



## The UNC Department of Epidemiology: Our First 40 Years, 1936-1976

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*The Chapel Hill work might be typified as being concerned with  
developing epidemiological strategies to measure the health effects of  
social and cultural change ... The work of Cassel and his colleagues  
at Chapel Hill has had a profound impact on social epidemiology.*

— James Trostle, 1986.

## Acknowledgments

We owe a great debt to Robert Korstad's *Dreaming of a Time*, an invaluable resource on the history of the UNC Gillings School of Global Public Health, and to Michel Ibrahim, then dean of the school, for commissioning the work. We also are grateful to Susanne Wolf who organized and compiled a department scrapbook, and in so doing, preserved booklets, letters, stories and photographs that are not available in any other source. Many members of the faculty and staff joined that effort, with encouragement and support from then-chair, David Savitz. An unpublished booklet printed around 1979 supplied unique information about the programs and faculty members of the department in late 1970s.

Additional key resources include annual reports for the Gillings School and the department archived in the UNC Health Sciences Library, and unpublished documents, digital collections and interviews held in UNC's University Archives, North Carolina Collection and Southern Historical Collection.

Victor Schoenbach, associate professor, contributed documents and memories, contacted former faculty members and alumni to check facts and collect resources, drafted sections of the document and edited many drafts. Schoenbach and Bill Jenkins interviewed many former faculty members.

Judith Winkler, lead writer, editor and graphic designer, also conducted archival research. Linda Kastleman provided editorial assistance.

Department Chair Andrew Olshan provided critical vision, leadership, encouragement and support.

Only a handful of epidemiology training programs existed in the United States when the University of North Carolina at Chapel Hill offered its first epidemiology course in 1936. Now, dozens of public health programs provide training in epidemiology. Over these years, the department was challenged by changes in patterns of disease and societal changes: From syphilis to chronic diseases and from segregation to civil rights, faculty members, research interests and student enrollment have changed and adapted with the times.

As one of the leading epidemiology departments in the world, the Department of Epidemiology at the Gillings School of Global Public Health has produced a body of influential research and trained thousands of students and public health professionals from all over the world. Our research has helped improve human health, advance understanding of the disease process and discover breakthroughs in prevention and care. UNC faculty members, fellows and students have helped expand the scope of epidemiology. The epidemiologic methodology advanced in the department has empowered epidemiologists to achieve greater impact on public health.

Today, epidemiology graduates from the Gillings School are leaders in academia, government, industry, civil societies and professional organizations. Graduates serve on expert advisory committees, review panels of granting agencies and editorial boards of professional journals.

Through research, teaching, collaboration and service, the department and its graduates have contributed to and shaped academic and public health programs at UNC, in North Carolina, throughout the U.S. and globally.

I invite students, faculty members and alumni to get to know the department's history and let it inspire you – as it does me.



Andrew Olshan, PhD  
Chair and  
Barbara Sorenson Hulka Distinguished Professor  
in Cancer Epidemiology  
Department of Epidemiology

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## About this Document

This account of the history of the Department of Epidemiology at the UNC Gillings School of Global Public Health begins in 1936 with the arrival of Dr. Milton J. Rosenau, covers the 40 years during which Milton Rosenau, Edward McGavran, Sidney Kark and John Cassel led the department and concludes in 1976 with the passing of John Cassel, and the appointment of Michel Ibrahim as chair.

The document includes profiles of many, not all, of the faculty members hired through 1976, describes a selection of the research and publications developed during these years and mentions some of the institutional changes in the school and university that led to changes and expansion in the Department of Epidemiology.

The department encourages friends and associates – faculty and staff members, alumni, students and others – to share their memories, memorabilia and documents that are critical to building an archive of the department's history.

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## 1936

Epidemiology was one of the division's first four departments of instruction: epidemiology, sanitary engineering, bacteriology and public health administration, each with one professor (Rosenau, 1939; UNC. Division of Public Health, *Announcements 1936-1937*, p. 3)

The division started out in Caldwell Hall, then the home of the medical school, and offered short courses to public health practitioners from across the southeastern states. Fifty-one students registered for the first short course. These first short courses included 12 weeks of instruction and one month of field work. Participants who completed the course earned certificates in public health (*Announcements, 1936*).

During the early days, departments were small, consisting of one professor and perhaps one assistant. Rosenau wrote that there were "seven departments in our division, each presided over by a full-time professor with full-time rank" (Rosenau, 1939, p. 2).



The Division of Public Health enrolled its first class in 1936.

## UNC Division of Public Health

The Division of Public Health, which eventually became the Gillings School of Global Public Health, was established within the UNC School of Medicine to serve North Carolina and was designated by the United States Public Health Service (USPHS) as the training center for the southeastern states. Milton Rosenau was appointed director of the division UNC. Division of Public Health, *Announcements 1936-1937*, p. 5).

### Milton Rosenau



*Milton J. Rosenau, MD*, was known as the foremost teacher of public health matters in the world. His arrival at UNC in 1936 as professor of epidemiology and director of the Division of Public Health launched a new era in North Carolina's efforts to train the state's public health workforce.

Rosenau was born in Philadelphia in 1869, earned a medical degree at the University of Pennsylvania in 1889 and completed postgraduate studies in Berlin, Paris and Vienna. He began his career as a surgeon in the U.S. Marine Hospital Service, now the U.S. Public Health Service. From 1899 to 1909, he served as director of the

Marine Hospital Service Hygienic Laboratory, which later became the National Institutes of Health (Rosenau, 1944). Rosenau is the author of *Preventive Medicine and Hygiene*, a standard epidemiology used for many years (Rosenau, 1918).

Rosenau served as the first chair of preventive medicine and hygiene in the U.S. at Harvard Medical School; as co-founder and director of the Harvard-MIT School for Health Officers; and as professor of epidemiology and director of the Harvard School of Public Health. Health problems and a mandatory retirement policy forced Rosenau to leave Harvard's faculties of medicine and public health ("Milton Joseph Rosenau," 1946).

*A school for health officers in a university organization should occupy a position as separate as that of the medical school.*

— Milton Rosenau, 1915, p. 1172

After leaving Harvard, Rosenau recovered his health, began a new chapter of his life at UNC and would soon achieve the vision Rosenau had articulated two decades earlier when he wrote, "A school for health officers in a university organization should occupy a position as separate as that of the medical school" (Rosenau, 1915, p. 1172).

At the time of his death, Rosenau was president-elect of the American Public Health Association and recently had received the association's Sedgwick Memorial Medal. He died on April 9, 1946, at age 76, after several heart attacks.



## The School of Public Health

### 1940

In academic year 1939-1940, the Division offered three graduate-level epidemiology courses to public health students: a two-part, general epidemiology sequence and Advanced Epidemiology, a research course for those qualified to do independent investigation under supervision. Several of the first dissertations focused upon epidemiology (*A Proposal for a Doctoral Program*, 1961).

In 1940-1941, 72 students enrolled in the School's PhD, MPH and MS degree programs. Because the U.S. was preparing to enter World War II, only 21 of those students stayed the full year (Rosenau, 1941). By 1946-1947, the numbers had rebounded, and 103 students were enrolled (McGavran, 1963).



The class entering in 1939 posed for a class picture.

Rosenau's push to make the division a school was already in motion as the 1940s began. The Division, then administered by the UNC Graduate School, had enrolled 13 students for higher degrees. Four Master of Public Health degrees and three Master of Science degrees were awarded in June 1940, and at its meeting in the same month, the Trustees of the University of North Carolina authorized the division to become the School of Public Health, independent of the medical school (Rosenau, 1940). Rosenau became the School's first dean and continued as professor of epidemiology. The public health school moved into the building now known as MacNider Hall.

## Epidemiological Survey of Syphilis

Syphilis was an overwhelming public health problem in the U.S. during the early decades of the 20th century. It was certainly not a new disease, and the anti-venereal disease (VD) campaigns in the U.S. during World War I had brought syphilis and gonorrhea into public conversation. However, the openness ended in the roaring 1920s. World War I veterans came home to a society in which sexuality and consumption of alcohol were driven underground. The impact of VD rose, while Prohibition and the temperance movement were heralded in public.

Thomas Parran, surgeon general of the USPHS under President Franklin D. Roosevelt, published *A Shadow on the Land* in 1937. In the book, he advocated for public discussion of VD, which he called the country's number-one health problem. Parran also proposed a national campaign to prevent and treat syphilis. Parran's book was quoted in newspapers across the country, and a Gallup poll reported strong approval for action on syphilis. Parran's campaign had turned the tide from opposition to support. In 1938, President Roosevelt signed the National Venereal Disease Control Act, which passed both houses of Congress with overwhelming support, despite fears that such a program would open the door to socialized medicine (Brandt, 1985).

Against this backdrop, North Carolina initiated a VD control program, and with no reliable estimates of the prevalence of the infection, the Rockefeller Foundation funded a field epidemiological study of syphilis in the state. The study, which took

place from 1940 to 1950, was the School's first research effort. The project partnered with the state's venereal disease control campaign and was implemented in Orange, Chatham, Person and Durham counties. By the time the Rockefeller funding ended, the project's population had expanded to include 185,000 people, spread over 1,792 square miles (*North Carolina Syphilis Studies*, 1950).

*The biggest hole in the entire [VD control] program was found to be actual ignorance of and indifference to the problem ... on the part of the nursing and clinical staffs of the health departments.*

– *Field Epidemiological Study*, 1942, p. 4.

## 1940

The School's first research project was an epidemiologic survey, the Survey of Venereal Disease in Orange, Person, Chatham and Durham Counties, started in 1940 and ran until 1950.



Many women enrolled as public health students during wartime and throughout the 1940s. Milton Rosenau is seated in the center of the front row, and John Wright is seated beside him, third from right.

John Wright, director of the VD survey, described the research as conducting blood studies on total communities to establish prevalence, incidence rates and trends, and the data were applied to assess and improve the state's VD control program. Wright and Lake Allen, the project research nurse, stepped in as trainers, and held VD clinics, delivering lectures, giving demonstrations in the health department clinics and inviting private physicians to participate. The project identified differences in specific populations including "coloreds," whites, people presenting for premarital physicals, pregnant women and babies born to mothers who had syphilis. The researchers also traced contacts. One project report described interviewing hospitalized soldiers to identify where soldiers contracted venereal diseases. The project continued until 1950 (*North Carolina Syphilis Studies*, 1950).

## John Wright



*John J. Wright MD, MPH*, began his medical education in Ann Arbor, where his father, grandfather and great-grandfather all had trained as physicians. However, after contracting tuberculosis, he left medical school and spent five years recovering in a sanitarium in Tucson, Arizona.

He finally completed his medical education at Vanderbilt University – but it wasn't family tradition or a bout of tuberculosis that sparked his interest in public health. It was typhoid. While a medical student at Vanderbilt, Wright developed a severe case of typhoid with "all the complications." During his recovery, he had time to wonder, *How did I get typhoid?*

Wright was awarded a Rockefeller Fellowship, earned a Master of Public Health degree from Johns Hopkins, and then returned to Tennessee, where he served as state director of vital statistics.

In 1940, Wright came to UNC as director of the public health school's epidemiologic study of syphilis and research associate professor of epidemiology. He also taught public health statistics and epidemiology to students at UNC's schools of public health and medicine and at North Carolina Central University.

Wright became a professor of public health administration around 1952, after the research project had ended. He was not interested in following Rosenau as dean, but he and Herman G. Baity, MD, professor of sanitary engineering, as acting deans, led the search for Rosenau's successor, Edward McGavran. Wright later served as associate dean of the public health school and retired around 1968 (Wright, 1988).

## Desegregation at UNC

*The U. S. Supreme Court's 1938 decision in Missouri Ex Rel. Gaines v. Canada put southern states on notice that they would be required to improve their graduate and professional schools for African-Americans or face court-ordered desegregation (Chapman, 2006, p. 169, Footnote 86.)*

*Although a number of attempts were made by African-Americans to enroll at UNC during the 1930s and 1940s, it was not until 1951 that unrelenting pressure from the NAACP and federal courts forced the university to desegregate its graduate schools (Chapman, 2006, p. 167). The trustees admitted Edward O. Diggs to the medical school in 1951, but only because university attorneys believed they could not prevail before the Supreme Court, since no 'separate but equal' medical school existed in North Carolina (Chapman, 2006, p. 168).*

William A. Darity, PhD, and Edward V. Ellis, PhD, each of whom completed a master's degree in public health at NCCU, were the first African-Americans to earn doctoral degrees at UNC. Both earned doctorates in public health education. Darity became founding dean of the University of Massachusetts at Amherst School of Health Sciences. Ellis worked as a health educator in North Carolina, served on the faculties of the University of Minnesota and Pennsylvania State University and became vice president of academic affairs at the University of Maryland Eastern Shore ("William Darity, Founding Dean," 2015; Ellis, n.d.; Ellis, 2015).

Epidemiology alumni from the Gillings School, including Seronda (Jackson) Robinson, PhD, associate professor and chair of the Department of Public Health Education, have taught epidemiology at North Carolina Central University.

## Teaching Public Health at N.C. Central



*Dr. James E. Shepard*, a pharmacist who completed his pharmacy degree at Shaw University in 1894, a financial leader, founder of North Carolina Central University (NCCU) and advocate for improving African-American health and education, met Milton Rosenau in the late 1930s, when the two became colleagues as members of the Division of Cooperation in Education and Race Relations and its Committee on Health Problems.

