DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE (GRAD)

Contact Information
Department of Pathology and Laboratory Medicine
http://www.med.unc.edu/pathology

J. CHARLES JENNETTE, Chair
Herbert C. Whinna, Vice Chair for Clinical Services and Director of McLendon Clinical Laboratories
Monte S. Willis, Vice Chair for Academic Affairs
Joan M. Taylor, Vice Chair for Research

Graduate work in the Department of Pathology and Laboratory Medicine is offered through the Molecular and Cellular Pathology program to those interested in acquiring more extensive knowledge of disease pathogenesis. Major emphasis is given to the investigation of molecular and cellular mechanisms responsible for disease initiation, progression, and treatment. Students are given the opportunity to undertake candidacy for the doctor of philosophy degree. Participation in research activities leading to an original dissertation is required of all advanced degree candidates.

Prospective candidates must hold a bachelor’s degree from an accredited college or university.

The department is located in the Brinkhous-Bullitt Building, and offers well-equipped laboratories for research and advanced work in pathology.

Please visit the graduate program’s Web site (http://www.med.unc.edu/pathology/mcp) for more graduate program information.

Professors

Dwight A. Bellinger (89), Laboratory Animal Medicine, Comparative Pathology
Frank C. Church (107), Thrombosis and Hemostasis, Macromolecular Protein Structure-Function, Molecular Pathology
William B. Coleman (139), Breast Cancer Epigenetics, Biology of Liver Stem Cells, Hepatocarcinogenesis, Cancer Molecular Diagnostics
Leslie G. Dodd, Surgical Pathology Cytopathology
Ronald J. Falk (172), Glomerular Disease, Lupus, Vasculitis, Dialysis
Rosann A. Farber (118), Genetic Instability in Cancer, Human Molecular Genetics, Microsatellite Instability
William K. Funkhouser Jr. (152), Surgical Pathology, Molecular Pathology, Immunology
Peter H. Gilligan (174), Diagnostic Bacteriology, Pulmonary Disease in Cystic Fibrosis, Toxin Mediated Diarrheal Disease
Margaret L. Gulley (196), Molecular Diagnostics, Oncology, Epstein-Barr Virus
Catherine A. Hammett-Stabler (171), Clinical Chemistry, Toxicology, Clinical Pharmacology
J. Charles Jennette (61), Renal Pathology, Immunopathology
David G. Kaufman (34), Human Origins of DNA Replication, Interactions between Human Endometrial Epithelial and Stromal Cells
Nigel Mackman (239), Thrombosis and Hemostasis
Nobuyo Maeda (116), Molecular Genetics of Atherosclerosis, Transgenic Laboratory Animals as Model Systems, Molecular Evolution

Susan J. Maygarden (131), General Surgical Pathology, Cytopathology, Prostate Carcinogenesis
Melissa B. Miller (211), Molecular Diagnostics, Antimicrobial Resistance, Molecular Epidemiology of MRSA
Timothy C. Nichols (156), General Cardiology, Cardiac Catheterization, Per-Cutaneous Transluminal Coronary Angioplasty
Volker Nickeleit (190), Renal Pathology, Fibroconnectins
Charles M. Perou (209), Breast Cancer, Genomics, Microarrays, Tumor Classification, Drug Resistance
Howard M. Reisner (38), Immunogenetics of Blood Coagulation, Imnunochemistry
John L. Schmitz (168), Flow Cytometry, HIV, Diagnostic Immunology, Sexually Transmitted Diseases
Harsharan K. Singh (186), Cytopathology, Fine Needle Aspiration Biopsy, Renal Pathology
Oliver Smithies (115), Molecular Pathology, Genetically Engineered Animal Models of Human Disease, Targeted Mutagenesis
Darrel W. Stafford (127), Molecular Biology
James A. Swenberg (66), Chemical Carcinogenesis, Toxicology, Mass Spectroscopy, DNA Damage and Repair, Endogenous DNA Damage
Joan M. Taylor (187), Adhesion Signaling, Cardiovascular Disease
Michael D. Topal (41), Genomic Instability and Disease
Cyrus Vaziri (249), Regulation of DNA Replication, S-Phase Checkpoints, and Post-Replication DNA Repair on Mammalian Cells
Bernard E. Weissman (119), Tumor Suppressor Genes
Elizabeth M. Wilson (235), Steroid Hormone Regulation of Gene Expression
John T. Woosley (133), Dermatopathology, Hepatobiliary and Gastrointestinal Pathology, Histopathologic Assessment of Prognosis

