society Satellite Meeting at the XXVIII International Congress of the International Academy of Pathology "Infection and Vasculitis", Sao Paulo, Brazil, October 2010
Annual Meeting of the International Pediatric Nephrology Association, New York, NY, "Advances in the Pathologic Classification and Diagnosis of Glomerular Diseases", August 2010
Annual Meeting of the International Pediatric Nephrology Association Renal Pathology Pre-Course for Pediatric Nephrologists, "Mini Primer on the Pathology of Pediatric Glomerular Diseases", "IgM Mesangial Nephropathy and C1q Nephropathy: Distinct or Not?" and "Vasculitis", New York, NY, August, 2010
Columbia University Postgraduate Review Course: Renal Biopsy in Medical Diseases of the Kidney, " Rapidly Progressive Glomerulonephritis and ANCA" and IgA Nephropathy and H-S Purpura", New York, NY, August 2010
Pathogenesis of Vascular Inflammation Induced by Anti-Neutrophil Cytoplasmic Autoantibodies: and Incentive Compensation Plan of Academic Faculty", Boston University, September 2010
"Vasculitis Caused by Antoneutrophil Cytoplasmic Autoantibodies (ANCA): Diagnosis, Pathogensis and Rationale for Treatment", Rheumatology Grand Rounds, Duke University, Durham, NC, September 2010

HARVEY MICHAEL JONES, M.D.

Osler and the Sanitary Movement, American Osler Society, Annual Meeting, Philadelphia, PA, May 2, 2011

KATHLEEN KAISER-ROGERS, Ph.D.

Structural Chromosome Rearrangements" UNC-Greensboro Genetic Counseling students, 120 minutes 2/17/11
Problem solving conference, UNC-Greensboro Genetic Counseling students, 60 minutes 2/17/11

"Molecular Cytogenetics" UNC-Greensboro Genetic Counseling students, 120 minutes 2/24/11
Problem solving conference, UNC-Greensboro Genetic Counseling students, 60 minutes 2/24/11

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

Advances in Enzyme Regulation Meeting, University of Bologna, Bologna, Italy, October 2010

SARA KOENIG, M.D.

Apheresis and Stem Cell Collection, BMT Nursing Core Curriculum
Transfusion Medicine for Clinicians, Pediatric Resident Introductory Series

JOE N. KORNEGAY, D.V.M., Ph.D.

"Translational lessons learned from a canine model of Duchenne muscular dystrophy", Southeast Veterinary Neurology Meeting, Athens, Georgia, September 25, 2010
"Translational lessons learned from a canine model of Duchenne muscular dystrophy", Chester Hartenstein '45 Memorial Lecture, College of Veterinary Medicine, Cornell University, Ithaca, NY, October 19, 2010
"A canine model of muscle hypertrophy", Johns Hopkins University and Krieger Institute, Baltimore, MD, November 1, 2010
"Translational lessons learned from a canine model of Duchenne muscular dystrophy", NHLBI, Bethesda, MD, March 9, 2011
"A canine model of muscle hypertrophy", Children;s National Medical Center, Washington, DC, March 10, 2011
"Translational lessons learned from a canine model of Duchenne muscular dystrophy", One Health Exchange Series North Carolina Biotechnology Center, May 19, 2011
"Translational lessons learned from a canine model of Duchenne muscular dystrophy", American College of Veterinary Internal Medicine, Denver, Colorado, June 15, 2011

NOBUYO MAEDA, Ph.D.

1st International Diabetes and Obesity Forum, Athens, Greece, Oct 21, 2010
Minisymposium on Lipids, Wake Forest University, April 11, 2011

CHRISTOPHER R. McCUDDEN, Ph.D.

Training and Competency Assessment of Laboratory Professionals in the USA. Journee Internationales de Biologie, CNIT La Defense, Paris, France, November 2010
Discussion Panel Member "Meeting the Needs of Young Laboratorians". Journee Internationales de Biologie, Paris, France, November 2010
Clinical Endocrinology for Laboratory Professionals. North Carolina Society for Clinical Laboratory Science (NCSCLS) Fall Focus 2010, Wake Tech, Raleigh, NC
Serum Protein Electrophoresis: New Therapies, New Challenges. Department of Pathology and Laboratory, The Ottawa Hospital, Ottawa ON, Canada, October 2010

MELISSA B. MILLER, Ph.D.

