**THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER**

**ORAL HISTORY PROJECT**

**INTERVIEW I**

**INTERVIEWEE: Edmund A. Gehan, PhD**

**INTERVIEWER:** Lesley W. Brunet

James S. Olson, PhD

**DATE:** March 28, 2003

**Major Topics Covered:**

* Educational background and path to becoming a biostatistician
* Early career at the National Institute of Health
* Fellowship at Birkberck in London with Sir David R. Cox
* Early collaborations with Drs. Frei and Freireich at the NIH
* Administrative dynamics of the institution.

**Biographical Note:**

Edmund A. Gehan, Ph.D., was born in Brooklyn, New York in 1929. He attended Manhattan College where he received his Bachelor of Science degree in Mathematics. Gehan was awarded his Doctorate in Applied Statistics from the University of North Carolina in Chapel Hill/ He taught Applied Statistics from 1955 to 1957. He worked for the National Institute of Health (NIH) in 1958 and was the head of the Biometrics Section of the Cancer Chemotherapy National Service Center in 1959. He was a member of the National Cancer Institute (NCI).

Gehan’s work in Biostatistics brought him to Houston as a professor at the University of Texas M. D. Anderson Cancer Center in 1967; the institution was a member of the Southwest Oncology Group at that time. Prior to his appointment at M. D. Anderson, he collaborated with Drs. Emil Frei III and Emil J. Freireich cancer research. Gehan has coauthored numerous articles that influenced the development of cancer research with the use of data analysis in clinical trials. Two of which include the 1965 Biometika journal article “A Generalized Wilcoxon test for Comparing Arbitrarily Singly-Censored Samples” and the 1974 New England Medical Journal article “Non-randomized Controls in Cancer Clinical Trials.

Since 1994, Gehan is a Professor Emeritus of Biostatistics at Georgetown University Medical Center.

**Selected Bibliography:**

Gehan, E. A. (1961, April). The determination of the number of patients required in a preliminary and a follow-up trial of a new chemotherapeutic agent. St. Louis: Journal of Chronic Diseases 13(4). 346-353.

Gehan, E. A. (1965). A generalized Wilcoxon test for comparing arbitrarily singly-censored samples. Biometrika 52(1 and 2). 203-223.

Gehan E. A., and Freireich E. J. (1981, December). Cancer clinical trials: A rational basis for use of historical controls. Seminars in Oncology, 8(4). 430-436

Gehan, E. A., and Freireich E. J. (1974, January 24). Non-randomized controls in cancer clinical trials. New England Journal of Medicine 290(4). 198-203.

Gehan, E. A., and Schneiderman, M. A. (1990). Historical and methodological developments in clinical trials at the National Cancer Institute. Statistics in Medicine 9. 871-880.

Gehan, E. A. (nd). How to find the cure for cancer. Journal of irreproducible results 35(4).

**Interview Chapters:**

**Chapter 01: Early Life and Education in Brooklyn, New York**A: Personal Background;

Story Codes:   
A: Character, Values, Beliefs, Talents;   
A: Professional Path;  
A: Personal Background; Influences from People and Life Experiences;   
C: Formative Experiences;

Dr. Edmund “Ed” Gehan summarizes his tenure at MD Anderson, how he came to MD Anderson, prior work in the Biostatistics area of the National Cancer Institute (NCI)/National Institute of Health (NIH), and graduate education. He briefly talks about his pre-collegiate life and career influences in Brooklyn, New York - including his attendance at St. Augustine’s Catholic High School. Dr. Gehan then details his range of performance on career aptitude tests (e.g. Wiggly Block Test) at the Johnson O’Connor Research Foundation and how his enjoyment of Reader’s Digest Word Power influenced his decision to attend Manhattan College.

**Chapter 02: Choosing An Educational Background Focusing on Statistics**A: Educational Path;

Story Codes:   
A: Professional Path;   
A: Influences from People and Life Experiences;  
A: Professional Path;   
C: Giving Recognition;  
A: Inspirations to Practice Science/Medicine;

Dr. Gehan reflects on his curriculum, performance, and choice of major at Manhattan College, and factors that influenced his selection of the University of North Carolina, Chapel Hill for graduate study in statistics. He talks about the “giants” at UNC Chapel Hill in the Department of Theoretical Statistics: Harold Hotelling, Herbert Robbins in probability, R. C. Bose, and S. N. Roy while he spent a year in that program. </p>