Associate Professors

Georgette A. Dent (117), Hematopathology, Medical Education
George Fedoriw (242), Hematopathology; Applications of Flow Cytometry
Mehmet Kesimer, Mucin Glycobiology and Airway Epithelial Pathobiology
Christopher P. Mack (188), Transcriptional Regulation in the Cardiovascular System, Smooth Muscle Cell Biology
C. Ryan Miller (231), Neuropathology, Genetics of Gliomagenesis and Experimental Therapeutics
Young E. Whang (236), Androgen Receptor, Prostate Cancer
David C. Williams Jr., Hematopathology, NMR Spectrophotometry and Structural Biology
Monte S. Willis (223), Molecular Mechanisms of Cardiac Disease and Ubiquitin-Proteasome Biology
Alisa S. Wolberg (198), Cellular and Molecular Mechanisms in Hemostasis and Thrombosis

Assistant Professors

Johann D. Hertel, Cytopathology
Nicole L. Korpi-Steiner, Clinical Chemistry
Jiandong Liu, Cardiovascular Biology
Marshall A. Mazepa, Transfusion Medicine
Li Qian, Cardiovascular and Stem Cell Biology
Jay S. Raval, Transfusion Medicine
Eric T. Weimer, Histocompatibility, Flow Cytometry and Clinical Microbiology/Immunology
Scott Williams, Stem Cell and Developmental Biology
Qing Zhang, Cancer Cell Biology
Clinical Professors
Thomas W. Bouldin (72), Neuropathology, Ocular Pathology, Neurotoxicology
Pamela M. Groben (157), Dermatopathology
Kathleen A. Kaiser-Rogers (212), Clinical Cytogenetics
Thomas J. Lawton, Breast Pathology, Gynecological Pathology
Deborah L. Radisch (213), Forensic Pathology
Scott V. Smith (164), Surgical Pathology, Cardiovascular Pathology, Pediatric Pathology
Karen E. Weck (210), Molecular Genetic Pathology

Clinical Associate Professors
Jessica K. Booker (199), Genetics, Breast Cancer
Susan C. Hadler (194), Oral Diagnosis
Jonathan W. Homeister (226), Molecular Mechanisms of Leukocyte Trafficking and Homing, Inflammatory Vascular Disease, Thrombosis and Hemostasis, Cardiovascular Pathology, Autopsy Pathology
Daniel J. Kenan, Nephropathology
Ruth A. Lininger (166), Surgical Pathology, Breast Pathology
Eizaburo Sasatomi, Gastro Intestinal and Liver Pathology
Lori R. Scanga (256), Surgical Pathology, Cytopathology
Leigh B. Thorne (207), Molecular Pathology, Autopsy Pathology
Dimitri G. Trembath (250), Surgical Pathology and Neuropathology
Herbert C. Whinna (167), Mechanisms of Hemostasis and Thrombosis, Biochemistry and Vascular Biology of Blood Coagulation, Protein Structure-Function

Clinical Assistants
Claudia M. Brady (230), Surgical Pathology
Kevin Greene (255), Surgical Pathology of the Liver and Gastrointestinal Tract
Stephanie P. Mathews (262), Hematopathology
Vincent J. Moylan Jr. (218), Cardiac Pathology and Autopsy Pathology
Siobhan M. O’Connor (257), Breast Pathology, GYN Pathology, Cytopathology
Nirali M. Patel, Molecular Pathology Anatomic and Clinical Pathology
Marian Rollins-Raval, Hematopathology, Flow Cytometry and Coagulation
Ruth E. Winecker (165), Forensic Pathology

Clinical Instructors
Steve Holmes (254), Examination of Simple and Complex Specimens, Surgical Pathology
April E. Kemper (259), Autopsy Pathology, Surgical Pathology
Tracie W. Massey (247), Tissue Procurement, Surgical Pathology
Andre Phelan, Pathologists’ Assistant: Surgical Pathology Training for Residents and Students

Research Professors
Virginia L. Godfrey (148), Veterinary Pathology, Animal Models of Genetic Disease, Autoimmunity
Hyung-Suk Kim (137), Gene Targeting and Animal Models for Human Diseases, Hypertension and Hereditary Cerebral Hemorrhage with Amyloidosis and Molecular Evolution
Judith N. Nielsen (222), Animal Health Maintenance, Diagnosis and Eradication

Research Associate Professors
Brian Cooley, Thrombosis, Vascular Injury, Microsurgery