Eastern Pennsylvania Branch of the American Society for Microbiology, 40th Annual Symposium, "New Molecular Approaches to Identify 21st Century Microbes Directly from Patient Specimens," Philadelphia, PA, November 2010
50th Interscience Conference on Antimicrobial Agents and Chemotherapy, "Best Practices in the Laboratory Diagnosis of Neisseria gonarrhoeae and Chlamydia trachomatis," Interactive Symposium, Boston, MA, September 2010
Southwestern Association of Clinical Microbiology 29th Annual Meeting, "Challenging Cases in Clinical Microbiology," San Antonio, TX, September 2010
International Association of Forensic Nurses 5th Annual Educational Retreat, "Sexually Transmitted Infections: Current Trends," Atlantic Beach, NC, August 2010

Memorial Sloan-Kettering Cancer Center, Infectious Disease Seminar, "Clinical Microbiology in the 21st Century," New York, NY, July 2010
11th Annual North Carolina Tuberculosis Symposium, "Molecular Tuberculosis Diagnostics," Durham, NC, March 18, 2011.
27th Annual Clinical Virology Symposium, "Routine implementation of respiratory viral panels," Daytona Beach, FL, May 9, 2011.
American Society for Microbiology, 111th General Meeting, Core Curriculum, "Best practices in the laboratory diagnosis of viral respiratory tract infections," New Orleans, LA, May 23, 2011.
Association for Professionals in Infection Control and Epidemiology, 38th Annual Educational Conference and International Meeting, "Molecular Microbiology: Uses and Pitfalls," Baltimore, MD, June 27, 2011.
Infectious Disease Grand Rounds (co-presented with John Schmitz and Peter Gilligan), "What's new in the Clinical Microbiology-Immunology Laboratories," June 24, 2011.

VOLKER R. NICKELEIT, M.D.

International Academy of Pathology (XXVII International Congress): "Viral Infections and the Kidney". Sao Paulo, Brazil, October 2010
Update on Polymavirus Nephropathy: Astelas Pharmaceutical Research Advisory Group Meeting, December 2010
11th Banff Conference on Allograft Pathology: "Polyomavirusnephropathy - Banff consensus classification." June 2011, Paris, France - [invited guest lecturer]

Course on *The Practice of Nephropathology* (Nephropathologiekurs Volhard-Fahr), lecturer on 'Transplant Pathology', Mannheim Germany, April 2011

YARA A. PARK, M.D.

Invited Lecturer, Transfusion Support for Bone Marrow Transplant Patients, University of North Carolina Hospitals, Department of Medicine, Hematology/Oncology Fellows, 2011

KATHLEEN W. RAO, Ph.D.

Analysis and Clinical Validation: A Laboratory Perspective, Oversight of Clinical Cytogenetic Array Technologies: An Educational Workshop (ACMG); Bethesda, MD, July 2010

ARLIN B. ROGERS, D.V.M., Ph.D.

Rogers AB. *Sex, bugs and toxin roles in liver cancer*. Liver Workshop: Hepatic Fibrosis and Hepatocellular Cancer: Inevitable Consequences of Chronic Liver Injury; ASIP, Experimental Biology 2011; Washington, DC, Apr 2011 (invited).

Rogers AB. *The influence of gut microbes on extraintestinal cancers*. Workshop: Health Consequences from Xenobiotic - Gut Microbiome - Host Interactions; Michigan State University Superfund Research Program, National Institute of Environmental Health Sciences; Research Triangle Park, NC, Nov 2010 (invited).

Rogers AB. *Liver cancer and gut microbiota*. Workshop: Human Microbiome, HIV Infection and Cancer; AIDS Malignancy Program, Office of HIV AIDS Malignancy, National Cancer Institute, Bethesda, MD, Sep 2010 (invited).

HARSHARAN K. SINGH, M.D.

Nephrology Grand Rounds: Haufen are novel urinary biomarkers of Polyomavirus Nephropathy, December 2010

OLIVER SMITHIES, Ph.D.