Dr. Gehan switched to the Department of Applied Statistics at North Carolina State in Raleigh, North Carolina under Gertrude M. Cox. While he graduated from NC State, Dr. Gehan spent most of his in Chapel Hill and reminisced about his time there. His last years at Chapel Hill were spent as a doctoral candidate and faculty member under the leadership of Bernard “Bernie” G. Greenberg, Dean of UNC School of Public Health.</p>

**Chapter 03: Work at NCI/NIH, the Role of Statistics in Medical Research, and its Application in Sequential and Combination Cancer Treatment Evaluation**

A: Professional Path;

Story Codes:   
A: The Researcher;  
D: On Research and Researchers;  
D: Understanding Cancer, the History of Science, Cancer Research;  
B: MD Anderson Culture;  
A: Personal Background;  
A: Professional Path;   
C: Funny Stories;  
D: On Research and Researchers;

Dr. Gehan talks about working for, and remembrances of, Nathan Mantel (known for survival rate analysis) at the NCI/NIH. Also at that time, he received direction from Jerome “Jerry” Cornfield, senior statistician (best known for the causal relation between cigarette smoking and lung cancer). He talks about the importance of statistics in medical research and publication, gives an example of a “6-Mercaptopurine (6MP) and Methotrexate (MTX)” treatment response rate study, and how he provided “analytical support” for Drs. Emil “Tom” Frei III and Emil J. Freireich’s sequential and combination treatment “ideas” for Leukemia treatment. </p>

At an MD Anderson dinner event the prior evening, Mr. Gehan mentions several prominent researchers (Dr’s Emil J Freireich, Emil “Tom” Frei III, Michael Keating, Jeffrey Gotlieb, Levy[?], and 6th Annual Emil J. Freireich Award for outstanding achievement of a young researcher in clinical cancer therapeutic award recipient Eric K. Rowinsky), their passion for research work, and being “turned on” serving as the statistical “member of the team.” </p>

The beginning of work with Drs. Frei and Freireich in January 1958, Dr. Gehan lists his roles over time as the replacement for Marvin A. Schneiderman, his career advancement to Acting Head, then Head of the Biometrics Section, Cancer Chemotherapy National Service Center and NCI Southwest and Eastern Clinical Trials Cooperative Groups. As a member of the Acute (now Cancer) Leukemia Group B, he reminisces about the face-to-face meeting style where Dr’s Frei III, Freireich, and James “Jim” F. Holland developed ideas for clinical studies. Additionally, he mentions his marriage to wife Brenda (nee McKeon) before his time working for Sir David Roxbee Cox (known for Regression Models and Life Tables) from 1962-1964 as a special Fellow at Birkbeck College of London, England. </p>

**Chapter 04: Strengthening Medical Oncology at MD Anderson with the Aid of NCI Researchers in the Department of Biostatistics**

B: An Institutional Unit

Story Codes:

B: Building/Transforming the Institution;   
A: Professional Path;  
C: Giving Recognition;  
D: On Research and Researchers;

Dr. Gehan recollects Dr. R. Lee Clark’s approach to funding, recruitment, and management and the attraction of MD Anderson/Houston to Dr. “Tom” Frei III, his wife Elizabeth “Liz” (nee Smith), as well as himself. Dr. Olson mentions from Kenneth Endicott (NCI Director) to Dr. R. Lee Clark (President, MD Anderson) lamenting the move of Dr’s Frei III and Freireich to MD Anderson. When Dr. Gehan started at MD Anderson in 1967, Dr. Lee D. Cady Jr. was the Head of the Department of Biomathematics. Dr. Gehan talks about the impact of the arrival of Dr’s Frei III and Freireich on MD Anderson Research. </p>

Dr. Gehan cites the cooperative group collaboration model of NCI/NIH Clinical Chairman Dr. C. Gordon Zubrod and biostatistician Marvin A. Schneiderman on the first randomized trials in acute leukemia and solid tumors. He recalls the members of the administration and the research team at MD Anderson before the arrival of Dr’s Frei III and Freireich: Dr. H. Grant Taylor, Chairman of the Southwest Oncology Group (Southwest Oncology Group), epidemiologist Eleanor Josephine McDonald (known for creating the National Cancer Registry) statistician Kenneth M. Griffith, Dr. Roy C. Heflebower, Joe E. Boyd and Dr. Stuart O. Zimmerman, Chairman of the Biomathematics Department. He also mentions other MD Anderson administrators and researchers: Terry L. Smith, Dr. Peter F. Thall, Dr. J. Jack Lee, President Dr. Charles A. LeMaistre, Dr. Frederick F. Becker and President Dr. John Mendelsohn. </p>

