



DUKE UNIVERSITY MEDICAL CENTER Pathologists' Assistant Program

Definition of a Pathologists' Assistant: Definition of the *American Association of Pathologists' Assistants* (AAPA): A pathologists' assistant is an intensively trained allied health professional who provides anatomic pathology services under the direction and supervision of a pathologist. Pathologists' assistants interact with pathologists in same manner that physicians assistants carry out their duties under the direction of physicians in surgical and medical practice. A pathologist is a physician who has completed residency training and passed board examinations in pathology. Anatomic pathology is the examination of cells (cytopathology), tissues (surgical pathology), or the body (autopsy pathology) for diagnostic purposes.

Duties of a Pathologists' Assistant: Pathologists' assistants work mostly in surgical pathology and to a lesser extent in autopsy pathology. This is not because of a lesser role pathologists' assistants play in autopsy pathology, but because of the sharp decline in the number of autopsies performed by pathologists in the USA. Pathologists' assistants describe and dissect tissues and organs that have been surgically removed from patients for the purposes of diagnosis or treatment. In this process, they must correctly orient the specimen, and take the appropriate tissue samples for microscopic examination by the pathologist. This can be a very complicated and difficult process that must be applied to the individual patient and specimen depending on the suspected disease and the type of surgery. Gross analysis of surgical specimens requires extensive training in basic pathology, anatomy, and histology. Pathologists' assistants can perform complete autopsy prosections. They also can prepare preliminary autopsy reports including clinical histories and gross and microscopic descriptions for the pathologist's review.

Because of their extensive training in pathology, anatomy, and histology, pathologists' assistants are called upon to perform many other duties in the laboratory depending on the setting. They work in quality assurance, prepare conferences and tumor boards, assist in frozen sections, and often hold supervisory positions. In academic settings, they often teach residents in the gross evaluation and dissection of surgical specimens and autopsy prosection. Pathologists' assistants are also employed in tissue banks and in research activities.

The actual duties performed by any individual pathologists' assistant is determined by the supervising pathologist.

History of Pathologists' Assistant Profession: In 1966, Dr. Eugene Stead at Duke University Medical Center pioneered the concept of physician extenders when he established the nation's first physicians assistant program. This allied health profession differed significantly from all other allied health professions because rather than being another support profession working independently on tasks not considered to be the practice of medicine, these individuals were trained to perform tasks previously performed exclusively by physicians. Dr. Thomas Kinney, Chairman of Pathology at Duke University Medical Center, saw a need for similar professionals in anatomic pathology so he initiated the nation's first pathologists' assistant program in 1969. These



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professionals were trained to perform tasks in autopsy and surgical pathology that had previously been performed by pathologists, under a pathologist's supervision. Since that time, other programs have been established and the profession has grown in number and stature. The training programs have grown from certificate programs to bachelor's degree programs and currently, all but one of the programs are graduate level masters programs.

At its inception, the physicians assistant profession was mentored and structured by the American Medical Association and accreditation of training programs and certification of individuals were established. Because of the small number of pathologists' assistants, high degree of specialization, and uneven initial acceptance of the profession by national pathology organizations, no guiding physician or pathology organization would establish criteria for training programs and credentials for individuals. This task was assumed by the national professional organization of pathologists' assistants, American Association of Pathologists' Assistants (AAPA). The AAPA was established in 1972, and held its first meeting in Atlanta in 1975. The first goals set by the organization were guidelines for training programs, a mechanism for approval of training programs, and the development of an examination for fellow status of membership in the AAPA. Graduates from AAPA approved programs or persons with a bachelor's degree and three years of AAPA approved on-the-job-training were eligible to sit for the examination. The major long-term goal of the AAPA was to achieve professional recognition for pathologists' assistants through establishing both independent accreditation of training programs and national certification of individual practitioners. The program approval and membership examination of the AAPA has served as de facto accreditation and certification by many employers for over 25 years.