Animal Models of Diabetic Complications Consortium (NIH/AMDCC) Meeting, Baltimore, Maryland, August 5, 2010
Marshall Forum on Transatlantic Affairs, Keynote Address, Raleigh, NC, "On Being a Scientist", September 18, 2010
Dinner of Champions, Keynote Address, An Annual Celebration of the Health and Life Sciences Benefiting the National Multiple Sclerosis Society, Umstead Hotel & Spa, Raleigh, NC, September 23, 2010
UNC Science Expo, Keynote Lecture, The Life and Work of a Nobel Prize Winner, September 25, 2010
University of Kentucky, Lexington, Kentucky, College of Pharmacy Research Day, Symposium on Drug Discovery and Development, "60 Years of Science", October 15, 2010
BRFAA Institute, Athens, Greece, "On Being a Scientist for 60 Years", October 22, 2010
BBC Radio for Moments of Genius, Telephone Interview, November 8, 2010
Keynote address at the Eighth Globalization of Pharmaceutics Education Network (GPEN) hosted by UNC Eshelman School of Pharmacy, "On Being a Scientist for 60 Years", November 10, 2010
Morehead Event, Jupiter Ball, November 19, 2010
MD/PhD Lecture, December 13, 2010
Interview with D.G. Martin on "Who's Talking" on WCHL, February 8, 2011
Washington University in St. Louis, MO, Paul E. Lacy Lecture, "On Being a Scientist for 60 Years", February 21, 2011
Interview for Carolina Week, UNC-CH, on how mice are used in biomedical research, March 4, 2011
Oliver Smithies Nobel Symposium with guest lecturers Drs. Thomas Steitz and Joan Steitz, UNC-CH, March 7-9, 2011
HHMI Alumni Event, Keynote Lecture, "60 Years as a Bench Scientist", Museum of Life and Science, Durham, NC, March 22, 2011
UNC School of Medicine, Leadership in Community Services, "On Being a Scientist for 60 Years", March 29, 2011
UNC Graduate Student Recognition Event Lecture, UNC-CH, April 6, 2011
Cell and Developmental Biology Departmental Seminar Series, UNC-CH, "On Being a Scientist for 60 Years", April 13, 2011
Interview/Video about the UNC Med School Admissions Office, April 20, 2011

Investigators' Appreciation Event, Keynote Lecture, North Carolina Central University, Durham, NC, April 29, 2011
University of Louisville, College of Pharmacy Research Day, Louisville, Kentucky, "Some Thoughts on the Kidney", May 12, 2011
University of Louisville, College of Pharmacy Research Day, Louisville, Kentucky, "On Being a Scientist for 60 Years", May 13, 2011
61st International Meeting of Nobel Laureates, Lindau, Germany, "A Toolmaker's Story", June 27, 2011
625th Anniversary of the Ruprecht-Karls University Meeting, Heidelberg, Germany, Special Lecture

LEIGH B. THORNE, M.D.

Surgical Oncology Conference, East Carolina University, September 2010

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

Trainee Luncheon Speaker, Association Molecular Pathology Meeting, November 2010

CYRUS VAZIRI, Ph.D.

EMBO workshop on DNA Repair, Oxford, United Kingdom, 2012
Grand Rounds Speaker, Moffitt Cancer Center, Tampa, FL, 2010

KAREN E. WECK, M.D.

"The Multidisciplinary Approach to Personized Medicine: Fitting together the pieces of the 'P-4' Puzzle". Conference on Personalized Medicine in the 21st Century, RTI International and the North Carolina Biotechnology Center, Durham, NC, June 2010
"CYP2D6 Genotyping to Guide use of Taxixifen in Breast Cancer", Symposium on Pharmacogenomics in Clinical Proactice, American Association of Clinical Chemistry Annual Meeting, Anaheim, CA, July 2010
"Case Studies in Molecular Genetics: Cystic Fibrosis Mutation Analysis and BRCA ½ Analysis", Association if Molecular Pathology Outreach Course, San Jose, CA November 2010

BERNARD E.WEISSMAN, Ph.D.

October 2010- Invited Speaker, 3rd International Conference of Tumor Targeted Therapy and Asia-Pacific Forum on Stem Cell, Xi'an, China.
Invited Speaker- NIH SCORE SC1 and SC2 PI Meeting, December 2010

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

"Muscle Ring Finger 1 (MuRF1)'s regulation of Cardiac Hypertrophy, Energy Metabolism, and Mitrchondrial Function". University of Washington School of Medicine, Special Seminar, Seattle, Washington, October 2010