Finally, he talks about the Department of Biostatistics, how it differs from Biomathematics, and the effort to strengthen medical oncology at MD Anderson. </p>

**Chapter 05: The Leadership Styles of Dr. Frei and Dr. Freireich and Working with the Southwest Oncology Group (SWOG)**B: An Institutional Unit;

Story Codes:   
B: Institutional Politics;  
B: Controversy;  
C: Funny Stories;  
D: On Research and Researchers;

In this chapter, Dr. Gehan contrasts Dr’s Frei III and J. Freireich’s administrative styles and capabilities. He mentions the adult and pediatric divisions in the Southwest Oncology Group (SWOG) and MD Anderson pediatric researchers Dr. Margaret Patricia Sullivan and Dr. Wataru "Walter" Sutow. Dr. Gehan then discusses the politics, group composition of the Southwest Oncology Group (SWOG), and MD Anderson’s participation in it. Specifically, he talks about the election of the successor to Dr. Tom Frei III as Chairman of the Southwest Oncology Group and mentions successors Dr. Barth Hoogstrate and Dr. Charles A. Coltman Jr.

**Chapter 06*:* Dr. Gehan's Research and Publishing Impact**A: The Researcher

Story Codes:

A: The Researcher;  
B: Research;  
C: Human Stories;  
C: Funny Stories;  
C: Collaborations;  
C: Giving Recognition;  
D: Understanding Cancer, the History of Science, Cancer Research;

In this chapter, Dr. Gehan assesses his research output. He talks about: the number of patients required in Phase II clinical trial, comparison of two survival distributions with no average survival time, the extension of the Wilcoxin (Frank) Test with two-sample tests with censoring (loss) when working with Professor Sir David Roxbee Cox in London, the Gehan-Breslow (Norman Edward)-Wilcoxon generalization of the Wilcoxon statistic test to the two-sample problem with censored data, and hazard functions.</p>

Dr. Gehan then discusses the impact of computers on statistical research publications. He talks about the necessity for, and research perspectives and publications regarding, non-randomized controls in cancer clinical trials. He mentions the influence of Dr. Franz Joseph Ingelfinger, Editor of the New England Journal of Medicine, in promoting a constructive Gehan/Freireich publication approach where there was a conflicting research theory (Thomas C. Chalmers, known for randomized clinical trials). He also discusses the development of cancer research cooperative groups, epidemiologist Eleanor Macdonald and many of his co-authored biostatics articles. </p>

***Chapter 07 The Relationship Between the Department of Developmental Therapeutics and Department of Medicine at MD Anderson***

B: Institutional Processes

Story Codes

B: Institutional Politics;

Dr. Gehan talks about patient referral practices and perspectives between the Department of Medicine, headed by Dr. Clifton “Cliff” Howe, and the Department of Developmental Therapeutics headed by Dr. Emil Frei III. He discusses direct referrals to Dr. Frei III and Freireich, Dr. C. C. Shullenberger (chronic leukemias), and Dr. Raymond “Ray” Alexanian (multiple myeloma).

**Chapter 08:Working as Adjunct Faculty at Rice University and The University of Texas School of Public Health and Consulting Work with the Southwest Oncology Group (SWOG)**

A: The Educator

Story Codes:

A: The Educator;  
A: The Mentor;  
A: Critical Perspectives;

A: Contributions;  
A: Activities Outside Institution;

In this chapter, Dr. Gehan talks about his adjunct faculty work at Rice University when Dr. James “Jim” R. Thompson was the head of the Department of Statistics, and at The University of Texas School of Public Health’s Department of Biometry. While at the latter, he supervised Lina Asmar’s master's thesis and participated on her Ph.D. committee, which she completed in 1992.</p>

Then, he gives an overview of Terry L. Smith’s and his consulting work in the Department of Biostatistics supporting several people/entities, like Dr. Raymond “Ray” Alexanian (Department of Medicine), the Department of Developmental Therapeutics, and while serving as the head statistician of the Southwest Oncology Group (SWOG), he mentions work with Dr. Micheal Keating, Dr. Kenneth “Ken” B. McCredie, Dr. Wataru “Wat” Walter Sutoh (pediatrics), Dr. Margaret Patricia “Pat” Sullivan (Intergroup Hodgkin's disease). He talks in detail about Dr. Grant Taylor (Chair of the SWOG), his relationship with President R. Lee Clark, his authoring of the book “Pioneers in Pediatric Oncology” (of which Mr. Gehan’s autobiography is included), and his involvement in the MD Anderson’s purchase of the Prudential building.</p>

