

# A PATHWAY TO EXCELLENCE



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*The First 100 Years of  
Pathology and Laboratory Medicine  
at the University of Rochester School of  
Medicine and Dentistry, 1921–2020*



**BRUCE R. SMOLLER**

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1921–2020

Bruce R. Smoller, MD



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# CONTENTS

List of Figures	vii
A Century of Change	1
The Initial Decade	4
1930s	15
1940s	21
1950s	28
1960s	39
1970s	48
1980s	59
1990s	72
2000s	87
2010s	97
Epilogue	117
Appendixes	119



## FIGURES

1	George Hoyt Whipple, the founder, first dean, and first chair of the Department of Pathology (1921–55)	5
2	Animal House (circa 1926)	6
3	Freida Robscheit-Robbins (1929)	6
4	University of Rochester Medical Center (1926)	8
5	Whipple Museum (2019)	9
6	Harriet Feary, the chief supervisor in histology for more than forty-five years	10
7	Pathology faculty (1926)	12
8	Specimen museum (2019)	14
9	Pathology faculty (1939)	16
10	William B. Hawkins, one of the department's first faculty members	16
11	Faculty, Department of Pathology (1949)	22
12	Roger Terry, a long-standing director of surgical pathology	23
13	Autopsy report (1945) on display in the Whipple Museum	24
14	Lab bill (1945)	25
15	Christmas poem for Whipple (1953)	29



16	Lowell Orbison, the second chair of the department (1955–67)	30
17	Bernard Panner, a member of the department from 1958 until his retirement in 2016	32
18	Department of Pathology (1959)	32
19	Labs circa 1955	34
20	Stanley Patten, the third chair of the Department of Pathology (1969–89)	40
21	Faculty, Department of Pathology (1969)	41
22	Dr. Elise DePapp, the first woman to succeed Robscheit-Robbins on the full-time faculty (1969–1976)	42
23	Leon Wheelless, the major research force in the analytical cytology division for many years	49
24	Anthony di Sant’Agnese, a major force in surgical pathology (1979–2014)	51
25	Faculty, Department of Pathology (1970s)	52
26	David Wilbur, director of cytopathology (1991–98)	61
27	Neil Blumberg, the first full-time director of transfusion medicine (1981–present)	62
28	Debbie Masel, chief supervisor of transfusion medicine (2019)	63
29	Sue Vanthof, the executive administrator to the chair (1979–present)	64
30	Thomas Bonfiglio, the fourth chair of the Department of Pathology and Laboratory Medicine (1990–97)	73

31	Dean Arvan, vice chair of clinical laboratories and twice acting chair of the department (1989 and 2002–4)	74
32	Steven Spitalnik, the fifth chair of the Department of Pathology and Laboratory Medicine (1998–2002)	75
33	Chawnshang Chang, the Whipple Professor of Pathology (1995–present)	77
34	Dan Ryan, the sixth chair of the Department of Pathology and Laboratory Medicine (2004–11; acting chair 2012–14)	88
35	John Krolewski, the seventh chair of Pathology and Laboratory Medicine (2011)	98
36	Bruce Smoller, the eighth chair of Pathology and Laboratory Medicine (2014–present)	98
37	Pathology faculty (2019)	99
38	University of Rochester Central Laboratories at Bailey Road (2019)	103
39	Microbiology at Bailey Road (2019)	103
40	Histology laboratory (2018)	106
41	Residents in pathology (2018–19)	111
42	Milton Finegold (1959), year-out student fellow; endowed pediatric pathology fellowship 2018	112
43	First class of graduating medical technology students (2018)	114



## A CENTURY OF CHANGE

The year 2021 marks the 100th anniversary of the Department of Pathology and Laboratory Medicine at the University of Rochester School of Medicine and Dentistry (URMC). As is the case with any institution of this size, our story is a long and tortuous one with many twists, many characters, and periods of significant change, growth, and even tumult. Our department has been a home for many a great pathologist, many a great discovery and award, and many great innovations with regards to teaching, clinical practice, and research. In the following pages, I hope to chronicle some of these events. Worthy of note is the number of members of the faculty at URMC who have later gone on to serve as chairs and deans, both locally and nationally. Our department's contributions to the field are myriad. The year-out fellowships for medical students were innovative when they were started and have persisted throughout a century of medical education, serving as a model for academic medical centers.

The genesis of this project came from a casual conversation with Dr. Dean Arvan, one of the most influential members in the history of our department. He shared with me a monograph that was published by the University of Pennsylvania, a department in which he had spent time. Inspired by the conversation, I decided to create a similar accounting for our department as it closes in on its own 100th anniversary. The department has grown and evolved in ways that I am certain would never have been anticipated by Dr. George Hoyt Whipple, our founding father. The progress was the work of many. I have attempted to include many of the departmental luminaries and to recognize the biggest and most dramatic changes. However, I fully recognize that no matter how hard one tries, one is certain to overlook developments that were seminal and people whose contributions were significant, but who somehow fell through the cracks in the writing or researching process. For this, I apologize and take full responsibility. This effort is meant

solely as a celebration and to honor all who brought us to our present state as a department. I apologize to anyone for whom an omission feels like a slight. It was totally unintentional.

I am most grateful for the abundant help I received from so many sources while compiling this historical account. Ms. Meredith Gozo in the Miner Rare Books Library was an invaluable resource, helping me to sort through Dr. Whipple's papers and with photographic documentation of the department's history. Ms. Mary Pyform from the American Board of Pathology was extremely helpful in my study of our residency program over the century.

I had the great pleasure of interviewing many long-standing members of the department, including Ms. Sandy Piampiano, Dr. Mark Stoler, Dr. David Hicks, Ms. Donna Russell, Dr. Leon Metlay, Ms. Dee Dee Fee, Ms. Diana Scott, Ms. Karen Bentley, Dr. Neil Blumberg, Ms. Debra (Debbie) Masel, Dr. Tai Kwong, and Ms. Rosemary Ziemba-Ball. Mr. Bob Johnson took a break from his retirement to share his recollections, as did Dr. Vivian Palladoro with hers. Drs. Mark Stoler and Margot Peters were very helpful in responding to my questionnaire. Dr. Kathy Parrinello, the chief operating officer of Strong Memorial Hospital, was also most generous with her time as she recounted the changes within the department over her forty years of interactions. Ms. Sue Powell, who worked within the hospital administration and later as a program administrator for several departments, was quite helpful in sharing her recollections of the department over several decades. Dr. Elise DePapp took the time to visit with me and to share her memories. Drs. Bonfiglio and Arvan repeatedly responded to my email requests, always with speed and incredibly detailed answers. Dr. Seymour Schwartz, a former chair of the Department of Surgery, and Dr. Irwin Frank from the Department of Urology were very helpful in providing their recollections of the department during their long tenures at the medical center. Ms. Judy Sterry and Mr. Nathan Loria were most helpful in digging through piles of archives in search of useful materials. Ms. Sterry and Ms. Cheryl Breitenbuecher reviewed a draft of the manuscript with eyes on fact-checking,

and their insightful questions improved the effort. Ms. Leslie Antinarella uncovered and shared many facts about our trainees over the years. Ms. Kelley Suskie, the department's program administrator, had many creative ideas and was a huge help to me. Ms. Sue Vanthof, who has served as the executive administrator for all chairs dating back to Stanley Patten (1969–89), was an invaluable resource in terms of her memories, her recollections, and her proofreading skills. Ms. Bethany Bushen helped me to gather photographic documentation for this work.

I would also like to thank my wife, Dr. Laura Smoller, professor and chair of the Department of History on the River Campus of the University of Rochester, for her editorial suggestions and for using her skills as a historian to help me search for sources beyond the departmental archives. Her perspective shaped this work in many ways, much as it has my entire adult life.

## THE INITIAL DECADE

The Department of Pathology and Laboratory Medicine occupies a unique position within the national community of pathology departments. At the University of Rochester School of Medicine and Dentistry, the department was actually established several years prior to the formal opening of the medical school and was developed by the man who was recruited to become the first dean of the school. The concept for developing a medical school in Rochester grew out of the Abraham Flexner report regarding the status of medical education in the United States in the early part of the twentieth century. Amongst his many recommendations was that a medical school be developed in a city with the size and resources of Rochester.

Cost of a loaf of bread:	\$0.12
President of the USA:	Woodrow Wilson / Warren G. Harding
World series winner:	New York Giants
Cost of a gallon of gas:	\$0.20
1922:	Insulin first used to treat diabetes
1928:	Penicillin discovered

### The Chair and Early Members of the Faculty

In 1921, Abraham Flexner, working with Dr. Benjamin Rush Rhee, the president of the University of Rochester, convinced Dr. George Hoyt Whipple (see figure 1) to leave his position as the director of the Hooper Foundation for Medical Research and dean of the medical school at the University of California at San Francisco (UCSF) to oversee the development of a medical school at the University of Rochester. Dr. Whipple was born in 1878 and attended Yale University. He then attended medical school at Johns Hopkins University, from which he

graduated in 1905. Thereafter, he worked with Dr. William Henry Welch in the Department of Pathology at Hopkins before moving to San Francisco in 1914. He arrived in Rochester in July 1921. A large portion of the financial support for this endeavor came from Mr. George Eastman, who was also intimately involved in the design of the physical plant of the school. Dr. Whipple played a central role in determining the style of the building, which was deliberately made in a spartan fashion. He was apparently responsible for the “white triangular structures” in the stairwell corners that were built allegedly to deter “spitting.”

Dr. Whipple’s pathology practice was solely consultative at its onset, as there was not yet a medical school or a hospital. During this initial phase, the practice of pathology was largely comparative in nature and dealt with animal diseases. His first office was located in the Eastman Science Building on the original university campus that later served as the women’s campus until the 1950s. In 1922, he relocated his animal research laboratory to a facility known as the Animal House (see figure 2) and his office and laboratories were adjacent to those of Dr. Walter R. Bloor, who was named chair of biochemistry. Dr. Whipple’s assistant, Dr. Freida Robscheit-Robbins (see figure 3), transported their colony of standardized “anemia dogs” from San Francisco to the Animal House, and the research program started anew. This colony of dogs persisted within the departmental research program until the 1950s and served as the test population for much of their work that led to the Nobel Prize.

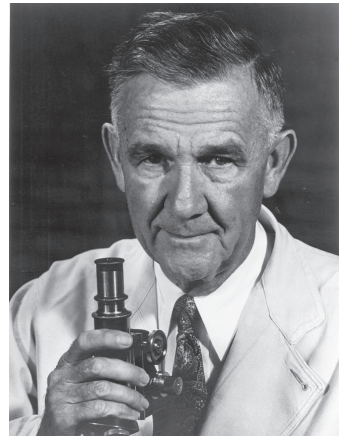


Figure 1. George Hoyt Whipple, the founder, first dean, and first chair of the Department of Pathology (1921–55)





Figure 2. Animal House (circa 1926), the site of the first Department of Pathology offices and laboratories

In 1924, Dr. Whipple hired his first assistant pathologist, Dr. Harry P. Smith, and the first group of technical assistants was trained under the tutelage of Mrs. Don Hutchens. Dr. Smith had worked with Dr. Whipple at UCSF and remained in the department until 1930, at which time he left to assume the position of chair of pathology at the University of Iowa. Later, he was to take a position as the chair of the Department of



Figure 3. Freida Robscheit-Robbins (1929), Dr. Whipple's co-researcher with anemia studies in dogs

Pathology at Columbia University and played an early leadership role in the American Society of Clinical Pathology. Dr. Robert P. Kennedy joined Dr. Whipple's department within a year or two of Dr. Smith and held the title of fellow in pathology at URM. He was soon promoted to the position of instructor in pathology.

In 1927, Dr. Floyd Winslow joined the department as an associate in pathology and Dr. Warriner Woodruff was named as an assistant in pathology. Dr. Woodruff spent two years training with Dr. Whipple. He left for Michigan, ultimately developing and recovering from tuberculosis

before becoming the chief surgeon in Saranac Lake. Dr. Samuel Shouse joined the faculty in 1928 as an assistant pathologist, as did Dr. Gordon B. Taylor, who was a fellow in pathology. In 1929, Dr. William B. Hawkins joined the department from Johns Hopkins Medical School. Dr. Hawkins was to remain a fixture and a central member of the department for the next forty years. He remained on the faculty until his death in 1971. By 1931, the department consisted of a total of thirteen members, including faculty and staff. Of interest, a steady stream of visiting professors from Europe, Asia, and Africa populated the department during its first years.

Mrs. Laura Olmsted Dunston served as the first departmental secretary, and she was succeeded by Miss Hilda DeBrine in 1929. Miss DeBrine also served as the receptionist and secretary for Dr. Whipple in his role as the dean of the medical school.

## Space

In 1926, the main medical school building was opened, and the Department of Pathology relocated from the Animal House into the new structure (see figure 4). The building was home to the medical school and a 250-bed community hospital. The plan was to house basic science departments (which included pathology) in close proximity to clinical departments and to hospitalized patients. Some of the space that was originally built for pathology still persists as departmental space, including the current autopsy suite and offices and the neuropathology unit located on the first floor, close to the present medical school building. Dr. Whipple's original office, in which he served as the dean of the medical school and the chair of the Department of Pathology, currently exists as a museum that houses many of his papers, his hunting boots, many of his awards, and his original desk and bookshelves (see figure 5). Other vestiges of the original floor plan, including

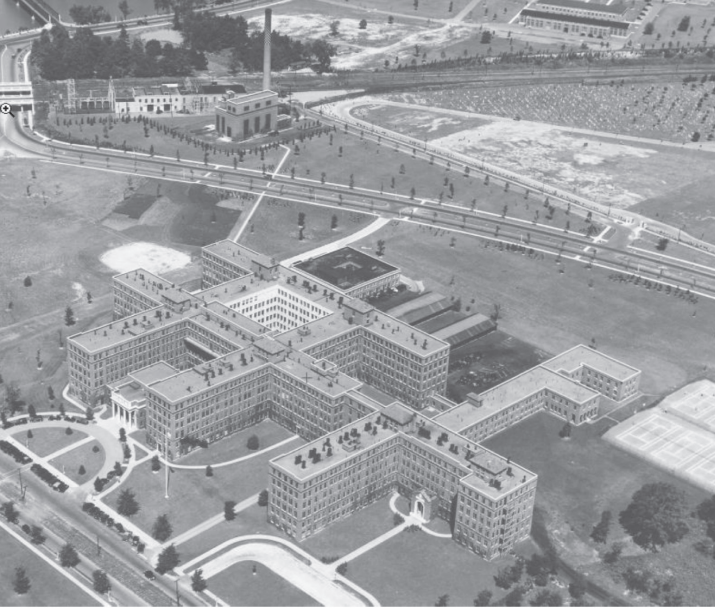


Figure 4. University of Rochester Medical Center (1926)

the autopsy suite and many of the offices and laboratories, are still occupied by the department.

## Clinical

The first autopsy at the medical center was performed by Dr. Whipple in January 1926. Over 100 were performed in the first two years, and in the first decade of the department over 3,400 autopsies were completed. The medical center had an autopsy rate of 60 percent to 70 percent during this time, a rate higher than the national average. The department performed autopsies for the Iola Tuberculosis Sanatorium beginning in 1926 and also had a working relationship with the Monroe County Infirmary.

During this early period, the practice of surgical pathology was a joint effort involving the Departments of Surgery



Figure 5. Whipple Museum (2019), the site of Dr. Whipple's office when he served as dean and chair; currently a largely preserved museum

and Obstetrics and Gynecology, as well as the Department of Pathology. As per Dr. Whipple, "The arrangement between Surgery and Pathology for handling surgical pathology has been a very satisfactory one. An assistant resident is held responsible by the Department of Surgery for keeping the records and correctness of the diagnoses. The Department of Pathology also holds this same resident responsible for a review of the material, which enables staff to see all of the interesting surgical material and all diagnoses are reviewed by one of the senior members of the department. This material is also available for teaching purposes. The Department of Obstetrics and Gynecology also provides much interesting material for review." The Pathology Department's main functions included medical education, research, and the performance of postmortem examinations. Neither surgical pathology nor any of the clinical pathology disciplines fell under the primary jurisdiction of the department in these early years.



Figure 6. Harriet Feary, the chief supervisor in histology for more than forty-five years

Ms. Harriet Feary (see figure 6) joined the department in 1926 and served as the senior technologist for many years thereafter, retiring in 1968. Under her direction, the department prepared histologic sections from autopsies, surgical pathology specimens, and animal studies. The department offset some of the costs for this division by charging other departments to prepare histologic slides for their research.

## Research

The department was heavily oriented toward research in its years of inception and was grouped with the “basic science” departments. Diagnostic surgical pathology was still an evolving specialty, and members of the faculty concentrated on teaching morbid anatomy through autopsies while performing research. Areas of interest included the study of bile pigments under myriad medical conditions, studies in anemia, physiology of the liver and bile, and blood plasma protein regeneration. In 1934, Dr. Whipple was awarded the Nobel Prize for “discoveries concerning liver therapy in cases of anemia.” He discovered that feeding liver to dogs reversed pernicious anemia. This observation was instrumental in creating a better understanding of the disease and treatment. Amongst his many other contributions, Dr. Whipple is responsible for the term and the concept of thalassemia. Dr. Smith had an interest in the role of vitamin K in coagulation. Members of the faculty published 115 papers in scientific journals during the first thirteen years of the department. *Archives of Pathology* published its first volume in 1926, but most of the other current discipline-specific journals from the United States did not come into being until the 1970s and 1980s. European journals such as *Virchows Archivus* were extant and still developing direction with regards to basic sciences or the practice of clinical medicine.

## Education

The department taught the discipline of pathology to its first group of medical students in 1926. These initial students paid an annual tuition of \$300 and were required to own personal microscopes that required two oculars and three objectives (including an oil immersion objective). Students were taught how to produce and interpret frozen sections, about “vital stains,” about the art of interpreting gross and microscopic appearances, and how to perform postmortem examinations.

Weekly clinicopathologic conferences involving medical students were held in conjunction with the clinical departments. The attending pathologists were in the laboratories and accessible to the students from the months of December through April, for two mornings and three afternoons per week. In this first year of formal medical school education, the department listed six total members on its faculty and staff and taught a total of twenty-three medical students (see figure 7). As per Dr. Michael J. Lepore in his book entitled *Life of the Clinician*, “Each year, the staff house residents would have a ribald and bawdry party during which the teaching staff was taken over the jumps with no holds barred. The dean attended these sessions and seemed to enjoy what was going on.” The great Dr. Whipple was not above a bit of merrymaking.

Bacteriology was taught as an independent discipline and through a separate department chaired by Dr. Stanhope Vayne-Jones. What are currently considered the other disciplines of clinical pathology were either not yet utilized in clinical medicine or were the responsibility of one of the clinical



Figure 7. Pathology faculty (1926)

departments such as the Department of Medicine. In Rochester, microbiology was the last of these clinical pathology disciplines to come under the auspices of the Department of Pathology and Laboratory Medicine. At the time of this publication, the director of microbiology, Dr. Dwight Hardy, still has his primary faculty appointment in the Department of Microbiology and Immunology, though the operations of the clinical laboratory reside wholly within the Department of Pathology and Laboratory Medicine.

While certainly there were postgraduate trainees within the department from its inception, no formalized training program that we would recognize appears to have existed. Annual medical school bulletins document short lists of men who were present in the department, presumably as trainees for a period of a year or two. However, there does not appear to be any formal curriculum or standardized program.

The Pathology Department was the home to a specimen museum that housed photographs, microscopic slides, and gross pathologic specimens. The museum was started by Dr. Harry Smith, and Miss Edna Fairman was the first curator, a function she held for several decades. She retired from this position in January 1971. Upon request, specimens of all types were released for illustration at conferences, lectures, and for presentations. The museum served all of the departments within the medical school. For many years, the museum was located on the second floor, right above Dr. Whipple's office. Gross pathology specimens were on display outside of medical student classrooms on the first floor of the S-wing for many years, until the time of the Adolph Auditorium renovation. The old slides were relocated to the Q-wing basement. In a quaint tradition that existed up through the late 1950s, on Friday afternoons, a formal "high tea" was held in the area of the museum. Dr. Whipple often attended these gatherings. At the time of this writing, the gross specimens from this museum (see figure 8) are still on display in the Center for Experiential Learning within the medical school. The preserved microscope slides can no longer be located and the Friday afternoon "high teas" are no longer part of the weekly schedule.





Figure 8. Specimen museum (2019)—specimens are from the 1920s, 1930s, and 1940s

## 1930s

The 1930s was a period of relative stability within the department as the medical center and school solidified their positions within the community and the region. There were no dramatic changes in size, structure, or function within the department.

Cost of a loaf of bread:	\$0.05
President of the USA:	Herbert Hoover
World series winner:	St. Louis Cardinals
Cost of a gallon of gas:	\$0.17
1935:	Yellow fever vaccine
1937:	First blood bank (Fantus, Chicago)

## Chair

The 1930s saw the continuation of Dr. Whipple's leadership of the department. There were no significant changes in the organizational structure, nor in the overall size or scope of the department during this period. The small department was easily overseen by a single leader, with no formal administrative structure.

## Faculty

The total number of faculty members never exceeded four during this decade, though the numbers of associates and trainees continued to increase, as did the number of medical students (see figure 9). Drs. Whipple and Hawkins (see figure 10) continued as faculty members within the department, and Dr. Wright was added to the team. Dr. Walter S. Thomas appears



Figure 9. Pathology faculty (1939)



Figure 10. William B. Hawkins, one of the department's first faculty members who remained on faculty until 1971

on the roster as a part-time member of the faculty, as does Dr. Istvan Gaspar. In 1931, Dr. Floyd S. Daft left his position at Yale and became an instructor with expertise in experimental pathology and biochemistry. His mentor, Dr. Cecil Drinker from the Harvard School of Public Health, opined that there were half a dozen very fine medical schools around the country (second, of course, to Harvard) and they included the newly built University of Rochester, convincing him to move here. He remained on the faculty in both pathology and biochemistry until 1937, at which point he moved to the National Institutes of Health (NIH), where he ultimately served as the director of the National Institute of Arthritis and Metabolic Diseases until his retirement in 1962.<sup>1</sup> In 1932, Ralph Knutti joined the team as a junior member of the faculty following training at Vanderbilt University and the Rockefeller Institute for Medical Research. Of note, when Dr. Knutti came to Rochester, it was in the midst of the Great Depression and he revealed that his salary was \$2,000 per year to serve as an instructor. He also received free room, board, and laundry services in the staff house adjacent to the medical center, wherein house staff and unmarried members of the faculty could live. In 1935, when he was promoted to assistant professor, he did not receive any increase in his \$2,000 per year salary. (Dr. Hawkins, who was an associate professor, received a salary of \$3,600 per year in 1939). Faculty members continued to concentrate on research endeavors, teaching medical students, and the performance of autopsies.

## Space

The department remained stable in terms of its occupancy space within the medical center during this decade.

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1 From Meckler et al., *Oral Histories*; interview with Dr. Wyndham D. Miles, historian at the NIH, 1964.

## Clinical

Autopsies continued to be the major clinical focus of departmental faculty. The autopsy rate remained at about 70 percent of all inpatient deaths and numbered around 700 per year. Responsibilities for surgical pathology continued to reside primarily within the Departments of Surgery and Obstetrics and Gynecology, with diagnoses only reviewed and confirmed by the members of the pathology faculty. The few rudimentary clinical laboratories that existed were under the purview of the Department of Medicine. Dr. Knutti served as the director of laboratories at both the Genesee and Park Avenue Hospitals during his time in the department. It is unclear as to exactly what his clinical responsibilities were in these hospitals during this period.

## Research

Research remained the major focus of the department during this decade. Areas of concentration continued along the same lines as during the previous decade, revolving primarily around Dr. Whipple's main interest in anemia. Other areas of research within the department included amino acid and body protein metabolism, shock, the renal thresholds for proteins, the development of experimental ascites, and work with radioisotopes. During this period and extending into the 1950s, all residents were required to take a full year out from their clinical training to develop a research program. Pathology was still considered to be one of the "basic science" departments within the school and not a clinical department.