Shepard wrote to Rosenau in 1940, asking for advice on how to establish a school of public health at the Durham school and saying that he believed public health was "one of the great fields for the training of Negro men and women" (Shepard, 1940). Rosenau quickly agreed, and while recruiting faculty for the courses, wrote that the school's faculty

was enthusiastic about the work (Rosenau, 1945). Shepard and Rosenau launched the program in 1945 when the Mississippi State Board of Health asked the UNC school to train eight African-American students (Korstad, 1990). Rosenau asked Lucy Morgan, PhD, founder of UNC's Department of Health Behavior, to develop the educational program. Both Rosenau and Shepard died within two years, and Morgan stepped into the leadership role. She was the first chairperson of the NCCU Department of Public Health Education, and the Miller-Morgan Building, which houses the Department of Public Health Education, bears her name (NCCU, n.d.).

Over the next 15 years, more than 100 black students received training modeled on UNC's curricula in public health education and public health nursing. UNC instructors, including epidemiology faculty members, taught the same courses at both schools. The collaboration, an example of a "separate but equal" program, was not equal at all, but it was progress during the time when Jim Crow laws imposed separation of blacks and whites.



These students enrolled in NCCU's first public health education class.

Black and white students from the two schools together attended a journal club that met sometimes on the Durham campus and other times on the Chapel Hill campus. According to Lucy Morgan, the idea of blacks and whites meeting together on campus was a radical notion in the North Carolina of the late 1940s and early 1950s. When tensions in Chapel Hill were high, the journal club would meet with the window shades drawn. (Korstad, 1990, 48-51).



## 1947-1963

Edward McGavran, MD, MPH, became dean and professor of epidemiology in 1947.

The School awarded its first two Master of Public Health degrees with an epidemiology focus to Alejandro Cruz Blandón and Domingos B. Carvalheda (*Alumni Directory*, 1994). It was not possible for graduate students in the public health school to enroll specifically in epidemiology until the late 1950s; the first individuals to earn epidemiology graduate degrees at UNC graduated in the early 1960s.



UNC's School of Public Health faculty posed for a photo in 1954. Seated on the front row are John Cassel, wearing glasses, and Edward McGavran, far right.

For more than a year following Dean Rosenau's death, the school functioned without a dean and with John Wright as its only epidemiologist (McGavran, 1963).

## Edward McGavran



*Edward G. McGavran, MD, MPH*, served as dean of UNC's public health school from 1947 to 1963 and head of the Department of Epidemiology from 1947 until 1958. McGavran's signature belief – that the community is the patient of the public health practitioner – led him to increase the field-training component of UNC's public health training. Of necessity, McGavran dedicated the majority of his effort to his responsibilities as dean, leaving less than a tenth of his time for the Department of Epidemiology (*Annual Report*, 1953).

McGavran was born in 1902 in Madhya Pradesh, India, and lived in India with his missionary family until he was 8 years old. According to Harriet Barr, McGavran biographer, the experience of watching long lines of people queued up to see his aunt, a doctor, in India, “gave impetus to the realization that treatment could not eliminate disease, and stimulated his interest in prevention.” McGavran earned an AB degree from Butler University and a medical degree from Harvard, where he studied with Milton Rosenau (Barr & Barrie, 1979).

After McGavran completed medical school, he followed Rosenau's advice to practice medicine before studying public health. McGavran earned the Master of Public Health degree at Harvard in 1936 (Barr & Barrie, 1979).

Before accepting the position of dean and head of the Department of Epidemiology at UNC in 1947, McGavran held faculty positions in preventive medicine and public health at Washington University Medical School and served as professor and head of the Department of Public Health and Preventive Medicine at the University of Kansas Medical School (*A Proposal for a Doctoral Program*, 1961).

McGavran retired from UNC in 1963 and worked as a consultant with a Ford Foundation family planning project in India until 1969. Edward McGavran died on Aug. 29, 1972, at the age of 70.

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*One of the best learning situations occurs at the 'patient side.' In public health, the patient is the community. Community-side instruction, if properly administered, can be superior instruction.*

– Edward McGavran, 1963, Section IX

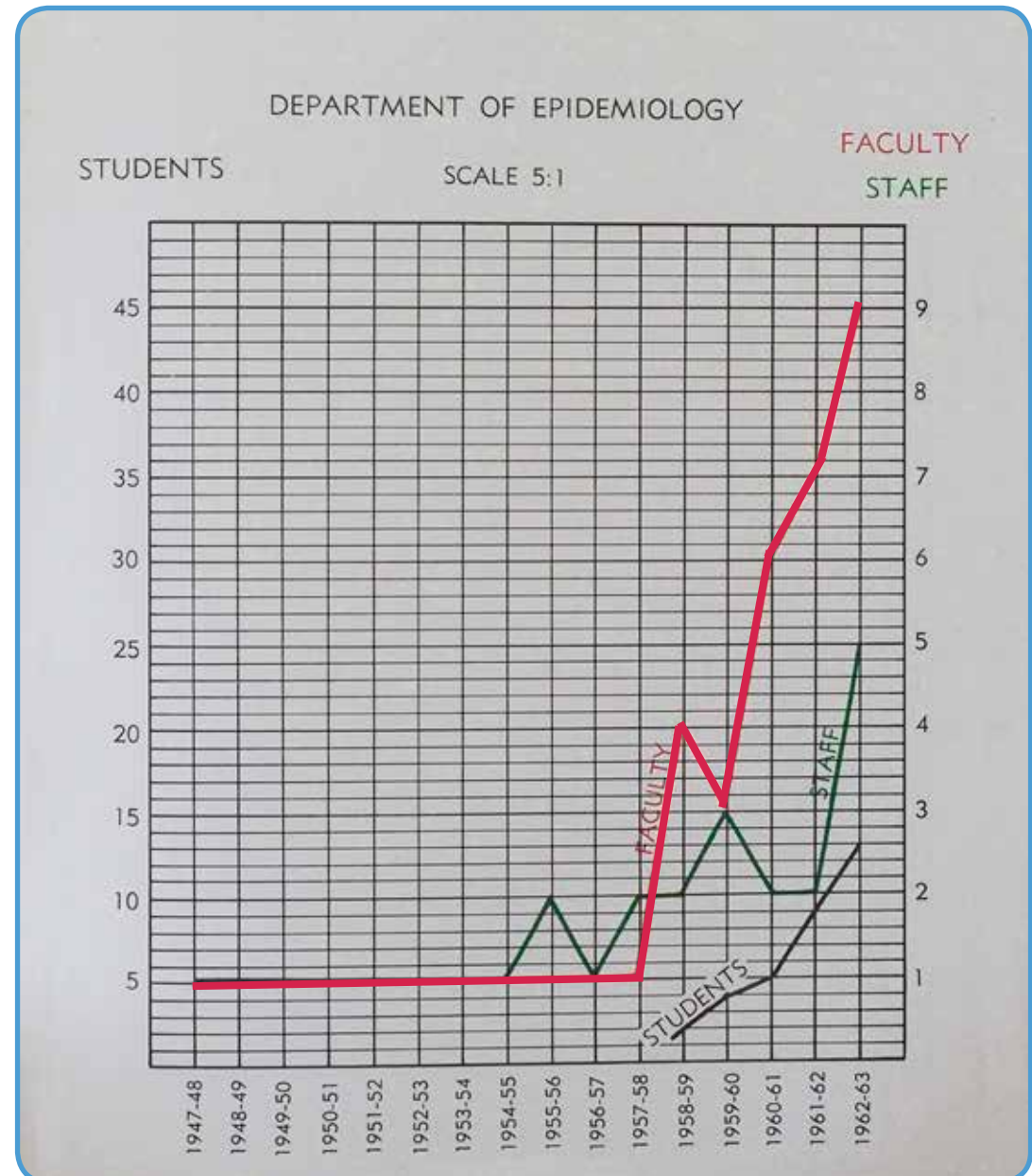
## Growth of Epidemiology, 1947-1963

### 1947-1963

In the early years of McGavran's tenure, the Department of Epidemiology taught all UNC public health students – but enrolled no students of its own, and its only faculty member juggled epidemiology responsibilities with those of being dean. Under McGavran's, Kark's and Cassel's leadership, the department developed its own degree programs, enrolled its own students and grew into a nine-member, multidisciplinary faculty.



Undated photo of Edward McGavran (center) beside John Wright (seated right) with other members of the UNC public health faculty and staff.





Sidney and Emily Kark posed for a photo in South Africa in the 1940s.

## South African Ties

Several South African physicians with ties to Pholela eventually earned a degree in the UNC Public Health School, joined the faculty or led the Department of Epidemiology. These included:

- Sidney L. Kark, professor and chair
- John C. Cassel, MPH in public health administration from UNC, professor and chair
- Cecil Slome, professor
- Jeremy D. Kark, PhD in epidemiology from UNC

## Bringing the South African Experience to UNC

Sidney Kark and John Cassel, South African epidemiologists who would transform the UNC Department of Epidemiology in the late 1950s, started their careers as doctors and pioneers in Pholela Health Center, a model multi-racial community health center located in an impoverished Zulu tribal reserve in Natal Province, South Africa, during the time when apartheid laws were tightening. Kark, Cassel and their wives, Emily Kark and Margaret Cassel, served at Pholela.

In 1940, Sidney Kark was appointed head of Pholela. There, he and Emily Kark, also a physician, developed the Community-Oriented Primary Health Care (COPHC) concept, which included “a socially oriented epidemiology to develop and evaluate” this new approach to health care (Trostle, 1986, p. 61).

After completing his service at Pholela, Sidney Kark established the Institute of Family and Community Health, a training center that prepared health workers of all races to expand the Pholela model. Kark developed the institute’s curriculum, and Cassel joined the institute.

Kark emerged from the Pholela experience committed to social medicine; Cassel developed a strong commitment to the need for epidemiologic surveys, which led him to study at UNC.

When multi-racial education became illegal under apartheid, the institute’s program became part of the Durban medical school, and the Pholela clinic could not operate legally with its multi-racial model (*Community Health, a Model for the World*, n.d.).

*The community’s health needs become known to the health-care workers through community surveys that are conducted by the health workers ... mapping of areas, understanding the culture, beliefs and habits of the community, socio-economic status as well as prevalence rates.*

– *History of Pholela*, 2001, paragraph 2.



## John Cassel

**John C. Cassel, MD, MPH**, the son of Jewish immigrants who fled an area that is now part of Lithuania to escape persecution during the Bolshevik Revolution (Cassel G, 2014), was born in Johannesburg in 1921. He completed his medical degree at the University of Witwatersrand (*A Proposal for a Doctoral Program*, 1961, Appendix). During the six years he spent at the Pholela Health Center working with community members and a Zulu “witch doctor” (traditional healer),



## Early 1950s

The Department of Epidemiology's Chronic Disease Section was established with funding from the National Institutes of Health (NIH) in 1954. By 1957-1958, the section had secured two grants: \$16,500 from the National Heart Institute and \$14,500 from the National Cancer Institute (*Annual Report* 1955 and 1958).

John Cassel, MD, MPH, who had studied epidemiology and biostatistics at the school and earned a master's degree in public health administration there, joined the faculty in 1954. In a few years, Cassel would become professor and chair of the department (*A Proposal for a Doctoral Program*, 1961. Appendix, p. 1).

Cassel published "A Comprehensive Program among South African Zulus" in *Health, Culture and Community* in 1955. The report details the practical experience that shaped Cassel's thinking about health and his later work in epidemiology (Cassel, 1955).

McGavran published "The Scientific Diagnosis and Treatment of the Community as a Patient," in the *Journal of the American Medical Association* in 1956. The article explained McGavran's core beliefs about public health (McGavran, 1956)

## Guilford County Research

In 1957, the Guilford County (N.C.) Disease Survey began. It was the department's first epidemiologic research on chronic disease (*Annual Report*, 1957).

Cassel became convinced that factors beyond medical data were needed to understand health (Cassel, 1955). Cassel enrolled in the biostatistics program at UNC's public health school in 1953 to develop the expertise in biostatistics and epidemiology he would need to continue his work at the Pholela Health Center (Cassel, G. 2014). He earned a Master of Public Health degree in public health administration in 1954, and the Cassel family returned immediately to South Africa.

When the Cassels arrived in South Africa, they found that the newly elected government's tightening of apartheid laws, which enforced racial separation in health care and education, made it impossible to continue their work at Pholela. Cassel, his pregnant wife and their young children, fled their native land with only one suitcase. While the Cassels were on board a ship from South Africa to England, John received a communication from Dean McGavran, inviting him to join the epidemiology faculty at UNC (Cassel G, 2014).

Cassel accepted the offer and joined the faculty as director of the Chronic Disease Section in 1954. He chaired the department from 1959 until April 1975, when an aggressive cancer forced him to step down as chair (*Annual Report*, 1976). He had been a brilliant, charismatic leader, and when he died the following year, he was mourned widely.

By all reports, Cassel was a remarkable teacher – charismatic, inspiring and demanding that each session be an experience in integrative thinking. Bert Kaplan, who attended Cassel's lectures and joined the faculty later, remembered Cassel's lectures this way: *John Cassel sounded like someone with a Talmudic education . . . he loved debates* (Kaplan, 2011).

Cassel was a lead researcher in the landmark Evans County Cardiovascular and Cerebrovascular Study and contributed to an influential body of research in areas including health and culture among Zulus, epidemiological and health implications of culture change, industrialization and health, urbanization and coronary heart disease, psychosocial factors in hypertension, physical illness and stress, psychosocial factors in hypertension, physical illness and stress, psychosocial factors and disease, family and social support and psychiatric epidemiology (Ibrahim, Kaplan, Patrick, Slome, Tyroler & Wilson, 1980).