**Chapter 09: Luminaries in the Department of Pediatrics and Evolution in the Field of Cancer Research**B: An Institutional Unit;

Story Codes:

B: Building/Transforming the Institution;  
C: Giving Recognition;  
D: On Research and Researchers;

Dr. Gehan fondly recalls Dr. Wataru Walter Sutow, recollects his participation with Dr’s Grant Taylor and Margaret Patricia Sullivan in a group studying the effects of atomic radiation, and speculates on how they came to MD Anderson’s Department of Pediatrics. He discusses pediatric cancer researchers’ perspectives on cancer research, how they differed from cancer research in adults, and changing involvement over time in various research groups (e.g. Southwest Oncology Group). Lastly, he notes Dr. Archie Bleyer would know more information regarding the pediatric cancer research activity.

**Chapter 10: Dr. Jan VanEys and the Development of MD Anderson’s Code of Ethics; Working with Pharmaceutical Industry**B: An Institutional Unit

Story Codes:   
B: Building/Transforming the Institution;  
B: Ethics;  
B: The Business of MD Anderson;  
C: Critical Perspectives;  
C: The Professional at Work;  
D: On Research and Researchers;  
D: Understanding Cancer, the History of Science, Cancer Research;  
D: Ethics;  
B: Industry Partnerships;  
D: On Pharmaceutical Companies and Industry;

In this chapter, Dr. Gehan talks about Dr. Jan VanEys’ work in pediatrics and as an ethicist at MD Anderson. He mentions Dr. VanEys’ work with Dr. James M. Bowen in the creation of a code of ethics at MD Anderson. He then talks about the role of statistics in cancer research, cancer research ethics, and the ethical use of randomized trials. He goes on to reference Donald “Don” Arthur Berry, head of the Department of Biostatistics at MD Anderson, talks about clinical equipoise, contrasts Bayesian and Frequentist reasoning, sequential analysis, randomized trials, etc. </p>

Dr. Gehan talks about the statistics department’s working relationship with other areas at the institution including working with Dr. Charles Blach who was the Head of the Department of Surgery at the time. Before 1980, the National Institute of Health (NIH) funded most research. Changes in the industry saw a bulk of funds coming from drug companies, which required new logistical concerns regarding data management and patient participation numbers to justify expenses. He provides examples of Dr. Bodey's research in protective environments for cancer patients. </p>

**Chapter 11: The Differing Leadership Styles of Drs. Clark and LeMaistre**

B: Key MD Anderson Figures

Story Codes:

B: MD Anderson History;

B: Controversy;

B: MD Anderson Culture;

B: Institutional Politics;

C: MD Anderson Past;

C: Leadership;

C: Portraits

D: On Leadership;

D: On Nature of Institutions;

Dr. Gehan provides a brief comparison of Dr. R. Lee Clark and Dr. Charles A. LeMasitre, who were the first two MD Anderson Presidents. According to Dr. Gehan, Dr. Clark was personable compared to Dr. LeMaistre's more organizational management style.

**Chapter 12: The Contributions of Colleagues to MD Anderson's Legacy**

B: Key MD Anderson Figures

Story Codes:

B: MD Anderson History;

B: Institutional Politics;

C: MD Anderson Past;

C: Portraits;

The interviewers ask Dr. Gehan to talk about his MD Anderson colleagues. A statistician by nature he offers to evaluate his colleagues on a 1-10 rating scale while identifying the strengths and weaknesses of each individual.

**Chapter 13: Transitions at the Department of Developmental Therapeutics**

B: Institutional Change

Story Codes:

B: MD Anderson History;

B: Growth and/or Change;

B: Controversy;

B: Research, Care, and Education in Transition;

B: Institutional Politics

D: On Research and Researchers;

D: On the Nature of Institutions;

Dr. Gehan concludes the interview by discussing changes at the institution including the closure of the Department of Developmental Therapeutics. He talks about the importance of having passion in cancer research, a trait he greatly admired in Drs. Frei and Freireich. He talks about the role of pharmaceutical companies and Rituxan, the first monoclonal antibody to be approved by the Food and Drug Administration (FDA).