## Education

Medical student education was another major function of the department during this decade. As the medical school curriculum became more formalized and the school continued

to expand and developed a substantial reputation for excellence, the department faculty played a central role in the second-year education of these students. The course description changed little during this decade, greatly resembling that from the prior decade. Similarly, the hours of availability of faculty members for the students remained essentially unchanged. One notable medical student at URMCC during this time was Dr. Lauren Ackerman. After graduating from the medical school in Rochester, he went to Boston to complete training in internal medicine before returning to spend a year with Dr. Whipple in pathology. Thereafter, he moved to Missouri and eventually became one of the major forces of the century in surgical pathology, serving as the director of surgical pathology at Washington University in St. Louis. (His textbook entitled *Ackerman's Surgical Pathology* served as the gold standard in the field for several generations of pathologists). Another amongst the trainees during this period was Dr. Charles Yuile, who would soon be recruited back from Montreal to join the faculty.

While not formally listed anywhere as residents, Drs. Ackerman and Yuile spent additional time in the department studying pathology under the great master, Dr. Whipple, after their medical school graduation. Presumably, these positions were analogous to our current residency or fellowship positions. Throughout the 1930s, from one to three people were listed as assistants or instructors and several others as volunteer assistants within the department. It is likely that these titles were given to trainees.

The American Board of Pathology was formed in 1936. The first board examination was given in 1936, and prior to 1938 "anyone with special qualifications could be certified without an examination at the Board discretion" (minutes of the American Board of Pathology). The cost for taking the board examination was thirty-five dollars and also covered two reexaminations (if needed). Residency training in pathology now came under the jurisdiction and regulation of the Advisory Board of Medical Specialists. It is unclear what type of "residency" training was in place during this decade,

as training requirements were determined by individual hospitals. Certainly, trainees who had completed medical school were present within the department and served as apprentice-like trainees under the tutelage of the small faculty. The scope of training does not appear to have been regulated or standardized at this point. Requirements for board certification after 1938 included a period of study of not less than four calendar years (including an internship), graduate training for one year in various phases of clinical pathology, and two years of anatomic pathology. An additional year of pathology clinical practice was required before sitting for the board examination.

One of Dr. Whipple's major contributions to the educational mission was the development of the year-out fellowship for medical students, similar to the one he demanded of departmental residents. These year-out fellowships enabled medical students to take a year away from their formal, structured four-year curriculum for in-depth study within any medical school department. A great number of them chose to do this year in the Department of Pathology. Dr. Whipple's view of pathology was that of a basic science discipline, in which pathologists functioned as medical scientists with research and teaching as their foremost responsibilities.

### New Developments/Achievements

In 1937, and largely due to Dr. Whipple's groundbreaking research in anemia and his receiving the Nobel Prize in 1934, the Council on Medical Education and Hospitals of the American Medical Association ranked the department in the upper 10 percent of pathology departments within the country. Given the relative age of the department, a mere ten to fifteen years of age, this was truly a remarkable achievement.

## 1940s

The 1940s saw the beginnings of the push toward community outreach as the department forged stronger associations with other local hospitals. World War II resulted in a marked depletion in physician personnel for URMC, as for much of the country. The latter half of the decade saw the URMC Department of Pathology take a lead role in educating military veterans.

Cost of a loaf of bread:	\$0.08
President of the USA:	Franklin D. Roosevelt
World series winner:	New York Yankees
Cost of a gallon of gas:	\$0.19
1942:	First medical paper on ultrasound
1943:	Streptomycin discovered
1945:	Pap smear invented

## Chair

Dr. Whipple retained his positions as dean and chair of the Department of Pathology throughout the 1940s. He continued to emphasize the research aspects of the discipline, while contributing morbid anatomy to the clinical and educational missions of the school. Per Dr. Knutti, “he was a pretty hard penny-pinching gentleman from New Hampshire, and ran his whole department on a shoestring. I will say this, however, that I never needed any equipment or any technical help that I didn’t get.”<sup>2</sup>

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<sup>2</sup> From Meckler et al., *Oral Histories*; interview with Dr. Ralph Knutti.



## Space

The basic floorplan of the department did not change significantly during this time period.

## Faculty

Dr. Sydney Madden joined the senior faculty in 1940. Dr. Knutti remained only through 1942. In 1940, he was diagnosed with tuberculosis and took a short sabbatical leave. Thereafter, he left to become the department head at the Children's Hospital of Los Angeles. Later in his career, he became the director of the National Heart Institute. In 1944, the only senior members of the faculty were Drs. Whipple, Hawkins, and Madden (see figure 11). It was during this same time period that Dr. Hawkins developed symptomatic tuberculosis that permitted him to work only part-time. The department was seriously understaffed. Dr. Madden left the department in 1946, headed for a position at Emory University. He went on to serve as a division head at the Brookhaven National Laboratories and, ultimately, as the first chair of the Pathology Department at UCLA. Dr. Charles Yuile, who had trained in



Figure 11. Faculty, Department of Pathology (1949)

pathology at the University of Rochester, was recruited back in 1945. In addition to his functions within the department, he took on a role as the pathologist at the Park Avenue Hospital, which contracted with the department for his services. He remained with the department until 1955, at which point he moved briefly to UCLA. In 1960, he returned to URMC, working in surgical pathology, teaching, and performing research. Upon his return, the majority of his time was spent at Genesee Hospital. He was given an appointment in the Department of Radiation Biology and Biophysics and kept his appointment in pathology until his retirement in 1972. He died in 1999. Dr. Roger Terry joined the department as an instructor in 1945 and was later promoted to assistant professor (see figure 12).



Figure 12. Roger Terry, a long-standing director of surgical pathology, largely responsible for consolidating the service within the department (interim chair 1967–69)

Further complicating the sparsity of faculty members during this decade was the incidence of tuberculosis within the faculty, necessitating sanatorium treatments and extended leaves of absence amongst the ranks. At this time, the incidence of tuberculosis seen in faculty members and medical students performing autopsies greatly exceeded that in the population at large.

## Clinical

The department established a contractual arrangement that provided pathology services at Park Avenue Hospital during

this time. Drs. Terry and Yuile served as the acting pathologists for various periods at the Park Avenue Hospital, Genesee Hospital, and Highland Hospital, all of which had arrangements with the department.

In 1945, the department established a more formal affiliation with Genesee Hospital. Dr. Jacob Goldstein served as the director of the clinical laboratories at this site. This arrangement, with surgical pathology coverage shared by the Departments of Surgery and Obstetrics and Gynecology (paralleling the arrangement from Strong Memorial Hospital), persisted until 1951, at which time Dr. Frank McKee, an assistant professor of pathology at the medical school, assumed the directorship at the Genesee Hospital. Consolidation of surgical pathology interpretation into the Department of Pathology at the Genesee Hospital occurred under his direction. This change in responsibility evolved contemporaneously with the similar changes happening at Strong Memorial Hospital.

Autopsies continued to be the major clinical responsibility of the faculty as the department remained steady with the

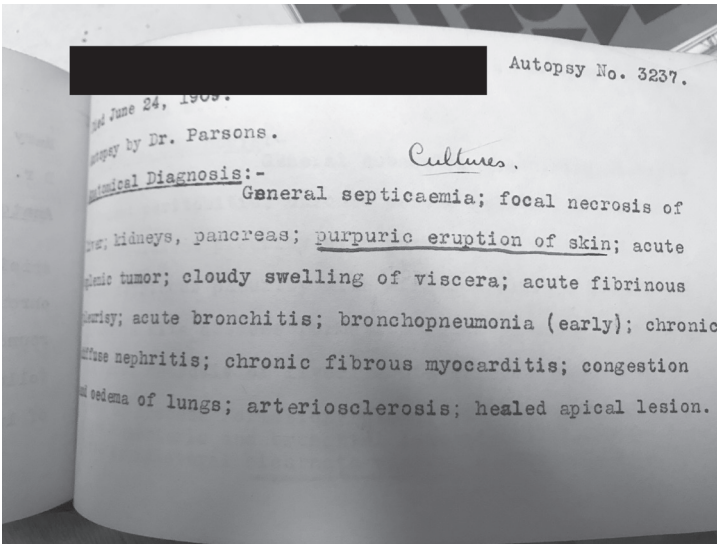


Figure 13. Autopsy report (1945)—one of Dr. Whipple's autopsy reports on display in the Whipple Museum

STATEMENT	
THE UNIVERSITY OF ROCHESTER	
STRONG MEMORIAL HOSPITAL	
ROCHESTER, N. Y.	
BUSINESS OFFICE	Date 9-17-45
To	[Redacted]
	<i>Dr. Roy, N.Y.</i>
	<i>9/28 - 9/14/45</i>
	AMOUNT \$ _____
Please return this stub with your remittance. Your cancelled check is a receipt.	
Care: 12 days @ 6.50	78.00
Laboratory Fee	5.00
Operating Room	15.00
Phone	1.22
	<u>99.22</u>
<i>Received Payment</i> <i>77 10 1945</i> <i>10 STRONG MEMORIAL HOSP.</i> <i>J.C.</i>	
<small>NOTE: All hospital or clinic expenses are ordinarily due and payable either in advance or at the time service is rendered. This account has been cleared because of special consideration. As no provision has been made for financing accounts on a credit basis, it is a matter of importance to the continued welfare of this institution that these charges be paid as promptly as possible.</small>	

THE UNIVERSITY OF ROCHESTER  
SCHOOL OF MEDICINE AND DENTISTRY  
STRONG MEMORIAL HOSPITAL  
540 GREENWOOD AVENUE  
ROCHESTER, N. Y.

BUSINESS OFFICE

Figure 14. Lab bill (1945)—an actual bill for laboratory services from the department

pace of 600–700 cases per year (see figure 13). Clinical pathology laboratories remained under the auspices of the Department of Medicine and the Department of Microbiology (see figure 14).

## Research

The research efforts of the department largely continued along the same lines as in the previous decades. Dr. Yuile's research efforts revolved around inhalation toxicity and radiation injury. Dr. Madden developed an interest in radiation biology and radiation-induced carcinogenesis.

## Education

By 1950, the forty members of the faculty and staff included thirteen senior faculty members, four so-called “internes,” and special fellows and veteran postgraduate fellows. This group

oversaw the education of sixty-nine second-year medical students who were comprised of sixty-two World War II veterans and three male civilians. A total of four women were in the second-year medical school class.

By 1945, there were four year-out fellows from the medical school class assigned annually to pathology. They each received a stipend of \$1,500. This opportunity for a year-out fellowship was chosen by 12–13 percent of all medical students. Between 1926 and 1975, 152 such fellows elected to work within the Department of Pathology. This was almost 50 percent of the total number of medical student year-out fellows that the institution supported within its first fifty years. Unfortunately, no organized record of these students exists within the medical center and the listing (see appendix) is a manual and incomplete compilation. While the department no longer was in a position to support 50 percent of all such year-out fellows, students continued to choose an extra year-out studying pathology in the department.

Much of the additional educational effort was devoted toward training veterans from World War II who returned to the field of medicine and chose to spend a period of time retooling in the department. In the latter years of the 1940s, this group represented the largest number of trainees within the department, with up to twenty veterans per year spending up to six months training in the department. The department trained a total of seventy-four of these so-called “internes” between 1945 and 1950.

The Residency Review Committee for Pathology began in the post-World War II era. This was the first significant national attempt to codify residency training in pathology. Despite these early efforts, standardization remained an elusive goal. Exact specifications for postgraduate training in pathology remained vague and do not appear to have been uniform in terms of curriculum. However, by 1947 there was a requirement for two years of anatomic pathology and two years of clinical pathology for a combined AP/CP certification, and three years of clinical pathology plus an additional one year of training, research, or approved practice for boards in CP

only. Throughout the 1940s, the department listed anywhere from three to five interns and five to seven assistants as part of the department. It is likely that these titles were reserved for trainees at this time.

## 1950s

The 1950s ushered in new leadership and started the gradual evolution toward a more clinically involved faculty. As research laboratory space became less available and the faculty's clinical responsibilities expanded, the department was gradually transforming from a basic science department into one with a major clinical focus. In 1953, Dr. Whipple stepped down as the dean of the school and Dr. Donald Anderson was appointed. He was to hold this position until 1966.

Cost of a loaf of bread:	\$0.16
President of the USA:	Harry S. Truman
World series winner:	New York Yankees
Cost of a gallon of gas:	\$0.27
1953:	Watson and Crick describe structure of DNA
1955:	Jonas Salk develops polio vaccine

## Chair

After thirty-four years, Dr. Whipple retired as the chair of the department on June 3, 1955. His reputation as an avid hunter was well known throughout the department, as is seen in this 1953 departmental Christmas party poem penned by Dr. Terry (see figure 15). He left behind a department with a national reputation as one with major scholarly contributions and lasting innovations to medical education. His year-out student fellowship program became a model adopted by medical centers throughout the country. His trainees and less senior faculty members went on to become chairs and deans in institutions nationwide. He died in 1976 at the age of ninety-eight. It is

alleged that he spent his last years in declining health as an occupant of Strong Memorial Hospital.

In 1955, Dr. Lowell Orbison (see figure 16) was recruited to the Department of Pathology after serving for eight years at the Case Western Reserve University (then known as the Western Reserve University) in Cleveland. He was appointed as the first George Hoyt Whipple Professor of Pathology and

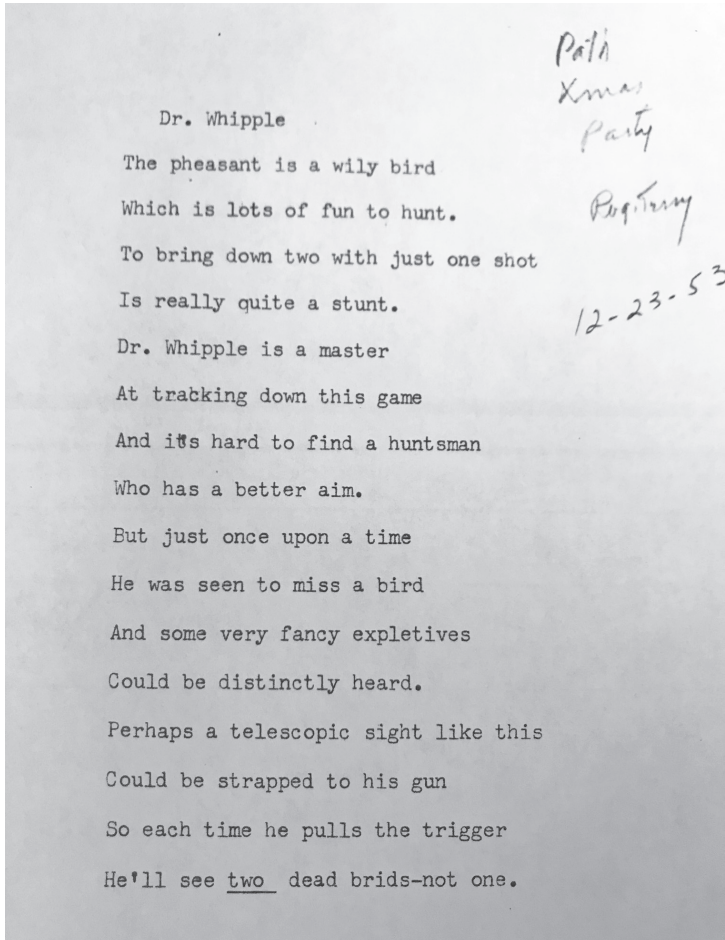


Figure 15. Christmas poem for Whipple (1953), written by Dr. Roger Terry and presented to Dr. Whipple



became only the second chair in the long and storied history of the department. His named chair was the result of one of many generous gifts proffered to the medical school by Dr. Whipple. Dr. Orbison remained as chair until 1967, at which point he was named as the third dean of the medical school, a position he kept until his retirement in 1979. While his illustrious career saw him serve as both a department chair and the dean of the medical school, by all accounts his outstanding characteristic was as a passionate teacher. Dr. Orbison continued to be a major contributor to the systemic pathology course throughout his tenure as the dean of the medical school. While known for being very serious, the residents during this time reveled in playing the occasional practical joke on their chair, which by all accounts he took in good humor.

Dr. Orbison hired Ms. Dorothy Lennon to help with the management of the department's front office in 1955. She remained with the department until her retirement in 1979, gradually ascending to the title of department administrator.



Figure 16. Lowell Orbison, the second chair of the department (1955–67), later to serve as dean of the medical school

## Faculty

At the onset of the decade, the faculty numbered approximately thirteen members. In 1951, Dr. Frank McKee, who had trained in the department, became an assistant professor and assumed the role as the director of laboratories at the Genesee

Hospital, a position he held until 1954. That year, he moved to UCLA to serve as the director of clinical laboratories for a short time before returning to Rochester as an associate dean. Thereafter, Dr. John Abbott, a senior instructor in the department, replaced him at Genesee Hospital. Genesee Hospital performed 233 autopsies (for a net autopsy rate of 68.4 percent) in 1954 and had 4,422 surgical pathology specimens and 750 cytopathology cases. There was a tight working relationship between the department at Strong Memorial Hospital and that at Genesee Hospital. (Dr. Bernard Brody, a 1951 alumnus of the University of Rochester but not a member of our faculty, worked with Dr. Abbott, serving as the director of the clinical laboratories at Genesee Hospital for many years. By all accounts, these clinical laboratories were far more sophisticated than those at Strong Memorial Hospital. Dr. Brody was a general internist!)

In 1956, Dr. Richard Moore joined the faculty but remained only a single year. Dr. William Woods joined the faculty in 1957 and remained for about five years. In 1958, Dr. Bernard Panner joined the department following a stint as a resident at the Mallory Institute in Boston (see figure 17). After completing residency training within the department, he would remain with the department until his retirement in 2016. The number of faculty had expanded to approximately sixteen by the close of the decade. A commitment was made toward the end of the era to attempt to retain the best of the trainees, as recruiting faculty members from outside of Rochester continued to be quite difficult. The theme of difficulty in recruiting high-quality faculty members persisted in annual reports generated throughout the decade.

The department oversaw all pathology coverage at Highland Hospital for much of the decade. Various other smaller hospitals throughout the region also contacted the department throughout the 1950s hoping to get part-time pathology coverage. However, the significant shortage in faculty members limited the ability to which the department was able to provide any help (see figure 18). The trend toward regionalization of

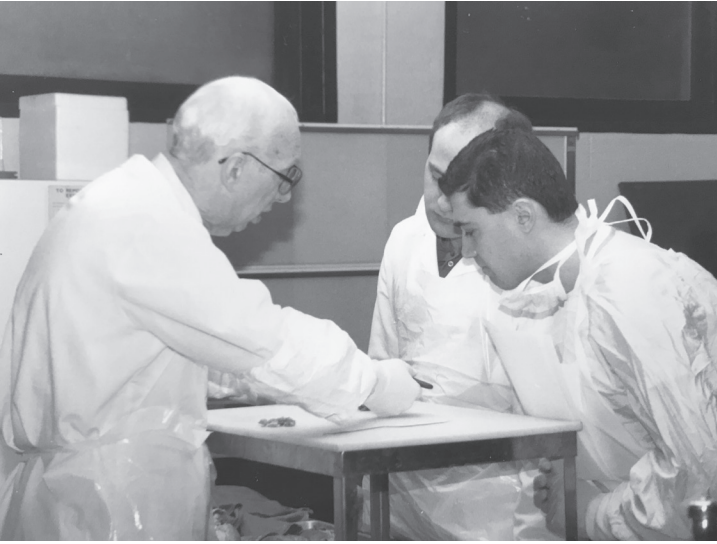


Figure 17. Bernard Panner (left), a member of the department from 1958 until his retirement in 2016



Figure 18. Department of Pathology (1959)

clinical services centered around the university-based department had already begun.

## Space

The physical plant of the department changed minimally during this time. It remained primarily in the area that currently houses the divisions of neuropathology and autopsy on the first floor of Strong Memorial Hospital. Increasingly, lack of space was thought to be hampering the clinical and research missions of the department as Dr. Orbison advocated forcefully to find additional space for the department.

By the mid-1950s, it became apparent that preservation of surgical pathology specimens was essential, while no space was allocated for this purpose. A concerted effort to press the medical school and hospital administrations for storage space and additional clinical laboratory space became an annual theme. The physical plant for the department had been designed to accommodate a basic science department with space for experimental laboratories, classroom space, and a morgue. The founders had not envisioned the department's evolution into a clinically oriented department with the need for clinical laboratory space.

## Clinical

While part of Dr. Orbison's "charge" from institutional leadership was to consolidate anatomic and clinical pathology into one department, there was very little movement toward this goal for much of the decade. As might have been expected, there was significant resistance from the clinical departments to cede control of the laboratories that were historically their realm. (There were individual departmental research and financial considerations that made such transfers unappealing). Initial plans for developing a formal residency training



Figure 19. Labs circa 1955

program in clinical pathology were seen as early as 1957. However, at this point, these plans largely involved arranging for pathology residents to rotate through various laboratories under the auspices of the Departments of Internal Medicine and Microbiology (see figure 19). As the plans for a formal training program began to take shape, the department was granted an additional two residents, one for each year of clinical pathology training.

By 1950, the department had logged in 12,452 autopsies since its inception and was performing approximately 650 per year. The autopsy rate continued to be nearly 70 percent, which was considered quite high for this period in the history of American medicine. The autopsy suite was overseen from 1937 through 1950 by Mr. Boris Jespersen. In 1958, the department performed 757 autopsies, including 123 for the coroner's office. This accounted for 76 percent of the deaths at the medical center. Nationally, the rates ranged from 40–60 percent during this era, so the medical center continued to be significantly above the national average. As per Dr. Schwartz, former chair of URMC's Department of Surgery, in the 1950s,

surgical residents were under intense pressure to obtain autopsy permission from the families of any patient who died while under their services. Further, they were expected to attend the postmortem examinations. He alleges that autopsies were performed without gloves, contributing to the inordinately high rate of tuberculosis amongst the pathologists and surgeons during this time.

Dr. Roger Terry joined the faculty in 1951. He was called away for military duty in 1953 and was gone for several years. When he returned in 1956, he assumed the role of director of surgical pathology and remained in this position until 1969. In this capacity, he signed out the vast majority of cases processed in the department. It was during this period that the handling of pathology specimens derived from surgical procedures became the primary responsibility of pathology. In 1956, obstetrics and gynecology transferred responsibility for pathologic diagnoses to Dr. Terry and his small team. Dr. Terry was widely regarded as a true gentleman and a superb diagnostician. Dr. Elise DePapp fondly remembers a New Year's Eve in about 1961 when she was on call and performing an autopsy into the evening hours. Dr. Terry entered the morgue and saw her there. Knowing that she was pregnant at the time, he insisted that she go home and relax and that he would finish the autopsy examination, despite his position on faculty and hers as a resident. In 1959, 6,293 surgical pathology specimens were signed out in the division currently known as anatomic pathology. It was now beginning to take the shape of the division that is currently known as surgical pathology.

The field of cytology was in its infancy early in the decade. Dr. Hannah Peters, having studied with Dr. Georgios Papanicolaou, was serving as the lead cytologist in this newly emerging field. Dr. Irwin Frank, a URM medical student, worked in the cytology laboratory and gradually learned from Dr. Peters how to interpret these new "Pap smears." When Dr. Peters was forced to leave the country due to political issues (she was married to a Russian man who was deported), the medical center was left with only Mr. Frank having any capability of interpreting these slides. Mr. Frank took over the task and continued

to perform this service for the medical center for the course of his medical student days and well into his urology residency here at URMC. These cases were officially signed out by a local obstetrician/gynecologist. Dr. Frank ultimately published several papers regarding the utility of cytopathology in diagnostic gynecology and urology. During this time, cytology did not reside within the department, but seems to have been associated with the Departments of Surgery, Urology (then a division of Surgery), and Obstetrics and Gynecology.