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*... throughout all history, disease, with rare exceptions, has not been prevented by finding and treating sick individuals but by modifying those environmental factors facilitating its occurrence ... we should focus efforts more directly on attempts at further identification and subsequent modification of these psychosocial factors rather than on screening and early detection.*

– Cassel, 1976, 121

## Late 1950s

The department received its first two *epidemiology* training grants: \$25,000 from the U.S. Public Health Service and \$10,000 from the NIH (*Annual Report*, 1958).

In 1959, the department began offering the Master of Public Health (MPH) and the Doctor of Public Health (DrPH) degrees in epidemiology. John Hughes, the first student to enroll in the doctoral program, earned the DrPH in 1959 (*Annual Report*, 1959).



Members of the faculty of the School of Public Health pose during the 1958-1959 school year. John Cassel is seated on the front row, second from left holding a pipe.

## First Graduate Degrees in Epidemiology

In the late 1950s, under the guidance of Sidney Kark and John Cassel, the department began a new phase. Epidemiology's transformation during this time was dramatic by any metric, whether breadth of faculty expertise, courses offered, degree programs offered, data available for research, or eventually, enrollment.

Under the guidance of Sidney Kark, the department developed two epidemiology graduate degree programs. Kark, having established the training program for the Pholela clinics, was well prepared for this project, and the Master of Public Health (MPH) and Doctor of Public Health (DrPH) degrees with a major in epidemiology were authorized in 1959 (*A Proposal*, 1961; *Annual Report*, 1959).

### Epidemiology Curriculum, 1959

#### Core

PH 104 Principles of Epidemiology (later became EPID 160 and, still later, EPID 600)

#### Public Health Electives

PH 207 Epidemiological Foundations for Disease Control

PH 208 Dental Epidemiology

PH 209 Epidemiology in Public Health Family Practice

PH 210 Comparative Epidemiology

#### Advanced Studies and Research

(Courses for epidemiology master's and doctoral students)

PH 200 Culture and Health

PH 212 History of Epidemiology

PH 201 Problems in Epidemiology

PH 203 Statistical Methods in Epidemiology

PH 301 Research in Epidemiology

– *A Proposal for a Doctoral Program*, 1961.

In 1961, the department applied to the UNC Graduate School for authorization to offer another doctoral degree – the Doctor of Philosophy (PhD). The proposal to the Graduate School noted the “urgent need for increasing research efforts” and the “critical shortage of trained personnel in the field.” The program objectives were to “stimulate further much-needed epidemiological research” and “strengthen the total teaching program of the department by increasing faculty opportunities for research and providing new data for current and proposed courses at all levels.” (*A Proposal*, 1961).

True to the proposal's objectives, the department strengthened and expanded. The faculty became a seven-member, multidisciplinary faculty. Data for doctoral research were available from a wide range of sources, including industrial populations, North Carolina Memorial Hospital, statewide dental

records, medical records of patients from the private and public sectors in North Carolina, chronic disease studies from Guilford County, N.C., and data from experience with the live polio vaccine in Dade County, Florida. The proposal was approved by the Graduate School, and by 1962-1963, the first two students had completed the course requirements for the PhD (*A Proposal*, 1961; *Annual Report*, 1963).



## Multidisciplinary Faculty

During 1958-1960, the department assembled an expanded multidisciplinary epidemiology faculty (*A Proposal for a Doctoral Program*, 1961, Appendix). These faculty members are listed below with the dates they joined the faculty and their primary areas of expertise.

- John Cassel (1954), physician
- Sidney Kark (1958), physician (one-year appointment as chair, then visiting and adjunct)
- Ralph Patrick (1958), cultural anthropologist
- John Fulton (1958), dentist
- C. David Jenkins (1960), psychologist
- Herman Alfred Tyroler (1960), physician
- Hubert Campbell (1960), visiting professor of statistics



**Sidney L. Kark, MD**, was born in Johannesburg in 1911 to Jewish immigrants from Lithuania. He earned a medical degree from Witwatersrand University in 1936. Kark developed the curriculum for the Institute of Family and Community Health and was a mentor to John Cassel, so when McGavran looked for someone to revitalize the Department of Epidemiology, Cassel, who by that time had joined the epidemiology faculty, made the connection to his South African mentor. Kark became chair of the Department of Epidemiology to “help direct the growth and reorganization of the department” (*Annual Report*, 1959, p. [1]).

Kark chaired the department for one year (1958-1959), during which he led development of a curriculum for graduate studies in epidemiology. Prior to coming to UNC, Kark had secured a position in Israel, so in 1959, he moved to Jerusalem, where he and other colleagues from South Africa established a new social medicine department. Kark served as professor and head of the Department of Social Medicine of the Hebrew University and Hadassah until 1980. He retained a connection to the UNC Department of Epidemiology and served as a visiting professor and adjunct for several years. Sidney Kark died in 1998. (Brown & Fee, 2002; Geiger, 1987; Susser, 1993; *Sidney L. Kark*, 1999).



**Ralph C. Patrick, PhD**, began his graduate education in sociology and anthropology at UNC and completed doctoral studies in social anthropology at Harvard. (*A Proposal*, 1961, Appendix).

In 1958, he returned to Chapel Hill and joined the epidemiology faculty as an associate professor, with a joint appointment in the Department of Anthropology. He served on the faculty until his death in 1983. Patrick, the first social scientist to join the epidemiology faculty, was a co-author, with John Cassel and David Jenkins, of the department’s conceptual model for social epidemiology

(Cassel, Patrick & Jenkins, 1960). His research included a large diabetes study in North Carolina, evaluation of an oral polio vaccine project in Florida and studies of hypertension in Micronesia.

Bill Jenkins, PhD, an epidemiology alumnus who took Patrick’s courses in the late 1970s, described Patrick as “tall and thin, laid back with long white hair” – an anthropologist who

## Sidney Kark

## Ralph Patrick

## Dental Public Health and Epidemiology

The Institute of Public Health Dentistry, established in the UNC medical school in 1936, was the nation's first training program for dentists working in public health (*N. C. Oral Health History* n.d.).

Public health dentistry was prominent in the department during the 1950s and 1960s. According to the 1954 annual report, epidemiology "assumed responsibility" for the course, Public Health and Dental Science 170, in 1953-1954. Although the report does not list the instructor, it seems likely it was John Fulton, who joined the epidemiology faculty as a professor four years later.

Rebekah Bowden, an early graduate of the Department of Public Health Education (now the Department of Health Behavior), was hired to organize 36 oral cancer seminars in 1960 (*N. C. Oral Health History* n.d.).

## Rosenau Hall Completed

In January 1961, a ground-breaking ceremony was held for a new building. When the building was dedicated in 1963, John Wright planted a magnolia tree in memory of Milton Rosenau, and in 1965, the building was named Rosenau Hall (Korstad, 1990).

talked about Margaret Mead, the cultural issues around accepting the Salk vaccine and his own research in Ponape (now known as Pohnpei), an area of Micronesia (Jenkins, B, 2014).

## John Fulton



**John T. Fulton, DDS**, a dentist who completed graduate work in public health, also studied mental hygiene and public health administration. Before coming to Carolina, Fulton provided dental care as a component of tuberculosis and cancer programs in state health departments. Fulton published a paper on the public health aspects of orthodontics in 1952 (Fulton, 1952; *N.C. Oral Health History*, n.d.).

In 1958, Fulton joined the faculty as a professor of public health dental epidemiology, and in 1960, Fulton and John Hughes, a graduate of UNC's public health administration and epidemiology programs, conducted the first comprehensive state dental survey in the country. This study provided the baseline data for a Kellogg Foundation-funded assessment of progress in preventing dental disease conducted in 1976. Fulton also lectured on human ecology and anthropology. He became a professor emeritus in 1970 (*Annual Report*, 1971).

## David Jenkins



**C. David Jenkins, PhD**, who earned a doctorate in psychology at UNC, joined the epidemiology faculty in 1958 and served until 1972. He was an adjunct faculty member in later years. Jenkins studied the ways that psychological factors influence health and how these factors can be measured.

He was a co-author, with John Cassel and Ralph Patrick, of the department's signature approach to epidemiology, published in 1960. He was well known for research that brought together cardiovascular health and psychology and published groundbreaking research on Type A behavior pattern in coronary heart disease. He developed the Jenkins Activity Survey (JAS), a psychometric survey of behavior and attitudes designed to identify Type A behavior (Jenkins, Zyzanski & Rosenman, 1971). After leaving UNC, he served on the faculty of Boston University and led the Division of Socio-medical Sciences at the University of Texas Medical Branch at Galveston. Jenkins served as director of the World Health Organization's Collaborating Center for Psychosocial Factors and Health and as executive editor of *Behavioral Medicine* (Jenkins C. D., 1981; Wedeman, 2005). He retired in Chapel Hill in 1996. During an

## Publications, Early 1960s

In 1960, Cassel, Patrick and Jenkins published “Epidemiological Analysis of the Health Implications of Culture Change: A Conceptual Model,” in the *Annals of the New York Academy of Sciences* (Cassel, Patrick & Jenkins, 1960). This article laid out the department’s signature approach to epidemiology.

In 1961, Cassel and Tyroler published “Studies of Culture Change: I. Health Status and Recency of Industrialization,” in the *Archives of Environmental Health* (Cassel & Tyroler, 1961). The article built on the department’s conceptual model published by Cassel, Patrick and Jenkins.

In 1964, Tyroler and Cassel published “Health Consequences of Culture Change: II The Effect of Urbanization on Coronary Heart Mortality in Rural Residents,” in the *Journal of Chronic Diseases* (Cassel & Tyroler, 1964). The article presented data confirming that the urbanization of rural areas of North Carolina was accompanied by increasing deaths from cardiovascular disease.

active retirement, Jenkins taught a social epidemiology course at UNC and wrote a handbook for behavioral health published by the Pan American Health Organization. He also enjoyed working with the Alamance-Orange (N.C.) Prison Ministry during retirement.



## Herman Alfred (Al) Tyroler

*Herman A. (Al) Tyroler, MD*, was born in Brooklyn in 1924. He completed his undergraduate education at Ohio University and his medical education at New York University, with additional medical training at Cornell University and Metropolitan Hospital in New York (*A proposal*, 1961, Appendix).

Before joining the UNC faculty, Tyroler served in the U.S. Air Force Medical Corps and worked as a researcher, physician and medical consultant in western North Carolina. During that time, he co-designed

mobile clinical units and traveled around western North Carolina conducting physical examinations. Tyroler amassed health data on 4,000 people.

Tyroler came to the UNC public health school for advice on how to use the data. He recalled his first conversations with Bernie Greenberg, then chair of the Department of Biostatistics, and John Cassel:

*I visited with [Bernie Greenberg] to find out how we could more properly do our work in occupational health, and he said to me, ‘Al, you know you’re doing epidemiology.’ I said ‘really?’ Which honestly, at that point in time, I didn’t know ... So he introduced me to John, and John went into orbit when he heard what we were doing in western Carolina – because John, based on the work he had done in South Africa in the Polela [sic] Project, was absolutely convinced that the modern epidemics, coronary disease in particular, but not just CHD, the modern epidemics were primarily attributable to major social transitions (Tyroler, 2001).*

In 1960, Tyroler joined the epidemiology faculty, bringing the department’s first expertise in occupational and industrial medicine. He became a preeminent expert in cardiovascular disease epidemiology, including the role of social factors in that and other diseases. He was a key co-investigator on the Evans County (Georgia) Heart Study, a consultant to the Charleston (South Carolina) Heart Study, and a collaborator – with other members of the epidemiology faculty – on studies of the impact of cultural change and industrialization on health. Tyroler created and led UNC’s NIH-funded cardiovascular epidemiology research training program, which has become the longest-running training program in the epidemiology department.

During his 40 years on the faculty, Tyroler served on monitoring boards and steering committees for a host of major national and international studies. He consulted extensively with influential bodies – including the National Aeronautics and Space Administration, and the World Health Organization – and served on many expert committees. Elected to the Institute of

## Cardiovascular Research

Data collection for the Evans County cross-sectional study – household census, interview survey and medical examinations – took place from 1960 to 1962.

In 1963, J. R. McDonough, Hames and colleagues published “Cardiovascular Disease Field Study in Evans County,” in *Public Health Reports* (McDonough, Hames, Stulb, & Garrison, 1963). It was the first published report of the Evans County Heart Study.

Follow-up data collection for the Evans County Study took place from 1967 to 1969.

Hames held part-time, visiting and adjunct faculty positions during the 1970s. For many years, the department held a “Curtis Hames Day,” which Hames attended.



Al Tyroler (left) and Curtis Hames (right) pose with a colleague.

Medicine (now the Health and Medicine Division of the National Academies of Sciences, Engineering and Medicine) in 1980, Tyroler received numerous distinctions and awards, including the American Public Health Association’s Wade Hampton Frost Lectureship and John Snow Award, the American Heart Association’s Distinguished Achievement Award and Ancel Keys Lecture. He was awarded the Gillings School’s Bernard G. Greenberg Alumni Endowment Award and Edward G. McGavran Award for Excellence in Teaching. Tyroler was named Alumni Distinguished Professor in 1980, and after his retirement in 1999, continued to engage with the department as Alumni Distinguished Professor Emeritus of Epidemiology (“Tyroler Memorialized,” 2008). Tyroler died on Feb. 18, 2007, at the age of 82.