Clinical Professors
David A. Eberhard (253), Pathology, Scientific and Business Support for Clinical Trials
Craig A. Fletcher (251), Vascular Biology
Tracy M. Heenan (163), Laboratory, Exotic- and Companion-Animal Medicine
Peiqi Hu (261), Immune-Mediated Kidney Disease
Masao Kakoki (224), Prevention of Cardiovascular Diseases
Steven Shipley, Laboratory animal medicine; infectious disease
Julia W. Whitaker (227), Laboratory Animal Medicine
Hong Xiao (215), Immune-Mediated Glomerular Disease and Vasculitis
Maimoon A. Zariwala (205), Genetic Analysis of Patients with Primary Ciliary Dyskinesia (PCD)

Research Assistant Professors
Silvio Antoniak, Protease-Activated Receptors in Cardiovascular Diseases, Myocarditis, and Heart Failure Animal Models
Pablo Ariel, Director of the Microscopy Services Laboratory
J. Todd Auman, Pharmacogenomics, Cancer Pharmacology
Zhaokang Cheng, Regulation of Cell Death and Survival in the Heart
Feng Li, Cardiovascular Biology
Stephanie A. Montgomery, Comparative Pathology and Animal Histopathology
Yang Yang, DNA Damage and Repair

Adjunct Professors
Mark E. Brecher (128), Blood Component Processing and Storage, Transfusion Strategies, Transfusion Transmitted Diseases
Cherie H. Dunphy (189), Hematopathology
H. Michael Jones (241), Medical Education at Medical Student and Resident Level, Medical History, Autopsy Pathology, Research Support
Joe N. Kornegay (232), Duchenne Muscular Dystrophy, Canine Model, Translational Studies, Muscle Hypertrophy
Chad A. Livasy (193), Surgical Pathology
Richard S. Paules (144), Oncogenes Tumor Suppressor Genes and Cell Cycle Control in Neoplastic Transformation of Mammalian Cells
Gary J. Smith (85), Prostate Cancer, Cancer Cell-Tissue Microenvironmental Interaction, Angiogenesis

Adjunct Associate Professors
Gary A. Boorman (102), Toxicological Pathology, Myelotoxicology
Jeffrey I. Everett (180), Experimental Pulmonary and Toxicology Pathology
Thomas H. Fischer (169), Gene Therapy, Blood Coagulation, Atherosclerosis
Tara C. Rubinas (229), Gastrointestinal Pathology and Hepatopathology
Nobuyuki Takahashi (184), Animal Models of Hypertension, Pre-eclampsia, Diabetic Nephropathy and Obesity

Adjunct Assistant Professors
Araba N. Afenyi-Annan (220), Transfusion Medicine
Christopher W. Gregory (201), Prostate Cancer, Androgen Receptor
John P. Hunt (243), Surgical Pathology and Hematopathology

Professors Emeriti
Nadia Malouf Anderson
C. Robert Bagnell Jr.
Stuart Bentley
Debra A. Budwit
John D. Butts
Requisites: lecture hours (three credits) with a complementary two-and-a-half-hour diseases of major organ systems. A follow-up to PATH 713/714L. Three Credits.

Requisites: major disease mechanisms.

Requisites: Pre- or A graduate-level laboratory course on basic mechanisms of systemic pathology for information. May be repeated.

Requisites: Requisite, BIOL 205; Permission of the instructor for students lacking the prerequisite.

Same as: BIOL 426.

PATH 462. Experimental Pathology. 1-9 Credits.

Hours, credits, and instructor to be arranged on an individual basis. Hands-on research experience in a predetermined instructor's laboratory. Students learn and apply specific techniques and participate in investigations of molecular mechanisms responsible for disease processes (pathobiology). Contact the director of graduate studies in pathology for information. May be repeated.

PATH 464. Light Microscopy. 3 Credits.

Permission of the instructor. Course focuses on practical fundamentals of light microscopy including optics, contrast mechanisms, fluorescence, laser scanning confocal microscopy, photography, and digital imaging.

Graduate-level Courses

PATH 713. Molecular and Cellular Pathophysiological Basis of Disease: Mechanisms of Disease. 3 Credits.

A graduate course on cell injury and pathogenesis of disease with emphasis on basic mechanisms at the molecular, cellular, and organismal levels. Three lecture hours with a complementary two-and-a-half-hour laboratory each week.

Requisites: Co-requisite, PATH 714L.