The cytology laboratory formally became part of the department in 1959, and with it came the hopes of developing a training program. The cytology laboratory examined 47,236 slides in 1959. The strategic question at the time was whether the laboratory should provide diagnostic services to Monroe County and the surrounding hospitals, or limit its service work to university-based cases. The discussion about the role of an academic department in the clinical care of the surrounding community persisted for decades. As the medical center continued to expand its operations and extramural research funding continued to diminish, the answer to this dilemma resolved itself.

Significant clinical responsibilities greatly limited the time faculty members were able to devote to research. This limitation continued to worsen over the course of the decade. Despite the consolidation of diagnostic surgical pathology into the department and the rapidly expanding specimen numbers, the department was severely hampered by issues regarding space and the number of faculty members throughout the decade. The predominant functions of research and teaching gradually were being supplanted by clinical pressures.

## Research

Dr. Orbison brought his research focus on the effects of increased blood pressure on vessels, other vascular diseases, and the composition of connective tissue with him when he

arrived in Rochester. Drs. Hawkins and Woods continued to pursue their research in vitamin B<sub>12</sub> metabolism.

Correspondence between Dean Anderson and Dr. Orbison exposed the lack of available laboratory space and any type of animal facilities as major impediments to departmental growth in the latter part of the decade. The Animal House (originally built in 1922) was at full capacity. It is interesting to note the census of the facility at that time: 253 dogs, 44 cats, 17 monkeys, 4 sheep/goats, 193 rabbits, 6,678 rats, 1,510 mice, 1,200 hamsters, 124 guinea pigs, 265 fowl, 10 ferrets, and 24 others.

## Education

In 1957, the department secured a five-year federal training grant at a rate of \$4,256 per year. This amount was used to cover the stipends for three postgraduate fellows, as well as modest laboratory expenses and travel for each of them. The grant was to support developing research programs for trainees.

The sophomore medical student pathology course was by now essentially a full-year didactic program run by the senior members of the faculty. In addition, there were clinicopathologic conferences offered to the third- and fourth-year medical students.

In the mid-1950s, there were four interns, four residents, and four year-out medical student fellows rotating within the department. Over this period of time, all reports describe the trainees as "men," and there were approximately eight to ten trainees per year. Women do not appear to have been part of the medical education program until very late in the decade. Near the end of this era, in concert with the initial moves toward adding a formal clinical pathology curriculum, the department was able to add two additional residents into the program. Dr. Robert Greendyke, who was to later join the faculty as its first clinical pathologist (part time), completed two full years of training in clinical pathology in the later years of the decade.



During this period, the PhD program was essentially confined to offering this advanced degree to dental students. There were no independent PhD students with the department.

### New Developments/Achievements

Dr. Whipple created an endowed professorship in pathology and a fund to endow medical student fellowships that bears his wife's name. He also endowed visiting lectureships in honor of the school's first three emeritus professors, Drs. John R. Murlin, Walter R. Bloor, and Samuel Clausen.

## 1960s

The decade saw a change in leadership in both the dean's office and within the department, as well as the further evolution into a clinically oriented department. Faculty members felt increasing pressure to balance an expanding workload with the need to garner extramural funding to sustain basic science research laboratories. By the end of the decade, Dr. Orbison would leave the department to assume the position of dean of the medical school.

Cost of a loaf of bread:	\$0.19
President of the USA:	John F. Kennedy
World series winner:	New York Yankees
Cost of a gallon of gas:	\$0.31
1964:	First measles vaccine
1967:	First human heart transplant

## Chair

When Dr. Orbison announced his decision to move to the dean's office in 1967, Dr. Roger Terry was named interim chair, a position he held until 1969. The last years of the decade saw the department operating in what was essentially a holding pattern, awaiting the appointment of a permanent chair to replace Dr. Orbison. It was difficult to hire any new faculty members during this transitional period.

Dr. Stanley Patten (see figure 20) was named as the third chair of the Department of Pathology in 1969. He was also elected president of the American Society of Cytology during this year and went on to be awarded with the society's Papanicolaou Award. Dr. Patten was an avid tennis player and very much enjoyed scuba diving. He was to oversee the department for more than twenty years.

## Faculty

In 1960, there was a total of sixteen faculty members in the department. Dr. Ashton B. Morrison joined the faculty in 1960, sharing an interest in renal pathology with Dr. Panner. He remained for only a few years before leaving to take the position as the chair of the Department of Pathology and, ultimately, the dean at Rutgers

University Medical School. Dr. Eric Schenk also joined the faculty during this period. He contributed expertise in cardiovascular and gastrointestinal pathology and developed immunofluorescence technology within the department. In 1963, Dr. Stanley F. Patten was recruited to URM from Cleveland to serve as the director of cytopathology. He was later to be named the department chair. Dr. Patten was a nationally renowned expert in cytopathology, with a special interest in automation. Almost immediately, he transformed the cytology laboratory into one of the largest and best-known such departments in the country. Dr. Lowell Lapham joined the department in 1964, adding neuropathology expertise to the expanding department. A graduate of Harvard Medical School, Dr. Lapham spent nearly ten years at Case Western Reserve before joining the department in Rochester. Dr. Terry was officially named the chief of surgical pathology in 1964 (a position he had held, *de facto*, for more than a decade).

By 1965, the senior faculty roster included Dr. Whipple, listed as professor emeritus, and Drs. Orbison, Hawkins, and



Figure 20. Stanley Patten, the third chair of the Department of Pathology (1969–89)

Terry as professors. Dr. Goetz Richter was hired onto the faculty as an addition to the basic science component of the department. Dr. Richter was a graduate of Johns Hopkins Medical School and was recruited from his position on the faculty of Cornell University Medical School. In 1968, Dr. Donald Stuard returned to his medical school alma mater, the University of Rochester, to direct the autopsy service. Dr. Robert Cooper joined the department, splitting time between surgical pathology, cytopathology, and the dean's office. The number of faculty members remained relatively constant at about sixteen throughout the decade (see figure 21). This became an increasing source of concern throughout this period of time as the clinical load and the educational programs continued to grow.

In 1969, Dr. Elise DePapp joined the faculty (see figure 22). While it is difficult to establish because of the varying roles and titles of faculty and other departmental staff over the decades, it is almost certain that Dr. DePapp was the first woman to have a full-time faculty position in the department



Figure 21. Faculty, Department of Pathology (1969)

after Dr. Robscheit-Robbins from the 1920s. (As academic titles were quite different in that era, Dr. Robscheit-Robbins's role in the department is not entirely clear. She never had a title that included the word "professor," though others held such a title during her many years within the department. From 1958–1962, Dr. Elizabeth Bottcher was listed on the departmental roster as a clinical senior instructor. This title may have been reserved for senior trainees and not full-fledged faculty members. In the early 1960s, Dr. Evilene E. Schneeberger, who had trained in the department, remained on faculty as an instructor for a year

or so. Her work was as a postdoctoral fellow working with Dr. Ashton Morrison before leaving for a long and distinguished career at Massachusetts General Hospital and Harvard Medical School. Again, this was probably not a true faculty position). Unlike her predecessors, Dr. DePapp carried the title of assistant professor of pathology. She also held joint appointments in the Departments of Pediatrics and Obstetrics and Gynecology. Some of Dr. DePapp's work for the department was with the Clifton Springs Hospital. She stayed on the faculty until 1976, at which point she became employed fully by the Genesee Hospital. As per Dr. DePapp, she chose "money over prestige." She maintained her affiliation as a clinical professor throughout her long career, which ended in 1998.

The year 1969 saw the departure of Dr. Roger Terry, who had served as the leader of surgical pathology for eighteen years (with various titles over that time period). He relocated to the University of Southern California, presumably because



Figure 22. Dr. Elise DePapp, the first woman to succeed Dr. Freida Robscheit-Robbins on the full-time faculty (1969–1976)

he had been overlooked for the chair position. Dr. Robert Greendyke, a clinical associate professor and director of the blood bank from 1966 onwards, served as the main member of the faculty charged with residency instruction for all of clinical pathology during this decade. His primary job was as the medical examiner for Monroe County and his role within the department was on a part-time basis. Other clinical pathology education was delegated to technologists within the clinical laboratories, most of whom resided outside of the department. Clearly, the department's commitment to education in clinical pathology was still in its rudimentary stages at this time.

## Space

Prior to 1967, when the new medical school research wing was opened, the department occupied approximately 8,000 square feet of space for all of its functions. The space was largely unchanged from when the department first opened in the 1920s. While the mission of the department had largely evolved from its inception, neither the space nor the faculty numbers had kept up with the transformation. During this time, the residents occupied offices on the first floor of the building, close to Dr. Whipple's original office. The surgical pathology suite by this time had been relocated to the second floor. Of note, the blood bank was located on the ground floor in what is currently the post office during this time. While nominally within the realm of the department, it was physically at some distance from the remainder of the department in what was still a relatively small hospital structure. It would remain in this location until midway through the 1970s.

## Clinical

As a result of having two faculty members with an interest in renal pathology, the department began its diagnostic electron

microscopy program in the early 1960s. This relatively new technology was also utilized in the work-up of tumors in surgical pathology. In addition, Drs. Panner and Schenk established a robust direct immunofluorescence program for analyzing skin and kidney biopsies. Dr. Panner also performed autopsies at small rural hospitals throughout the western part of the state as the department continued to balance an increased presence within the community with its position as a basic science department.

The early 1960s saw the rapid expansion of the fields of laboratory medicine. Laboratories of bacteriology (microbiology), chemistry, and blood banking began to coalesce into the departments of pathology throughout the nation, transforming the clinical scope as well as the training programs. The situation at URMHC lagged a bit behind the national trend.

The 1960s also saw the rapid growth and evolution of the cytology laboratory. The rudimentary laboratory had no faculty oversight. Dr. Stanley Patten was recruited from Cleveland to address this deficiency. His arrival at Rochester immediately thrust the department into the national limelight as a leader in the field of cytopathology, with specific interests in automation.

The surgical pathology specimen volume grew only modestly throughout this decade, rising to 7,950 by 1969.

As early as 1963, Dr. Orbison was expressing the concerns of his faculty that their time was increasingly being devoted to clinical service and non-scholarly activities and that there was not enough time built into the schedule to allow for adequate research activities. This problem was exacerbated throughout the decade by the scope and volume of clinical operations continuing to increase, yet the number of faculty members remained constant.

## Research

Early in the decade, Dr. Ashton Morrison studied histochemical and biochemical aspects of chronic renal insufficiency.

His research efforts that began in Rochester would persist throughout his career. He made many significant contributions to the field. Dr. Panner studied hypokalemic nephropathy in experimental animals, as well as pursuing his interests in lysosome formation. Dr. Lapham developed a research program that studied cerebellar development in the fetus. He also was a major contributor to the institutional research program in Alzheimer's disease. Dr. Goetz Richter joined the research arm of the faculty and developed an extensive program in ferritin metabolism and immunology. He worked extensively on iron and ferritin in cell pathology, especially as it applied to hepatocellular carcinoma. He also studied the effects of ferritin synthesis on myocardial fiber hypertrophy. Dr. Richter was awarded many grants from the NIH, the Rockefeller Foundation, and other organizations over his tenure on the faculty at URM. He remained a mainstay in the research division until his retirement and is currently a professor emeritus in the department. Dr. Stanley Patten continued with his work in the field of cervical carcinogenesis, bringing the department to the national forefront in the field of cytopathology.

## Education

It was during the 1960s that the size of the medical school class expanded from seventy-four to ninety-six students. Pathology course time within the curriculum also expanded during this era. The faculty oversaw a full-year sophomore curriculum in pathology for medical students throughout most of this decade. Drs. Schenk and Panner were the mainstays of the departmental educational programs, presiding over training sessions with the medical students and residents. Dr. Schenk routinely received awards from the medical students for his outstanding contributions to their education. Dr. Panner was singled out by many students, residents, and junior faculty as a superb mentor full of invaluable career advice.



With the formation of the American Council on Graduate Medical Education (ACGME) and the subsequent involvement of the federal government in the financial support for residents, efforts to standardize training requirements began to develop some traction.

In 1960–61, the department finally offered its first formal residency rotations in clinical pathology. Chemistry operated within the Department of Medicine under the direction of Dr. William B. Mason, who was given a joint appointment in pathology. Hematology education was run by Ms. Jean Shaffer, a medical technologist, who was given a similar joint appointment, a process that was to be followed with increased frequency as training in clinical pathology became routine. The hematology laboratory was also under the direction of the Department of Medicine. The microbiology laboratory was firmly ensconced within the basic science Department of Microbiology and Immunology. The clear separation of basic science and clinical departments had not yet been realized, and residency training in pathology reflected this.

Dr. Richter, who was appointed in 1967, assumed the co-directorship of the departmental training grant.

Though it is difficult to enumerate precisely the number of trainees, as nomenclature was different and training programs less formal, at the start of the decade there were approximately two chief residents and nine residents and interns in the department, with anywhere from four to six post-sophomore year-out student fellows. The department appears to have had approximately ten postgraduate trainees (what we now call residents) per year throughout most of the decade. Resident recruitment was considered to be quite difficult during this period, as per many communications between the chairs and the deans. While this reflected a national trend, departmental leadership thought the issue to be of more significance in Rochester.

A record number of twelve medical students opted to take part in the year-out program in 1966–67. There were four such fellows in 1969–70.

## New Developments/Achievements

Automation in cytopathology and the development of electron microscopy and immunofluorescence technologies heralded great advances in the realm of anatomic pathology.

## 1970s

The change in name to the Department of Pathology and Laboratory Medicine highlights what was probably the most significant development of the decade. It was during this period of time that the department began to consolidate control of clinical laboratories under one organizational structure. Pressures from New York state regulatory bodies played a significant role in the institutional push for this goal. The scope of the department's mission had changed significantly from its days of inception as it moved from a department predominantly centered in research and education to one with a substantial clinical mission.

Cost of a loaf of bread:	\$0.25
President of the USA:	Richard Nixon
World series winner:	Pittsburgh Pirates
Cost of a gallon of gas:	\$0.36
1970:	First rubella vaccine
1975:	CAT scan developed

## Chair

Under the direction of Dr. Stanley Patten, the 1970s were a period of great expansion for the department. The major areas of professional growth in the 1970s included cytopathology, surgical pathology, and the development and consolidation of clinical laboratories. National concerns included the introduction of DRGs (diagnostic-related groups) and great concern as to how pathology departments were going to be compensated for clinical efforts within clinical laboratories. This was especially crucial as the percentage of funding derived from extramural sources failed to keep pace with faculty expectations, largely due to the increased clinical pressures on the faculty.

Dr. Patten was supported in the front office by Ms. Dorothy Lennon, who served as the department administrator and executive secretary for many years. She retired in 1979 and was replaced by Ms. Cheryl Breitenbuecher.

## Faculty

By 1970, a total of twenty-seven faculty members were listed in the department faculty roster; however, only eleven were full-time members of the department. In effect, the number of full-time departmental faculty members had not increased in nearly twenty years. In 1971, Dr. Leon Wheelless (see figure 23), an electrical engineer, joined the department in order to help develop automation in the screening of Pap smears. He developed the slit-scan cytofluorometry technique. Other prominent scientists including Drs. Paul Horan, Jim Leary, David Kay, Jim Kill, and Jay Reader joined the cytopathology



Figure 23. Leon Wheelless, the major research force in the analytical cytology division for many years

laboratory during this decade, keeping the department at the vanguard of the specialty.

Dr. Terry left the department in 1969 and this precipitated a period of instability within the division of surgical pathology. Dr. Robert Cooper was recruited from the University of Oregon and served as the director of surgical pathology from 1969–74. When he was promoted to the role as director of the new University of Rochester Cancer Center in 1974, he relinquished his position in surgical pathology. Dr. Thomas Bonfiglio briefly served as an interim director of surgical pathology before he left in 1975 for Case Western Reserve in Cleveland. Dr. Bonfiglio returned to the department at URMC in 1977 and remained as the director of surgical pathology until 1990, ushering in a new period of sustained stability. Other members of the faculty included Drs. Homeira McDonald and Chi Whan Kim. In 1979, Dr. Tony di Sant’Agnese (see figure 24) joined the faculty from Columbia University. He was to become a central pillar of the surgical pathology division throughout his long career, which lasted until 2014. Dr. Virginia Anderson served as a member of the autopsy service upon her hire in 1979. She also added expertise in pediatric pathology to the growing faculty, but remained on the faculty for only a few years.

The neuropathology division added Dr. Byung Ho Choi, who remained on faculty from 1972–81. His predecessor within the division, Dr. William Markesbery, left the department for the University of Kentucky, where he became a founding member of their aging center.

Dr. Robert Greendyke continued to serve as the director of the blood bank up through 1977. At this point, he was the only pathologist actively involved in clinical pathology. Ms. Betty Keenan served as the chief supervisor in the blood bank for more than two decades, stepping down from this position in 1980. Dr. Vivian Pallodoro served as the administrator overseeing the blood bank during this period and extending up through 1977. She was then promoted to assistant laboratory manager, a position that she held in one form or another until her retirement in 2002. In 1975, Dr. Jerome Nosanchuck



Figure 24. Anthony di Sant'Agnese, a major force in surgical pathology (1979–2014)

was hired as the acting director of clinical pathology. Shortly thereafter, Dr. Richard Coolen was hired as the director of clinical chemistry.

In 1977, Dr. Dean Arvan was hired from the University of Pennsylvania to serve as the first director of the clinical laboratories, with the charge of building robust clinical, research, and educational programs. Dr. Arvan was able to garner significant resources from the upper levels of the university administration to accomplish these goals. It was under his guidance that the Department of Pathology transformed into the Department of Pathology and Laboratory Medicine. Dr. Alfred Bacharach joined the clinical chemistry team in 1977, one of Dr. Arvan's first moves in attempting to bolster this division. In 1979, Dr. Tai Kwong was recruited from the University of Toronto to join the chemistry group as a replacement for Dr. Richard Coolen. He was appointed as the assistant director of the chemistry laboratory. Dr. Arvan took over as the director of the blood bank on an interim basis, replacing

Dr. Greendyke, until he was able to successfully recruit Dr. Blumberg in 1980. Prior to Dr. Blumberg's arrival, Ms. Jane Banzhaf, a medical technologist, served as the residents' main blood banking educator.

In addition to the hurdles they were to face in attempting to bring laboratory testing into the department, Drs. Arvan and Patten faced internal struggles as they tried to convince faculty members from the divisions of anatomic pathology and clinical pathology to see the department as a single entity. Early on, there was marked resistance from both sides to this amalgamation. Despite decades of evolution, this was seen as a fundamental change in the culture of the department.

By the end of the decade, the number of faculty members had increased to twenty-one, though this number included some part-time members (see figure 25). The department was now the employer for twenty staff members in anatomic pathology and 251 in the clinical laboratories. A small, faculty-heavy department had completely transformed into a medium-sized department with a specialized workforce consisting of many laboratory technologists and other personnel.



Figure 25. Faculty, Department of Pathology (1970s)

## Space

In 1970, the department had a total of 8,402 square feet of space, of which 2,256 was used for autopsies. An additional 1,208 square feet were used for cytopathology. The surgical pathology unit occupied 543 square feet and neuropathology had 726 square feet. There was a single 150-square-foot conference room and storage occupied 450 square feet. The pathology residents shared 629 square feet of space.

The S-wing was built in the 1970s. The department received 3,400 square feet of this space that had been designed for research and education. A new electron microscope was purchased by the department and located in this area, along with several new research laboratories. An additional 2,000 square feet of space in the S-wing was allocated to medical student education.

The surgical pathology laboratory was greatly enlarged during this time, keeping pace with the increased importance placed upon surgical pathology as a distinct discipline. Histology retained its location on the second floor, close to the Whipple Conference Room. Six to eight histotechnologists shared rooms on either side of the long hallway. This small area served as the site for tissue processing, tissue embedding, slide cutting, and staining. It also doubled as a site for eating lunch, smoking, and socializing up through 2004. The windows in the rooms no longer closed properly by that time, making for very chilly winters and summers that often saw ashes from the incinerator located below wafting into the laboratories. In 1977, Diana Scott joined the staff of histotechnologists. She rose through the ranks to become chief supervisor, a position she still holds more than forty years later! Mr. Charles Churukian presided over the special stains laboratory that remained on the first floor. Mr. Churukian, in concert with Drs. Eric Schenk and Dave Penney, was involved in the Biologic Stains Commission, which still resides within the department. They were responsible for producing a histologic stains manual that became the national standard.



Between 1970 and 1975, the department assumed control over the clinical chemistry, blood bank, and hematology laboratories. They were housed in antiquated space in H-3 during this era. Thereafter, the chemistry laboratory briefly occupied space in a building on Mt. Hope Avenue. Blood specimens were sent to the laboratory via a primitive tube system beneath Crittenden Avenue. On occasion, specimens would arrive having frozen en route. The hematology laboratory was housed in two trailers in a parking lot behind the old dean's office area, near the current site of the Whipple Museum. When large trucks would pass on Elmwood Avenue or remain idling with their engines running, all microscopic examinations would have to pause due to excessive vibrations.

In 1972, construction for an entirely new hospital was completed. This construction resulted in the hospital that retains much of its current configuration. It was into this space that the new, consolidated clinical laboratories would be designed and located. The hematology laboratory, which included coagulation and phlebotomy, was housed on the ground floor, close to the current emergency room. The phlebotomy space consisted of a single large room with space for approximately twenty-five phlebotomists. Clinical chemistry was in the adjacent space, the same location on the ground floor that it remained in for nearly fifty years. In 2019, a large portion of the laboratory would relocate to the new space on Bailey Road. The remaining portions would relocate down the hall, into the 2100 wing, in 2020.

By 1979, the department occupied 14,272 square feet of space for its anatomic pathology activities, and 28,670 square feet for the clinical laboratories. The basement continued to house some of the department's basic scientists' laboratories, along with the electron microscopy unit. Ms. Karen Bentley and Mr. Steven Coleman were the mainstays of this clinical electron microscopy service.

The William B. Hawkins Conference Room had been established on the first floor and housed many departmental activities, not the least of which was the annual holiday party, hosted by Dr. Donald Stuard and often featuring on-site

whiskey sours! A change in university policy regarding liquor licensing effectively ended these on-site celebrations. In more recent years, the conference room has been partitioned, with a portion allocated to other functions within the medical school; nonetheless, the William B. Hawkins Conference Room still exists, albeit with less room to throw holiday parties.

## Clinical

Beginning with Dr. Patten's arrival in 1963, the department boasted the only regional cytology laboratory. This was during the early years of Papanicolaou smears and, through educational efforts, the laboratory volume steadily increased to a peak of greater than 97,000 Pap smear analyses per year. The department moved from a manual reporting system to a computerized reporting and billing system. It was during the early 1970s that fine needle aspiration cytology also developed as a new subspecialty. The University of Rochester was at the forefront of this specialty, along with departments such as Johns Hopkins University and the Medical College of Virginia. As late as 1979, in a letter from Dr. Patten to Dr. Frank Young, who had recently been named the dean, it was apparent that cytopathology services were not yet considered diagnostic procedures and were not reimbursed by insurance.

The total surgical pathology volume in 1971 was 10,132 cases. This grew to 12,134 cases by 1979. In the early 1970s, the autopsy numbers peaked at about 700 cases per annum. Thereafter, in concert with the national trend, the numbers started to decline and, with this change, the efforts of faculty again evolved. Part of the decrease in autopsy rates can be attributed to the 1971 decision of the Joint Commission on Accreditation of Health Organizations (JACHO) to eliminate the requirement that hospitals perform autopsies on 20 percent of hospital-based deaths. The department performed only 468 autopsies in 1976, a number that remained reasonably constant throughout the remainder of the decade. Dr. Panner was widely hailed as a great teacher and a mainstay

of the autopsy division. The electron microscopy section was in its prime under the direction of Dr. di Sant'Agnese, with Karen Bentley as the major technical support person for the program. In addition to the large number of renal biopsies being performed, tumor analysis by electron microscopy had become the standard of care. Ms. Bentley also played a major role in teaching residents the fundamentals of ultrastructural biology during this time. Ms. Bentley remains a member of the faculty to this day, though her electron microscopic studies have reverted back to primarily research work. Electron microscopic analysis of tumors has almost entirely been supplanted by immunohistochemistry.