## Evans County Cardiovascular Study



**Dr. Curtis G. Hames**, a primary care physician practicing in Claxton, a rural town in Evans County, Georgia, contacted the U.S. Public Health Service in the late 1950s for assistance on a study he proposed to conduct. Hames wanted to test his observation that his black patients, particularly men, rarely had coronary heart disease, even though many had markedly elevated blood pressure. In contrast, coronary disease was common among his white patients.

The Evans County Cardiovascular and Cerebrovascular Epidemiologic Study became one of the most well-known cardiovascular disease studies of its time. It was distinctive in *methodology* (a prospective whole-community cohort study in a largely rural, biracial population); *purpose* (to examine differences in cardiovascular heart disease in blacks and whites); and *breadth of factors* studied (biologic, social, behavioral and economic). The study attempted to enroll all residents of Evans County over 40 years of age, a 50 percent random sample of those between 15 and 39 years of age and African-Americans in neighboring Bulloch County, Georgia, in a longitudinal study that spanned two decades. The study was the largest U.S. nongovernmental community-wide cardiovascular disease cohort study of its time.

At the request of the USPHS, **Bernard G. Greenberg, PhD, professor and then chair of the Department of Biostatistics**, went to Evans County to assess the study’s potential. He returned with serious reservations, so he made a second visit, this time with John Cassel. After the second trip, both professors were enthusiastic about the study, which was similar in some ways to the epidemiologic surveys Cassel had conducted at the Pholela Center in South Africa (Korstad, 1990).

Cassel led the Department of Epidemiology’s work on the study. In the cross-sectional phase of the study, which took place between 1960 and 1962, researchers asked about health behaviors, socio-economic status and medical history, and collected clinical data on anthropometry, serum



## Malawi Public Health Program

The Malawi program, supervised by the Department of Epidemiology, was led by faculty member Cecil Some (*Annual Report*, 1965).

*[The project] took Peace Corps volunteers with no professional health training, brought them to Chapel Hill for four months of instruction and then sent them to Malawi in south central Africa to work on the prevention and cure of tuberculosis.*

*The program's objectives were twofold: implementation of an integrated health program using nonprofessionally trained personnel and the training of national counterparts so that health activities could continue following the Peace Corps's withdrawal.*

– Robert Korstad, 1990, p. 130-131.

cholesterol and blood pressure. The findings showed that all manifestations of coronary heart disease (CHD) occurred more frequently in men than in women and more frequently in white men than in black men. None of the risk factors studied – systolic and diastolic blood pressure, serum cholesterol level, cigarette smoking, body weight or diet – explained the social class and ethnic differences in prevalences. However, stratified analysis by occupation showed that coronary heart disease rates were comparable in black and white men when both were sharecroppers.

The second phase of the study, which took place from 1967 to 1969, clarified questions the initial cross-sectional study had raised and showed that risk factors were comparable across race and social status. Notably, CHD incidence remained markedly higher for white Evans County residents, with the exception of white sharecroppers. The researchers attributed this difference to the greater amount of physical activity among blacks and sharecroppers compared to the level of activity reported by whites of higher socio-economic status.

The Evans County study involved several institutions and many individuals. From the UNC epidemiology faculty, John Cassel, Al Tyroler, Curtis Hames and Joan Cornoni-Huntley were co-authors on most of the articles reporting on the work. Siegfried Heyden and Alan Bartel of Duke University Medical School were close collaborators. Other authors from the UNC epidemiology faculty included Bert Kaplan, who worked on the questionnaire for the follow-up study, and David Kleinbaum, who conducted the multivariable analysis for the second phase of the study. Additional collaborators came from Duke's Department of Neurology and from Emory University. UNC students co-authored articles and conducted dissertation research with data from the Evans County study (Cassel, 1971).

## Cecil Slome



*Cecil Slome, MB, ChB, DPH*, completed his medical degree at the University of Capetown and earned a doctoral degree in public health at the University of London. He worked at the Pholela Health Center with John Cassel and Sidney Kark and joined the UNC epidemiology faculty in 1961.

Slome, who had served as co-director of the Peace Corps' health program before joining the UNC faculty, supervised the Department of Epidemiology's Malawi Public Health Project. Slome conducted research on hypertension, diabetes and epilepsy and applied epidemiologic methods to program planning and evaluation at the community level. He was affiliated with the Carolina Population Center. Slome died in 1981. (*Annual Reports*, 1965, 1982; *Epidemiology Booklet*, c1979).



## Health Services Research Center

In 1968, the UNC Health Services Research Center, now the Cecil G. Sheps Center for Health Services Research, was created with funding from the National Center for Health Services Research (later re-named the Agency for Healthcare Research and Quality). It was one of the first five health services research centers in the country (*The Cecil G. Sheps Center for Health Services Research*, n.d.).

## Society for Epidemiologic Research

In 1969, the department hosted the second annual meeting of the Society for Epidemiologic Research (SER), which was attended by approximately 200 epidemiologists from the U.S., Canada, Argentina and Israel. Caroline Becker coordinated the event and also hosted the society's annual meeting on the UNC campus in 1985 (*Annual Report*, 1969; Lubker, 2014).



## Caroline Becker

*Caroline Becker, MD*, who spent her early years in Missouri and came from a family of flight pioneers, had a long and illustrious career as a physician, epidemiologist and environmentalist. She completed medical education at Johns Hopkins University, worked in London setting up the labs for Sir Alexander Fleming, the discoverer of penicillin, and set up labs in Central America.

In 1965, Becker became the first woman epidemiology faculty member at UNC. She was appointed assistant professor as the primary infectious diseases epidemiologist in an era when epidemiology's attention had shifted from infectious to chronic diseases. She was named Emeritus Associate Professor in 1990.

Bobbie Boyd Lubker, who completed her dissertation under Becker's guidance, quoted her mentor as saying, "the abandonment of 'germ' epidemiology lasted only until the HIV epidemic struck, and then public health institutions across the country scrambled like a house afire to return to infectious disease roots." Lubker remembers Becker's unique teaching style, which focused on the principles underlying concepts. She also remembers Becker as a problem-solver and organizer – whether that meant securing access to a data set or arranging to have trucks with generators and workers provide air conditioning in UNC's Memorial Hall, which was not air conditioned at that time, for the 1985 annual meeting of the Society for Epidemiologic Research (Lubker, 2014).

Becker published research on cardiovascular disease, the effects of oral contraceptives and blood pressure in the Evans County study and community-hospital-based stroke care. She consulted with the North Carolina Heart Association and the World Health Organization (*Annual Report*, 1976) and received the 1989 Award for Excellence from the Statistics and Epidemiology Section of the North Carolina Public Health Association (*NCPHA Newsletter*, 1989). As an environmentalist, Becker helped fifth graders in Durham, N.C., save the creek behind their school and served as president of the Eno River Association, in Durham, N.C. In 1999, Becker (under the name Caroline Becker Long) published *Church Bells of Antigua and Surrounding Villages*, which she illustrated with her own photographs and rubbings she had made of inscriptions on church bells in Guatemala (Lubker, 2014).

Becker suffered a stroke later in life and moved into a retirement community, where she remained active. One of her projects in that community was to organize a system that allowed residents to keep up with each other when HIPPA privacy regulations made that difficult. She traveled to Chantilly, Virginia, to attend the dedication of a branch of the National Air and Space Museum as an honored guest and member of the Becker family of flight pioneers. She died in 2014 at the age of 89 (Lubker, 2014).

## Carolina Population Center and International Research

In 1966, the Carolina Population Center (CPC) was established, with Moyer W. Freymann as its first director ("CPC History," n.d.).

Abdel R. Omran, MD, DrPH, a native of Egypt, led the CPC's epidemiology unit and the World Health Organization's International Reference Center for Epidemiologic Studies in Human Reproduction.

Omran served on the epidemiology faculty from 1966 until he resigned in 1983. He was the first faculty member specializing in international population and family planning programs. He taught Epidemiology in Population Dynamics. Omran is known as the developer of the theory of epidemiologic transition (Omran, 1971) and compiler of evidence to support family planning as an essential intervention for the health of women and children.

*Community Medicine in Developing Countries* was published in 1975. Authors associated with the Department of Epidemiology included John Cassel, Moyer Freymann, John Fulton, David Jenkins, Sherman James, James Murrell, Abdel Omran (editor) and Carl Shy (Omran, 1975).

## Berton Kaplan



**Berton H. Kaplan, PhD**, whose parents immigrated to the U.S. from an area of Russia now part of Lithuania, grew up in Strasburg, Virginia. He graduated from Virginia Tech and then served in the Air Force. He originally was scheduled to be sent to Korea, but because of an administrative mistake, he served in Cape Canaveral, Florida.

He began graduate studies in social anthropology at the University of Edinburgh but left after one year when his father developed heart problems. He then enrolled in the doctoral program in sociology at UNC because, in Kaplan's words, "It was the closest thing to social

anthropology I could find" (Kaplan, 2011). While a doctoral student in sociology, Kaplan worked for John Cassel, attended Cassel's seminars and became interested in epidemiology, mental health and public health. He completed the doctorate in 1962.

Kaplan was appointed to the faculty of the Department of Mental Health at the UNC public health school but spent much of his time in the Department of Epidemiology. He left UNC and spent a year at Cornell University in Ithaca, N.Y., on a Social Science Research Council Fellowship, working with Alexander Leighton. As Kaplan was finishing the fellowship, first John Cassel and then UNC Chancellor J. Carlyle Sitterson called to recruit him to the Department of Epidemiology. Kaplan returned to Chapel Hill in 1966 to join the epidemiology faculty and develop the sociological questionnaire for the Evans County follow-up study. He served on the faculty until 1999. A voracious consumer of literature in many fields (Kaplan, 2011).

Kaplan met weekly with John Cassel to develop their ideas on social factors and health. Kaplan edited several monographs on social psychiatry and led the psychosocial epidemiology program and UNC's National Institute of Mental Health Training Program on psychosocial factors in mental health. He and Cassel co-authored a seminal article about social support and health (Kaplan, Cassel & Gore, 1977).

Kaplan received the Gillings School's McGavran Award for Excellence in Teaching (an award initially established at Kaplan's suggestion), the UNC General Alumni Association's Faculty Service Award and the inaugural Berton H. Kaplan Lifetime Achievement Award from Duke University's Center for Spirituality, Theology and Health. Kaplan retired from UNC in 1999 and continued to reside in Chapel Hill until his death in May 2017 ("Kaplan, former professor," 2017).

## Origin of the Cancer Program

In 1975, the department forged a close relationship with Duke University that led to the development of a joint cancer epidemiology training program.

*The Cancer Control Program between this department and Duke has brought about a close association to study the cancer problem [toward the goal that] this association will result in the development of a training grant in cancer research (Annual Report, 1975, p. D-35).*

By the following year:

*A new program of teaching and research is being planned in cancer epidemiology in collaboration with [UNC's] Cancer Center and the School of Medicine, and the Division of Community Health Services of the School of Medicine at Duke University.*

*An initial informal series of seminars on cancer epidemiology is being offered in the late spring and early summer of 1976 (Annual Report, 1976, p. D-3).*



## Barbara Sorenson Hulka

*Barbara Sorenson Hulka, MD, MPH*, became a musician long before she became an epidemiologist. Hulka, who grew up in Minnesota, began playing the piano at age six and the violin at nine. She earned an undergraduate degree in music at Radcliffe and a master's degree in music from Julliard. Hulka is still a musician, but in her last year at Julliard, she started on the path to becoming an epidemiologist.

"I felt like something was missing," Hulka commented. "I got enthralled with the idea of learning more about the human body and the causes of disease. It seemed like a very exciting idea" (Spivey, 2001).

After finishing medical school and earning the Master of Public Health degree at Columbia University, Hulka completed an internship in preventive medicine at the USPHS hospital on Staten Island and later ran a cervical cancer screening program in Pittsburgh.

Hulka came to Chapel Hill as a "trailing spouse" when her husband joined the faculty of the UNC School of Medicine. Shortly after arriving in Chapel Hill, she arranged to meet with John Cassel. Hulka was hired as assistant professor, and her first assignment was to work with Cassel to write a health services research grant. This was the school's first grant in health services research and an area in which Hulka worked for many years, while also developing a research and training program in cancer epidemiology. She became acting department chair in 1982, and following a national search, she was appointed chair in 1983. In 1987, she was named Kenan Professor. Hulka continued to serve as a faculty member until becoming Kenan Professor Emeritus in 2001 (Hulka, 2015).

Hulka is well known for her research on cancer, which included cancers of the cervix, breast and endometrium, as well as research on the influence of exogenous estrogens and the associations between hormones and prostate cancer. Through her experience in cancer research and knowledge of contemporary advances in biomolecular sciences, she developed an early appreciation of the potential for using biomarkers in epidemiologic research. She wrote *Biological Markers in Epidemiology* "one of the first attempts to bring order, and a critical eye, to the burgeoning field of molecular epidemiology" (Saracci, 1992).

During her decade as chair, Hulka oversaw the department's move from Rosenau Hall into McGavran-Greenberg Hall and expanded the infectious diseases epidemiology program by recruiting additional faculty and welcoming faculty members from the former Department of Parasitology and Laboratory Practice into the Department of Epidemiology. She championed the integration of lab sciences into population-based research and secured laboratories for infectious diseases and cancer researchers.