In 1995, the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), following negotiations with the AAPA, agreed to accredit training programs. Over the following two years, all of the former AAPA approved programs became accredited. Subsequently, all of the initially accredited programs have been through a second round of evaluation by NAACLS and have been re-accredited.

In 2000, the National Commission for the Certification of Pathologists' Assistants was formed and held its first meeting in Toronto in conjunction with the annual AAPA meeting. The Commission was comprised of representatives from most major stakeholders in the practice of pathology. The Commission was charged with assuring the development and implementation of a national certification process for Pathologists' Assistants. The Commission partnered with the American Society of Clinical Pathology and the first national certification was held in Boston in September 2005 in conjunction with the annual AAPA meeting.

Employment and Salary Opportunities for Graduates: The opportunities for employment and salaries have been excellent. There are very few pathologists' assistant training programs (7) and thus the supply of graduates is limited. At Duke all graduates have found employment months before graduation and salaries currently average in the low 70's.



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Program Accreditation: In addition to the accreditation of Duke University, and the School of Medicine, The Pathologists' Assistant Program is individually accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS) which is recognized by the United States Department of Education.

Facilities: The major facilities supporting this program are the classrooms, laboratories, and library of the medical school, and the Autopsy and Surgical Pathology Laboratories at Duke University Hospital and the Veterans Administration Hospital. The medical schools Thomas Kinney Central Teaching facility has laboratory space and state of the art audiovisual equipment for small group instruction, computer services including computerized instructional programs that supplement the lectures and laboratories. The medical center library contains all significant current journals and an impressive collection of books. The pathology laboratories provide exposure to more than 300 autopsies and 40,000 surgical pathology specimens.

All students receive a new lap top computer on entry. Each student is assigned an individual carrel that is wired for on line services for the Internet, Medline, and e-mail addresses are provided for each student.

Class Size: The program accepts 7 students for each class.

Core Faculty:

Kenneth Broda, Ph.D., Program Director

Pamela Vollmer, BHS, Associate Program Director, Staff Pathologists' Assistant

Roger McLendon, M.D., Professor and Medical Director

Alan D. Proia, M.D., Ph.D., Professor, Chief of Autopsy Service

Robin Vollmer, M.D., Associate Clinical Professor, Director of Surgical Pathology, Durham Veterans Administration Medical Center (DVAMC)

Pamela Vollmer, BHS, Staff Pathologists' Assistant, Surgical Pathology Coordinator

Jennifer Johnson, MHS, Staff Pathologists' Assistant, Instructor in Surgical Pathology

Audra Solomon, MHS, Staff Pathologists' Assistant, Instructor in Surgical Pathology

Steve Holmes, MHS, Staff Pathologists' Assistant, Instructor in Surgical Pathology

Meridith Hennessey, MHS, Staff Pathologists' Assistant, Instructor in Autopsy Pathology

William Bradford, M.D., Professor Emeritis, Pediatric and Neonatal Pathology

Stanley Robboy, M.D., Professor, OB-GYN Pathology

Rex Bentley, M.D., Associate Professor, General Surgical and Breast Pathology

Marcia Gottfried, M.D., Professor, General Surgical and Gastrointestinal Pathology

Christine Hulette, M.D., Professor, Neuropathology

Thomas Sporn, M.D., Assistant Professor, Forensic Pathology, Pulmonary Pathology

Victor Roggli, M.D., Professor, Pulmonary Pathology

John Shelburne, M.D., Ph.D., Professor, Chief of Staff DVAMC, Ultrastructural Pathology



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John Madden M.D., Ph.D., Professor, Surgical Pathology
Louis DiBernardo M.D., Ph.D., Assistant Professor, Cardiovascular Pathology,
Supervisor of Autopsy Service
David Howell, M.D., Ph.D., Professor, Chief of Pathology and Laboratory Medicine
DVAMC, Immunopathology
Thomas Cummings, M.D., Professor, Surgical Pathology, Ophthalmic Pathology
Patrick Buckley, M.D., Professor, Hematopathology, Director Pathology Resident
Education

Program of Study: The program is 24 months in length, beginning with the start of the medical school academic year in August of each year (see current Medical School Bulletin for exact dates). Students take most of their first year basic science courses in the School of Medicine with medical students. The first year provides a broad, graduate level background in anatomic pathology, anatomy, biochemistry, histology, physiology, and microbiology. In the second year, students train in small group and one-on-one experiences with Pathology Department faculty and staff.