With the completion of the new hospital building in 1972, the consolidation of the clinical pathology laboratories began in earnest. In 1970, Dr. Frank Young, the chair of the Department of Microbiology, was included on the departmental faculty roster, overseeing the microbiology laboratory; however, the unit essentially was operated out of the Department of Microbiology. Clinical pathology was still an evolving and fragmented part of the discipline. With the arrival of Dr. Dean Arvan, the clinical pathology laboratories began to take shape. In 1977, laboratory medicine became an official academic division within the department. In 1978, the clinical laboratories installed their first computer system for reporting. Clinical chemistry had begun to implement automated testing platforms. The arrival of DRGs changed the entire financial structure of clinical laboratory testing, diminishing the resistance of clinical departments to ceding oversight to a centralized Department of Pathology and Laboratory Medicine. This would result in major shifts in the next decade.

## Research

Dr. di Sant'Agnese was instrumental in advancing the fields of diagnostic electron microscopy and then, later, immunohistochemistry in its early days. Dr. Stuard, the director of the autopsy service, received extramural funding from the

National Cancer Institute (NCI) for his work with the effects of therapeutic irradiation on visceral organs. Dr. Richter continued to be a major contributor to the research side of the department.

## Education

As it was difficult to find qualified cytotechnologists to examine the burgeoning specimen volumes, the department started its own one-year cytotechnology program. This was overseen by Ms. Florence Woodworth, who was later to become Dr. Stanley Patten's wife. She was recruited from Seattle to head this program in 1970. She remained at URMHC until 1991, though she transferred her primary appointment out of the department in 1981 as a result of her marriage to Dr. Patten. The cytopathology division thus became a prominent training center for cytotechnologists.

The University of Rochester became one of the first departments in the United States to have a one-year, informal fellowship in cytopathology, capitalizing on its wealth of clinical material and faculty expertise. However, the formal fellowship program did not officially begin until 1989, at the time the American Board of Pathology formally established cytopathology as a certified subspecialty. An unofficial neuropathology fellowship program was also extant in the department at this time.

Clinical pathology training of residents occurred mainly under the tutelage of senior technologists, including Jim Salvatore, Jean Shafer, Helen Short, Jane Banzhaf, and Diane Monteverde. Jim Salvatore also played a leadership role within the administration of the clinical laboratories and the interactions with the hospital leadership. Dr. Greendyke remained the only pathologist actively involved in the clinical pathology residency training program in the early years of the decade. By the end of the decade, Dr. Arvan had begun to develop rotations in many clinical laboratories that were gradually incorporated into his sphere of control.

In 1970, the department trained ten residents, along with eight postdoctoral fellows and four pre-doctoral fellows. There were also four student year-out fellows. Student fellows routinely participated in autopsies, logging as many as seventy-five during the course of their year-out. In continuing with its tradition of training future luminaries, one of the year-out student fellows in 1976–77 was Dr. Margot Peters, who would go on to be a professor of dermatology and pathology at the Mayo Clinic and a leader in the field of dermatopathology. Dr. Peters remembered Drs. Panner, Stuard, Orbison, and Patten as being true role models who treated students as peers. She cited her year-out as being one of the most influential years in her professional development. Anywhere from ten to fifteen trainees per year appear on the departmental roster during this period.

The sophomore medical student course lasted the entire academic year and, during this period of time, medical students were expected to attend and to participate in at least two autopsies. On an almost annual basis, Dr. Stuard was singled out by the students for his outstanding contributions to the medical student course and for his participation in an independent studies program.

### New Developments/Achievements

In 1973, a Whipple Fellowship was established at Genesee Hospital in honor of Dr. George H. Whipple. This was used to fund a year-long visiting professorship in that affiliated hospital.

## 1980s

In 1979, Dr. Frank Young, the chairman of microbiology and also a professor in the Department of Pathology, became the fourth dean of the medical school. He replaced Dr. Orbison, continuing the line of members of the pathology faculty ascending to the position of dean of the medical school at the University of Rochester (three of the first four deans). Dr. Young was a strong advocate for research as an important component of all faculty job descriptions. Early in his tenure, discussions ensued about the classification of the Department of Pathology and Laboratory Medicine as a “clinical” or “basic science” department, with serious ramifications for faculty salaries and requirements for extramural funding as a criterion for promotion and continued employment. The senior medical school leadership pushed for members of the department to derive significant portions of their salaries from extramural funding. At the same time, and different from the other basic science departments, the members of the Department of Pathology and Laboratory Medicine had increasing, and now significant, clinical obligations. This tension existed throughout the decade.

Cost of a loaf of bread:	\$0.51
President of the USA:	Ronald Reagan
World series winner:	Los Angeles Dodgers
Cost of a gallon of gas:	\$1.31
1980:	Smallpox eradicated
1983:	HIV identified as virus that causes AIDS

## Chair

Dr. Stanley Patten remained as the chair throughout the decade, resigning from his position on June 31, 1989. Dr. Patten died in

January 1997 after moving to Seattle, Washington, to become medical director of NeoPath. Dr. Tom Bonfiglio replaced him as acting chair for the remainder of 1989. Dr. Bonfiglio was a very popular figure within the department, having served in leadership roles for many years. His gentle, soft-spoken demeanor was appreciated by faculty and staff alike.

Upon Dr. Patten's retirement, an external review of the department allegedly suggested that the institution should infuse major capital into the department in order to increase its research profile. The administration opted against this strategic initiative, despite the increasing pressures on the department to become more research oriented.

In the mid-1980s, Dr. Patten's leadership team included Dr. Bonfiglio as the director of surgical pathology; Dr. Lapham, who oversaw neuropathology; Dr. Panner, who ran the autopsy service; and Dr. Arvan, who served as the director of the clinical laboratories. Dr. Richter served as the sophomore medical student course coordinator.

## Faculty

Dr. Bernard Panner took over as the chief of the autopsy service in 1981, replacing Dr. Donald Stuard, who left the department to assume the role of chair of the Department of Pathology in Reading, Pennsylvania. Dr. Panner successfully recruited Dr. Leon Metlay from Pittsburgh to help with the service. This brought to two the number of full-time faculty members on that service, which was responsible for performing over 400 autopsies. Dr. Metlay, who remains a member of the faculty to this day, also brought expertise in placental pathology and pediatric pathology to the department. In 1983, there was a total of thirteen full-time members of the faculty (eleven MDs and two PhDs), a slight decrease from several years before. This number finally increased to approximately twenty-one by the end of the decade.

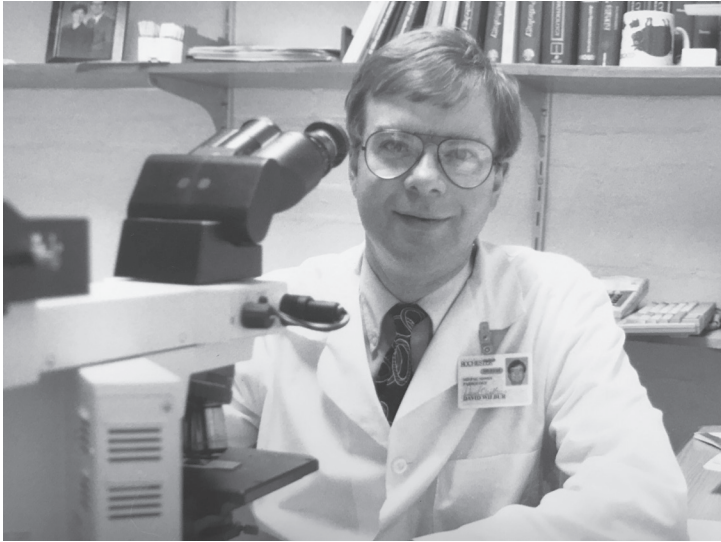


Figure 26. David Wilbur, director of cytopathology (1991–98)

In the mid-1980s, Drs. Mark Stoler and David Wilbur (see figure 26), both of whom completed residencies at URMC, joined the faculty in surgical pathology and cytopathology. Drs. Phil Dvoretzky and Catherine Listinsky joined the surgical pathology faculty during this time, as did Dr. Jan Muhlbauer, a dermatopathologist who had a joint appointment in the Department of Dermatology. In 1989, Dr. Glynis Scott was recruited from Yale University to join the faculty as a dermatopathologist to replace Dr. Muhlbauer, who remained on the faculty for only a brief period of time. She remains as the director of this service more than thirty years later. In addition to the dermatopathologists, there was a total of only four faculty members with nearly full-time service responsibilities within surgical pathology.

Dr. Tom Eskin joined Dr. Lapham on the neuropathology faculty in 1980 and stayed for a decade before leaving to become the director of neuropathology at the University of Florida. By 1986, the faculty numbered twenty-three full-time members, including eleven full-time anatomic pathologists.



The clinical services continued to expand rapidly and the growth in faculty numbers increased modestly, contributing to the stresses on research productivity for many.

Dr. Dan Ryan was appointed as an assistant professor in 1981 and given control of the hematology section of the laboratory. His wife, Dr. Charlotte Ryan, also became a member of the faculty, concentrating in surgical pathology. In 1982, Dr. Charles Sparks was recruited to lead the clinical chemistry unit and his wife, Dr. Janet Sparks, joined him first as a research associate and then as a faculty member within the research division. Dr. Charles Sparks was instrumental in helping his younger colleagues within the clinical chemistry laboratory to develop their academic programs. Dr. Kwong provided additional expertise in toxicology, which would later allow the department to build another community outreach program. These early efforts were harbingers of the direction the department was to take in the decades to come. Dr. Alfred Bacharach, who served as the director of clinical chemistry, left the institution in 1983. He had served in this capacity since 1979. By the mid-1980s, there were five MDs in the division of clinical pathology, along with three PhD clinical chemists.

Dr. Neil Blumberg (see figure 27), who completed all of his training at Yale University, was hired after a short stint at the University of Connecticut to serve as the first full-time director of the transfusion medicine service at URM. He would serve as the only full-time member of this laboratory for the next ten years before recruiting Dr. Scott Kirkley to help him. Dr. Blumberg remains as the director of transfusion medicine at the time of this

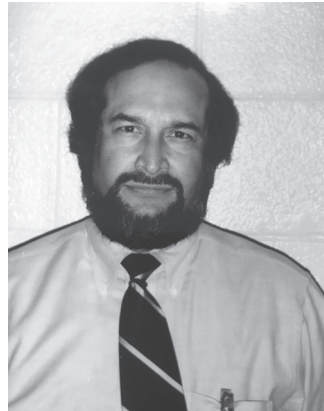


Figure 27. Neil Blumberg, the first full-time director of transfusion medicine (1981–present)

writing. Ms. Debra (Debbie) Masel joined the blood bank in 1977 (see figure 28). She would ascend to the role of chief supervisor of the laboratory in 1996, one which she still holds. Ms. Ann McMican held this position for more than a decade before Ms. Masel. Dr. Nancy Wang was recruited from the University of Minnesota to head the cytogenetics laboratory, which by this time resided within the department.

One of the mainstays and educational leaders in the department during this period was Ms. Jean Shaffer. A medical technologist by training, she was an excellent teacher and morphologist and contributed to the education of many of the department's trainees from 1956 until her retirement. For more than twenty years, she was a central figure in hemato-pathology and was given the title of assistant professor in 1978. It is certainly a testament to her importance within the department that she was granted an academic faculty position in the absence of an MD or a PhD. (She was appointed to a faculty position as an assistant professor in the Department of Medicine several years earlier. This reflects the structural organization of the clinical laboratories during her time at this institution.)

Early in the decade, Dr. Robert Mooney joined the faculty as a member of the clinical chemistry team, with an additional basic science laboratory research program. He had recently graduated with a PhD in biochemistry from Johns Hopkins University. In 1985, Dr. David Penney moved from the Department of Anatomy to the Department of Pathology



Figure 28. Debbie Masel, chief supervisor of transfusion medicine (2019)

and Laboratory Medicine, bringing with him his extramurally funded program in lung biology. Dr. Harold Smith joined the research division in 1986.

The faculty roster for 1989–90 included twenty-one full-time members of the team.

## Space

The chair's office suite remained in 1-7423 (currently the site of neuropathology). In addition to Dr. Patten (and then Dr. Bonfiglio), the suite was occupied by several long-standing members of the department. Ms. Sandy Piampiano, Sue Vanthof, and Cheryl Breitenbuecher formed the nucleus of the administrative staff that addressed issues concerning the medical student course, financial issues within the department, and the chair's administrative functions. At this time, Sue Vanthof served as the secretary for the entire anatomic pathology departmental faculty (see figure 29). This group



Figure 29. Sue Vanthof, the executive administrator to the chair (1979–present)

of support staff remained intact (with modifications in job descriptions) until 2015, when Ms. Breitenbuecher retired. Much of the departmental executive administrative chores fell to Ms. Breitenbuecher during this decade.

By 1983, the department had undergone a significant expansion, now occupying 14,817 square feet of space for anatomic pathology. This included a slight increase in autopsy space, up to 2,920 square feet, but a major increase in the space allocated to surgical pathology, which was now 2,160 square feet and located on the second floor. It was during this period that the “blue light” policy disappeared from the medical center. Up until this time, whenever an autopsy was in progress, a blue light situated outside of the morgue was illuminated, an invitation for any medical student to step in to observe the proceedings as time allowed. Due in part to concerns about the high incidence in tuberculosis amongst trainees, this policy was altered. The diagnostic electron microscopy unit occupied 1,046 square feet in the basement. The histopathology laboratory grew to 1,354 square feet and the resident offices grew to 901 square feet. The establishment of an endocrine/radioimmunoassay/protein laboratory in the 2-3600 area resulted in a further increase of total space. The total space occupied by clinical laboratories in 1983 was 36,910 square feet. This represented an increase of approximately 20 percent in square footage from ten years earlier.

Surgical pathology faculty members occupied a small cluster of offices on the second floor that housed a total of five faculty, three transcriptionists, and four residents. As was the standard at the time, smoking in the hospital was still permissible. Over time, this office suite became stained a unique shade of yellow due to the constant smoking in the cluster. Its distinct hue left a lasting impression on its past occupants. In 1983, there was a slight renovation to this office suite. During the period of renovation, the William B. Hawkins Conference Room was repurposed as a surgical pathology sign-out area and a resident office suite.

The cytopathology suite, also on the second floor, expanded to 1,817 square feet. Cytopathology, which under

the leadership of Dr. Patten had attained a national reputation, resided in space that is currently occupied by the pathology residents, adjacent to the K-207 auditorium. A total of six cytotechnologists occupied this room. Donna Russell, who is still the director of educational activities in the division, joined this group in 1987. Departmental cytotechnologists have continued to occupy a prominent place on the national scene since the early days under Ms. Florence Woodworth. The analytic cytology research laboratories, headed by Dr. Wheelless, occupied space in the perpendicular, adjacent hallway.

## Clinical

During this era, each of the laboratories largely functioned independently, with little integration into a coherent and interactive department. Many of the areas of pathology that extended across divisions, such as immunohistochemistry or molecular diagnostics, were not yet fully evolved and not part of the standard of practice. The divisions of anatomic and clinical pathology had completely separate administrative functions with little to no overlap. There was little sense of a common purpose or common goals between the divisions.

Dr. Jan Muhlbauer's arrival in the department led to an abrupt increase in the surgical pathology volume, which increased by 10,000 dermatologic cases that year, peaking at 20,103 cases in 1983. Unfortunately for the department, that increase in volume was transient, as Dr. Muhlbauer was able to transfer that book of business to his new private office when he chose to leave the department after only a short stay on the faculty. The surgical pathology volume had dropped to 14,056 by 1985. The number gradually increased throughout the remainder of the decade, reaching 20,000 cases again in 1990. Dr. Bonfiglio continued to preside over the unit, accompanied by Dr. di Sant'Agnese, who ran the electron microscopy unit, and Dr. Wilbur, who oversaw the earliest phases of the immunocytochemistry laboratory. As of 1983, all patient record documentation within the divisions of anatomic pathology

(except for cytopathology) was still manual, with no computerized information system in place.

The autopsy numbers decreased from their highs in the 1970s down to approximately 400 cases per year by 1983. The autopsy volume remained between 350–400 cases per year during the decade of the 1980s. These numbers remained relatively stable. Nationally, the rate of autopsies had fallen to 5–10 percent of all hospital-based deaths. The rate at URMC, while low, exceeded this rate.

The early 1980s saw the development of the immunohistochemistry laboratory. At this point, most antibody detection was by direct immunofluorescence performed on frozen tissue, and the department had a library of approximately twenty antibodies at its disposal. Dr. di Sant'Agnese served as the director of the laboratory later in the decade.

The cytopathology unit reviewed approximately 65,000 cases per year during the early 1980s, with the majority of cases coming from private practitioners in the region. Two faculty members devoted the majority of their time to cytopathology as the volumes remained relatively constant. Dr. Wheelless was spearheading many studies in quantitative analysis within this laboratory during this period. By the end of the decade, the cytopathology volume had increased to approximately 80,000 cases.

By 1983, many clinical laboratories had been relocated, largely consolidated under the Department of Pathology and Laboratory Medicine, and modernized. During this era, Dr. Paul Woolf in internal medicine oversaw the endocrine laboratory, Dr. Richard Miller ran the obstetrics and gynecology-affiliated laboratories, and the tissue typing laboratory resided within the Department of Surgery. Special coagulation was brought into the hematology laboratory from the Department of Medicine in 1981. Cytogenetics became available, but only through collaboration with a laboratory at Roswell Park Cancer Center. The total number of clinical laboratory tests increased from approximately 1.9 million tests in 1985 to 2.5 million in 1990. The clinical chemistry laboratory was divided into four discrete sections, overseen by Dr. Charles

Sparks upon his joining the faculty in 1982. He personally took charge of the automated sections of the laboratory. The protein laboratory and the radioimmunoassay laboratory were supervised by Dr. Robert Mooney. Dr. Tai Kwong oversaw the toxicology laboratory and served as the associate director of the clinical chemistry laboratory. Dr. Kwong also assumed control of the immunoassay section of the laboratory. Dr. Theodor Mayer was also on the clinical chemistry faculty at this time. He would leave for Rochester General Hospital shortly thereafter. Clinical hematology was overseen by Dr. Dan Ryan. It was late in this decade that the department purchased its first clinical flow cytometer. The flow cytometry laboratory was overseen by Dr. Ryan and had three full-time technologists. The blood bank continued to be run by Dr. Blumberg. While the numbers of units transfused and associated testing continued to increase, the number of technologists was able to remain largely stable due to slowly advancing automation. Test by test and laboratory by laboratory, Dr. Arvan and his colleagues were slowly consolidating laboratory testing under the domain of the Department of Pathology and Laboratory Medicine.

## Research

Dr. Mark Stoler, working with Dr. Tom Broker, began his seminal work in human papilloma virus and cervical carcinogenesis. His *in situ* hybridization techniques represented cutting-edge science at the time and his work was funded by the NIH. His work helped to maintain the prominence of the cytopathology division at the national forefront of the field. Dr. Stoler likely had the first National Institutes of Health R01 grant awarded to a member of the surgical pathology faculty at URM. Previous NIH awards had been granted to members of the department whose roles involved the performance of autopsies and medical student teaching, with little or no surgical pathology responsibilities. The “basic science” department

had now become truly a clinical department with a basic science component.

Extramural funding was at approximately \$800,000 in 1980 and peaked at \$1.6 million in 1988, declining slightly thereafter. The department garnered approximately \$1.5 million in extramural funding in the last years of the decade. Drs. Robert Mooney, Leon Wheelless, and Harold Smith were the major contributors to the researcher division, studying insulin actions, quantitative analysis of sickle cells, and ApoB mRNA editing, respectively. The public health support into the department ranked twenty-ninth nationally. Dr. Glynis Scott, whose primary appointment was in dermatology, but who was a mainstay on the dermatopathology service, thrived with her work in signaling pathways and melanoma biology. Drs. Charles and Janet Sparks also had significant extramural funding during this time.

## Education

Dr. Patten served as the director of the residency program throughout his tenure as chair. By the 1980s, residency training in pathology bore a striking resemblance to the present program. At this point, combined training in anatomic and clinical pathology required a total of four years, while training limited to either of the subdivisions required a total of three years. In 1985, the American Board of Pathology requirements changed to five years of training (which would later be reduced back down to four years, but not for more than a decade). Residents were required to spend six months on the autopsy service, three months of training in cytopathology, three months in neuropathology, and nine months in surgical pathology. The clinical pathology rotations included three months in each area: the blood bank, clinical chemistry, hematology, and microbiology laboratories. Various elective rotations completed the four-year training program. In 1986, the department was the home to sixteen residents in pathology. This number hovered around sixteen to eighteen for most



years during this decade. Subspecialty training was also offered in neuropathology. From 1984–88, one of the outstanding residents was Dr. Dawn Riedy. She was a medical student and year-out student fellow at URMC and winner of the Hawkins Award prior to beginning her residency. Dr. Riedy went on to become the chair of the Department of Pathology at Rochester Regional Health System, the position she currently holds. The cytopathology rotation was both “free form” and rigorous, with Dr. Patten administering a notoriously demanding exam for all residents at the end of the rotation. Dr. Charles Sparks served as the Residency Review Committee director within the department from 1987–1989.

As early as the mid-1980s, there was pressure from the faculty to develop subspecialty fellowship training programs. No ACGME-accredited programs existed in the department, despite the increasing awareness that these types of programs were being established at most major academic medical centers. This became a source of some tension within the department. The neuropathology division had sponsored a neuropathology fellowship program, but decided to discontinue the program in 1982.

The department (in conjunction with the Department of Microbiology and Immunology) provided clinical training fellowships in clinical microbiology for two microbiology PhD students each year. This program attained great national prowess and continues to thrive up to the present. Dr. Marilyn Menegus oversaw the program, which trained many future chairs and leaders in the field in various departments of microbiology. Since her death in 2017, the program has been overseen by Dr. Nicole Pecora and continues to attract stellar trainees.

Early in the decade, the second-year medical students participated in a two-semester course. The fall semester was directed by Dr. Goetz Richter and was entitled General Pathology. The spring semester course, run by Dr. Bernard Panner, was entitled Systemic Pathology. By mid-decade, Dr. Leon Metlay had taken over the General Pathology semester-long course. The Systemic Pathology course had been replaced by

a series of organ-specific courses into which pathology lectures were integrated. The trend of pathology having diminished classroom time with medical students was to continue over the next several decades, with a significant impact on the department's ability to recruit future residents, especially from the university's medical school class.

The year-out program for medical students continued to thrive, with six student fellows in 1986. Most of the decade saw at least two students per year within the department.

The PhD program, under the direction of Dr. Mooney, granted sixteen PhDs between 1970 and 1986. The program remained small but continued to have a strong and well-structured curriculum.

### New Developments/Achievements

This decade saw the influx of great advances in technology. The department began to use flow cytometry and molecular diagnoses in the clinical setting, along with great advances with mass spectrometry in the toxicology laboratory. Immunohistochemistry had begun to replace electron microscopy as the principle diagnostic adjunct to routine histology.

## 1990s

The decade was characterized by a continued move toward the importance of diagnostic cytopathology, surgical pathology, and clinical pathology, with fewer departmental resources available for extramurally funded research programs. Toward the end of the decade, senior leadership made a concerted effort to move the department back to a heavy focus on research. Dr. Jay Stein, the CEO of the medical center, put much effort into the construction of the Kornberg Research Building and was eager to fill it with extramurally funded investigators.