## Psychosocial Epidemiology

In 1974, with a grant from the National Institute of Mental Health, the department developed a doctoral (PhD) program for social scientists including sociologists, psychologists and anthropologists. Under Berton Kaplan's leadership, the program prepared students to conduct epidemiological investigations into the role of psychosocial processes in the onset and recovery from medical and mental health disorders. The training grant ran from 1974 to 1980.

## Civil Rights Movement

Many public health students in the 1960s were involved in protests focused on social change including access to health care, the environment and civil rights.

After the civil rights sit-ins in Greensboro, N.C., the movement spread to Chapel Hill and many public health faculty members were involved in actions to end desegregation in Chapel Hill (Korstad, 1990,p. 134-135).

In his interview with Victor Schoenbach, Michel Ibrahim mentioned that John Cassel (then Ibrahim's dissertation advisor) often joined protests and marches on Franklin St. (Ibrahim, 2014).

Hulka worked for the WHO's Human Reproduction Program and chaired the epidemiology steering committee for its epidemiology unit for seven years. During her time as committee chair, the unit conducted studies on abortion, contraception and female genital mutilation. She served on U.S. advisory panels and was named a national associate of the Institute of Medicine. She was honored with the American Society of Preventive Oncology's Distinguished Achievement Award for her work in prevention of women's reproductive cancers, the National Institute of Environmental Health Science's Hans L. Falk Memorial Lecture, the American College of Epidemiology's Abraham Lilienfeld Award, and the APHA Epidemiology Section's Wade Hampton Frost Lecture (Hulka, 1999; Hulka, 2015).

## Stephen Zyzanski



*Stephen J. Zyzanski, PhD*, was born in Hammond, Indiana, to a Polish immigrant family. His father was a butcher, and the Zyzanski family lived behind the store.

Zyzanski holds degrees in psychology and psychometrics from Iowa State and a doctoral degree in psychometrics from UNC.

While he was a doctoral student working in a biometrics lab, Zyzanski was introduced to epidemiology when epidemiology faculty member David Jenkins requested assistance from the lab. Zyzanski was assigned to help

Jenkins with data analysis, and when Jenkins received a grant to study Type A behavior and heart disease, he hired Zyzanski to help.

Zyzanski worked as an epidemiology research assistant from 1966 to 1968, and during this time, John Cassel invited him to teach a lab for Epidemiology 160. Zyzanski recalls how he responded to Cassel: "I've just learned to spell epidemiology. I don't think I am prepared to teach it." Cassel reassured him that with his quantitative skills, he would pick up the methods very quickly (Zyzanski, 2015). He attended Cassel's lectures and labs and then replicated the labs with his own students.

In 1968, Zyzanski completed the psychometrics doctorate and joined the epidemiology faculty, serving until 1972, when he went to Boston University to continue the research he had begun with Jenkins.

Zyzanski eventually moved to Chase Western Reserve University. In 2004, he received the Curtis Hames Research Award from the Society of Teachers of Family Medicine. He is Emeritus Professor of family medicine, epidemiology and biostatistics, and oncology at Chase Western Reserve (Zyzanski, 2015; Zyzanski, n.d.).



## Recruitment of Minority Students

*In 1970, the slow pace of integration and a general upsurge of black activism prompted black students to issue [a statement] requesting increases in the number of black students and faculty, more courses geared to the needs of students planning to work in the black community, the appointment of a minority recruitment officer, and greater black involvement in projects relating to the black community.*

— Korstad (1990, p. 142)

Fred Mayes, PhD, dean of the School, formed a committee to consider the demands in the statement and appointed William Small to the position of minority recruiter. Within a year, the number of minority students increased from 20 to 49. The next year, Small began to focus on diversifying the faculty, and as the faculty and student body became more diverse, the need for other changes arose (Korstad, 1990, p. 142-143; Jenkins B., 2014).



*Joan Cornoni-Huntley, PhD*, earned a master's degree in biostatistics at UNC in 1962, and then worked at the Yale public health school. The following year, Cassel recruited Cornoni-Huntley to the UNC epidemiology doctoral program. As a doctoral student, she worked as a research assistant with the Evans County study and as an epidemiology instructor.

In 1970, she completed the doctorate and was appointed assistant professor of epidemiology, serving on the faculty until 1977.

Cornoni-Huntley may be the first faculty member to work remotely. When she married Robert Huntley, then-chair of the Department of Community and Family

Medicine at Georgetown University, she moved to Washington, D. C., and commuted to Chapel Hill. Eventually, she worked primarily in Washington, serving as deputy director, and then acting director, of the National Institute on Aging's demography and biometry program. She maintained her association with the UNC Department of Epidemiology in adjunct and clinical faculty roles and served as an associate consulting professor at Duke University.

Cornoni-Huntley is the author of publications about the Evans County study and the Charleston Heart Study. She is well known as the author of articles, books and chapters about the health of older men and women.

When Cornoni-Huntley retired, she returned to Chapel Hill, where she assumed responsibility for EPID 160 for one semester. She has served as an adjunct professor for many years (Cornoni-Huntley, n.d.; *Epidemiology Booklet*, c1979).

## David Kleinbaum



*David G. Kleinbaum, PhD*, earned the doctoral degree in mathematical statistics at UNC in 1970 and worked as a research associate in epidemiology while he was a doctoral student. The following year, he responded to a biostatistics announcement recruiting a faculty member to provide biostatistics assistance to epidemiology researchers. Kleinbaum joined the biostatistics faculty and taught biostatistics and epidemiology until 1993.



## 1970s

In 1971, “Summary of Major Findings of the Evans County Cardiovascular Studies” was published in *Archives of Internal Medicine* (Cassel, 1971). The special issue included 15 articles that presented primary findings from the Evans County Study.

In 1971, the Psychological Correlates of Coronary Heart Disease Risk research program was initiated as a behavioral science satellite to clinical research studies in progress. The research involved 13 studies and 5,800 male study participants.

From his office in the epidemiology department’s space in Rosenau Hall, Kleinbaum worked closely with epidemiology faculty members, led the multivariable analysis of the Evans County follow-up study and taught students from across the public health school (Kleinbaum, 2017).

Kleinbaum is well known for his contributions to epidemiologic methods and the teaching style he developed while at UNC.

*‘When I started teaching mandatory biostatistics classes in 1970 at UNC, I realized early on that a lot of my students didn’t want to take a course they perceived as boring, so I kept things relaxed and fun.’ Kleinbaum says of his active teaching methods. Over his 48-year teaching career, Kleinbaum achieved this by embracing technological advancements in the classroom, wearing loud shirts and peppering lectures with his signature brand of dry humor. ‘Several of my colleagues and students have referred to me as the Woody Allen of epidemiology’ (‘Rollins Epidemiologist David Kleinbaum Retires,’ n.d.).*

Kleinbaum taught BIOS 105 Introductory Biostatistics, and in 1972, created a second-level biostatistics course on regression analysis that became a requirement for epidemiology students. Kleinbaum distributed class handouts copied from typed drafts of a book he was preparing. In 1978, Kleinbaum and Lawrence Kupper published the book, *Applied Regression Analysis and other Multivariable Methods*, a textbook for nonstatisticians (Kleinbaum & Kupper, 1978).

Kleinbaum soon began to put his mark on BIOS 287, adapting the course to focus upon statistical methods that are most relevant for epidemiology, and in 1978, Kleinbaum, Kupper and then-epidemiology doctoral student Hal Morgenstern – a trio who became known simply as KKM, their combined initials – began to make improvements to EPID 268, the department’s foundational, second-level epidemiology methods course. The KKM-version of EPID 268 was the basis for *Epidemiologic Research: Principles and Quantitative Methods* (Kleinbaum, Kupper, & Morgenstern) which quickly became a widely used epidemiology textbook. Excitement about the KKM methods, teaching style and textbook led Kleinbaum and Kupper to teach dozens of short courses.

In 1993, Kleinbaum left the UNC public health school to become a professor of epidemiology at Emory Rollins School of Public Health. He continued to teach short courses, held visiting scholar and faculty appointments in Germany, Australia and the Netherlands, and continued to develop courses including ActivEpi, an introductory textbook available on CD and the web. Kleinbaum has authored seven textbooks and received many teaching awards. In 2005, he received the first Association of Schools of Public Health/Pfizer Award for Teaching Excellence.

By the time Kleinbaum retired in September 2017, he had taught more than 220 short courses in countries all over the world. He is Professor Emeritus of epidemiology at Emory.

### Early 1970s

In 1971, Jenkins, Zyzanski and Rosenman published “Progress Toward Validation of a Computer-Scored Test for the Type A Coronary-Prone Behavior Pattern,” in *Psychosomatic Medicine* (Jenkins, Zyzanski & Rosenman, 1971). The test, which became known as the Jenkins Activity Survey, was the first psychological scale that could be used to assess Type A behavioral pattern as a risk factor for coronary heart disease. Prior to Jenkins’ work, a structured interview was required.

In 1971, Omran published “The Epidemiologic Transition: A Theory of the Epidemiology of Population Change,” in the *Bulletin of the World Health Organization*. Omran’s theory was one of the first attempts to account for the effects of major changes in living standards and health services on patterns of disease.



*Michel A. Ibrahim, MD, PhD*, grew up in a Christian family in Cairo, a largely Muslim society and a very cosmopolitan city. He studied medicine in the British style at the University of Cairo. After completing a medical degree, Ibrahim ran a clinic in a village in Egypt for several years. The experience made him think about switching from medical practice to public health.

“We treat them [people with schistosomiasis] one at a time, we cure them,” remembered Ibrahim. “And then the next year they go out in the field and get infected again.” Ibrahim realized that his strongest interests were population, prevention and community (Ibrahim, 2014).

In 1961, Ibrahim earned a Master of Public Health degree in biostatistics at UNC and then switched to epidemiology. He completed doctoral studies under John Cassel and earned the second PhD degree in epidemiology awarded by the School. Ibrahim spent seven years on the faculty of the School of Medicine at the State University of New York at Buffalo, serving as a health officer at the Erie County (New York) Health Department during the last three years of his time at the Buffalo medical school.

In 1971, Ibrahim returned to Chapel Hill to join the epidemiology faculty. When John Cassel stepped down as chair in 1975, Ibrahim was appointed acting chair. After Cassel died, a search was conducted, and Ibrahim was appointed chair, a position he held until 1982. Ibrahim served as dean from 1982 to 1997. During his deanship, Ibrahim encouraged interdisciplinary research, secured funding to build McGavran-Greenberg Hall and established the Herman G. Baity Environmental Engineering Laboratory.

Ibrahim’s research interests include health services, cardiovascular health and public health practice. He was a founding board member of the American College of Epidemiology and later was elected president. He has served as president of the N.C. affiliate of the American Heart Association, the Association of Schools [and Programs] of Public Health and the Council on Education for Public Health.

He served as associate editor of the *American Journal of Epidemiology*, editor and chair of the editorial board of the *American Journal of Public Health*, and member of numerous other editorial boards. He has received the Physician’s Recognition Award from the American Medical Association, multiple awards from the N.C. affiliate of the American Heart Association, the Rankin Award from the North Carolina Public Health Association and the 2013 Abraham Lilienfeld Award.

After retiring from UNC, Ibrahim became a professor of epidemiology at Johns Hopkins Bloomberg School of Public Health and editor-in-chief of *Epidemiologic Reviews*. He remains

## Survival Course

In 1975, two black graduate students working with the Black Student Caucus, Bill Jenkins, from epidemiology, and James Murrell, from biostatistics, initiated a “black students survival course” to assist black – and then other students of color – who were having difficulties in epidemiology or biostatistics courses. The survival course was an expanded version of assistance that had been offered in previous years by doctoral students including epidemiology student James Bernstein, who later became the long-time director of the N.C. Office of Rural Health. During the three years that Jenkins and Murrell taught the survival course, no black students received a grade lower than B in either epidemiology or biostatistics. In the course’s third year, students from other ethnicities also were included (Jenkins, B., 2014.).

engaged with the UNC Gillings School and its Department of Epidemiology as dean and professor emeritus.

## Felix Gruber

**Felix Gruber, MD, DrPH**, served as director of the School of Medicine at the University of Oriente in Ciudad Bolivar, Venezuela, before coming to UNC, where he earned a master’s degree in epidemiology 1964 and a doctoral degree in epidemiology in 1972.

He became an epidemiology instructor while in the doctoral program and an assistant professor in 1972. Gruber worked with Abdel Omran and held a joint appointment with the International Fertility Research Program (now FHI 360).

Gruber left the UNC faculty in academic year 1974-1975, and in 1980, returned to Venezuela, where his work focused upon establishing family medicine centers (Kidd, 2017).

## Carolyn Williams



**Carolyn A. Williams, MSN, PhD**, earned a combined MSN-MPH in 1965 and a doctorate in epidemiology in 1969 at UNC. She served as adjunct assistant professor in the Department of Epidemiology from 1969 to 1971, while holding faculty appointments at Emory’s nursing school. She returned to Chapel Hill and served on the faculty in the UNC School of Nursing and in the Department of Epidemiology from 1971 to 1984 (Williams, n.d.).

While on the epidemiology faculty, Williams conducted research on methods to assess the quality of care provided to ambulatory patients and assessed the contribution of nurse practitioners to primary care. She investigated the relationship of women’s health to their work roles and social support networks, as well as the association between Type A behavior and coronary heart disease in women (*Epidemiology Booklet*, c1979).

Williams served as dean and professor of the University of Kentucky College of Nursing. She received the UNC School of Nursing’s Alumna of the Year Award in 2000 and has served in high-level advisory positions. She is professor and Dean Emerita of Kentucky’s College of Nursing (“Alumna of the Year,” 2001).