Curriculum:

<u>Year 1 Fall</u>	<u>Credits</u>
INTERDIS 100B Molecules and cells	6
CBI 301 Human Structure and Function	12
PATHASST 202 Intro to Neuroanatomy & Neurohistology	2

<u>Year 1 Spring</u>	<u>Credits</u>
INTERDIS 102B Body and Disease	16
PATHASST 204 Intro to Practical Pathology Techniques	1
PATHASST 206 Intro to Neurologic Dissection	1

<u>Year 1 Summer</u>	<u>Credits</u>
PATHASST 210 Introduction to Autopsy Pathology	4
PATHASST 220 Introduction to Surgical Pathology	4
PATHASST 215 Histology Techniques	1

<u>Year 2 Fall</u>	<u>Credits</u>
PATHOL 241P Pathologic Basis of Clinical Medicine	3
PATHOL 223P Autopsy Pathology	4
PATHASST 230 Surgical Pathology	8
PATHOL 359P Diagnostic Technologies and Techniques	2
PATHASST 216 Histology Techniques	1



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PATHASST 240 Photography	1
<u>Year 2 Spring</u>	<u>Credits</u>
PATHOL 242P Pathologic Basis of Clinical Medicine	3
PATHASST 231 Surgical Pathology	8
PATHOL 224P Autopsy Pathology	4
PATHOL 241 Photography	2
PATHASST 302 Forensic Pathology	2
ACADEMIC DEGREE AWARDED	85
<u>Year 2 Summer</u>	<u>Credits</u>
PATHASST 300 Autopsy Practicum	4
PATHASST 301 Surgical Pathology Practicum	4
CERTIFICATE AWARDED	93

Course Descriptions:

INTERDIS 100 - Molecules and Cells. A course designed for first year medical students with a focus on the molecular and cellular principles of human disease. The course has four components, which are tightly integrated: biochemistry, cell biology, genetics, and a series of clinical correlations. The biochemistry component re-emphasizes the relationship between structure and function of the major classes of macromolecules in living systems including proteins, carbohydrates, lipids, and nucleic acids. The metabolic interrelationships and control mechanisms are discussed as well as the biochemical basis of human diseases. The cell biology component emphasizes the structure and function of the cells and tissues of the body. The laboratory provides practical experience with light microscopy studying and analyzing the extensive slide collection of mammalian tissues. The genetics component emphasizes molecular aspects of the human genome, the structure of complex genes, regulation of gene expression, experimental systems for genetic analysis, human genetics -- including population genetics and genetic epidemiology, the use of genetic analysis for the identification of disease causing genes, cytogenetics, cancer genetics, and genetic diagnosis and counseling. The series of clinical correlations links the material covered in the basic science lectures to clinical problems. Many of the correlations include an interview with a patient. Also included are a day symposium on nutrition and a day symposium on aging. Credits: 6. Enrollment: max 105. *Garcia-Blanco, Nicchitta, Raetz, and staff*



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CBI 301 - Human Structure and Function. Core course of preclinical curriculum presents scientific principles underlying structure and function of the normal body. Focuses on gross anatomy, microscopic anatomy, and physiology of nine organ systems providing the foundation for the practice of medicine. Registration of non-Pathologists Assistant students requires permission of Course Director. Credits: 12. *Jakoi*

INTERDIS 102B - Body and Disease. This core course is presented from February through June of the first year. The course begins with fundamental principles of the four basic sciences most directly related to human disease: immunology, microbiology, pathology and pharmacology. This component is followed by an integrated presentation of the most common human diseases organized sequentially by organ system. Teaching modes include lectures, a variety of small group activities guided by faculty and clinically-oriented disease workshops. Credits: 16. *Nadler, Dawson, Hulette, and Mitchell.*