"The Use of Animal Models of Duchenne Muscular Dystrophy Muscular Dystrophy Cardiomyopathy to Test Novel Experimental Therapies." Seattle Children's Research Institute, Seattle, WA, October 2010
"The Role of Ubiqyitin Ligase MuRF1 in Regulating Cardiac Mass and PPARα Mediated /energy Metabolism". University of Nebraska Medical Center, Omaha Veteran's Affairs Medical Center, Omaha, NE, October 2010
"Regulations of Cardiac Hypertrophy and Metabolism by the Ubiquitin Ligase MuRF1." University of South Dakota, Graduate Student Association Invitation, Vermillion, SD, October 2010
"Regulation of Cardiac Hypertrophy and Metabolism by MuRF-family of Ubiquitin Ligases". University of Calgary, Department of Physiology & Libin Cardiovascular Institute Seminar, Calgary, Alberta, Canada, August 2010

RUTH E. WINECKER, Ph.D.

Getting Good Data for Suspected Drug Overdose Cases– Helpful Hints. Presented at Death Investigation Seminar Fitting the Pieces to the Puzzle. Hosted by the Brody School of Medicine at East Carolina University. Greenville, NC, December 1, 1010.

ALISA S. WOLBERG, Ph.D.

TG Measurement and Fibrin Formation, 1st Maastricht Summer School on Thrombin Generation and its Application, Maastricht, Netherlands, June, 2010
Plasma and Cellular Influences on Fibrin Structure and Stability, Gordon Research Conference on Hemostasis, Waterville Valley, NH, July 27, 1010
Cellular and Soluble Contributions to Clot Formation, Structure, and Stability, 13th Biannual Midwest Platelet Conference, Chapel Hill, NC, October 15, 2010
Clot Formation, Structure and Stability: Virchow's Triad Revisited, Hemostasis, Bleeding and Therapeutic Approaches in 2010: New Therapies and New Paradigms IV, Atlanta, GA, December 4, 2010

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

Review of Liver Pathology, Pathology and Imaging Course, American College of Gastrienterology, San Antonio, TX, October 2010

HONG XIAO, M.D.

Invited lecture titled "The Advances in Pathogenesis and Treatment of ANCA Disease" 9th National Conference on Geriatric Nephrology, 9-13 June 2011, Wuhan, China.

XIANWEN YI, M.D., Ph.D.

Type 2 Diabetes, Insulin Resistance and Metabolic Dysfunction (J1)/Obesity (J2), Keystone Symposium, A Joint Plenary Session, Jan., 2011:

MAIMOONA B. ZARIWALA, Ph.D.

Zariwala M. Whole-Exome Sequencing to Identify Genetic Causes of Primary Ciliary Dyskinesia., International Conference on Inherited Disorders of Muco-Ciliary Clearance (Focus on PCD), May 20-22, 2011, Münster, Germany.

Zariwala M. Use of Whole-Exome Sequencing to Define Genetic Causes of Primary Ciliary Dyskinesia. Gordon Research Conference: Cilia, Mucus & Mucociliary Interaction, Feb. 13-18, 2011, Ventura, CA, USA.

Zariwala M: The emerging genetics of primary ciliary dyskinesia. Primary Ciliary Dyskinesia and Overlapping Syndrome, Sept. 30-Oct. 1, 2010, St. Louis, MO, USA.

DIRECTOR OF CONTINUING EDUCATION COURSES

ARABA N. AFENYI-ANNAN, M.D., Ph.D.

History of Blood Banking, AABB Annual Meeting, Baltimore, MD. October 2010
Immunopathology of Sickle Cell Disease, AABB Annual Meeting, Baltimore, MD. October 2010

WILLIAM B. COLEMAN, Ph.D.

Experimental Biology 2011, April 2011, Washington D.C., Breast Cancer Workshop: Breast Cancer Stem Cells. Workshop Organizers and Session Chairs: A.G. Rivenbark and W.B. Coleman.

CHERIE H. DUNPHY, M.D.

Co-Director, Society of Hematopathology USCAP Symposium, March 2011

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

"Challenges In Specimen Quality and Handling", NCI Workshop on Criteria for Use of 'Omics-Based Predictors in Clinical Trials, Bethesda, MD, June 23-24, 2011

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

UNC CME course – Pulmonary Pathology, 4/30/11

PETER H. GILLIGAN, Ph.D.