## Mid-1970s

In 1976, Carl Shy published “Lung Cancer and the Urban Environment” as a chapter in *Clinical Implications of Air Pollution Research*.

In 1976, Sherman James and David Kleinbaum published “Socioecological Stress and Hypertension-Related Mortality Rates in North Carolina,” in the *American Journal of Public Health* (James & Kleinbaum, 1976).

In 1976, John Cassel delivered “The Contribution of the Social Environment to Host Resistance,” the fourth *Wade Hampton Frost Lecture* (Cassel, 1976).

In 1977, Dragana Andjelkovich and co-authors published “Mortality Experience of a Cohort of Rubber Workers, 1964-1973,” in the *Journal of Occupational Medicine*.

## Edward Wagner



*Edward H. Wagner, MD, MPH*, completed his medical degree at the State University of New York at Buffalo in 1965 and earned a Master of Public Health degree in epidemiology at UNC in 1972.

Wagner served on the faculty of the departments of epidemiology and medicine from 1972 until 1983. His primary research interests were health services research and clinical epidemiology in primary care and preventive services. He was principal investigator for studies in Chatham and Edgecombe (N.C.) counties.

As associate director of UNC’s Health Services Research Center, Wagner evaluated models of rural health care and health hazard appraisal. He was a practicing inter-

nist, clinical teacher and member of the Robert Wood Johnson Clinical Scholars Program.

In 1983, Wagner was promoted to professor in the departments of epidemiology and medicine. Later that year, however, he was recruited to lead the Group Health Cooperative of Puget Sound Center for Health Studies. Wagner took the position and moved to Seattle; however, he retained ties with the UNC epidemiology department as an adjunct professor. Wagner, faculty member Victor Schoenbach and smoking cessation expert C. Tracy Orleans engaged in the Free & Clear study, a randomized trial of self-help approaches to smoking cessation. Wagner was appointed professor in the Department of Health Services at the University of Washington School of Public Health and director of the MacColl Center for Health Care Innovation. He became Director Emeritus of the MacColl Center in 2012 and is a Professor Emeritus of health services at the University of Washington (*Epidemiology Booklet*, c1979; Wagner, n.d.).

## Minority Health Conference

In 1977, the Black Student Caucus (which soon changed its name to the Minority Student Caucus), launched the annual Minority Health Conference to draw attention to public health issues of concern to African-Americans, attract more people of color to the school as students and faculty members and give public health students experience organizing to meet the needs of the black community (Jenkins, B., 2014).

Conference speakers have included well-known national figures. As of 2017, the conference has become the largest and longest-running student-led health conference in the U.S. The conference has been expanded nationally via satellite, webcast and formal partner conferences, and other universities have emulated the UNC conference.



## Sherman James

*Sherman A. James, PhD*, completed his undergraduate education at Talladega College in Alabama and earned a doctorate in social psychology from Washington University in Saint Louis, Missouri, in 1973.

He joined the epidemiology faculty in the same year and served until 1989. He was the first African-American tenure-track faculty member at the School, the last epidemiology faculty member hired by John Cassel, one of a handful of African-American faculty members and one of an even smaller group promoted to associate professor or professor during his 16 years at UNC.

James remembers meeting with Cassel during his interview for the position.

*He [Cassel] began talking about the field of epidemiology, and more specifically about social epidemiology, and why I – a budding social scientist and son of the American South ... where racial health disparities abounded – should be interested in a field like epidemiology where a love of science and a commitment to social justice are mutually reinforcing (James, 2012).*

James studied cardiovascular health and the influence of socio-economic, psychological and behavioral factors on health. While at UNC, he developed the John Henryism hypothesis, a behavioral pattern of intensive striving to overcome the challenges of discrimination and disadvantage that sometimes results in adverse health impacts.

James left Carolina to become John P. Kirscht Collegiate Professor of public health at the University of Michigan, where he was founding director of the Center for Research on Ethnicity, Culture and Health. Later, he served as chair of the Department of Health Behavior and associate dean. In 2003, he returned to North Carolina as Susan B. King Professor of public policy at Duke's Sanford School of Public Policy, and in 2014, retired to a half-time faculty position at Emory's Rollins School of Public Health. James received the Abraham Lilienfeld Award in 2001 and delivered the 2016 Wade Hampton Frost Lecture. In 2007-2008, he served as president of the Society for Epidemiologic Research. James has fully retired and lives in Little Rock, Arkansas (James, n.d.; *Epidemiology Booklet*, c1979; James, 2014.).



## Environmental Epidemiology

*The increasing rate of technological innovation, including the development of new products of unknown toxicity, has created an urgent need for new research strategies and new types of research scientists.*

*The graduates of this training program will be new scientists in this field. They will be Ph.D's in Environmental Epidemiology, individuals sophisticated in the principles and perspectives of epidemiology and biostatistics, well trained in human biology and the environmental sciences and with knowledge and a sensitive awareness of the contributions of the behavioral sciences.*

*Such individuals though primarily epidemiologists (rather than laboratory scientists) should be capable of recommending the necessary laboratory experiments that should be conducted to refine or refute the clues developed from epidemiological studies, and subsequently test some of these new laboratory findings again in human populations.*

*— Annual Report, 1974, E-22.*



**Dragana A. Andjelkovich, MD, MPH**, completed a medical degree at the University of Belgrade, Yugoslavia, and a master's degree at Johns Hopkins University.

She joined UNC's epidemiology faculty in 1973 and became an investigator with the Occupational Health Studies Group. In the early 1980s, she conducted research on the relationship between working in the rubber industry and pregnancy and birth outcomes (*Epidemiology Booklet*, c1979). In the 1990s, she published research on occupational and environmental health and worked with the Chemical Industry Institute of Toxicology in Research Triangle Park. She is retired and lives in Chapel Hill.

## Carl Shy



**Carl M. Shy, MD, DrPH**, who grew up in Milwaukee, started undergraduate studies on schedule, but after the first year, he entered the Jesuit Order and completed his undergraduate education in a Jesuit seminary. Several years later, he left the order and enrolled in medical school at Marquette.

During his medical internship, Shy was posted first to work with cancer patients who could not be cured and then rotated to the pathology lab where he encountered patients from the cancer ward who had died. Not long after this experience, Shy decided to focus his career upon prevention of disease. He entered public health school in Ann Arbor and earned a doctorate in epidemiology, concentrating in pulmonary health.

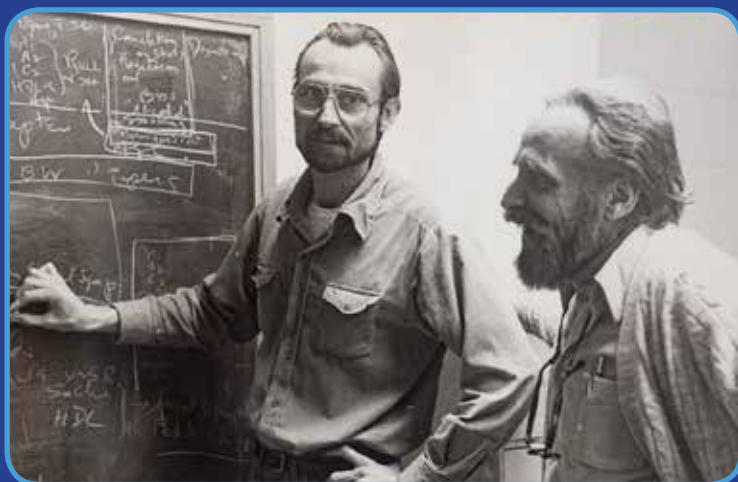
Shy conducted research on air pollution at the agency that later became the Environmental Protection Agency (EPA). He moved to North Carolina in 1968, when the agency relocated to Research Triangle Park. In the late 1960s, Shy established ties to UNC's Department of Epidemiology as an adjunct professor, and in 1974, he was appointed head of the Institute for Environmental Studies, with a joint faculty appointment in environmental sciences and epidemiology. He served on the faculty of the Department of Epidemiology for more than three decades and was department chair from 1993 to 1996.

## Lipids Research Program

Al Tyroler and Gerardo Heiss have played leadership roles in the Lipids Research Clinics (LRC) program, an international, 12-clinic, cooperative study.

The program yielded the first community-based measurement of the hyperlipidemic effect of oral contraceptives and set new standards for triglyceride levels.

Tyroler chaired the program's epidemiology committee beginning in 1973, and Heiss co-chaired the analysis group on lipids and lipoproteins beginning in 1976 (Annual Report, 1974, 1977).



Gerardo Heiss (left) and Al Tyroler were frequent collaborators.

Working with the International Agency for Research on Cancer (IARC), Shy contributed to global efforts to identify and evaluate possible carcinogens including asbestos, chromium, fluoride, cadmium, beryllium and formaldehyde.

Shy is an enthusiastic advocate for cooperative learning and one of the first faculty members at the Gillings School to shift classes away from the lecture format to student-led discussions, problem-centered classes, critique of journal articles and case studies. Shy led development of and taught an internet-based version of EPID 160, the school's first internet-based core course. Shy received the Gillings School's McGavran Award for Excellence in Teaching in 1994. He continues to engage with the department as Professor Emeritus (Shy, 2015).

## Gerardo Heiss



*Gerardo Heiss, MD, PhD*, earned a medical degree in Chile and a Master of Science degree in social medicine in London. He then returned to Chile where he was a teaching fellow in the Department of Public Health and Social Medicine at the University of Santiago.

In 1974, Heiss came to Chapel Hill and enrolled in the UNC epidemiology doctoral program with funding from a research assistantship. After earning a doctorate in 1976, he joined the faculty and began working closely with Al Tyroler on cardiovascular training and research.

Heiss has played leading roles on several large, multicenter studies, including Atherosclerosis Risk in Communities (ARIC), the Family Heart Study, the Family Blood Pressure Program, the UNC component of the Women's Health Initiative and the Hispanic Community Health Study/Study of Latinos. In 1992, Heiss followed Tyroler as the leader of the cardiovascular disease epidemiology training program, funded by the National Heart, Lung and Blood Institute/National Research Service Award (NHLBI/NRSA). The cardiovascular disease program is now in its 40th year.

Heiss is a Kenan Distinguished Professor of epidemiology at UNC. He is the recipient of the Greenberg Alumni Endowment Award, the McGavran Award for Teaching and the Larsh Award for Mentorship. In 2015, he received the American Heart Association's Epidemiology and Prevention Mentoring Award (Heiss Wins American Heart Association's Epidemiology Mentoring Award, 2015; Heiss [UNC Profile], n.d.).

Reflecting on the Department of Epidemiology when she joined in 1975, Joyce Allen, departmental registrar, wrote:

*When I came to work in Epidemiology, in 1975, there was a banner up on the wall of my office reading 'Epidemiology is the Study of Persons Broken Down by Age and Sex.' It was an old joke, even then, and my introduction to the discipline.*

– Joyce Allen in *Memories*, c1996.



## State of the Department, 1976-1977

### Department Chair

Michel Ibrahim

### Program Areas

Cancer  
Cardiovascular  
Environmental  
Health services research and clinical  
Population dynamics and family planning  
Residency program in clinical medicine  
Social epidemiology

### 44 Epidemiology Majors

MPH 8  
MSPH 7  
PhD 29

### Student Demographics

White 39;  
African-American 2  
International 3

Males 19  
Females 25

### 14 Degrees Awarded

MPH 8  
MSPH 2  
PhD 4

### New Courses

EPID 251 Epidemiologic Methods in Population  
EPID 268 Advanced Methods in Epidemiology  
EPID 270 Applications of Psychological Theory  
EPID 276 Advanced Environmental Epidemiology

### 15 Full-Time Faculty Members

### Selected Research Topics

Cervical and endometrial cancer  
Evaluation of family nurse practitioners  
Race and social influence  
Religion and coronary heart disease  
Abortion

Forty years after the arrival of Milton Rosenau, UNC's first epidemiologist, the Department of Epidemiology had become a nationally recognized epidemiology training program, with a strong reputation in etiological investigation. The department's work in the epidemiology of cardiovascular diseases and psychosocial health was especially strong. Population dynamics and family planning, environmental epidemiology, clinical epidemiology and health services research were also well developed, and the cancer program was in its first year.

During the next decades, the department would continue to respond to challenges and changes in patterns of disease – notably the appearance of HIV and other emerging infectious diseases, as well as cultural shifts, including the increase of women as faculty members and students.

In later years, the department expanded its research in cancer and infectious diseases and developed new programs in reproductive epidemiology, pharmaco-epidemiology and injury prevention. The department's network of collaborators included UNC's schools of medicine, dentistry and nursing, as well as the Carolina Population Center, Health Services Research Center (now the Cecil G. Sheps Center for Health Services Research), and UNC's cancer center (now UNC Lineberger Comprehensive Cancer Center). The department worked closely with off-campus collaborators including Duke University, North Carolina Central University, the state health department, county health departments, universities, groups across the country and international entities including the World Health Organization and the Pan American Health Organization.

The department would become one of the largest and most highly regarded epidemiology doctoral-training programs in the world. The department's faculty and graduates would join faculties in departments of epidemiology in many universities in the U.S. and abroad, serve on editorial boards or as editors of major epidemiology journals, occupy leadership positions in epidemiology professional societies and at the National Institutes of Health, and play significant roles in the private sector and in health care. The department would play a major role in significant national and international research projects.

We will chronicle these and other developments in the department's rapid evolution after 1976 in further publications of the history series.