PATHOL 223, 224P - Autopsy Pathology. A detailed consideration of the morphologic, physiologic, and biochemical manifestations of disease. Includes gross dissection, histologic examinations, processing, and analyzing of all autopsy findings under tutorial supervision. 4 credits each course or 8 credits. *DiBernardo and staff*

PATHOL 241, 242P - Pathologic Basis of Clinical Medicine. This course consists of lectures and seminars by the departments of Pathology and Medicine faculty emphasizing both basic science and systemic pathologic topics. 3 credits each course. *Department of Pathology and Medicine faculty.*

PATHOL 359P - Diagnostic Technologies and Techniques. Medical technologies and techniques used to assess Cellular and Subcellular Pathology are presented. The course consists of lectures and demonstrations on special techniques and technologies used to study the alterations of cellular structure and associated functions that accompany cell injury e.g. electron microscopy, fine needle aspiration and bone marrow aspiration biopsy etc. 2 credits. *Broda and staff*

PATHASST 202 - Introduction to Neuroanatomy and Neurohistology. This is an intensive course in the study of neuroanatomy and neurohistology. The purpose of this course is to teach students the gross and microscopic anatomy of the brain and spinal cord. 2 credits. *Hulette and Hennessey*

PATHASST 204 - Introduction to Practical Pathology Techniques. This course is designed to introduce the student to the day-to-day activities in a surgical pathology and an autopsy service. Emphasis is placed on the various duties assumed by trained Pathologists Assistants. Students are introduced to basic tissue dissection techniques taught through participation in autopsies. 1 credit. *Hennessey and Vollmer*

PATHASST 206 - Introduction to Neurologic Dissection. The purpose of the course is to teach students how to dissect the brain and spinal cord, and take sections for



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microscopic diagnostic purposes. 1 credit. *Hulette and Hennessey*

PATHASST 210 - Introduction to Autopsy Pathology. This is a summer rotation given during the first summer session. It is designed to acquaint the student with autopsy prosection and workup. Students assist residents in full autopsy dissections. 4 credits. *DiBernardo and staff*

PATHASST 215, 216 - Histology Techniques. Students participate in rotations through various histology laboratories. The rotations are designed to acquaint students with the various laboratory techniques used in tissue processing and special procedures. 1 credit each. *Broda and staff*

PATHASST 220 - Introduction to Surgical Pathology. This is a rotation conducted during the first summer session. It is designed to acquaint students with the techniques of gross dissection, descriptions, and submission of tissue samples from surgical specimens. 4 credits. *Vollmer and staff*

PATHASST 230, 231 - Surgical Pathology. These courses consist of thorough laboratory training in the orientation, description, and dissection of gross surgical specimens. Students follow many of the cases through to signout by the pathologist. 4 credits each. *Vollmer and staff*

PATHASST 240, 241 - Photography. This is an introduction to medical photography. Students become familiar with photography equipment and the fundamentals of gross specimen photography. 1 credit for PATHASST-240 and 2 credits for PATHASST-241. *Reeves and Conlon*

PATHASST 300 - Autopsy Practicum. This is the final autopsy rotation completed during the summer of the second year of training. Students must perfect their dissection skills, demonstrate the ability to conduct full autopsy prosections in all possible situations, and write full preliminary autopsy reports. In addition, special dissection skills are taught in this course. 4 credits. *DiBernardo and staff*

PATHASST 301 - Surgical Pathology Practicum. This is the final surgical pathology rotation completed during the summer of the second year of training. Students must perfect their dissection skills and demonstrate the ability to orient, dissect, describe, and submit appropriate tissue samples from all commonly encountered surgical pathology specimens. 4 credits. *Vollmer and staff*

PATHASST 302 - Forensic Pathology. This is a practical rotation at the North Carolina Office of the Chief Medical Examiner observing and participating (on a limited basis) with forensic pathologists performing medical-legal autopsies. 2 credits. *Butts and staff*



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Certificate Requirements: After completion of 85 units of graduate credit, the academic Master of Health Science (MHS) degree is awarded at regular university graduation exercises in May of the second year. A further 8 units of credit are earned in the final summer rotations. Completion of the final summer rotations and a comprehensive oral presentation with questions before the Pathology Department faculty and staff result in awarding of the professional certificate as a Pathologists' Assistant.