A Case-Based Review of GI Infections, SEACM, Charlotte, NC, November 2010

Understanding CF Microbiology American Society for Microbiology New Orleans May 2011
Beyond *Enterobactericeae*: Isolation, Identification, Antimicrobial Susceptibility, and Clinical Significance of Glucose Non-fermenters and Fastidious Gram Negative Bacilli, NACMID Springfield MA June 2011

CATHERINE HAMMETT-STABLER, Ph.D.

Contemporary Issues in Clinical TDM/Tox. Chicago, IL. April 2011. Conference chair and moderator.

J. CHARLES JENNETTE, M.D.

Presiding Officer and Program Committee Chair, Association of Pathology Chairs Annual Meeting, Pathology Practice and Management: Sharing Successes, Avoiding Failures and Preparing for the Future", Seattle, WA, July 2010

Co-Organizer: 15th International Vasculitis and ANCA Workshop, Chapel Hill, NC, May 15-18, 2011
Co-Organizer: Chapel Hill Consensus Conference on Vasculitis Nomenclature, Chapel Hill, NC, May 14, 2011

CHRISTOPHER McCUDDEN, Ph.D.

Preparation of Manuscripts for Publication: Improving Your Chances for Success. Moderator. AACC Annual Meeting, Anaheim, CA, July 2010

MELISSA B. MILLER, Ph.D.

Southwestern Association of Clincal Microbiology 29th Annual Meeting, "Sequence-based Identifications in Microbiology," San Antonio, TX, September 2010

VOLKER R. NICKELEIT, M.D.

Short Course #45, United States and Canadian Academy of Pathology (USCAP), continuous education series: "Diagnosing Tubulointerstitial and Vascular Diseases of the Kidney: a case based algorithmic approach using virtual microscopy", San Antonio, TX (March 2011); with HK Singh

CME: Nephropath Laboratory Staff, August 2010 & November 2010

HARSHARAN K. SINGH, M.D.

Co-Director - United States and Canadian Academy of Pathology (USCAP), Short Course entitles: "Diagnosing Tubulointerstitial and Vascular Diseases of the Kidney: a case based algorithmic approach using virtual microscopy", USCAP Annual Meeting, San Antonio, TX, February 26 – March 4, 2011

KAREN WECK-TAYLOR, M.D.

Course Director, "Current Applications of Molecular Pathology: Real Time Updates and Case Studies," Association of Molecular Pathology Outreach Course (1 Day Course), San Jose, CA, November 2010

ALISA S. WOLBERG, Ph.D.

Co-Chair: 6th Symposium on Hemostasis with Special Focus on Tissue Factor, Factor VIIa, and Tissue Factor Pathway Inhibitor: Hemostasis and Beyond, May 3-5, 2012

SERVICE ON UNC AND UNCH COMMITTEE

ROBERT C. BAGNELL, Ph.D.

Member, Microscopy Core Labs Sub-Committee

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

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

THOMAS W. BOULDIN, M.D.

Member, Graduate Medical Education Committee
Member, North Carolina Cancer Hospital Executive Committee
Member, Full Professors Appointment, Promotion and Tenure Committee
Member, Health Safety Advisory Committee
Chair, Full Professors Appointment, Promotion and Tenure Committee

ARLENE S. BRIDGES, Ph.D.

Chair, UNC Health Sciences Library Advisory Committee
Member, University Library System Advisory Committee
Member, UNC TraCS Core Directors Committee
Member, Committee to Develop HR Tracks for Core Facility Personnel

JOHN F. CHAPMAN, Dr. P.H.

Chair, UNCH Point of Care Committee
Hospital Infection Control Committee, UNC Health Care
Anti-infective Subcommittee of the Pharmacy & Therapeutics Committee and the Department of Hospital Epidemiology, UNC Health Care

FRANK C. CHURCH, Ph.D.

Member, Morehead-Cain Foundation, Central Selection Committee
Member, University Research Council Grants Review Panel
Member, 2nd year Course Directors Committee (CC2)
Member, Medical School Student Promotions Committee (SPC)
Member, Medical School Admissions Committee
Member, Academy of Distinguished Teaching Scholars, UNC-CH
Member, Executive Committee of the Carolina Cardiovascular Biology Center
Fellow, Academy of Educators, UNC-CH School of Medicine

WILLIAM B. COLEMAN, Ph.D.

Member, Biological and Biomedical Sciences Program Executive Committee, July 2008-Present
Member, Department of Pathology and Laboratory Medicine Research Advisory Committee

MARILA CORDIERO-STONE, Ph.D.