Cost of a loaf of bread:	\$0.70
President of the USA:	George H. W. Bush
World series winner:	Minnesota Twins
Cost of a gallon of gas:	\$1.14
1992:	First hepatitis A vaccine
1996:	“Dolly the Sheep” becomes first clone

## Chair

In July 1990, Dr. Thomas Bonfiglio was named the fourth chair of the Department of Pathology (see figure 30). Dr. Bonfiglio had an international reputation as a cytopathologist, serving as the president and member of the Executive Committee of the American Society of Cytology and as president of the American Society of Clinical Pathology. Following upon the heels of Dr. Patten, Dr. Bonfiglio’s appointment as chair allowed the department to retain its national reputation for leadership in the field of cytopathology. Dr. Bonfiglio remained as the chair until 1997. He was a very popular and friendly chair, known for socializing with the junior members of the cytopathology unit and for his off-time fishing and coaching his children’s



Figure 30. Thomas Bonfiglio, the fourth chair of the Department of Pathology and Laboratory Medicine (1990–97)

soccer teams. Dr. Dean Arvan was named the associate chair for clinical affairs and also served as the coordinator of outpatient laboratory services. Dr. Arvan, always a gentleman, could often be seen smoking his pipe in his office as he busily assembled the beginnings of the clinical laboratories empire. Drs. Arvan and Bonfiglio worked with great synergism and collegiality as they represented the department in all interactions with the hospital and the medical school.

Dr. Dean Arvan assumed the title of acting chair in May 1997 (see figure 31). He had spent the previous twenty years as the director of the clinical laboratories. He oversaw huge projects in automation, consolidation, and growth of the laboratories. Dr. Arvan was devoted to his grandchildren, with whom most of his time away from the office was spent. He became the senior associate dean for faculty affairs in 1998 when the dean selected a new chair for the Department of Pathology and Laboratory Medicine.

The end of the decade saw Dr. Steven Spitalnik, who did his residency training in the department, return from the

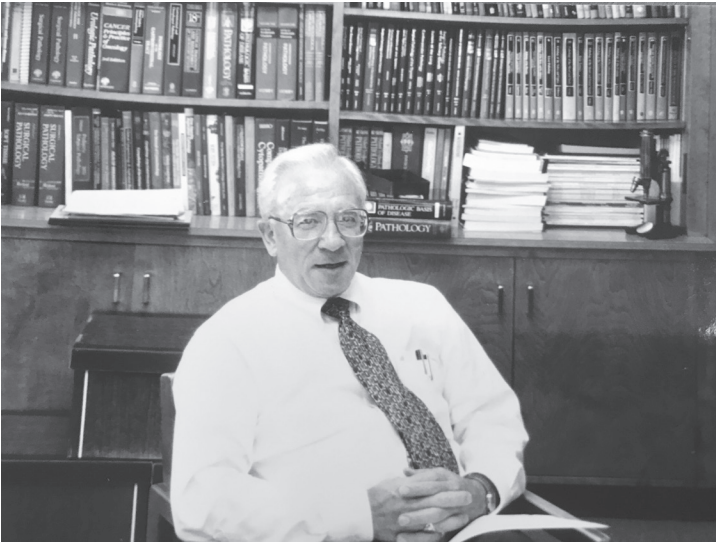


Figure 31. Dean Arvan, vice chair of clinical laboratories and twice acting chair of the department (1989 and 2002–4)

University of Pennsylvania. In 1998, he became the fifth chair of the department (see figure 32). Dr. Spitalnik was the vice-chair of the Pathology Department in Pennsylvania and came to URMC having built a robust career in transfusion medicine and apheresis. His research interests centered around the immunology of cellular proteins. He was viewed as a charismatic chair and had made many friends during his residency at URMC. Many members of the department remembered him fondly from his days as a resident and were pleased and excited when he arrived as chair. He was charged by the upper administration of the medical center with augmenting the research profile of the department, which had become almost exclusively a clinically oriented department by this time.

Ms. Cheryl Breitenbuecher operated as the department administrator during this time, serving as the chief departmental administrator in charge of the medical school functions. Ms. Sue Vanthof continued in her role as the administrative assistant to the chair and to the department's



Figure 32. Steven Spitalnik, the fifth chair of the Department of Pathology and Laboratory Medicine (1998–2002)

central administration. Mr. Jay Marchwinski was hired by Dr. Arvan to oversee the administration of the clinical laboratories. In this role, he largely took over the administrative responsibilities that Jim Salvatore had been performing for decades, bringing more of a financial bias to the program. Working with Dr. Arvan, Mr. Marchwinski played a pivotal role in the pronounced expansion of the clinical laboratory operations and helped to develop the network of patient service centers. This groundbreaking work changed the complexion of the department in ways that persist up to the present. He was succeeded by Mr. Robert (Bob) Johnson, who remained in this position as the administrator of the clinical laboratories for several years. Mr. Johnson had served in a similar role at the highly successful Genesee Hospital laboratories for many years and became available when that hospital shuttered. As the department's mission continued to evolve, Mr. Johnson would ultimately assume the role of program administrator, assuming financial and administrative oversight for the clinical, education, and research programs.

## Faculty

In 1991, the department boasted a faculty consisting of eight professors, five emeritus professors, ten associate professors, and ten assistant professors. There were twelve additional members of the faculty who had secondary appointments in pathology and thirty-three clinical and adjunct faculty.

The year 1991 was a major one for faculty retirements and symbolically marked the end of an era and the beginning of a new one. Dr. Richter became professor emeritus. Dr. Schenk retired. Dr. Lapham announced his retirement, but continued on while a search for his replacement in neuropathology proceeded. Dr. Eskin also left the department to become the director of neuropathology at the University of Florida.

In 1991, after a short stint at the University of Connecticut, Dr. David Wilbur returned to URMC to serve as the director of cytopathology. He remained in that position until 1998, at which point he relocated to Massachusetts General Hospital for a similar position. His wife, Dr. Margaret Fallon, a member of the department's surgical pathology faculty, relocated along with him. Dr. Lisa Teot became the director of the cytopathology service in 1998 and remained as such until she left for a similar position at Boston Children's Hospital in 2001.

Dr. Bonfiglio remained as the director of surgical pathology until he replaced Dr. Patten as chair in 1990, at which point Dr. di Sant'Agnese was named as the new division director. Dr. Joshua Sickel, who had trained in the department, and Dr. David Hicks, who had gone to medical school at URMC and did his pathology training at the University of Pennsylvania, joined the faculty. At this point in his career, Dr. Hicks was devoting most of his professional efforts to understanding and diagnosing aspects of bone pathology. Dr. Andrea Dawson, an expert in breast pathology, also joined the team. Dr. Clara Mesonero became a member of the surgical pathology faculty, as the department strove to keep up with the increasing service workload. Further additions to the faculty in surgical pathology and cytopathology included Drs. Carl McCary, John Kalmar, and Fadi Hatem.

As the clinical pathology services expanded, so did the need for subspecialty experts. Dr. Ray Felgar was hired to oversee the hematopathology service. Dr. Beerelli Seshi joined his division. Dr. Scott Kirkley joined the division of transfusion medicine, providing some relief for Dr. Blumberg, who was the sole member of the division for the previous ten years.

Drs. Listinsky and Dvoretzky left the department during this period.

Dr. Lapham remained as the director of the neuropathology division until his retirement in 1992. Dr. Jim Powers was recruited from Columbia University to assume the role as the director of neuropathology. In 1994, Dr. Powers was named the associate chair for education and Dr. Charles Sparks the associate chair for research. Dr. Arvan was named the associate chair for clinical affairs. When Dr. Arvan became the acting chair in 1997, Dr. Dan Ryan stepped in as the director of the clinical laboratories. In 1999, Dr. Panner announced his retirement. However, due to departmental needs on the renal pathology service, he was convinced to continue his work in the department on a part-time basis, a situation that persisted for the next seventeen years!

Dr. Chawnshang Chang (see figure 33) was recruited as the George Hoyt Whipple Professor of Pathology, expanding the departmental research profile. Dr. Chang was a nationally renowned researcher with interests in the molecular aspects of prostatic carcinogenesis. He was recruited from the University of Wisconsin with the expectation that he would

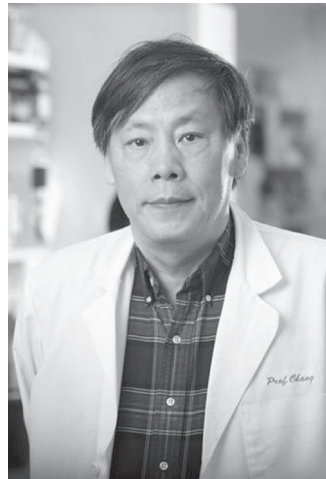


Figure 33. Chawnshang Chang, the Whipple Professor of Pathology (1995–present)



significantly augment the national profile of departmental research. Dr. Chang brought with him a large contingent of research fellows and negotiated for an increase in the number of PhD students admitted to the departmental program. Dr. Penney retired from the research division during this same year.

In 1997, the department listed eleven professors (including one emeritus), nine associate professors, nine assistant professors, and three clinical assistant professors amongst its ranks. An additional twenty physicians and scientists had secondary appointments in the department. Thirty-nine more physicians had adjunct and clinical appointments as the department spread its affiliations across the region. While the number of adjunct and secondary appointments continued to expand, the number of full-time faculty members remained largely stable throughout the decade, despite the increase in both volume and scope of pathology services being offered.

Dr. Brendan Boyce was recruited to the department toward the end of the decade, bringing with him expertise in anatomic pathology, as well as a large, extramurally funded research program. He had built an international reputation in bone disease at the University of Texas at San Antonio.

Dr. Eric Schenk died suddenly in 1993. He was a beloved member of the faculty for thirty years. In his honor, the department created an annual faculty teaching award that is still awarded to this day.

## Space

In 1991–92, the autopsy suite was completely renovated. A high-risk infectious case room with negative pressure ventilation was installed. A shower was added to the suite during this time. Another part of the renovation project included the installation of an elevator in the morgue. This was done at the behest of the CEO, Dr. Jay Stein, who thought it improper for

funeral homes to transport deceased patients to their outside facilities through the main hallway of the hospital.

During this decade, there were significant renovations made to the offices and laboratory space on the first floor near the original dean's office. This was largely prompted by the recruitment of Dr. Chang; however, the department also saw a major renovation of the neuropathology research laboratory, the S-wing offices, and laboratories.

The chair's office suite was relocated to its current location in the second floor of the 2100 wing in 1997. Many of the surgical pathology faculty members also moved to this wing at the same time, remaining there until the new surgical pathology suite was constructed several years later.

In 1991, the flow cytometry laboratory was physically separated from the hematology laboratory and moved into the space it currently occupies on the second floor of the 3600 space. Several years thereafter, the molecular pathology unit moved away from the hematology laboratory to the first floor of the 2100 wing, which it occupied until it moved to its current Bailey Road location in 2019.

The departmental spaces on the ground and first floors of the 2100 area were remodeled into state-of-the-art research spaces as part of the plan to enhance the department's research programs. Drs. Sims's and Spitalnik's research programs were the first occupants of the newly designed space. By the end of the decade, Dr. Boyce's laboratory was also to occupy this space and, later, Drs. Mooney and Lianping Xing would move into this space.

In the latter years of the decade, the hospital invested in a significant renovation of the blood bank, chemistry, and hematology laboratories located on the ground floor.

## Clinical

By the start of the 1990s, the organizational structure began to look similar to the one currently in place. Faculty members resided primarily within the divisions of anatomic or clinical

pathology. Within anatomic pathology, there was an autopsy division, a cytopathology division, an anatomic pathology immunopathology laboratory, and a surgical pathology division. Within surgical pathology, there were units allocated to diagnostic electron microscopy, histology, immunohistochemistry, and a special stains laboratory. The neuropathology unit was further subdivided into a section of muscle cytochemistry (which resided in the Department of Neurology). There was also an ophthalmic pathology laboratory peripherally within the department, under the direction of Dr. Steven Searl. The surgical pathology workload grew and became substantially more complex, in part due to a contract with the Lattimore Surgicenter and the start of a liver transplantation service at Strong Memorial Hospital.

Within clinical pathology, there were sections of phlebotomy, a computer facility, specimen receiving, transfusion medicine, hematology, endocrinology, cytogenetics, nephrology, microbiology, clinical chemistry, immunoserology, and reproductive endocrinology. Chemistry was further subdivided into general chemistry, radioimmunoassay, a protein laboratory, and toxicology/drug analysis. Dr. Dan Ryan was named the acting laboratory director when Dr. Arvan moved into the chair's office. The chemistry and hematology laboratories were combined into a single unit, allowing for improved efficiencies. When the two laboratories were combined, Dr. Charles Sparks was appointed as the medical director. The department also had a cell sorting facility that was overseen by Dr. James F. Leary. In 1991, the department bought its first flow cytometer, greatly expanding its capabilities in hematopathology. In 1994, the blood bank became computerized with the purchase of a Mediatech system. This allowed for increased efficiencies, as the laboratory continued to expand with no increase in personnel.

Other laboratories such as cytogenetics, dermatopathology, endocrinology, eye pathology, HLA/tissue typing, immunology, microbiology, nephrology, neuromuscular, and reproductive medicine were still operating primarily in departments other than the Department of Pathology and

Laboratory Medicine and were designated as satellite laboratories. Many of these laboratories would come under the control of the department during Dr. Spitalnik's time as chair at the end of the decade and extending into the next.

The clinical laboratories developed outreach programs in phlebotomy (what are currently known as patient service centers) and a drug testing program for several regional employers. In 1986, Dr. Kwong had been selected by the American Association of Clinical Chemistry to work on a federal panel regarding drug screening for federal employees. He used this experience to build the pre-employment drug testing program that the department was to oversee for the next fifteen years.

Throughout the decade, the department continued to expand its phlebotomy outreach program to include new blood drawing stations and nursing homes. By 1995, the clinical laboratories were processing 1.8 million tests. The outreach volume increased by 25 percent in 1995–96 alone as this became a major source of the clinical workload and significant revenue stream for the department.

The newly created molecular laboratory consisted of two technologists, and oversight was shared by Drs. Arvan and Ryan. Their main assays were T and B cell gene rearrangement studies. This laboratory functioned as a diagnostic clinical laboratory that also served to augment and support the research endeavors of its medical directors.

The surgical pathology volume had grown to 22,000 cases by 1993. There was a dramatic rise in the 1980s, but the numbers leveled off during much of the 1990s. In 1994, Dr. Bonfiglio hired Ms. Laurie Baxter as the department's first pathologists' assistant. Her work helping with specimen preparation and grossing would become invaluable with the explosion in specimen volumes over the next decades. In 1997, the histology laboratory added evening and night shifts.

Autopsy numbers dropped precipitously during this decade. While this was a national trend, it may have been further exacerbated by a highly publicized malpractice suit at

another local hospital in which autopsy findings were blamed for the outcome of the legal settlement. The department continued to have a strong working relationship with the Monroe County Medical Examiner's Office. Dr. Nicholas Forbes, who was primarily employed by Monroe County, participated in the department's autopsy service, which was led by Dr. James Powers. This arrangement was especially helpful for the residency training program, which by this time required that residents receive some training in forensic pathology. This relationship continues to the present. There is currently a jointly sponsored ACGME-accredited fellowship training program in forensic pathology.

Cytopathology volumes actually decreased from 90,000 cases in 1993 down to 75,500 by 1995. It was during this era that the cytopathology division participated in an outreach program, providing diagnostic services to the hospitals in the "southern tier" of New York, including Nicholas Noyes, Jones Memorial, and St. James Mercy Hospitals. This program was briefly overseen by Dr. Maureen Lowe, who was one of the cytopathology fellows during this era. Mr. Mike Facik was named the chief supervisor in the division in 1997, a position he held for two decades until his retirement in 2017.

By the early 1990s, the department had a greatly expanded list of clinical and adjunct faculty. More than thirty physicians who populated the American Red Cross, Genesee Hospital, Highland Hospital, the Monroe County Medical Examiner's Office, Park Ridge Hospital, Rochester General Hospital, and Saint Mary's Hospital held these appointments as the department expanded its affiliations and influences within the region. The department signed a formal contract to provide pathology services to St. James Mercy Hospital in 1992. Members of the faculty also covered pathology services at Nicholas Noyes Hospital on an ad hoc basis.

The year 1997 saw the arrival of a new clinical information system that provided a major upgrade to clinical pathology services.

## Research

Early in the decade, Dr. Leon Wheelless was named as the interim director of a new division of experimental, cellular, and molecular pathology. Drs. Wheelless, Robert Mooney, and Harold Smith had NIH grant support. The NIH funding levels were markedly diminished at this point, due to major funding reductions in the national organization. During the two years from 1989–91, the departmental faculty was responsible for 215 publications and 185 presentations at national meetings. The research extramural funding level for 1990–91 was \$964,745.

Mid-decade, the department developed a committee on program and faculty development, headed by Dr. Charles Sparks, who was given the title of associate chair for research. This committee was designed to initiate and promote faculty research throughout the department. A small amount of departmental money was used to fund pilot studies for departmental researchers. Dr. Chang brought a huge program in molecular oncology from Wisconsin and provided the impetus for the expansion and updating of research facilities within the department. His presence greatly increased the departmental research footprint and NIH grant ranking.

This decade saw a continuous increase in extramural funding, annually exceeding one million dollars. In 1997, the department saw a 14 percent increase in this number on account of the recruitment of Dr. Chang into the George Hoyt Whipple Professorship.

Departmental research concentrations included Dr. Chang's work with molecular mechanisms of prostate cancer, Dr. Hicks's work on the effects of lead and radiation on bone, Dr. Carl McGary's work in the biochemical and genetic bases of tumor metastasis, and Janet Sparks's studies on insulin and Apo B biogenesis in obese rats. Dr. Harold Smith was chosen to chair the first Gordon Research Conference on RNA editing in 1995. Dr. David Penney garnered significant NIH support for his work in lung injury and fibrosis.

Dr. James Leary oversaw large research programs in cell analysis and sorting and the molecular characterization of metastatic breast cells. Dr. Leary was a member of the department from 1978–94, during which time he played a critical role in the development of high-speed flow cytometry. He later moved to the University of Texas at Galveston and then to an endowed professor position at Purdue University.

Dr. Brendan Boyce joined the faculty at the very end of the decade and brought with him a large, extramurally funded research program. His work in osteoclasts blended in well with the nationally renowned program at the Musculoskeletal Research Center. He brought Dr. Lianping Xing along as a research professor. She would later become an independently funded principal investigator. This research collaboration forged a strong relationship between the department and the world-renowned Musculoskeletal Research Center.

## Education

Dr. James Powers served as the associate chair for education beginning early in the 1990s. Dr. Leon Metlay became director of the general pathology course for second-year medical students and Dr. Dean Arvan became the residency director. Dr. Arvan served in this role from 1990 to 1994. Thereafter, Dr. Powers assumed this role. Of note is the concern at that time that there was a steadily decreasing interest in pathology as a specialty for American-trained medical graduates. The lack of significant exposure to medical students with the new curriculum was blamed for much of this diminished interest. The requirement for a fifth year of residency training further exacerbated the problem. Realizing the problem, the American Board of Pathology soon reversed the requirement for five years of training in order to be eligible to take the certification exam in pathology in hopes of increasing the numbers of medical students entering the field.

The department had seventeen residents in 1990 and these trainees were recruited from medical schools throughout the

country and beyond. In 1992, the residency program was officially enlarged from eighteen to twenty-one residents in order to reflect the rapid expansion in specimen volumes. This included two residents who were assigned to the Genesee Hospital, one in anatomic pathology and one in clinical pathology. The department continued to have fifteen to twenty-one residents per year, graduating eight trainees in 1995. Amongst the residents from 1996 to 2000 was Dr. Charles LeVe, who currently serves as the chair of the Department of Pathology at Roswell Park Cancer Center in Buffalo, another of the many URMC faculty and residents who would attain national leadership positions. Dr. Ritu Nayar was one of the cytopathology fellows to train in the program during the 1990s. She would go on to serve as the president of the American Society of Cytopathology and a leader in the field.

The department continued with its strong participation in Dr. Whipple's year-out program for medical students. Two or three year-out medical student fellows were part of the team for each year throughout most of the decade. Due to gradually diminishing financial support from the medical school, the number of year-out fellows gradually diminished. By the end of the decade and moving forward, the standard became one such fellow per year.

Two clinical post-residency fellowships were established in 1991, both in honor of Dr. Stanley Patten. One was in surgical pathology/cytopathology and the other in transfusion medicine. The department did not seek ACGME accreditation for either of these programs.

The graduate student training program was reorganized under the newly created experimental pathology division. There were seven students in the PhD program in 1990. Over the course of this decade and under the leadership of Dr. Harold Smith, the graduate program grew from seven to twelve students. In 1995, four students received PhDs from the department and another four received master's degrees. With the arrival of Dr. Chang, the program again nearly doubled in 1997.



## New Developments/Achievements

The departments at Strong Memorial Hospital and Highland Hospital were merged into a single administrative entity under the University of Rochester Department of Pathology and Laboratory Medicine in the mid-1990s. This structural change occurred concurrently with the intimate affiliation of the two hospitals at the highest levels. Dr. Bonfiglio and his successors now had responsibility for overseeing the anatomic and clinical pathology laboratories at Highland Hospital, with local medical directorship remaining intact. This created some logistical hurdles but also allowed for improved laboratory standardization.

The Dr. Stanley Patten, Jr. Fellowship Fund was established when Dr. Patten retired. It was used to support post-residency fellowship training programs.

A regional toxicology program was initiated in 1990 under the direction of Dr. Tai Kwong. The coagulation laboratory became fully automated in 1994. Flow cytometry and comprehensive immunohistochemistry were added to the testing platforms offered by the department.

In 1995, the department offered its first molecular T-cell gene rearrangement assays and bcr/abl assays for assisting in the diagnosis of lymphomas and leukemias.

It was during the 1990s that the electron microscopy unit became the first “core laboratory” facility at URMC.

## 2000s

The new millennium brought in a wave of developments for the department. Soon, there was further unrest within the office of the chair. The institution would form a medical faculty group that would help to usher in a new salary structure. This structure served to recognize the faculty as members of a clinical department that had a research division, and not members of a basic science department. The decade saw much-needed expansion and the development of new laboratory space and offices. There were also the earliest signs of the complete sub-specialization of clinical work that was to follow in the next decade. The development of the clinical trials unit proved to be one of the more lasting developments of the decade, sputtering at its inception, but growing into a major revenue stream by the middle of the next decade.

Cost of a loaf of bread:	\$2.00
President of the USA:	George Bush
World series winner:	Arizona Diamondbacks
Cost of a gallon of gas:	\$1.46
2001:	First targeted cancer therapy
2006:	First vaccine to target cancer

## Chair

Dr. Spitalnik began the decade as the chair. He provided great enthusiasm for building a large, research-oriented department, while at the same time providing a charismatic presence within the clinical laboratories. It was during his relatively short tenure as chair that the department began to merge the anatomic and clinical divisions and to function as a single, large department with common goals. Upon his arrival, Dr. Spitalnik recruited Mr. Bob Johnson from Genesee Hospital to serve as the program administrator, overseeing the

department's clinical operations. There was tremendous institutional pressure to expand the department's research presence during this period, at the same time as there was a serious institutional push to increase the clinical workload. Resources were sparse, faculty personnel at a premium, and the pressure to perform on all fronts was quite intense. Dr. Spitalnik left UPMC for Columbia Presbyterian Medical Center in 2002.

During the 2002–04 period, Dr. Dean Arvan once again served as the acting chair while there was a search for a new permanent chair.

In September 2004, Dr. Dan Ryan was named the chair of the department (see figure 34). Dr. Ryan was a great supporter of the faculty, while keeping a constant watch on the research accomplishments of the department.

He had done his medical education at Johns Hopkins University and his residency at the University of Rochester. He joined the faculty in 1981 as part of the newly developing hematology laboratory and served as the director of hematology and then of the clinical laboratories for several years before accepting his new position. Dr. Ryan took great pride in the customer service that the laboratory provided and transformed the culture of the clinical laboratories in this regard. Dr. Neil Blumberg replaced him in his role as the director of clinical laboratories.



Figure 34. Dan Ryan, the sixth chair of the Department of Pathology and Laboratory Medicine (2004–11; acting chair 2012–14)

Dr. Boyce, who was recruited with the title of director of surgical pathology, was promoted to vice chair for anatomic pathology in 2007.