### Collecting the Stories

**Victor Schoenbach, PhD**, associate professor of epidemiology, has taken the lead in collecting the oral history of the department, building on the work done by Sue Wolf, Robert Korstad and others.

Schoenbach's association with the Department of Epidemiology began in fall 1972 when he was a student in an EPID 160 class taught by John Cassel and Berton Kaplan. In the late 1970s, Schoenbach entered UNC's epidemiology doctoral program, and after earning a doctorate in 1979 and completing a short postdoctoral fellowship in psychosocial epidemiology, he joined the epidemiology faculty.

During his more than 40 years in the department, Schoenbach knew many of the faculty described here and knows numerous alumni, many of whom were his students in the introductory epidemiology course. He is committed to ensuring that people who built the department are not forgotten and events that shaped the department are included in its history.

In 2011, Schoenbach began recording interviews with former faculty members, chairs and alumni and has created a rich online archive ([go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)). This collection is an unparalleled resource for and about the department and its key leaders.

Schoenbach continues to interview individuals associated with the department.

Learn more about the UNC Department of Epidemiology using the resources listed here.

### Book Commissioned by Michel Ibrahim

Korstad, R. R. (1990). *Dreaming of a time: The school of public health: The University of North Carolina, 1939-1989*. Chapel Hill was originally published as a book. It is still available as a PDF file. [digital.ncdcr.gov/cdm/ref/collection/p249901coll22/id/263035](http://digital.ncdcr.gov/cdm/ref/collection/p249901coll22/id/263035)

### Library Resources

A Guide to researching public health at UNC: Selected current & historical resources. (Available online only) [hsl.lib.unc.edu/gillings/resourcer](http://hsl.lib.unc.edu/gillings/resourcer)

The Department of Epidemiology's annual reports were issued with the reports of the School of Public Health and are found in the library volumes with the School's reports. Milton J. Rosenau's letters to Dr. R. B. House and Dr. Frank Porter Graham included annual reports for the school, covering the years from 1936 to 1943.

### Archival Resources

Records of the School of Public Health, 1930-1998. Collection Number: 40120 Series 5  
Department of Epidemiology holds original documents and letters.

Digitalnc.org includes many issues of the UNC Record in its yearbooks collection. The announcements for sessions is the best source to find course listings and faculty and staff members in the early years [digitalnc.org](http://digitalnc.org).

### Interviews, Lectures and Event Recordings

Interviews and other materials collected by Victor Schoenbach are available online at [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory).

- Alumna of the year: Carolyn Williams, PhD, RN, FAAN. (2001). *Carolina Nursing, spring 2001*, 7. Retrieved from [nursing.sites.unc.edu/files/2012/11/CCM3\\_032270.pdf](http://nursing.sites.unc.edu/files/2012/11/CCM3_032270.pdf)
- Alumni directory*. (1994). Chapel Hill, N.C.: UNC School of Public Health.
- Barr, H. H., & Barrie, F. H. (1979). *Edward G. McGavran: Guardian of the body politic*. Chapel Hill, N.C.: UNC School of Public Health.
- Brandt, A. M. (1985). 'Shadow on the Land': Thomas Parran and the New Deal. In *No magic bullet: A social history of venereal disease in the United States since 1880*. (pp. 122-160). Oxford: Oxford University Press. Retrieved from [web.stanford.edu/dept/HPS/154/May06Brandtp122to160.pdf](http://web.stanford.edu/dept/HPS/154/May06Brandtp122to160.pdf)
- Brown, T. M., & Fee, E. (2002). Sidney Kark and John Cassel: Social medicine pioneers and South African emigrés. *American Journal of Public Health*, 92(11), 1744–1745. doi:10.2105/AJPH.92.11.1744
- Carolina to celebrate 50 years of African-American students. (2001). Retrieved from [unc.edu/news/archives/nov01/bsm112601.htm](http://unc.edu/news/archives/nov01/bsm112601.htm)
- Cassel, G. (2014). Email correspondence with Victor Schoenbach.
- Cassel, J. C. (1955). A Comprehensive health program among South African Zulus. In B. D. Paul (Ed.). *Health, culture and community* (pp. 15 - 41). New York: Russell Sage Foundation. Retrieved from [iupui.edu/~anthkbl/e445/readings/cassel.pdf](http://iupui.edu/~anthkbl/e445/readings/cassel.pdf)
- Cassel, J. C. (1971). Summary of major findings of the Evans County Cardiovascular Studies. *Archives of Internal Medicine*, 128(6), 887–889. Retrieved from [jamanetwork.com/journals/jamainternalmedicine/article-abstract/578736](http://jamanetwork.com/journals/jamainternalmedicine/article-abstract/578736)
- Cassel, J. C. (1976). The Contribution of the social environment to host resistance: The Fourth Wade Hampton Frost Lecture. *American Journal of Epidemiology*, 141(9), 798–814; discussion 797. Retrieved from [academic.oup.com/aje/article-abstract/185/11/1015/3859055?redirectedFrom=full](http://academic.oup.com/aje/article-abstract/185/11/1015/3859055?redirectedFrom=full)
- Cassel, J. C., Patrick, R. C. & Jenkins, C. D. (1960). Epidemiological analysis of the health implications of culture change: A conceptual model. *Annals of the New York Academy of Sciences*, 84, 938–949.
- Cassel, J. C. & Tyroler, H. A. (1961). Epidemiological studies of culture change. I. Health status and recency of industrialization. *Archives of Environmental Health*, 3, 25–33.
- The Cecil G. Sheps Center for Health Services Research. (n.d.). Retrieved from [www.shepscenter.unc.edu/about-us/](http://www.shepscenter.unc.edu/about-us/)
- Chapman, J. K. (2006). *Black freedom and the University of North Carolina, 1973-1960*. (Unpublished doctoral dissertation). University of North Carolina, Chapel Hill, N.C. Retrieved from [cdr.lib.unc.edu/indexablecontent/uuid:2ad37fba-c082-4e69-9a16-135c73aedd9](http://cdr.lib.unc.edu/indexablecontent/uuid:2ad37fba-c082-4e69-9a16-135c73aedd9)
- Community health: A model for the world*. (n.d.). Retrieved from [apps.nlm.nih.gov/againsttheodds/exhibit/community\\_health/model\\_world.cfm](http://apps.nlm.nih.gov/againsttheodds/exhibit/community_health/model_world.cfm)
- Cornoni-Huntley, J. C. (n.d.). Curriculum vitae. [Unpublished].
- CPC history. (n.d.). Retrieved from [cpc.unc.edu/aboutcpc/history](http://cpc.unc.edu/aboutcpc/history)
- Ellis, E. V. (2015). Interview by Victor Schoenbach, Jan. 5. Available at [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)
- Ellis, E. V. (n.d.). Curriculum vitae. [Unpublished].
- Epidemiology booklet*. (c1979) [Untitled, undated booklet]

- Field epidemiological study of syphilis in Orange, Person, Chatham and Durham Area* (1942). Chapel Hill, N.C. [Unpublished report].
- Fulton, J. T. (1952). The Public health aspects of orthodontics. Presented at the Annual meeting of the American Association of Public Health Dentists. St. Louis, Missouri, September 7. Retrieved from [onlinelibrary.wiley.com/doi/10.1111/j.1752-7325.1952.tb03628.x/abstract](https://onlinelibrary.wiley.com/doi/10.1111/j.1752-7325.1952.tb03628.x/abstract)
- Geiger, J. (1987). Sidney Kark in America. *Health/PAC Bulletin*, 17(5) 1987.
- A Glimpse at the past: A pictorial history of the Department of Epidemiology*. (1996) [Slideset and script created for a celebration honoring the distinguished careers of Professors Berton H. Kaplan, Carl M. Shy and H.A. (Al) Tyroler].
- Heiss wins American Heart Association's epidemiology mentoring award. (2015). Retrieved from [sph.unc.edu/sph-news/heiss-wins-american-heart-associations-epidemiology-mentoring-award/](https://sph.unc.edu/sph-news/heiss-wins-american-heart-associations-epidemiology-mentoring-award/)
- Heiss G. (n.d.). [UNC profile]. Retrieved from [sph.unc.edu/adv\\_profile/gerardo-heiss-phd/](https://sph.unc.edu/adv_profile/gerardo-heiss-phd/)
- History of Pholela Community Health Center*. (2001). Retrieved from [kznhealth.gov.za/Pholela/history.htm](http://kznhealth.gov.za/Pholela/history.htm)
- Hulka, B. S. (1991). Epidemiological studies using biological markers: Issues for epidemiologists: ASPO Distinguished Achievement Award Lecture. *Cancer Epidemiology, Biomarkers & Prevention*, 1. (November/December), 13–19. Retrieved from [courses.washington.edu/epi573/Hulka\\_1990.pdf](https://courses.washington.edu/epi573/Hulka_1990.pdf)
- Hulka, B. S. (1999). Interview by Steve Estes. May 7. [For the UNC Southern Historical Collection].
- Hulka, B. S. (2015). Interview by Victor Schoenbach [Video]. September 9. Available at [go.unc.edu/EPIDhistory](https://go.unc.edu/EPIDhistory)
- Ibrahim, M. A. (1989). Interview by Robert Korstad [Transcript]. July 6.
- Ibrahim, M. A. (2014). Interview by Victor Schoenbach [Video]. October 10. Available at [go.unc.edu/EPIDhistory](https://go.unc.edu/EPIDhistory)
- Ibrahim, M. A. (n.d.). [Faculty profile]. Retrieved from [jhsph.edu/faculty/directory/profile/333/michel-a-ibrahim](https://jhsph.edu/faculty/directory/profile/333/michel-a-ibrahim)
- Ibrahim becomes dean. (n.d.). Retrieved from [sph.unc.edu/resource-pages/gillings-timeline/](https://sph.unc.edu/resource-pages/gillings-timeline/)
- Ibrahim, M. A., Kaplan, B. H., Patrick, R. C., Slome, C., Tyroler, H. A., & Wilson, R. N. (1980). The Legacy of John C. Cassel. *American Journal of Epidemiology*, 112(1), 1–7. Retrieved from [hu-med-anthro-history.wikispaces.com/file/view/the+legacy+of+john+cassel.pdf](https://hu-med-anthro-history.wikispaces.com/file/view/the+legacy+of+john+cassel.pdf)
- Jackson, R. (2015, February 20). This month, let's also celebrate not-so-distant black history in NC. *The News & Observer*. Retrieved from [www.newsobserver.com/opinion/op-ed/article10883789.html](http://www.newsobserver.com/opinion/op-ed/article10883789.html)
- James, S. A. (2012). John Cassel: An appreciation and some brief reflections: John C. Cassel Lecture. Retrieved from [epiresearch.org/wp-content/uploads/2014/10/Spring-2012.pdf](https://epiresearch.org/wp-content/uploads/2014/10/Spring-2012.pdf)
- James, S. A. (2014). Interview by Bill Jenkins and Victor Schoenbach [Video]. Feb. 27. Available at [go.unc.edu/EPIDhistory](https://go.unc.edu/EPIDhistory)
- James, S. A. (n.d.). Curriculum vitae. [Unpublished].
- James, S. A. & Kleinbaum, D. G. (1976). Socioecologic stress and hypertension related mortality rates in North Carolina. *American Journal of Public Health* 66.4 (1976): 354-358. Retrieved from [ajph.aphapublications.org/doi/pdf/10.2105/AJPH.66.4.354](https://aphapublications.org/doi/pdf/10.2105/AJPH.66.4.354)
- James E. Shepard, founder of N.C. Central University. (n.d.). Retrieved from [ncdcr.gov/blog/2013/10/06/james-e-shepard](https://ncdcr.gov/blog/2013/10/06/james-e-shepard)
- Jenkins, B. (2014). Interview by Victor Schoenbach [Video]. Oct. 2015. Available at [go.unc.edu/EPIDhistory](https://go.unc.edu/EPIDhistory)
- Jenkins, C. D. (1981). Curriculum vitae. [Unpublished].