Member, Executive Committee, Biological and Biomedical Science Program
Member, Mentoring Committee
Chair, Promotion/Tenure Review Committee
Executive Committee, Curriculum in Toxicology

GEORGETTE A. DENT, M.D.

Member, Student Promotions Committee
Member, Curriculum Committee
Member, 1st Year Course Directors Committee
Member, 2nd Year Directors Committee
3rd & 4th Course Directors Committee
Assistant Dean for Admission Search Committee
UNC SOM LCME Committees and Working Groups
Chair, UNCH Hospital Infection Committee
Chair, Associate Vice Chancellor of Student Affairs Search Committee

CHERIE H. DUNPHY, M.D.

Member, UNC Fixed Term Promotions Committee

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

Member, UNC Committee for the Communication of Genetic Research Results (CCGR)

ROSANN A. FARBER, Ph.D.

Member, Faculty Hearings Committee

Member, Faculty Advisory Committee on Postdoctoral Scholars
Member, Department of Genetics Advisory Committee

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

Member, Institutional Animal Care and Use Committee

PETER H. GILLIGAN, Ph.D.

Chair, IRB, IACUC, SOM Admissions Committee

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

Member, SOM Fixed Term Promotions
Member, Search Committee for DLAM Director

KEVIN G. GREENE, M.D.

Member, MS2 GI Block Planning Committee

MARGARET L. GULLEY, M.D.

Member, UNC Clinical Tranlational Science Award, Section Leader
Member, UNCH RAM Lab Advisory Group to UCRF
Member, Executive Director's Advisory Group, Department of Pathology and Laboratory Medicine

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

Member, 2nd Year Curriculum Committee (Medical School)
Member, 4th Year Clinical Capstone Course (Medical School)
Member, Interview MS 2 Students for Ashville Program (Medical)
Member, Assessment Committee (Medical School)
Member, Research in the Medical Curriculum (Medical School)
Member, Dental School Admissions Committee
Member, Dental School 1st Year Teaching Committee
Member, Assessment Revision Committee (Dental School)

CATHERINE A. HAMMETT-STABLER, Ph.D.

Member, School of Medicine 2nd Year Course Directors
Member, Clinical Documentation Committee
Member, CDC Documentation Sub-Committee
Member, LCME Self-Study Committee, Educational Program Sub-Committee
Chair, IRB, IACUC, SOM, Admissions Committee

TRACY HEENAN, D.V.M.

Member, Faculty Council
Member, Division of Laboratory Animal Medicine Director Search
Member, DLAM Advisory Committee
Chair, IACUC Animal Concern Subcommittee
Chair, IACUC/DLAM Leadership Committee
Chair, Vice Chancellor for Research (VCR) Compliance Task Force
Co-Chair, Network of Laboratory Animal Coordinator [NLAC] Steering Committee
Chair, VCR Development Leadership Mentoring Committee

J. CHARLES JENNETTE, M.D.

Member, UNC Health Care System Executive Council
Member, Dean's Advisory Committee of the UNC School of Medicine
Member, UNC Physicians & Associates Board
Member, Medical Staff Executive Committee
Member, Hillsborough Hospital Planning Committee
Member, UNC Physicians & Associates Payor Relations Committee
Co-Chair, SOM Strategic Space Committee

WILLIAM K. KAUFMANN, Ph.D.

Member, Research Advisory Committee, DPLM

JOE N. KORNEGAY, D.V.M., Ph.D.

Member, Institutional Animal Care and Use Committee (IACUC)
Member, Department of Pathology and Laboratory Animal Medicine Grand Rounds Committee
Member, Department of Pathology and Laboratory Animal Medicine Research Advisory Committee
Member, Department of Pathology and Laboratory Animal Medicine Preliminary Exam Committee
Co-Chair, Division of Laboratory Animal Medicine (DLAM), Director Search Committee

SUSAN T. LORD, Ph.D.

Member, Research Advisory Committee
Member, Advisory Board, Program in Cellular and Molecular Biophysics
Member, Association of Professional Women in the Medical School Executive Committee
Member, Graduate Education Advancement Board

CHRISTOPHER P. MACK, Ph.D.

Chair, Dept of Pathology Faculty Assessment

NOBUYO MAEDA, Ph.D.

Member, DLAM Space Committee
Member, Pathology Research Advisory Committee
Member, DLAM Director Search Committee
Chair, DLAM Advisory Committee

SUSAN J. MAYGARDEN, M.D.