Mr. Bob Johnson's position rapidly evolved into that of the departmental program administrator in the early years of

this decade. He developed an organizational structure for the financial aspects of the department and was instrumental in the massive transformation in the size and scope of the department's clinical endeavors. As the structure grew and evolved, the department was much better situated to negotiate for the necessary resources to support the continuous growth. It was during this time that departmental leadership was finally successful in negotiating hospital support for the faculty based upon their professional billings. It was during this period that Mr. Johnson and Drs. Spitalnik and Ryan worked hard to transform the image of the department (along with its faculty salaries) from one of a basic science department to one of a clinical department. The "identity tensions" that had begun in the 1950s had fully resolved by the end of this decade. The department was now fully regarded as a clinical department that housed a research division, not unlike the Departments of Surgery or Internal Medicine.

## Faculty

In 2002, the department faculty consisted of thirteen professors, seven associate professors, and ten assistant professors. There were also seven research associate professors and three clinical associate professors. An influx of new faculty arrived with the new leadership. Following his second stint as the acting chair, Dr. Arvan retired in 2004. Over approximately twenty-five years, his contributions to the department were innumerable. He is still a regular attendee at departmental celebratory functions.

Overseeing the clinical laboratories during this time were Dr. Jim Corsetti (automated laboratories), Dr. Cholpody Kamath (andrology and the laboratories at Highland Hospital), Dr. Robert Mooney (point-of-care testing and biomedical genetics), Dr. Nancy Wang (cytogenetics), Dr. Rabi Tawil (neuromuscular), Dr. Neil Blumberg (blood bank), Dr. Ray Felgar (hematology), Dr. Tai Kwong (toxicology), and Dr. Paul Rothberg (molecular diagnostics). Additional laboratory directors

included Drs. Dwight Hardy (microbiology), James Powers (neuropathology), Charles Sparks (protein lab), Brendan Boyce (surgical pathology), Tom Bonfiglio (cytopathology), and Thomas Shanahan (tissue typing).

The research division included Dr. Chang, the George Hoyt Whipple Endowed Professor, along with Drs. Boyce, Janet and Charles Sparks, Arend, Callahan, Reeder, Dan Ryan, Pierce, Mooney, and Qi. Dr. Jiaoti Huang was recruited into this division in 2000, splitting his time between his research efforts and surgical pathology. Dr. Peter Sims was hired to join the faculty in 2006. He brought a large, extramurally funded research program with him. Dr. Robert Pierce left the department in 2007 to join the Hutchinson Cancer Center in Seattle.

Dr. Scott Kirkley served as the residency director and Dr. Robert Mooney as the director of the graduate student program.

In 2007, Dr. Richard Burack was recruited from Washington University in St. Louis to serve as the director of the hematopathology unit, replacing Dr. Raymond Felgar who left for the University of Pittsburgh.

Early in the decade, Dr. Philip Katzman, who had done his residency in the department, was recruited back following the completion of his pediatric pathology fellowship training at Boston Children's Hospital. Dr. Bruce Goldman from Temple University joined the autopsy service in 2005 and also added much-needed expertise in organ transplant pathology. In 2006, Dr. Mahlon Johnson was recruited from Vanderbilt University to replace Dr. Jim Powers as the director of the neuropathology division. Dr. Johnson was internationally renowned for *Working on a Miracle* (1997), the autobiographical and inspirational account of his fight to survive occupationally acquired HIV infection. He brought the same fearless attitude to the department, where he routinely performed autopsies on patients with Creutzfeldt-Jakob disease, a chore he continues to take on for most of northern and western New York state. Dr. David Hicks was recruited back to the department in 2007 as the new director of surgical pathology. Following faculty stints at Roswell Park Cancer Center and the Cleveland

Clinic, he returned to the department with new enthusiasm and many innovative ideas. By this time, he had redirected his attention to breast pathology and had attained a national reputation as an expert in specimen processing quality and in the interpretation and role of Her-2 in breast cancer.

By mid-decade, Dr. Rana Hoda was recruited from the Medical University of South Carolina to head the cytopathology division. After a short while, she departed for Cornell, leaving the division without a full-time leader. The long era of national prominence in cytopathology had ended, though the large clinical service persisted.

Highland Hospital became much more fully integrated into the department, with their pathologists now clearly reporting to the chair of the department at URM. Dr. Julietta Fiscella, a graduate of the residency program, joined the staff at Highland Hospital in 1996. She became the chief of pathology at Highland Hospital in 2010, a position she continues to hold at the time of this writing.

## Space

The department occupied 24,710 square feet of research laboratory space in 2002.

The decade opened with a pressing need for new clinical space at Strong Memorial Hospital. The recruitment of Dr. Brendan Boyce as the director of surgical pathology prompted a huge push for more and higher-quality space. The year 2003 saw a major renovation and expansion of the surgical pathology suite. Some space vacated by the Department of Orthopedic Surgery was appropriated for this expansion. This space was considered “state-of-the-art” when it was built, and it was designed to accommodate the volume of cases seen by the surgical pathology faculty. The facility was completed and fully occupied in 2004. In addition to the physical plant, the new surgical pathology suite was fully equipped with the highest-quality grossing stations, dissection tables, tissue processors, and other equipment designed to make the surgical pathology

unit a superlative service. As part of this renovation project, faculty offices, most of which were in the 2-2100 wing, were moved into the new surgical pathology suite on the ground floor.

The clinical laboratories also underwent significant renovations, as automated equipment required bigger open spaces. Many walls were removed from the area occupied by clinical chemistry. Microbiology was located in space that had not been changed since the 1920s and 1930s. Some of this space was upgraded; however, it continued to suffer in both quantity and quality.

In 2006, the department undertook another construction project, creating new research laboratories in the ground floor of the 2100 area of the medical center. Modern, good-sized laboratories were built with the goal of improving the department's research presence within the institution. Concurrent with the laboratory expansion, the department was successful in recruiting Dr. Peter Sims, a well-known and highly successful researcher, onto its faculty. The developing molecular pathology laboratory, supervised by Dr. Paul Rothberg, also occupied the G-2100 space.

The 2006–7 period also saw the move of the tissue typing laboratory into the second floor (2-3600) area where it currently resides. Previously, the laboratory had been located far from the remainder of the department, within the Department of Surgery. Its move was part of a large construction project that included the building of a new hematopathology laboratory and flow cytometry unit. That unit persists in the same configuration at the time of this writing. The point-of-care testing unit, which was housed on the second floor, was moved to a location on the ground floor in order to accommodate this expanded hematopathology unit. Dr. Richard Burack had been recruited from Washington University at St. Louis to head up the new division, and the 2-3600 space was renovated to house the new service. As was the case for the preceding fifty years, the department continued to expand in its scope of services, with available and adequate space within the hospital significantly lagging.

In 2006, the department rented space at a building on Ridgeland Road in the adjacent town of Henrietta that it would occupy for the next decade and a half. This space was used to house the outpatient clinical testing, which had outgrown any available space within Strong Memorial Hospital. The space was also used for the newly formed clinical trials unit that Dr. Ryan started.

In 2007, the cytogenetics laboratory completed a major renovation. Housed in an older section of the hospital, the space was antiquated and no longer conducive to modern technological advances. This provoked another construction project for the department. The newly built laboratory was 2,034 square feet of space.

## Clinical

There were approximately 300 autopsies performed in 2002 and 90,000 cytopathology specimens were examined.

The volume of clinical laboratory tests performed in Highland Hospital plus Strong Memorial Hospital exceeded 3.5 million in 2003. Automation was the driving force during this decade as hematology and clinical chemistry modernized. Dr. Tai Kwong was named the director of the combined automated laboratories (hematology and chemistry) in 2006. Under the guidance of Dr. Dan Ryan, first in his role as the director of clinical laboratories and then as the chair of the department, the clinical laboratory outreach program greatly expanded. Patient service centers continued to crop up across the region. The clinical laboratories began to process specimens from throughout the region on a much larger scale. The efforts to consolidate clinical laboratories continued throughout this period, following upon the efforts of Dr. Arvan. By the end of the decade, the andrology laboratory and the neuromuscular laboratory were the only two diagnostic laboratories that resided in large part outside of the department. With the urging of Dr. Kwong, the department acquired its first mass spectrometers early in the decade and began to build a new



line of testing, which was necessary to keep pace with the rapidly expanding organ transplant program at Strong Memorial Hospital.

The surgical pathology volume in 2008 had reached 44,237 cases. The autopsy volume stood at 323 cases that year. Upon Dr. Hicks's return to Rochester as the head of surgical pathology, the department developed a much more interactive style with the surgeons and became much more clinically oriented and responsive than it had been. Issues like turnaround time and tissue ischemic time became central to operations, improving the department's standing with the URMC clinicians. Hospital administration was keenly aware of and impressed with these changes. In order to accommodate the continually increasing workload in surgical pathology, the department expanded its team of pathologists' assistants. The volume of specimens requiring processing greatly exceeded the capabilities of the limited numbers of surgical pathologists and the residents. Funding for residents had been capped by Medicare and, despite the enormous growth, the department realized no increases in its number of residents. The team of pathologists' assistants became a major force in the clinical and teaching aspects of the department, as they took on the additional role of teaching residents how best to do gross examinations of surgical pathology specimens.

Immunohistochemistry had become a full force in diagnostic anatomic pathology and research by the early years of the decade. Dr. di Sant'Agnese continued to oversee the clinical part of the unit and Dr. Jiaoti Huang was named co-director in charge of the research portion of the laboratory. Dr. Huang would retain this position until his departure for UCLA in 2008. Dr. Huang later went on to his current position as the chair of the Department of Pathology at Duke University.

The field of cytopathology began to change. Fine needle aspiration cytopathology was beginning to become increasingly important, and the role of Pap smears had begun to diminish as molecular testing became available.

## Research

In 2002, there were nine members of the faculty who were principal investigators on NIH grants. NIH funds totaling \$2.230 million were received by department faculty. An additional \$318,000 was received by additional co-principal investigators within the department. In 2008, the department ranked fifty-third nationally in NIH funding. The medical school ranked twenty-fourth nationally this same year.

In 2006, Dr. Peter Sims was recruited to the department and named the scientific director of the department. His wife and research collaborator, Dr. Therese Wiedmer, joined the faculty with him. Their efforts in complement biology, platelet activation, and adipocyte biology added another dimension to the department's research profile.

Dr. Janet Sparks continued with her successfully funded research program in lipoprotein metabolism. Dr. Chang's research into prostate cancer continued to be heavily funded by the NIH. Dr. Boyce's work into osteoclast biology was similarly successful.

## Education

The department had a total of sixteen residents in 2002. This number remained constant throughout the decade, despite the continuing growth in workload. There were no new fellowships added during this era, as the hospital grappled with the cap on trainee numbers imposed by federal agencies.

The sophomore medical student course continued in much the same vein as in the previous decade. Year-out student fellows were present throughout the decade, though in lesser numbers than in the past.

The graduate student program remained stable under the leadership of Dr. Robert Mooney. With the arrival of Dr. Chang, the number of students had significantly expanded and this number remained relatively constant throughout the decade. During this period, many of the graduate students

were pursuing their dissertation research in laboratories beyond the department.

### New Developments/Achievements

The clinical trials unit was established during this decade. Seeing the need for new revenue streams and finding the field filled with intellectual potential, Dr. Dan Ryan spent years developing a clinical trials unit within the department. He worked tirelessly to recruit laboratory testing opportunities from scientifically advanced studies with funded researchers from the medical center, as well as from large pharmaceutical companies throughout the world, in order to build a financially lucrative program. State-of-the-art tumor immunology studies became the major focus for the laboratory. The unit initially occupied rented space at Ridgeland Road in the adjacent town of Henrietta throughout most of this and the next decade. Dr. Charles Sparks was named the director of the unit in 2007.

In 2007, as a result of being awarded a US Department of Defense grant, the department was able to purchase a new electron microscope that also was able to do X-ray spectrometry.

## 2010s

**M**edical economics continued to evolve at a fast pace and, with it, URMC leadership under the direction of Dr. Mark Taubman (dean of the medical school and chief executive officer) and Mr. Steve Goldstein (chief executive officer of Strong Memorial Hospital) developed an aggressive growth strategy. The university developed formal affiliation relationships with many small regional hospitals in order to coordinate healthcare, create efficiencies, and standardize care for patients throughout the region. The Department of Pathology and Laboratory Medicine transformed itself into a fully centralized regional laboratory, as well as maintaining its place as a tertiary care, academically oriented department. By the end of the decade, there were sixty-eight members of the full-time faculty and 985 employees, making the department the biggest one in the University of Rochester School of Medicine and Dentistry (and second only to the School of Nursing in the entire University of Rochester system). The departmental budget now exceeds \$500 million annually, a far cry from the department with four faculty members who performed autopsies, taught medical students, and performed basic science investigation.

Cost of a loaf of bread:	\$2.78
President of the USA:	Barack Obama
World series winner:	St. Louis Cardinals
Cost of a gallon of gas:	\$3.52
2012:	p53 tumor suppressor gene discovered

## Chair

The decade began under the continued leadership of Dr. Dan Ryan. He announced his retirement in 2011. Dr. John Krolewski (see figure 35) from UC Irvine was recruited to lead

a transformation into a more scientific and molecular era for the department. Dr. Krolewski joined the faculty with great fanfare based upon a strong and highly productive research career. Unfortunately, he was not a good match for the department and for URMC and, after less than a year, Dr. Ryan was asked to return as an interim chair, a position he held for approximately two years. Dr. Ryan named

Dr. Neil Blumberg to serve as the vice chair for clinical pathology in 2013. Dr. Brendan Boyce continued in his role as vice chair for anatomic pathology. They held these positions through 2016.



Figure 36. Bruce Smoller, the eighth chair of pathology and laboratory medicine (2014–present)



Figure 35. John Krolewski, the seventh chair of pathology and laboratory medicine (2011)

In 2014, Dr. Bruce Smoller was hired to serve as the seventh chair of the department (see figure 36). Dr. Smoller had recently stepped down as the executive vice president of the United States and Canadian Academy of Pathology (an organization that once boasted the department's own Dr. Orbison as its president). He had previously spent almost nine years as the chair of the Department of Pathology at the University of Arkansas for Medical Sciences. Dr. Smoller is a pathologist with subspecialty

expertise in dermatopathology. He did his training at Harvard's Beth Israel Hospital (anatomic and clinical pathology), followed by Cornell New York Hospital (dermatopathology fellowship). He came to Rochester with experience in building large outreach programs at several academic institutions, including the University of Arkansas and Stanford University, and these efforts, along with his administrative work overseeing an international organization, were deemed to be a good match for the rapidly evolving institutional initiatives. Dr. Smoller's academic contributions center around diagnostic and immunologic features of mycosis fungoides, a type of cutaneous lymphoma. He was a past president of the American Society of Dermatopathology and a former editor-in-chief of the *Journal of Cutaneous Pathology*. His background as primarily an anatomic pathologist served as a nice switch in orientation from the primarily clinical pathology-trained chairs of the previous twenty years.

## Faculty

By the end of the decade, the department proudly listed sixty-eight full-time faculty members (see figure 37). One of the exciting developments was the marked increase in diversity



Figure 37. Pathology faculty (2019)

amongst the faculty, and especially its leadership within the department. Vice chairs included Drs. Christa Whitney-Miller overseeing anatomic pathology; Richard Burack overseeing clinical operations at Strong Memorial Hospital; Victoria Zhang, who oversees the clinical enterprise that includes all of the affiliated hospitals; and Jennifer Findeis-Hosey, who oversees the educational programs. The vice chair for administration is Ms. Kelley Suskie, who was recruited from the University of Arkansas for Medical Sciences to oversee the enormous administrative aspects of the clinical enterprise. She had worked in a similar role with Dr. Smoller when he served as chair of that department.

The huge growth in faculty numbers during this era was in keeping with the move to completely sub-specialize services in both anatomic and clinical pathology. Paralleling clinical medicine in which sub-specialization became the norm for academic medical centers, there was a pressing desire on the part of the medical center's clinicians for the department to have pathologists with subspecialty training and expertise in all areas of pathology. This change resulted in a large influx of subspecialty-trained faculty members in both anatomic and clinical pathology disciplines and in the creation of sections within the larger divisions such as surgical pathology. With this sub-specialization, each organ-specific faculty group was headed by a section head. By the end of the decade, the department boasted nine gastrointestinal pathologists as part of its surgical pathology faculty, which numbered more than thirty (see appendix). Sections within surgical pathology included dermatopathology (Dr. Glynis Scott, director), neuropathology (Dr. Mahlon Johnson, director), renal pathology (Dr. Bruce Goldman, director), thoracic pathology (Dr. Moises Velez, director), genitourinary pathology (Dr. Hiroshi Miyamoto, director), breast pathology (Dr. David Hicks, director), bone and soft tissue pathology (Dr. Xi Wang, director), gynecologic pathology (Sharlin Varghese, director), pediatric pathology (Dr. Phil Katzman, director), and head and neck pathology (Dr. Ellen Giampoli, director).

The clinical laboratories continued with the theme of sub-specialization that began prior to the parallel evolution of surgical pathology. Microbiology continued to be led by

Dr. Dwight Hardy, with the addition of Nicole Pecora as the associate director. (Dr. Marilyn Menegus, who had served in this role for many years, died suddenly in 2017). The automated laboratories, including clinical chemistry and hematology, once again came under the direction of Dr. Kwong late in the decade, though as he moved to part-time status in 2020, Dr. Victoria Zhang took over this role. Dr. Li Liu was recruited to serve as an associate director. Molecular pathology, run by Dr. Paul Rothberg for many years, transitioned to the leadership of Dr. Zoltan Oltvai in 2019. Dr. Oltvai was recruited from the University of Pittsburgh, where he had overseen a very successful research laboratory. He immediately set out to build a next-generation sequencing program for the solid tissue pathology work-ups. Drs. Anwar Iqbal and Bin Zhang served as the section directors for microarray and cytogenetics, respectively, within the rapidly expanding division. Transfusion medicine continued to be run by Dr. Neil Blumberg with the able assistance of Drs. Scott Kirkley and Majed Refaai. Myra Coppage continued in her role as the director of the tissue typing laboratory, but recruited and trained Dr. Helene McMurray to serve as the associate director and her successor. Dr. McMurray is also serving as the director of the graduate studies program within the department.

While “retired,” Dan Ryan continued to oversee the clinical trials unit through the decade. His vision from more than ten years earlier had begun to pay huge dividends to the department and the institution. The unit currently has more than thirty employees. The department successfully recruited Dr. Ryan’s successor, Dr. Erin Marnier, from the clinical trials division at Roche, with the hope that this unit will continue to grow and to provide a steady source of revenue to help support its research and teaching missions.

Dr. Charles Sparks announced his retirement in 2011 and was named professor emeritus. Dr. Robert Mooney, another member of the chemistry division who also served as the director of the graduate student PhD program for many years, retired in 2017. Dr. Nancy Wang retired as the director



of cytogenetics in 2015. Dr. Bin Zhang was recruited from Washington University in St. Louis to take her place. Dr. Paul Rothberg retired in 2019 and Dr. Jim Corsetti, yet another long-standing member of the chemistry division, retired in 2020. After many years of a highly successful and stable clinical pathology division largely assembled by Dr. Arvan in the 1970s and 1980s, it was time to rebuild the division.

## Space

This decade saw an enormous growth in the medical center footprint and an even greater growth in patient services. Space shortage on the Strong Memorial Hospital campus resulted in the move of several departments, including diagnostic imaging, orthopedics, and dermatology, to off-site facilities. The emergency medicine department established urgent care centers throughout the region. The Department of Pathology and Laboratory Medicine was an active participant in this process. The concept of a centralized laboratory had been discussed by the hospital administration as early as fifteen to twenty years before. There was clearly a need for more acute care space within the hospital, and the administration believed that the laboratories were occupying space that could be better used for this purpose. Additionally, the physical plant at Strong Memorial Hospital was not capable of absorbing the increase in numbers of specimens that were flowing into the system as a result of the expansion of the clinical enterprise throughout the state. After decades of discussion and planning, the concept became a reality in 2019.

The first phase of a new 130,000-square-foot laboratory building was built at 211 Bailey Road in Henrietta in 2019, with flexible laboratory space designed to allow for a regional, centralized laboratory (see figures 38 and 39). All outpatient, non-urgent laboratory testing from Strong Memorial Hospital and from the affiliated hospital network was directed to the new facility, which also houses the clinical trials unit. The new building has office space (with windows!) for the



Figure 38. University of Rochester Central Laboratories at Bailey Road (2019)



Figure 39. Microbiology at Bailey Road (2019)

medical directors of the faculty who oversee the laboratories that are based there. Laboratories such as microbiology, much of automated chemistry and hematology, toxicology, the protein laboratory, and molecular pathology relocated from Strong Memorial Hospital into the new building. FF Thompson Hospital, Highland Hospital, Jones Memorial Hospital, St. James Mercy Hospital, and Nicholas Noyes Hospital redirected the majority of their outpatient testing to the new centralized laboratory.

The transfusion medicine unit and the portions of the automated chemistry and hematology laboratories that remained on-site at Strong Memorial Hospital were relocated to the ground and first floors of the 2100 wing of the hospital, enabling the department to occupy three consecutive floors. The researchers who had previously occupied this space moved into renovated space on the fifth floor of the S-wing. Faculty offices were consolidated to occupy the majority of the second floor of the 2100 wing, and a new suite was constructed in the same area for residents and fellows. The department's footprint within Strong Memorial Hospital was becoming both smaller and more localized.

The surgical pathology suite, which saw a massive renovation and expansion at the turn of the century, remained intact but with plans to move portions of it into the next phase of the Bailey Road laboratory, allowing for further growth. At the time of this writing, the surgical pathology unit is developing plans to move various functions such as histology, immunohistochemistry, fluorescent in situ hybridization (FISH), and some specimen processing to the Bailey Road facility. In addition, various parts of the cytopathology laboratory, including specimen preparation and Pap smear evaluation, will be moved to the off-site location. Decisions regarding other parts of the operation remain unsettled at the time of this writing.

As the clinical trials laboratory expanded and became a source of pride, as well as providing a steady flow of revenue used to support departmental teaching and research activities, the unit relocated into the newly built University of Rochester Central Laboratories on Bailey Road.

## Clinical

This was a period of enormous expansion and transformation for the University of Rochester School of Medicine and Dentistry. Leadership sought to actively build a stable population of “covered lives” throughout the western portion of New York state by forging relationships with several surrounding hospitals. As the institution’s mission transformed, so did that of the department.

A huge initiative for the department during this decade was one that paralleled the direction of the institution, namely expansion and consolidation. The department was charged with centralizing non-urgent anatomic and laboratory testing into a single laboratory that was built for this purpose. Dr. Victoria Zhang, a clinical chemist with additional MBA training, was called upon to oversee the process of developing a single enterprise that provides standardized, efficient laboratory testing to the network of affiliated hospitals. By 2019, the process was approximately 80 percent completed, with routine laboratory specimens arriving daily from FF Thompson Hospital, Highland Hospital, Jones Memorial Hospital, St. James Mercy Hospital, and Nicholas Noyes Hospital. Similar testing originating from Strong Memorial Hospital was also shifted to the new central laboratory, as was all of the testing from the approximately fifty regional patient service centers (off-campus sites at which outpatients can go to have blood drawn).

Surgical pathology followed suit with the trend in medicine by developing a completely sub-specialized model for diagnostic work, establishing a wide range of organ-based sections. The surgical case volume in 2014 was 55,156 cases. The volume had exceeded 75,000 accessions (and over 125,000 specimens) by 2019. Additional surgical pathology specimens were received in large numbers from affiliated hospitals. Dr. David Hicks began the decade as the director of surgical pathology and, in 2018, ceded the position to Dr. Christa Whitney-Miller. He maintains his role as the director of the immunohistochemistry laboratory. Within the division of surgical pathology, distinct sections were established for each

organ system. Each small group of faculty members assumed responsibility for diagnostic work and participation in tumor boards for their respective clinical services. Clinical colleagues throughout the institution expressed their delight at the departmental reorganization and the evident new level of sophistication with diagnostic and treatment plans. Several of the various sections have been quite successful in attracting large volumes of consultation cases, contributing to the regional reputation and the quality of the educational programs for the department. Nearly twenty histotechnologists prepare over one million microscope slides per year (see figure 40)

Ms. Laurie Baxter heads a group of eleven pathologists' assistants who are an invaluable part of the team, providing not only grossing assistance but also teaching and expertise to the residents during their surgical pathology and autopsy rotations.