- Jenkins, C. D. (2003). *Building better health: A handbook of behavioral change*. Washington, D.C. Pan American Health Organization.
- Jenkins, C. D., Rosenman, R. H. & Friedman, M. D. (1967). Development of an objective psychological test for the determination of the coronary-prone behavior pattern in employed men. *Journal of Chronic Diseases*, 20(6), 371-379.
- Jenkins, C. D., Zyzanski, S. J., & Rosenman, R. H. (1971). Progress toward validation of a computer-scored test for the Type A coronary-prone behavior pattern. *Psychosomatic Medicine*, 33(3), 193–202.
- Kaplan, former epidemiology professor, dies at 86. (May 8, 2017). Retrieved from [sph.unc.edu/sph-news/kaplan-former-epidemiology-professor-dies-at-86/](http://sph.unc.edu/sph-news/kaplan-former-epidemiology-professor-dies-at-86/)
- Kaplan, B. H. (2011). Interview by Victor Schoenbach. January 17. [Audio] Available at [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)
- Kaplan, B. H., Cassel J. C. & Gore S. (1977). Social support and health. *Medical Care*, 15(Supplement 5).
- Kark, J. D. (n.d.). [Biosketch]. Retrieved from [www.epi.umn.edu/cvdepi/oral-history/kark-jeremy-d/](http://www.epi.umn.edu/cvdepi/oral-history/kark-jeremy-d/)
- Kark, S. L., (n.d.). [Letter in *Memories* scrapbook].
- Kark, S. L., & Cassel, J. C. (1952). The Pholela Health Centre: A progress report. *American Journal of Public Health*, 92(11), 1743–1747. Retrieved from [ncbi.nlm.nih.gov/pmc/articles/PMC1447320/](http://ncbi.nlm.nih.gov/pmc/articles/PMC1447320/)
- Kidd, M, Heath, I & Howe, A. (2017). *Family medicine: The classic papers*. Boca Raton, Fla: CRC Press.
- Kleinbaum, D.G. (2017). Curriculum vitae. Retrieved from [sph.emory.edu/faculty/profile/#!DKLEINB](http://sph.emory.edu/faculty/profile/#!DKLEINB)
- Kleinbaum, D. G. (2017). Interview by Bill Jenkins and Victor Schoenbach [Video]. Sept. 27. Available at [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)
- Kleinbaum, D. G & Kupper, L. L. (1978). *Applied regression analysis and other multivariable methods*. North Scituate, Massachusetts: Duxbury Press.
- Kleinbaum, D. G., Kupper, L. L., & Morgenstern, H. (1982). *Epidemiologic research: Principles and quantitative methods*. N.Y: Wiley.
- Korstad, R. R. (1990). *Dreaming of a Time. The School of Public Health, 1939-1989*. Chapel Hill, N.C.: UNC School of Public Health. Retrieved from [digital.ncdcr.gov/cdm/fullbrowser/collection/p249901coll22/id/262831/rv/compoundobject/cpd/263035](http://digital.ncdcr.gov/cdm/fullbrowser/collection/p249901coll22/id/262831/rv/compoundobject/cpd/263035)
- A Legacy of diversity and inclusion. (n.d.). Retrieved from [sph.unc.edu/resource-pages/diversity-timeline/](http://sph.unc.edu/resource-pages/diversity-timeline/)
- Lipid Research Clinics population studies. (n.d.). Retrieved from [clinicaltrials.gov/ct2/show/record/NCT00005128](http://clinicaltrials.gov/ct2/show/record/NCT00005128)
- The Lipid Research Clinics coronary primary prevention trial results. I. Reduction in incidence of coronary heart disease. (1984). *The Journal of the American Medical Association*, 251(3), 351–364. Retrieved from [ncbi.nlm.nih.gov/pubmed/6361299](http://ncbi.nlm.nih.gov/pubmed/6361299)
- Lubker, B. B. (2014). Thoughts and words to honor the memory of Mary Caroline Becker Long. [Eulogy] Retrieved from [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)
- McDonough, J. R., Hames, C. G., Stulb, S. C., & Garrison, G. E. (1963). Cardiovascular disease field study in Evans County. *Public Health Reports*, 78, 1051–1059. Retrieved from [ncbi.nlm.nih.gov/pmc/articles/PMC1915405/pdf/pubhealthreporig00084-0045.pdf](http://ncbi.nlm.nih.gov/pmc/articles/PMC1915405/pdf/pubhealthreporig00084-0045.pdf)
- McGavran, E. G. (1953). What is public health? *Canadian Journal of Public Health / Revue Canadienne de Santé Publique*, 44(12), 441–451.
- McGavran, E. G. (1956). Scientific diagnosis and treatment of the community as a patient. *The Journal of the American Medical Association*, 162(8), 723.



- McGavran, E. G. (1963). *Report to the faculty*. Chapel Hill, N.C.: UNC School of Public Health, University of North Carolina.
- Memories*. (c1997.). [Scrapbook of the UNC Department of Epidemiology. [Contributors: Joyce Allen, Carolyn Becker, Darrah Degnan, Jane Foust, Phyllis Johnson, Susan King, Marilyn Knowles, Meg McCann, Sharon Pope, Rosa Rodriguez-Acosta, Betsy Seagroves, Marilyn Vine, Sue Wolf].
- Milton Joseph Rosenau. (1946). *American Journal of Public Health and the Nation's Health*, 36(5), 530–531.[Editorial]. Retrieved from *ajph.aphapublications.org/doi/pdf/10.2105/AJPH.36.5.530*
- N.C. Oral health: History of N.C. dental public health*. (n.d.). Retrieved from *ncdbhs.gov/dph/oralhealth/aboutUs/history.htm*
- North Carolina Central University (NCCU). (n.d.). A History of the Department of Public Health Education. Retrieved from *web.nccu.edu/shepardlibrary/pdfs/centennial/PublicHealth.pdf*
- North Carolina Public Health Association (NCPHA) Newsletter*, (1989). Retrieved from *ncpha.memberclicks.net/assets/HistoricalNewsletters/1989%20newsletters.pdf*
- North Carolina syphilis studies: Report for the biennium July 1, 1948 to June 30, 1950* (1950). Chapel Hill, N.C: UNC Department of Epidemiology.[Unpublished report].
- Omran, A. R. (1971). The Epidemiologic transition: A theory of the epidemiology of population change. *The Milbank Quarterly*, 83(4), 731–757. doi:10.1111/j.1468-0009.2005.00398.x
- Omran, A. R. (1974). Population epidemiology: An emerging field of inquiry for population and health students. *American Journal of Public Health*, 64(7), 674–679. Retrieved from *ajph.aphapublications.org/doi/pdf/10.2105/AJPH.64.7.674*
- Omran, A. R. (Ed.). (1975). *Community medicine in developing countries*. New York: Springer.
- Petty, A. W. (1988). Interview by Robert Korstad. November 10.
- A Proposal for a doctoral program in public health with a major in epidemiology*. (1961). Chapel Hill, N.C.: UNC School of Public Health. [Unpublished proposal with an appendix that includes biographies of Cassel, McGavran, Fulton, Patrick, Tyroler, Jenkins and Wilson].
- Rollins epidemiologist David Kleinbaum retires. (n.d.). Retrieved from *news.emory.edu/stories/2017/10/david\_kleinbaum\_retirement/index.html*
- Rosenau, M. J. (1915). Courses and degrees in public health work. *The Journal of the American Medical Association*, 313(11), 1172.
- Rosenau, M. J. (1918). *Preventive medicine and hygiene*. New York and London: D. Appleton and Company.
- Rosenau, M. J. (1936). Letter to Dr. R. B. House [Report for the Division of Public Health for the year ending Nov. 30, 1936]. December 18.
- Rosenau, M. J. (1938). Letter to Dr. Frank P. Graham [Report for the Division of Public Health for the year 1937-38 and the fall quarter of 1938]. December 6.
- Rosenau, M. J. (1939). Letter to Dr. Frank P. Graham [Report for the Division of Public Health for the year 1938-1939 and the fall quarter 1939]. November 10.
- Rosenau, Milton J. (1940). Letter to Dr. Frank P. Graham [Report for the School of Public Health for the year 1939-1940 and the fall quarter 1940]. December 5.
- Rosenau, M. J. (1941). Letter to Dr. Frank P. Graham [Report for the School of Public Health for the year 1940-1941 and for the fall quarter 1941]. December 5.
- Rosenau, M. J. (1942). Letter to Dr. Frank P. Graham [Report for the School of Public Health for the year 1941-1942 and for the fall quarter of 1942]. December 31.

- Rosenau, M. J. (1943). Letter to Dr. Frank P. Graham [Report for the School of Public Health for the year 1941-1942 and for the fall quarter of 1942]. January 4.
- Rosenau, M. J. (1944). Curriculum vitae. [Unpublished].
- Rosenau, M. J. (1945). Letter to Marguerite F. Hall. October 22.
- Saracci R. (1992). 'Biological markers in epidemiology' book review. *American Journal of Epidemiology* 1992;136(3):363-364.
- The Science of community, the community of science. (n.d.). [Booklet of the UNC Department of Epidemiology].
- Shepard, J. E. (1940). Letter to Milton J. Rosenau. April 4.
- Sherman A. James, PhD. (n.d.). Retrieved from [sph.unc.edu/mhpl/sherman-a-james-phd/](http://sph.unc.edu/mhpl/sherman-a-james-phd/)
- Shy, C. M. (2015). Interview by Karin Yeatts, Lorraine Alexander and Victor Schoenbach. [Video]. February 13 [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)
- Sidney L. Kark 1911-1998. (1999). Hebrew University-Hadassah. Braun School of Public Health and Community Medicine [n.p.] [Booklet inserted in *Memories* scrapbook includes Kark's curriculum vitae, p. 9-24].
- Spivey, A. (2001). Barbara Hulka's clear notes. *Endeavors: Research and Creative Activity at UNC-Chapel Hill*. Retrieved from [endeavors.unc.edu/spr2000/Hulka.htm](http://endeavors.unc.edu/spr2000/Hulka.htm)
- Suggested personnel and budget for a chronic disease section of the Department of Epidemiology*. (1953). Chapel Hill, N.C.: UNC School of Public Health. (1953). [Unpublished draft].
- Susser M. (1993). A South African odyssey in community health: A memoir of the impact of the teachings of Sidney Kark. *The American Journal of Public Health* 1993;83: 1039-1042.
- Trostle J. (1986). Anthropology and epidemiology in the twentieth century: A selective history of collaborative projects and theoretical affinities, 1920 to 1970. In C. Janes, et al. (Eds.). *Anthropology and epidemiology: Interdisciplinary approaches to the study of health and diseases* (p. 59-94). Dordrecht: Reidel Publishing Company.
- Tyroler, H. A. (2001). Interview by Darwin Labarthe. [Unpublished transcript with permission to quote kindly provided by Henry Blackburn].
- Tyroler, H. A. (1985). Total serum cholesterol and ischemic heart disease risk in clinical trials and observational studies. *American Journal of Preventive Medicine*, 1(4), 18-24.
- Tyroler, H. A. & Cassel, J. C. (1964). Health consequences of culture change: II The Effect of urbanization on coronary heart mortality in rural residents. *Journal of Chronic Diseases*, Feb;17:167-77.
- Tyroler memorialized for transformative influence on field of epidemiology. (April, 28, 2008). *Carolina Public Health*, Spring. Retrieved from [sph.unc.edu/cphm/carolina-public-health-magazine-building-and-inspiring-leaders-spring-2008/tyroler-memorialized-for-transformative-influence-on-field-epidemiology/](http://sph.unc.edu/cphm/carolina-public-health-magazine-building-and-inspiring-leaders-spring-2008/tyroler-memorialized-for-transformative-influence-on-field-epidemiology/)
- UNC Department of Epidemiology. (1953-1954 to 1976-1977). *Annual report*. Chapel Hill, N.C.: UNC School of Public Health.
- UNC Division of Public Health. (1936). *Announcements for the Session 1936-1937*. [July 1936 revision] Chapel Hill, N.C.: University of North Carolina, Retrieved from [library.digitalnc.org/cdm/singleitem/collection/yearbooks/id/12812/rec/2](http://library.digitalnc.org/cdm/singleitem/collection/yearbooks/id/12812/rec/2)
- UNC School of Medicine, Division of Public Health. (1938). *Announcements for the Spring Term 1938 and the Session of 1938-1939*. Chapel Hill, N.C.: University of North Carolina. Retrieved from [library.digitalnc.org/cdm/singleitem/collection/yearbooks/id/12721/rec/6](http://library.digitalnc.org/cdm/singleitem/collection/yearbooks/id/12721/rec/6)

- UNC Graduate School, Division of Public Health. (1939). *Announcements for the Session 1939-1940*. Chapel Hill, N.C.: University of North Carolina. Retrieved from <http://library.digitalnc.org/cdm/singleitem/collection/yearbooks/id/12861/rec/3>
- UNC Graduate School, Division of Public Health. (1940). *Announcements for the Session 1940-1941*. Chapel Hill, N.C.: University of North Carolina. Retrieved from [library.digitalnc.org/cdm/ref/collection/yearbooks/id/12873/re](http://library.digitalnc.org/cdm/ref/collection/yearbooks/id/12873/re)
- University of Minnesota. (n.d.). Heart attack prevention: A history of cardiovascular disease epidemiology. Retrieved from [epi.umn.edu/cvdepi/people/](http://epi.umn.edu/cvdepi/people/)
- Wagner, E. H. (n.d.). Curriculum vitae. [Unpublished].
- Wagner, E. H. (n.d.). Faculty bio. Retrieved from [depts.washington.edu/hserv/faculty/Wagner\\_Edward](http://depts.washington.edu/hserv/faculty/Wagner_Edward)
- Wedeman, M. (2005). C. David Jenkins, PhD, Leader in the field of behavioral medicine retires: A tribute by Martha Wedeman. *Behavioral Medicine*, 31(1), 43–46.
- Weisz, G., & Olszynko-Gryn, J. (2010). The theory of epidemiologic transition: The origins of a citation classic. *Journal of the History of Medicine and Allied Sciences*, 65(3), 287–326.
- William Darity Founding dean of health sciences. (2015). Retrieved from [umass.edu/newsoffice/article/obituary-william-darity-founding-dean](http://umass.edu/newsoffice/article/obituary-william-darity-founding-dean)
- Williams, C. (n.d.). Curriculum vitae. Retrieved from [www.uky.edu/nursing/sites/www.uky.edu.nursing/files/Williams%20CV.pdf](http://www.uky.edu/nursing/sites/www.uky.edu.nursing/files/Williams%20CV.pdf)
- Wright, J. J. (1988). Interview by Robert Korstad [Transcript]. September 9.
- Zyzanski, S. J. (n.d.). Curriculum vitae. [Unpublished].
- Zyzanski, S. J. (2015). Interview by Victor Schoenbach [Audio]. August 26. Available at [go.unc.edu/EPIDhistory](http://go.unc.edu/EPIDhistory)

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