Member, GMEC Committee

MELISSA B. MILLER, Ph.D.

Member, Hospital Infection Control Committee, UNC Health Care
Anti-Infective Subcommittee of the Pharmacy & Therapeutics Committee and The Department of Epidemiology, UNC Health Care

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

Member, Lineberger Comprehensive Cancer Center Clinical Genomics
Member, Lineberger Comprehensive Cancer Center Clinincal Informatics

JUDITH N. NIELSEN, D.V.M.

Member, Network of Laboratory Animal Coordinators Steering Committee
Member, Institutional Animal Care and Use Committee
Member, IACUC subcommittee on Pharmaceuticals for Use in Laboratory Animal Research
Ad Hoc, SOM/DLAM Space committee
Member, DLAM Advisory Committee
Member, University-wide Laboratory Animal Strategic Planning/Stakeholder's Committee

YARA A. PARK , M.D.

Member, Pharmaceutical and Therapeutic Committee

KATHLEEN W. RAO, Ph.D.

Member, Curriculum Committee
Member, Block 9 Course Committee
Co-Chair, 2nd Year Curriculum Committee
Co-Chair, Academy of Educators

HOWARD M. REISNER, Ph.D.

Member, Student Promotions Committee
Member, Medical School Admissions Committee
Member, Second Year Course Directors Committee
Member, IT Governance Communications Technology Coordinating Committee
Member, University Hearings Board

ARLIN B. ROGERS, D.V.M., Ph.D.

Member, Molecular and Cellular Pathology Graduate Program
Member, Preliminary Examination Committee

HARSHARAN K. SINGH, M.D.

Member, Hospital Credentials Committee

SCOTT V. SMITH, M.D.

Member, UNCH Pediatrid Timor Board
Member, UNCH Multidisciplinary Thoracic Oncology Tumor Board
Chair, UNC SOM Student Appeals Committee

JOAN M. TAYLOR, Ph.D.

Member, School of Medicine Appointments for Tenure and Promotions Committee
Member, Health Sciences Affairs APT Committee
Member, School of Medicine Conflict of Interest Committee
Member, Carolina Cardiovascular Biology Center, Executive Committee
Member, Integrative Vascular Biology Training Program Admissions Committee
Member, Medical Student Research Grant Evaluation Committee
Member, Animal Models Core Oversight Committee

LEIGH B. THORNE, M.D.

Member, Core Facilities Oversight Committee

RICHARD R. TIDWELL, Ph.D.

Member, Biomedical IRB Board
Member, UNC-CH Research Advisory Council
Member, UNC-CH Aids Clinical Trials Group
Member, UNC-CH Advisory Board for the Centers for Infectious Disease
Chair, Carolina Center for Clinical Drug Development Advisory Board

MICHAEL D. TOPAL, Ph.D.

Chair, UNC Core Facilities Advocacy Committee, 2008-present (monthly)
Chair, UNC Office of Translational Technologies Core Facilities, 2009-present (weekly)
Member, Vice Dean of Research Management Team, 2010-present (weekly)
Member, UNC UCRF Pilot Project Review Committee, 2008-present
Member, UNC RAC (Dean's Research Advisory Committee), 2008-2010
Chair, UNC Proteomics Review Committee, 2008-2010
Chair, UNC Regional Genomics Facility Committee, 2011 (monthly)
Chair, Committee to Establish Fixed-Term Faculty Positions for Core Directors (monthly)

CYRUS VAZIRI, Ph.D.

Member, Pathogenesis Graduate Admissions Committee

BERNARD E. WEISSMAN, Ph.D.

Member, Curriculum in Toxicology Executive Committee
Member, Pathology and Laboratory Medicine Graduate Education Committee
Chair, Animal Studies Core Facility Advisory Committee

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

Member, UNCH POC Committee
Member, UNCH Transfusion Committee
Member, UNCH Quality Council
Member, UNCHMSEC

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

Member, Institutional Animal Care and Use Committee (IACUC)

ALISA S. WOLBERG, Ph.D.
Member, UNC Thrombosis and Hemostasis Program Seminar Series
Member, Biological/Biomedical Sciences Program (BBSP) Pathogenesis Admissions Committee
Member, UNC School of Medicine Strategic Planning Task Force #7
Member, Liaison Committee on Medical Education (LCME) Steering Committee