The cytopathology laboratory continues to review approximately 50,000–60,000 Pap smears per year, but the majority of time and effort is now spent on fine needle aspiration cytopathology procedures. The cytopathology slides are reviewed by



Figure 40. Histology laboratory (2018)

approximately twelve cytotechnologists. Cytopathology faculty are annually performing more than 1,200 fine needle aspiration procedures. As the decade came to an end, ultrasound-guided fine needle aspiration biopsies became an increasingly important part of the practice.

In order to provide diagnostic services for the plethora of affiliated hospitals, a division of affiliated hospital pathologists was created. To varying degrees, the department administered pathology services to FF Thompson Hospital, St. James Mercy Hospital, Jones Memorial Hospital, and Nicholas Noyes Hospital, in addition to its continued strong ties with Highland Hospital. There was a short-lived relationship with Wyoming County Hospital. The division is overseen by Dr. Tamera Paczos, a pathologist who had previously trained as an obstetrician/gynecologist. Her clinical acumen allows her to work as an ideal liaison with the community physicians in the smaller, affiliated hospitals. This group oversees frozen section diagnoses, as required at the smaller hospitals, as well as providing medical oversight for the various clinical laboratories. Routine surgical cases from all hospitals throughout the network are transported to the central laboratory for processing and signed out by the surgical pathologists within the department. Over the century, the department had provided such services to varying degrees to many smaller hospitals. However, by the end of the 2010s, the department had complete control and responsibility for laboratory services for all of the hospitals in the network. All laboratory services were now fully rolled up into the departmental operations.

Less formal relationships were established with Bassett Hospital in Cooperstown and Arnot-Ogden Hospital in Elmira as the institution and the department extended services throughout the state. For many remote and smaller hospitals, the department has taken on the role of a reference laboratory. At the time of this writing, additional institutional affiliations were being entertained by upper levels of the administration. The influx of patient specimens necessitated an expansion of clinical faculty and the complete rethinking of clinical laboratory space as has been described. However,

the organizational structure of the department now allows it to more readily accommodate any further affiliations or other relationships.

By 2014, autopsy volume had diminished to 193 cases. The addition of a strong advocate for autopsies, Dr. Caroline Dignan, resulted in increased numbers of cases thereafter, with numbers rising back to almost 250 by 2019. Dr. Dignan had served for many years as the medical examiner for Monroe County before she was recruited to join the department in 2016. Her expertise in forensic pathology further enhanced the educational component of the department, though residents continue to rotate through the county facility for their primary training in forensics. Her passionate advocacy for postmortem examinations has resonated with several clinical services and resulted in renewed interest throughout the medical center.

The large and complex clinical operation could not survive without an effective administrative organization, overseen by the vice chair for administration, Ms. Kelley Suskie. Ms. Melissa Allen serves as the administrative director of operations; Ms. Rosemary Ziemba-Ball, the administrative director of finance, monitors the departmental finances; and Mr. Bill Andrews is the administrative director of the enormous information technology program. Ms. Fran Gersonia is the administrative director of the quality assurance program that ensures regulatory compliance in hospital laboratories throughout the enterprise. As the enterprise continues to evolve, Ms. Gersonia is developing a portfolio of shared operating procedures to be followed across the group of hospital laboratories. Ms. Vicki Vandewalle is the director of performance improvement and projects and played a central role in the construction and consolidation projects of the decade (for which she was recognized with the University of Rochester Meliora Award in 2019). Ms. Judy Sterry just completed her long-standing tenure as the administrative director for strategic planning and retired in early 2020 after many years of service in the department. Ms. Kim Evans-Dame serves

as the department's human resources business partner. Ms. Kathleen Leibenguth oversees the clinical trials unit.

## Research

The Department of Pathology boasted several extramurally funded scientists throughout the decade. Dr. Brendan Boyce continued with his work in osteoclast biology and remained a mainstay of the musculoskeletal research unit. Dr. Lianping Xing, whose career started under the tutelage of Dr. Boyce, continued with her own successful NIH-funded program, working in a similar scientific arena. Dr. Archibald Perkins, a hematopathologist, made some breakthrough discoveries with his extramurally funded leukemia research. Dr. Chang continued with his work in prostate carcinogenesis. Dr. Zhenqiang Yao became an independently funded investigator, working in the field of cancer metastasis. Dr. Richard Burack also garnered some extramural funding for his studies on tumor microenvironment. Dr. Andrew Evans, also a member of the hematopathology unit, was awarded a Wilmot Cancer Institute training grant. Hiroshi Miyamoto derived grant support from the US Department of Defense, as well as garnering industry support.

Dr. Benjamin Frisch was recruited to join the basic science team, working in hematologic malignancies and tumor microenvironment. The department was also successful in recruiting several young physician scientists. Drs. Nicole Pecora, Bin Zhang, and Rajnish Bharadwaj began to develop exciting programs in microbiology, cytogenetics, and neurobiology, respectively. Dr. Michael Drage is also pursuing an investigative career in gastrointestinal disease, along with his work on the GI pathology service.

Dr. Peter Sims retired and became a professor emeritus in 2012. Dr. Janet Sparks retired in 2014. Dr. Brendan Boyce moved to a part-time status toward the end of the decade. He continues to have NIH funding.

The end of the decade saw the initiation of a huge campaign to recruit a vice chair for experimental pathology to



oversee a formal new division in hopes of expansion and to provide institutional support to the Wilmot Cancer Institute initiative to attain National Cancer Institute designation as a cancer center.

## Education

Dr. Jennifer Findeis-Hosey assumed the position of medical student education director in 2014. Beginning in the years before, and accelerating during her tenure as director, the medical school curriculum underwent a complete transformation. The year-long pathology course was replaced with a curriculum that was organ-based, into which pathology education was interspersed with physiology, histology, pharmacology, and clinical diagnosis for each organ system. This followed the national trend that occurred in virtually all medical schools. As the directorship for each of the organ-based courses progressively came under the control of clinicians, the role for pathologists in the medical school curriculum continued to diminish. Nonetheless, Dr. Findeis-Hosey was able to build a large and enthusiastic student organization, the Pathology Interest Group, designed to stimulate interest in pathology as a field. Nonetheless, interest in residency training in pathology continued to wane amongst URM medical students.

Dr. Findeis-Hosey initiated the department's participation in a program for exceptional high school students known as Explorations in Pathology, further expanding the department's commitment to education at all levels. High school students spend several weeks in the department learning about the specialty and rotating in the laboratories.

In 2019, Dr. Linda Schiffhauer replaced Dr. Kirkley, who had served as the residency director for eighteen years. Dr. Majed Refaai moved into the role as the associate director and this initiated a new era of changes in the residency educational program. Dr. Kirkley's tenure was characterized by stability and the consolidation of a solid program that annually excelled in ACGME reviews. The department consistently

graduated from three to five residents each year. Virtually all of the graduates pursued subspecialty fellowships, though largely in other sites due to the paucity of fellowship offerings at URM. Our resident graduates routinely were placed in elite fellowship programs. About half of these trainees went on to community hospital-based jobs, while the other half remained within academia.

The residency program was capped at sixteen residents for many years, despite the fact that the service workload for the department had increased manifold (see figure 41). It remained at this level until 2020, at which time the department was granted permission to increase by one additional resident per year, up to a total of twenty residents. The dearth of American-trained medical students pursuing residency training in pathology became a serious national issue, with many programs

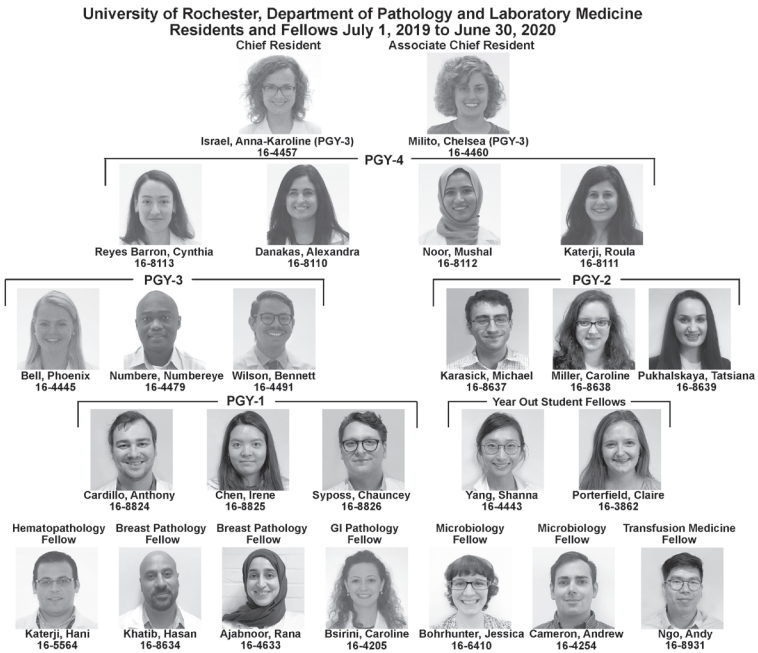


Figure 41. Residents in pathology (2019–20)

failing to fill all of their available training slots. Despite this, the department continued to do well, recruiting fine residents to fill all of the spots for the latter half of the decade. This is a testament to the excellent job Dr. Kirkley did in overseeing the screening and recruiting of our trainees.

During this period, subspecialty pathology fellowship training programs at URMC also greatly increased. The medical school administration realized that the department's post-graduate educational offerings were disproportionately small compared with the clinical enterprise and the department's training program was suffering as a result. The department added ACGME-accredited programs in transfusion medicine, dermatopathology, forensic pathology, and pediatric pathology. The Milton J. Finegold Pediatric Pathology Fellowship program was made possible by a generous philanthropic gift from Dr. Milton Finegold. Dr. Finegold was a graduate of the University of Rochester School of Medicine and had done a year-out medical student fellowship in the pathology department in 1958–59 (see figure 42). Inspired by his mentors, Drs. Terry and Hawkins, Dr. Finegold was moved to give back to his old alma mater. The dermatopathology fellowship was created in partnership with the Department of Dermatology and the forensic pathology program in conjunction with the Monroe County Medical Examiner, overseen by Dr. Nadia Granger, an alumna of our residency training program. These new fellowships were added to the extant ones in hematopathology, cytopathology, microbiology, and transfusion medicine, as well as three in surgical pathology. At the



Figure 42. Milton Finegold (1959), year-out student fellow; endowed pediatric pathology fellowship 2018

time of this writing, an additional fellowship training program in molecular pathology is under consideration.

The graduate student program remained under the direction of Dr. Robert Mooney until 2016. Upon Dr. Mooney's retirement, Dr. Rick Libby, a member of the Department of Ophthalmology, briefly stepped in to oversee the program. Shortly thereafter, he was promoted to the rank of senior associate dean of graduate education and relinquished this position. Dr. Helene McMurray was appointed to the position in 2018. Dr. McMurray has a PhD in microbiology and has spent many years working in the fields of genomics, bioinformatics, and biostatistics. The program continues to thrive and, under Dr. McMurray's leadership, is undergoing some significant modifications. She has worked with Drs. Schiffhauer and Findeis-Hosey to integrate the graduate students and research faculty with the clinical residency and educational missions. Over the decades, the basic science and service components of the department had drifted apart, reflecting the increased pressures in both arenas. The change in leadership within both educational components began a concerted effort to meld the goals and educational opportunities in hopes of creating synergies.

In 2017, the department admitted its first class of medical technology students (see figure 43). Faced with a crisis that existed nationally, but to a larger extent within the state due to New York's restrictive licensing criteria, the department decided to begin its own program. Ms. Vicki Roberts was able to escort the program through its ultimate National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) accreditation and to serve as its inaugural program coordinator. Initially admitting twelve students per year, the program rapidly expanded to fifteen annually. Many of the graduates immediately joined the workforce at URM, which was the proximal goal of the program. The department is currently initiating the work to expand the program to include a phlebotomy training program.

Ms. Donna Russell serves as the program director for a joint cytotechnology training program in conjunction with



Figure 43. First class of graduating medical technology students (2018)

Roswell Park Cancer Center's cytopathology unit and Daemon College. They train two cytotechnology students per year and there are thoughts about expanding this program. Members of the cytopathology faculty and other cytotechnologists also participate in this program.

The medical student year-out program continues to be a very popular and successful program, despite the marked reduction in available funding sources. Each year, one or two superb medical students opt to spend a year serving in a position similar to that of a first year resident in the department. These students continue to be amongst the brightest and most motivated of the URMC medical students. Dr. Whipple's initial concept persists a century later.

### New Developments/Achievements

The new University of Rochester Central Laboratories building was erected at Bailey Road. Using the old Cardiovascular

Research Institute (CVRI) laboratory building as a foundation, the department constructed a 130,000-square-foot building to house many of its laboratories. In the first phase of the project, microbiology, much of the automated hematology and chemistry laboratories, molecular pathology including microarray and cytogenetics, toxicology, specimen management, phlebotomy, and the information technology units relocated to the new building. When the project is complete, parts of cytopathology and surgical pathology will also move into the modern, flexible open laboratory building. The second phase of the building project with additional clinical laboratory space is currently in the planning stages.

The department implemented many advances in technology as part of the regional expansion of laboratory services. The bacteriology section within microbiology became largely automated by the end of the decade. The automated chemistry operations became more streamlined with automation of the pre-analytical aspects of the system. The new central laboratory implemented a LEAN design in order to maximize efficiencies in the newly erected building. Next-generation sequencing became part of the basic work-up for hematologic malignancies, with solid tumor panels following close behind.

Anatomic pathology began to experiment with telepathology as a means to provide frozen section coverage at the outlying affiliated hospitals, but without necessitating a full-time pathologist's presence at these smaller settings. Voice recognition software transformed the way surgical pathologists worked through cases, largely obviating the need for transcription. Fluorescent in situ hybridization (FISH) technology became part of the standard work-up for breast cancers. Bar-coded slides and other automated cassette printers have been implemented in order to reduce labeling errors.

As the decade comes to an end, department leadership spends a great deal of time debating the transition into whole-slide imaging technology and the potential benefits of introducing image analysis software into the clinical services.



## EPILOGUE

As I complete this chronology, I can only imagine how inconceivable this might have looked to Dr. Whipple back in 1921. The field of pathology and its role in a complex, tertiary care medical center have evolved beyond anyone's wildest dreams. As I have learned from my wife, a medieval historian, what was "state-of-the-art" in one period will look antiquated shortly thereafter and yet, at each period in time, was likely the result of significant advances and a source of pride. In many ways, Dr. Whipple was a visionary and created a department that served its patients, its students, and its faculty well. Several generations of scholars and superb clinicians have built upon the foundation he built. Others have spread his influence throughout the country. Our predecessors have created a large and highly complex department that continues to provide excellent patient care services, educational offerings, and contributions to the medical literature. It would be shortsighted to see our current position as anything other than an intermediate one, with incomprehensible changes to follow. I feel honored and truly privileged to be occupying the position now that affords me the opportunity to provide this interim documentary. While I will not be around to read the history of the next one hundred years of the department, I can only guess that future changes will make our current situation seem as "quaint" as the department Dr. Whipple established appears to us now. Congratulations to all who have contributed to the current state of the department and my very best wishes to those who will write the subsequent chapters.





# APPENDIXES

## Notable Accomplishments

- |      |  |
|------|--|
| 1934 | G. H. Whipple – Nobel Prize  |
| 1953 | G. H. Whipple – Alumni Gold Medal, University of Rochester Medical Center              |
| 1954 | W. B. Hawkins – Alumni Gold Medal, University of Rochester Medical Center              |
| 1956 | W. B. Hawkins – Dr. Henry C. Buswell and Bertha H. Buswell Faculty Fellow              |
| 1963 | J. L. Orbison – President, International Academy of Pathology                          |
| 1973 | S. Patten – Papanicolaou Award, American Society of Cytopathology                      |
| 1968 | J. L. Orbison – Alumni Gold Medal, University of Rochester                             |
| 1975 | J. L. Orbison – Albert David Kaiser Medal, University of Rochester Academy of Medicine |
| 1979 | F. Woodworth – Cytotechnologist of the Year, American Society of Cytopathology         |

- 1981 L. Lapham – Henry C. and Bertha H. Buswell Distinguished Service Fellow, University of Rochester
- 1985 D. Arvan – Gerald T. Evans Award, Clinical Laboratory Physicians and Scientists
- 1990 D. Hicks – Arthur Purdy Stout Award
- 1990 D. Hicks – Stowell-Orbison Award, United States and Canadian Academy of Pathology
- 1991 T. Bonfiglio – Papanicolaou Award, American Society of Cytopathology
- 1994 L. Lapham – Award for Meritorious Contributions to Neuropathology, American Association of Neuropathologists
- 1992 J. Powers – President, American Association of Neuropathology
- 1992 T. Bonfiglio – President, American Society of Clinical Pathology
- 1995 D. Hicks – Kappa Delta Elizabeth Winston Lanier Award for Outstanding Orthopaedic Research, American Academy of Orthopedic Surgeons
- 1996 S. Patten – American Society of Clinical Pathology Distinguished Pathology Educator Award, honoring H. P. Smith
- 1997 D. Hicks – Duthie-Everts Resident Education Award, Department of Orthopedics
- 2000 N. Wang – President, Chinese Geneticists in America

- 2003 C. Chang – Milheim Award for Excellence in Cancer Research, Milheim Foundation
- 2007 J. Powers – Lifetime Achievement Award, American Association of Neuropathologists
- 2010 T. Bonfiglio – James W. Reagan Award, International Academy of Cytology
- 2011 D. Hicks – Excellence in Education Award, College of American Pathologists
- 2014 V. Y. Zhang – Chair, North American Chinese Clinical Chemists Association
- 2016 B. R. Smoller – Master in Pathology, American Society of Clinical Pathology
- 2017 V. Y. Zhang – Outstanding Leadership Award, Wallace H. Coulter Foundation and American Association of Clinical Chemists
- 2019 L. Schiffhauer – Inspiration Award, Association of Pathology Chairs
- 2020 N. Blumberg – American Academy of Blood Bankers Hall of Fame

\*A complete recording of faculty accomplishments does not exist in the departmental archives. This is my best attempt to create one from all of the sources available to me. I apologize for any omissions.



## BOOKS PUBLISHED BY MEMBERS OF THE DEPARTMENT FACULTY

- 1963 J. L. Orbison (and D. E. Smith). *The Peripheral Blood Vessels*, Williams and Wilkins Co., Baltimore.
- 1969 S. Patten. *Diagnostic Cytopathology of the Cervix*, Williams and Wilkins Co., Baltimore.
- 1983 T. A. Bonfiglio. *Cytopathologic Interpretation of Transthoracic Fine Needle Biopsies*, Masson Publishing USA, New York.
- 1994 (R. C. Scully), T. A. Bonfiglio et al. *Typing of Female Genital Tract Tumors*, Second Edition, Springer-Verlag.
- 1996 (Y. Erozan), T. A. Bonfiglio et al. *Fine Needle Aspirations of Subcutaneous Organs and Tissues*, Raven-Lippincott.
- 1997 Bonfiglio T. A. (and Y. Erozan). *Gynecologic Cytopathology*, Raven-Lippincott.
- 2012 D. Hicks (and S. Lester). *Diagnostic Pathology: Breast*, Amersys Publishing, Inc.; Second Edition published 2016, Elsevier.
- 2014 (F. Rongioletti), B. R. Smoller. *Rare Malignant Skin Tumors*, Springer.
- 2017 (T. L. Phung, T. S. Wright, C. Y. Pourcian), B. R. Smoller. *Pediatric Dermatopathology*, Springer.

- 2019 H. Miyamoto. *Sex Hormone Receptor Signals in Human Malignancies*, MDPI, Basel.
- 2019 (G. Burg, H. Kutzner, ...) B. R. Smoller. *Atlas of Dermatopathology: Tumors, Nevi and Cysts*, Wiley-Blackwell.
- 2020 (D. Milner ...), N. Pecora et al. *Diagnostic Pathology: Infectious Diseases*, Second Edition, Elsevier.

\*A complete recording of publications does not exist in the departmental archives. This is my best attempt to create one from all of the sources available to me. I apologize for any omissions.

ERIC A. SCHENK AWARD WINNERS  
FOR EXCELLENCE IN RESIDENCY  
EDUCATION

1994	Bernard Panner	2008	Anthony di Sant'Agnese
1995	Joshua Sickel	2009	Leon Metlay
1996	Judy Sterry	2010	Haodong Xu
1997	Mary Anne Rutkowski	2011	Linda Schiffhauer
1998	Carl McGary	2012	David Hicks
1999	Michael Facik	2013	Vicki Roberts
2000	Dean Arvan	2014	Richard Burack
2001	Angela Iacchetta	2015	Xi Wang
2002	Donna Mulford	2016	Luis De Las Casas
2003	Steven Spitalnik	2017	Luis De Las Casas
2004	James Powers	2018	Abberly Lott-Limbach
2005	Nedda Howk	2019	Majed Refaai
2006	Jiaoti Huang	2020	Aaron Huber
2007	Thomas Bonfiglio		





CHAIR'S AWARD WINNERS FOR  
EXEMPLARY SERVICE TO THE  
DEPARTMENT

2015	Christa Whitney-Miller
2016	Tamera Paczos
2017	Caroline Dignan
2018	Richard Burack
2019	Aaron Huber
2020	Victoria Zhang



WINNERS OF THE MAPSTONE SECOND-  
YEAR MEDICAL STUDENT TEACHING  
AWARDS (PARTIAL LIST\*)

1981	Bernard Panner
1991	Eric Schenk
2016	Jennifer Findeis-Hosey

\*A complete recording of winners does not exist in the medical center archives. This is my best attempt to create one from all of the sources available to me. I apologize for any omissions.