Grading Policies: Grades will be honors (H), pass (P), Low pass (L), fail (F), or incomplete (I). Failure in any course or violation of the Duke University School of Medicine's Honor Code may result in dismissal from the program. If a student receives two Ls, the student will be placed on academic probation and will be required to perform additional studies defined by the Director. All incomplete grades automatically revert to F if work is not completed within one semester or one summer session following award of an incomplete grade.

Tuition and fees: Tuition for the entering class of 2007 will be \$22,000 per year with a yearly technology fee of ~\$2,200. The entering tuition and fee costs are guaranteed for the second year and will not increase.

Financial Aid:

Stafford Loans are available subsidized up to \$8500 per year. Unsubsidized Stafford Loans are available to eligible students up to the amount of the school's budget.

Supplemental Loans up to the program's recommended budget are available from private lenders.

For more detailed information, contact the Office of Financial Aid, Duke University School of Medicine, Box 3067, Duke University Medical Center, Durham, NC 27710, or at the School of Medicine's Office of Financial Aid website: <http://finaid.mc.duke.edu>

Admission policies: Applicants will submit completed application form, additional materials, and fees to the Director for review. After review, selected candidates will be invited for an interview. A review committee consisting of the Program Director, Associate Director and at least three others drawn from either the Medical Director, the Surgical Pathology Training Coordinator, staff PAs, and 2nd year students will approve all final admissions decisions. Criteria for admission are weighted to academic preparation and performance. Preparation in *basic* sciences such as cell biology is preferred over courses such as anatomy and histology. Laboratory experience is also highly valued but it cannot replace adequate academic preparation.



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Prerequisites for Admission:

1. A baccalaureate degree in a biological or chemical science from an accredited institution which includes course work in general chemistry, organic chemistry and/ or biochemistry, biologic science, microbiology, mathematics and English composition.
2. A baccalaureate degree in a non-science major to include the courses defined above in 1, and at least 18 credit hours in biological sciences and chemistry of such depth that the admissions committee judges the candidate has the minimum scientific background to successfully begin the study of medical sciences.
3. Scores for the Graduate Record Examination (GRE) or Medical College Admissions Test (MCAT) taken within the last five years.

Candidates who receive their baccalaureate degree from institutions outside the United States must submit a transcript evaluation showing degree equivalency and subject matter description.

Application Procedures:

The application deadline is the last day of February of each year. Application reviews will be finished in the first week of March. Selected candidates will be interviewed in the following three weeks. Applicants will be notified by the end of April.

Application forms can be obtained by downloading from this Web site or by writing: Pamela Vollmer, BHS, PA(ASCP) Associate Director, Pathologists' Assistant Program, Department of Pathology Box 3712, Duke University Medical Center, Durham, NC 27710. Telephone (919) 684-2159.

Applications must include:

1. A completed Duke University application form and a non refundable application fee of \$55.00.
2. Official transcripts of all colleges and universities attended.
3. GRE/MCAT scores. Scores should be sent to the codes provided in the application form. In addition, scores and percentiles should be written in the application form.
4. TOEFL or IELTS scores (no more than two years old) are required for international students whose native language is not English. Scores should be sent to the codes given in the application form.
5. Three letters of recommendation

Incomplete applications will not be reviewed.

Candidates will be notified of the admission committee's decision no later than April 30.



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Accepted candidates will be required to submit a non refundable deposit of \$350.00 to retain their places in the class. This deposit will apply to tuition.