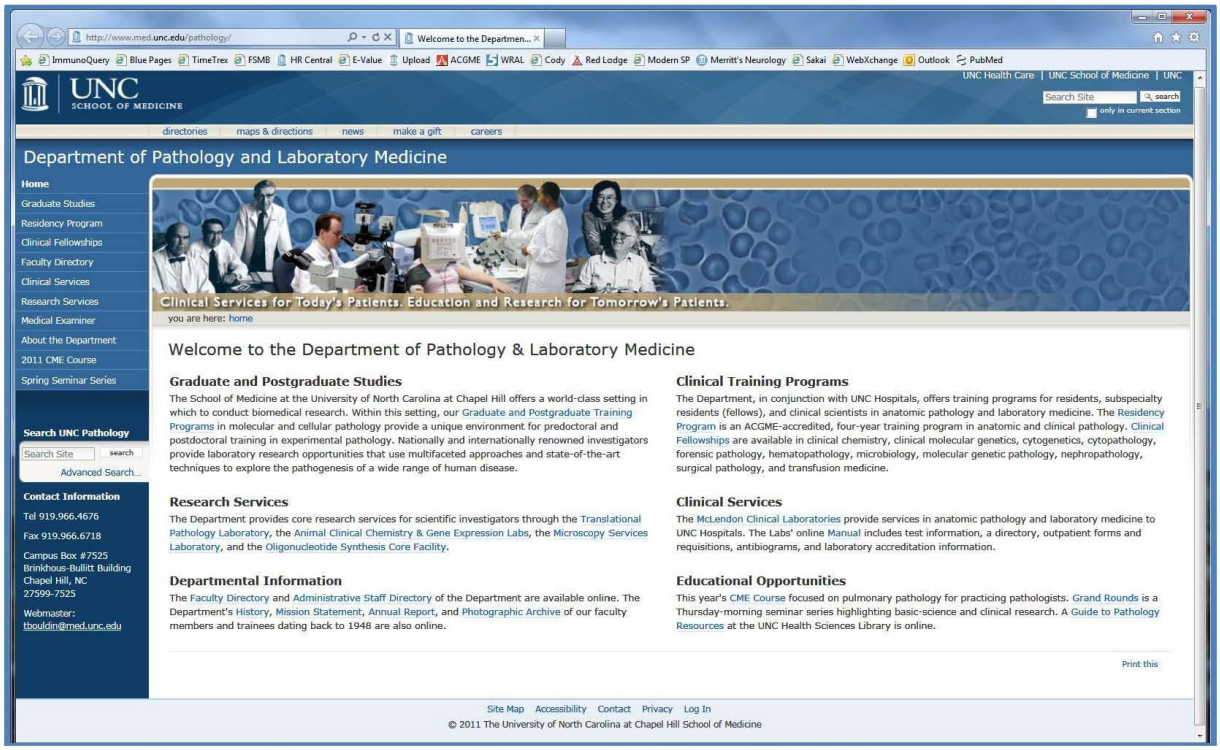
DEPARTMENTAL FACULTY HANDBOOK

The Department of Pathology and Laboratory Medicine has established an online faculty handbook. The handbook is updated regularly as new information becomes available. The idea for this handbook 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 Faculty Handbook provides our faculty members with detailed and up-to-date information on such topics as faculty appointments, promotion policies, School of Medicine policies, purchasing, grant proposals, human resources, equipment available within the Department, and core research services available within the Department, School of Medicine, and University. The handbook also provides an introduction and overview of the faculty orientation process. The Department of Pathology and Laboratory Medicine's Faculty Handbook is accessible though the Departmental web site.

DEPARTMENTAL WEB SITE

The Departmental web site (http://www.pathology.unc.edu) 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 the residency training program, the thirteen fellowship and research symposia.

The web site is maintained by Dr. Thomas Bouldin. In June, 2010, the web site was moved to a server maintained by the UNC School of Medicine. Web pages for the graduate program are authored by Dr. William Coleman and Dr. Jonathon Homeister. Web pages for the residency and fellowship training programs and for the faculty are maintained by Dr. Bouldin. Individual faculty members now have the ability to construct and edit their own biographical sketches and laboratory web pages on the Departmental web site.



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School of Medicine
University of North Carolina at Chapel Hill
July 1, 2010 – June 30, 2011

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CHERIE H. DUNPHY, M.D.

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

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

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