## YEAR-OUT STUDENT FELLOWS (PARTIAL LIST\*)

1925-26	R. Kennedy	1947-48	T. Van Zandt
1926-27	R. Kennedy	1949-50	L. Anderson
1927-28	E. Manwell	1950-51	A. Golodetz
1928-29	G. Taylor		G. Vennart
1929-30	J. Lichty, Jr.	1951-52	S. Chapin
1930-31	W. Havill		C. Phillips, Jr.
1931-32	G. Meade		J. Utterback
1932-33	E. Mahoney		R. White III
1933-34	D. Kariher	1952-53	R. Greendyke
1934-35	V. Scott		R. Hill, Jr.
1935-36	J. Howland		P. Hoyer
	P. Winslow		R. Krause
1936-37	W. George	1953-54	T. Hannum
1937-38	R. Metcalf		F. French
	W. Noehren		C. Cochran
1938-39	C. Finch	1954-55	R. Dibble
	W. G. Swalbach		D. Maude
1939-40	A. Rowe		W. Mayer
	A. Turner		J. Olson
1940-41	F. McKee	1955-56	R. Clark, Jr.
	L. Zeldis		D. Clough
1941-42	J. Carter		J. Eischenschmid
	A. Kattus, Jr.		W. Hammond
1942-43	F. Shull		H. McClure
1943-44	F. Anderson		D. Platt
	J. Donovan	1956-57	T. Doege
1944-45	M. Lambie		P. Griner
	W. Clay		M. Lamm
1945-46	R. Nye		D. Neville
	W. Sandrock	1957-58	R. Elridge
1946-47	E. Church		J. Miller III
	J. Wells, Jr.		W. Peck
1947-48	R. Hyatt		K. Sears

1958–59	Milton Finegold	1968–69	C. Gulick
	J. Gallup		W. Markowitch
	R. Hanss		M. McCann
	T. Harter		R. Wood
	D. Pilcher	1969–70	R. Billingham
	P. Smilow		T. Hoskins
	E. DePapp		J. Huchinson
1959–60	C. Andrus		R. Leach
	S. Blomgren	1970–71	W. Crigler
	R. Galbreath		D. Kraus
	W. Huffer		A. Schlosser
	D. Stuard	1971–72	D. Graham
1960–61	S. Cope	1972–73	M. Chopek
	C. Faulkner		P. Dafler
	A. C. Maier	1973–74	S. Feinberg
	R. Surace		J. Izquierdo
1961–62	D. Campbell		S.S. Lee
	AK Kreutner, Jr.		T. Miller
	G. Reid		K-H. Tye
1962–63	G. Dehart, Jr.	1975–76	D. Antanitus
	C. Janeway		R. Irons
	L. Kish		S-S. Lee
	J. Pennell		M-S. Shih
	G. Simon	1976–77	Margot Peters
1964–65	R. Astanita	1982–83	Dawn K. Riedy
	J. Brown	1998–99	Peter Bouman
	J. M. Channik		Joohee Kim
	R. Lepoff		Jasmine Low
	R. Shannon		Daniel Morgan
	J. Simon		Erik Reisendeld
1965–66	S. Dashef	1999–2000	Hubert Fenton
	J. LoGerfo		James Goldman
	S. Morral		Elizabeth Kehr
	D. Moss		Vincent Ko
	H. Olson		Christine La
	J. Young		Brenda Lawrence
1966–67	W. Orlowski		Megan Quinn
	R. McKinney		Scott Raffo

1999–2000	Shonna Yin	2008–9	Amanda Bringard
2000–1	Sarah Bean		Glenn Buchberger
	Nicholas Byrne		Kristopher Denby
2003–4	Kim Murray		Elizabeth Tran
	Tobechi Ebede	2009–10	Benjamin Marsh
	Raul Idelberto		Owen Young
	Badell Derek	2010–11	Bonnie Choy
	Madsen		Josh Segal
	Adienne Carruth		Chiyo Takehara
2004–5	Abigail Kroening	2011–12	Nicole Altorelli
	Justin Van Der Meid		Margaret Compton
	Kristi Wolf		Anthony Portanova
2005–6	Karoline Moon		Sriram Venigalla
	Alan Sherburne	2013–14	Benjamin Mazer
2006–7	Nicole Burr	2014–15	Jonathan Soh
	Anne Fender	2015–16	Sandra Toth
	Rene Myers	2016–17	Michelle Pitch
	Shawn Rosen	2017–18	Benjamin Gertsen
	Orren Wexler	2018–19	Craig Connor
2007–8	Mark Mentrikoski	2019–20	Claire Porterfield
	Charles Chaung		Shanna Yang

\*A complete recording of year-out students does not exist in the medical center archives. This is my best attempt to create one from all of the sources available to me. I apologize for omitting the names of those that I could not find.





WILLIAM B. HAWKINS AWARD WINNERS  
(PARTIAL LIST\*)

1984	Dawn K. Riedy
1993	Jeffrey A. Goldstein
1994	Andrew L. Folpe
1995	John A. DiPreta
1996	Alexander R. Judkins
1997	Scott LaPoint Angelique Wolf
1998	Robert A. Vernooy, Jr.
1999	Thuy L. Phung
2000	Alice-Lee Vestner
2001	Jamie L. Adam
2002	Nicholas P. Bryne
2003	David J. Glidden
2004	Terina Swanson Chen Robert L. Burch
2005	Jeffrey Baliffn Claudia Vans Martinez
2006	Adrienne Catharine Carruth Derek L. Masden
2007	Karoline K. Moon Kristina Wolf Subik
2008	Abigail Lea Hobson Kroening
2009	Rene Pierre Myers
2010	Charles Chuang Mark Mentrikoski
2011	Bronwyn H. Bryant Joseph Hatem

2012	Benjamin Lee Marsh Xuan Julia Wang
2013	Bonnie Choy Joshua Isaac Philip Segal
2014	Margaret Compton
2015	Salvatore Priore Daniel Marker
2016	Benjamin Mazer
2017	Sandra Toth Youssef Farhat
2018	Michelle Ann Pitch Heather L. Maoli
2019	Ben G. Gersten
2020	Connor P. Craig Andrew Allbee

\*A complete recording of winners does not exist in the medical center archives. This is my best attempt to create one from all of the sources available to me. I apologize for any omissions.

## SIGNIFICANT PHILANTHROPIC GIFTS

George Hoyt Whipple Professorship

William B. Hawkins Award

Milton S. Finegold Pediatric Pathology Fellowship

Stanley Patten fund

Tai Kwong Medical Technologist Award

Margot S. Peters charitable gift in honor of Dr. Bruce Smoller

\*A complete recording of philanthropic donations does not exist within the medical center. This is my best attempt to create one from all of the sources available to me. I apologize for any omissions.

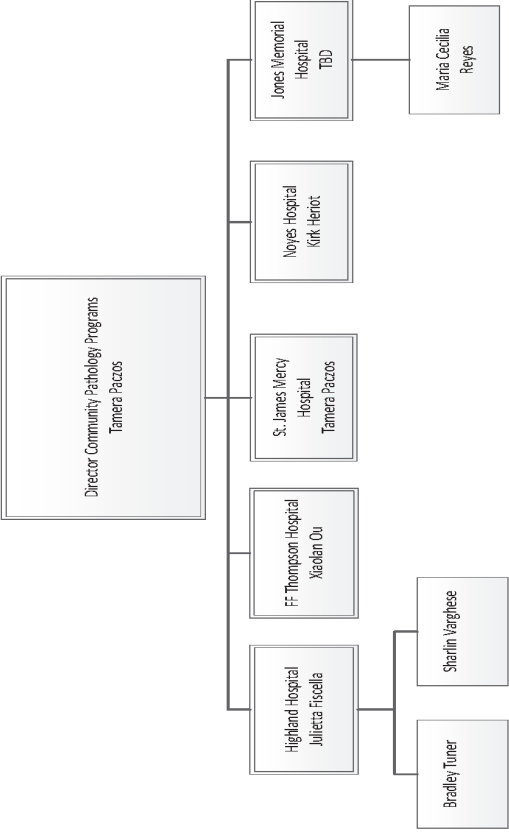


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- Corner, George Washington. *George Hoyt Whipple and His Friends: The Life-Story of a Nobel Prize Pathologist*. Philadelphia: J. B. Lippincott Company, 1963.
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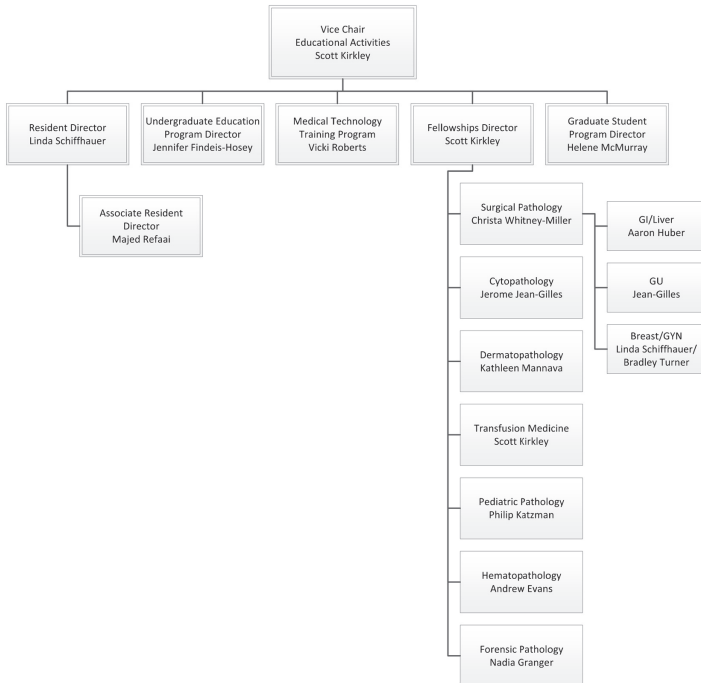


Community Pathology Programs  
Organizational Charts  
10/7/2019

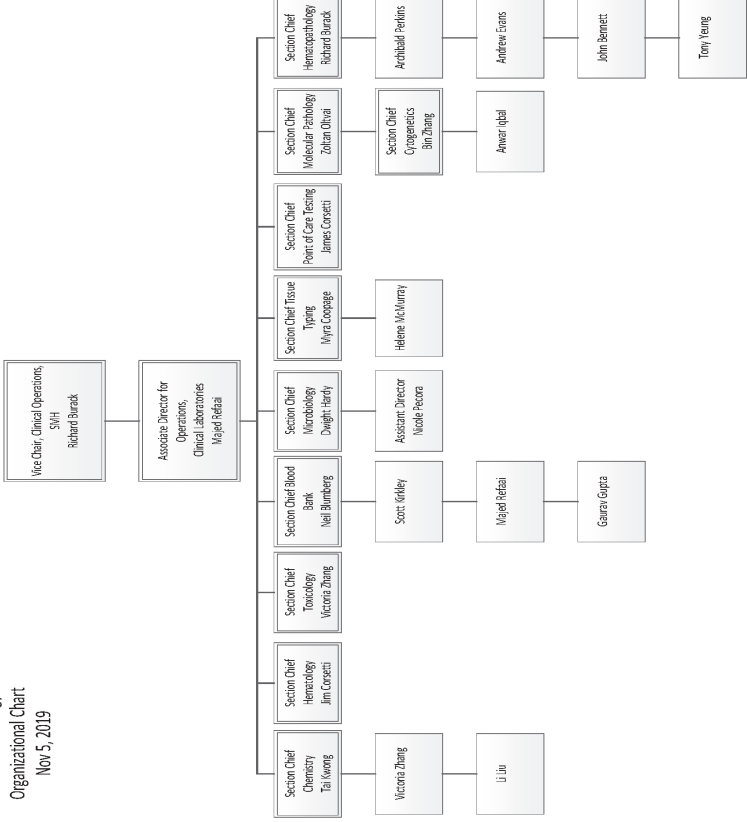




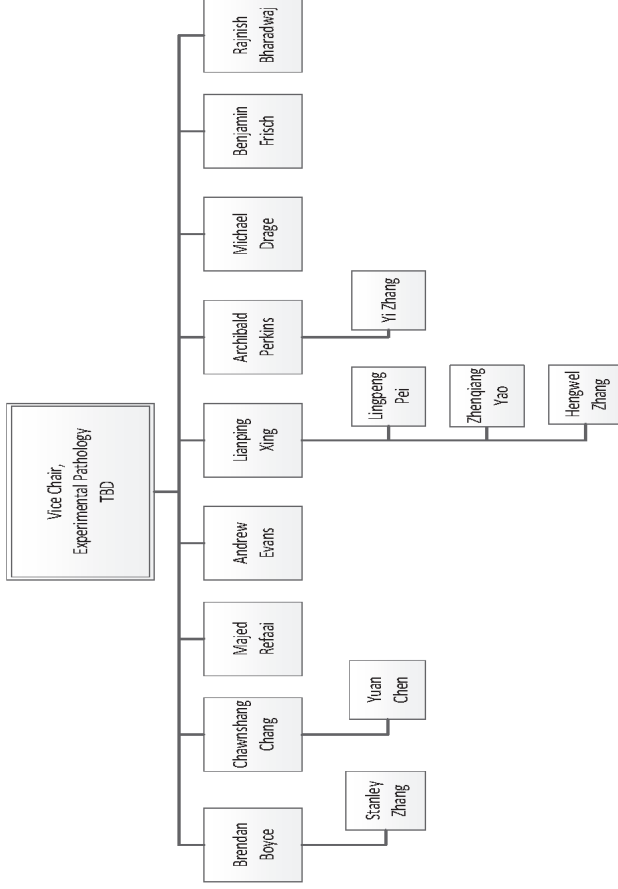
Educational Pathology  
Organizational Chart  
10/14/2019



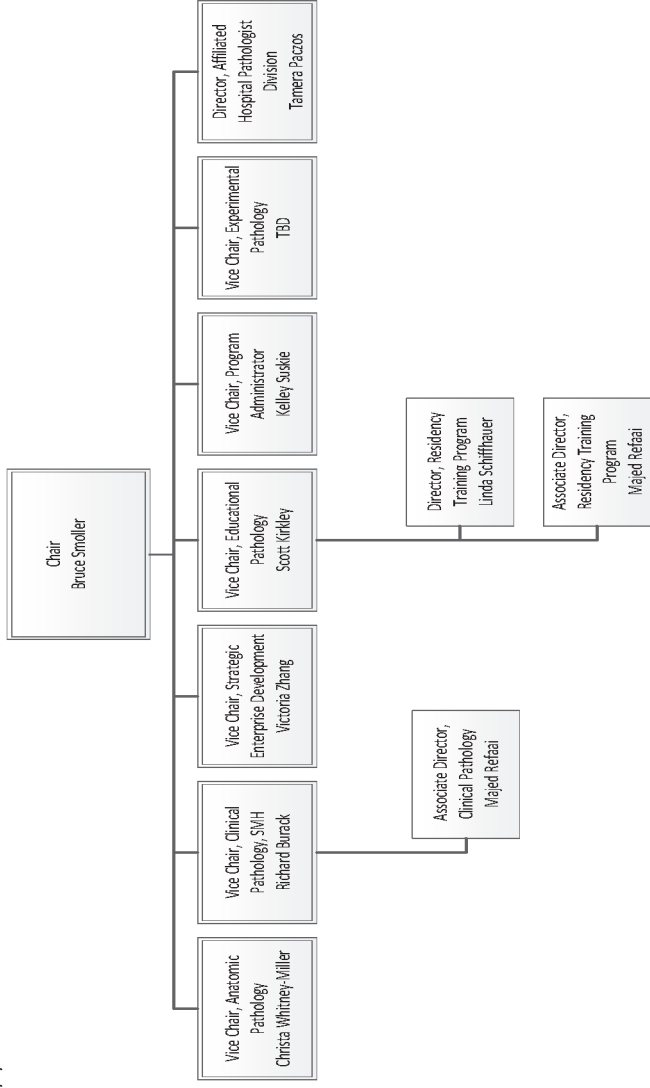
Clinical Pathology  
Organizational Chart  
Nov 5, 2019



Experimental Pathology  
Organizational Chart  
10/7/2019

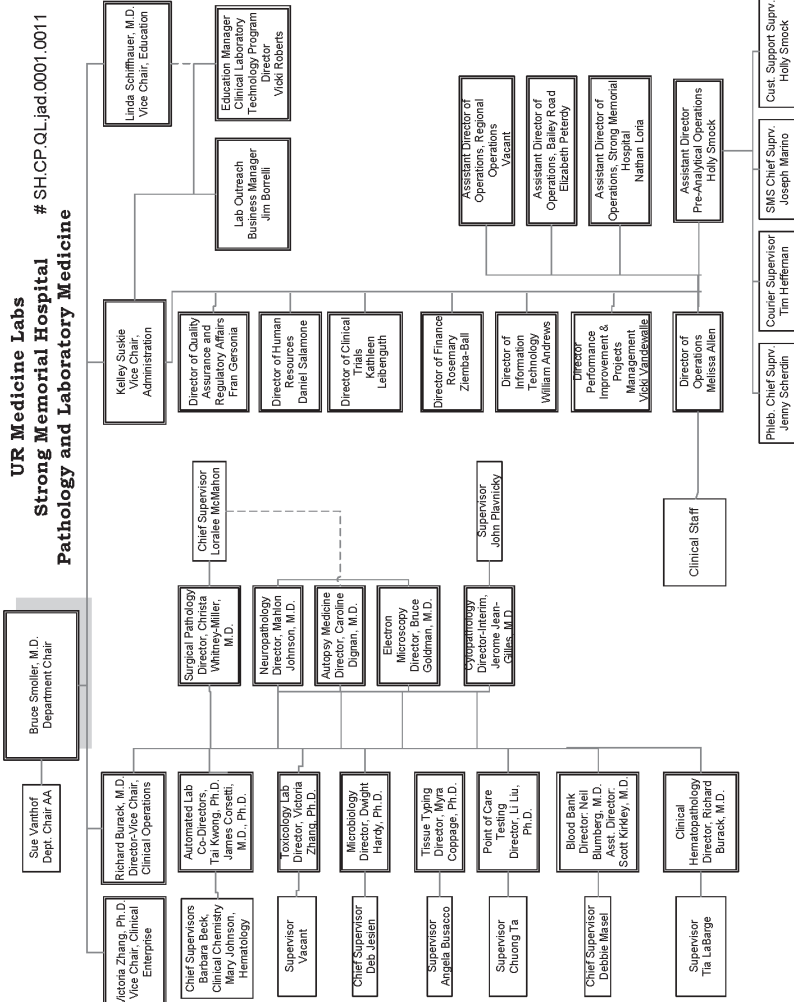


Cabinet  
Organizational Chart  
10/7/2019

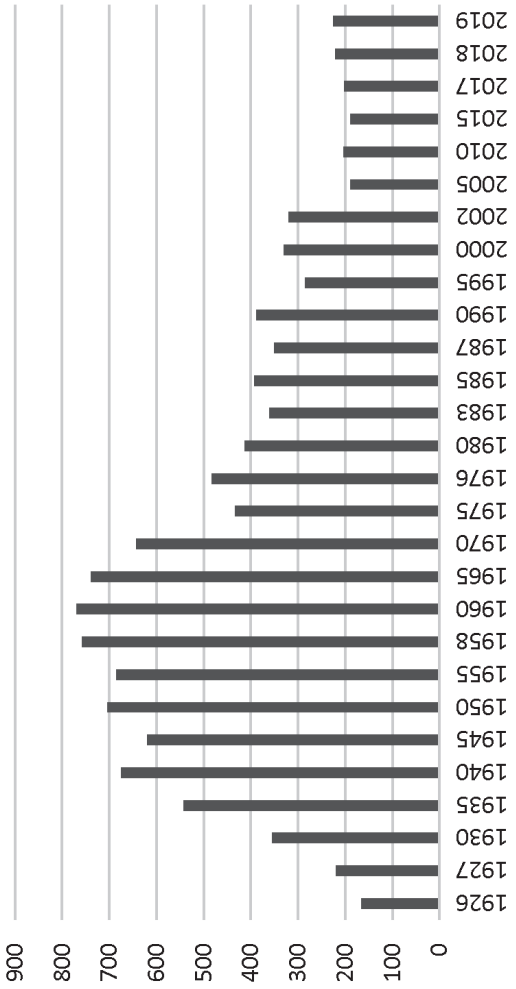


**UR Medicine Labs**  
**Strong Memorial Hospital**  
**Pathology and Laboratory Medicine**

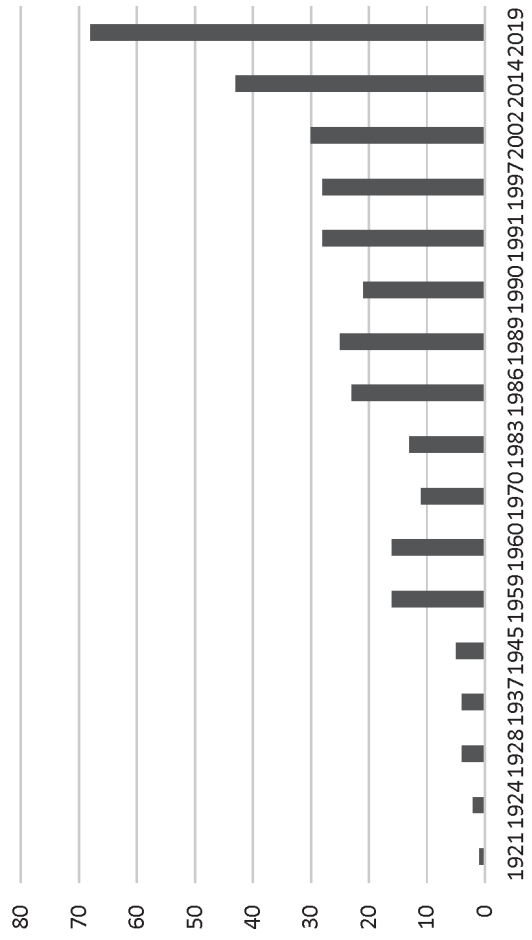
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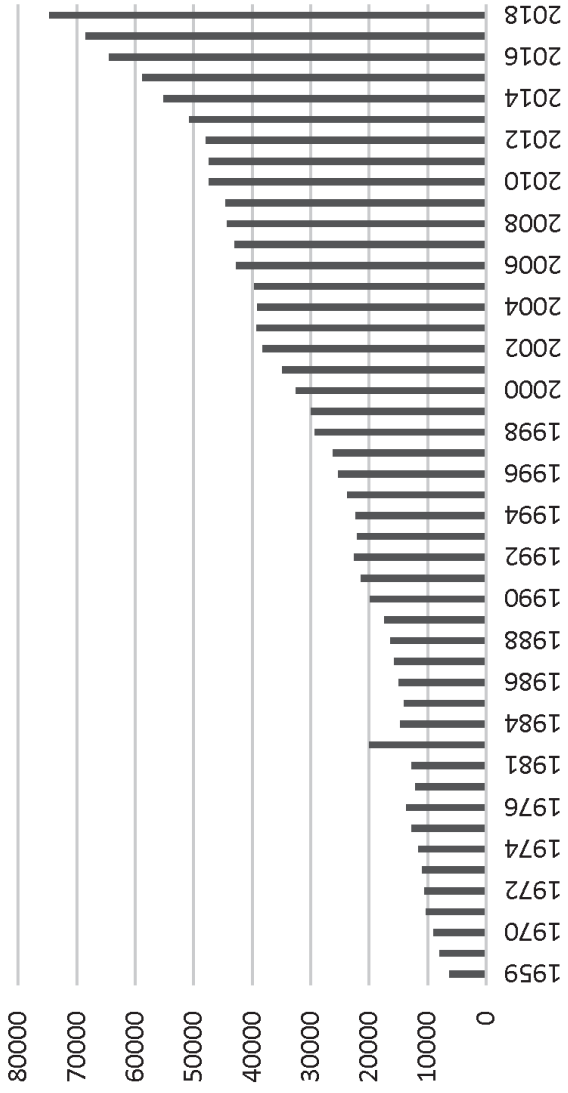
# Number of Autopsies



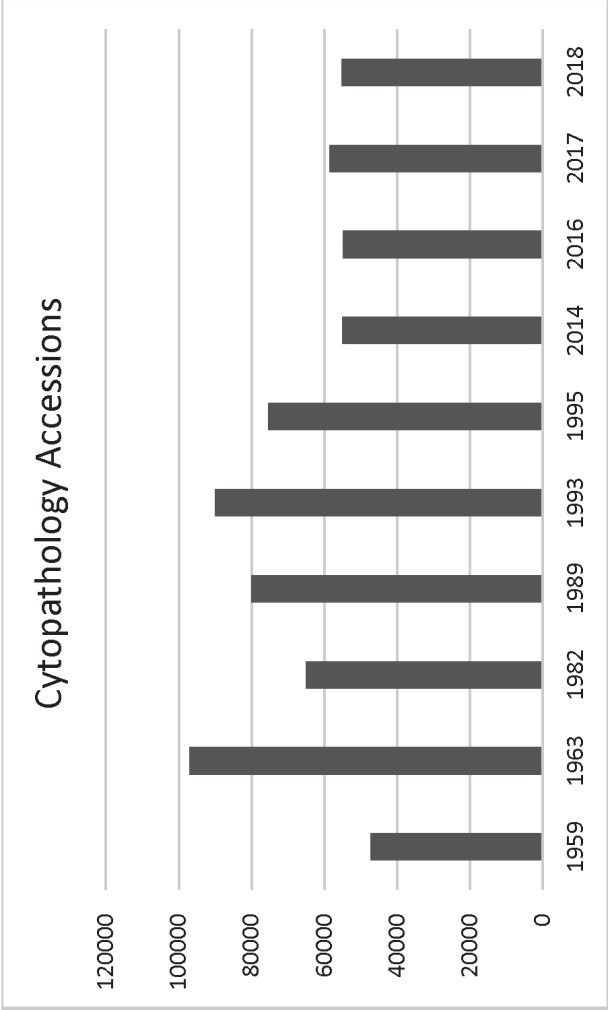
# Number of full-time faculty



# Surgical Pathology Accessions







## Clinical Laboratory Test Volumes