PATH 714L. Molecular and Cellular Pathophysiological Basis of Disease: Laboratory I. 2 Credits.

Pre- or A graduate-level laboratory course on basic mechanisms of disease pathogenesis, emphasizing cell and tissue-based examples of major disease mechanisms.

Requisites: co-requisite, PATH 713.

PATH 715. Molecular and Cellular Pathophysiological Basis of Disease: Systemic Pathology. 3 Credits.

A graduate-level laboratory course on systemic pathology, emphasizing diseases of major organ systems. A follow-up to PATH 713/714L. Three lecture hours (three credits) with a complementary two-and-a-half-hour laboratory (two credits) each week.

Requisites: Co-requisite, PATH 716L.

PATH 716L. Molecular and Cellular Pathophysiological Basis of Disease: Laboratory II. 2 Credits.

Pre- or A graduate-level laboratory course on mechanisms of systemic disease pathogenesis, emphasizing cell and tissue-based examples of diseases of the major organ systems.

Requisites: co-requisite, PATH 715.

PATH 723. Practical Considerations for Translational Research. 2 Credits.

Permission of the instructor. A multi-disciplinary course providing students principles involved in translating basic science into clinically applicable diagnostics and therapies to improve human disease outcomes. The course is focused on bioinformatics, bioethics, trial design, FDA approval, and commercialization of laboratory diagnostics.

PATH 725. Cancer Pathobiology. 3 Credits.

Permission of the instructor. This course examines pathobiological features of cancer. An interdisciplinary approach draws from epidemiology, genetics, molecular biology, and clinical medicine to investigate cancer etiology, pathogenesis, prevention, and treatment.

PATH 726. Human Environmental Disease. 1-3 Credits.

This course will study human disease processes that are induced or exacerbated by our environment. Environmental disease stressors include solar radiation, air and water pollution, bioreactive substances in foods, pesticides, metals, dusts, particles, and allergens. Lectures will emphasize epidemiology, mechanisms of toxicity, and human disease pathogenesis.

PATH 766. Current Topics in Cardiovascular Biology. 3 Credits.

Permission of the instructor. Second-year graduate students only. This manuscript-based course will emphasize recent advances in heart and blood vessel development, the molecular mechanisms that regulate cardiovascular cell function, and current methodologies in the cardiovascular field. It will be team taught by members of UNC's McAllister Heart Institute.

PATH 767. Molecular and Cellular Biology of Cardiovascular Diseases. 3 Credits.

Second year graduate students or permission of the instructor. Course reviews the molecular, cellular, and organismal pathogenesis of cardiovascular disease. It is team-taught by faculty with topic expertise and stresses primary literature and current methodologies. May be taken as a companion to PATH766 or on its own.

PATH 792. Seminar in Carcinogenesis. 2 Credits.

Permission of the instructor. Survey of classical and current literature on selected critical issues in carcinogenesis. Students discuss experimental methods and observations as well as theories and generalizations. Two seminar hours a week.

Same as: TOXC 792.

PATH 801. Cell Cycle Regulation and Cancer. 3 Credits.

This journal club-style discussion course will focus on molecular events that regulate normal cell cycle progression, and on how deregulation of the cell cycle leads to cancer. Classes will follow the development of the cell cycle field chronologically, learning how current concepts and paradigms have evolved through scientific inquiry.

Same as: GNET 801.

PATH 890. Special Topics in Pathology. 1-3 Credits.

A study in special fields under the direction of the faculty. Offered as needed for presenting material not normally available.

Repeat rules: May be repeated for credit. 6 total credits. 3 total completions.
PATH 900. Research in Pathology. 2-12 Credits.
Permission of the department. This is a research course in which advanced students in pathology carry on investigations on mechanisms of disease. Six or more laboratory hours a week, to be arranged. May be repeated.
Repeat rules: May be repeated for credit.

PATH 920. Seminar in Interdisciplinary Vascular Biology. 1 Credit.
Permission of the instructor. Participants in the Interdisciplinary Vascular Biology Training Program only. Students will be required to present their thesis work as a formal seminar, give an introductory lecture to introduce their project (in cooperation with their thesis advisor), and to attend and discuss the seminars of other students.
Repeat rules: May be repeated for credit. 6 total credits. 6 total completions.

PATH 993. Master's Research and Thesis. 3 Credits.
May be repeated.
Repeat rules: May be repeated for credit.

PATH 994. Doctoral Research and Dissertation. 3 Credits.