American Association of Avian Pathologists
Biographies of Professionals in Poultry Health

Barrett S. Cowen

1939 –

Prepared by: Barrett S. Cowen
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Professional History of Barrett S. Cowen

Early Years: Barrett Stickney Cowen was born in Lebanon, New Hampshire in 1939; the third of 3 children of Frank Young Cowen and Elsie Stickney Cowen. He had a sister (Priscilla) 2

years older and a brother (Norris) 7 years older. The Cowen family moved to Springfield, Vermont when Barrett was 13 months of age. His father was an accountant working at the First National Bank in Springfield and his mother was a stay-at-home former school teacher (Home Economics). He acquired his primary and secondary education in the Springfield public school system.

Barrett (Barry) experienced the usual parental upbringing at that time (2nd World War) with loving parents, siblings and experiencing such war-time activities as volunteer civil defense monitoring, curfews, blackouts and rationing. In an addition to his high school focus (college preparatory), his extracurricular activities included being a member of the marching band, chorus, and ski, tennis and baseball teams. Barry's first exposure to poultry rearing came about as a result of his father's hobby of raising and showing (i.e. at country fairs, nationally) Black Rosecomb Bantams. A common activity for him during the summer months as a teenager was assisting farm owners with the care of dairy cattle and chickens. This led to an interest in veterinary medicine and the pleasure of joining the legendary Dr. Robert Marshak (a veterinary practitioner in Springfield at that time and a Cowen family friend) on farm visits.

Following high school graduation, he entered the University of Vermont (UVM) in 1958. After two years of study he joined the Vermont National Guard (a medical unit in Burlington, VT) and commenced basic and medical corp. training in the fall of 1960 with completion in the winter of 1961. Upon completing the last two years of his Bachelor of Science in Agriculture (Poultry Science major), he was hired by Hubbard Farms Inc. (Walpole, NH), as a Laboratory Assistant in the Department of Research and Development and as such was involved in the selection and caring of grandparent broiler breeders and health related activities.

Professional Career: He acquired professional aspirations resulting from a lengthy project to eradicate *Mycoplasma gallisepticum* (MG; an important player in Chronic Respiratory Disease) from broiler breeders which was the focus of his duties for a two year period. Hubbard Farms (versus Cobb Inc.) initiated this MG eradication program by injecting breeder progeny with tylosin-in-oil four times at 5- day intervals. If there were no MG serological reactors after 2 generations, they were considered MG clean. An important component of this project was his responsibility to learn how to propagate MG and acquire appropriate serological technics at Dr. Robert Dunlop's laboratory at the University of New Hampshire (UNH). As a result of this project, Hubbard Farms Inc. had a new laboratory constructed in Walpole and he became involved with the acquisition of essential laboratory equipment, etc. Additionally, he initiated laboratory activities in that facility and continued working there until leaving Hubbard Farms Inc. in 1965 to pursue graduate studies at UNH. In retrospect, it was rewarding for him to know that the MG eradication program used by Hubbard Farms Inc. was successful.

The two years at UNH, as a Graduate Assistant in the Animal Science Department, allowed him to broaden his laboratory skills (e.g., embryo inoculations, cell culture preparation, propagation and assays of bacteria and viruses and biochemical techniques). Additionally, he married a beautiful young lady (Ruth Consuegra Cardenas) from Colombia, South America in September 1966. Dr. Samuel Smith chaired his Master of Science (MS) committee (other members; Drs. Richard G. Strout, Alan C Corbett, and Edward J. Herbst) and provided thesis research oversight.

The research was an investigation of MG nuclease (ribonuclease and deoxyribonuclease) levels and involved determining the relationship of nuclease activity to culture age, nutrient, and location. The research results demonstrated nuclease activities in MG are a function of strain (e.g., SW & A5969), nutrient, and culture age. The requirements for the MS Degree were granted in August 1968. A notable pleasure during these years at UNH was meeting and interacting with the legendary Mr. Walter Staples (the PPLO man).

Upon completion of the MS research, he accepted a Research Specialist III position in the Department of Avian Diseases at the New York State Veterinary College (Cornell University) in Ithaca, NY and commenced working there in September of 1967. His initial responsibility was to assist Dr. Stephen B. Hitchner (Department Chair) with establishing a long range project on the characterization and classification of avian viruses with special emphasis on Infectious Bronchitis Virus (IBV) which was supported by the Federal Grant Project NE-138. Initially, his IBV research addressed pH stabilities of IBV (coronavirus) strains. Continuing studies included clone purifying and antigenically comparing tissue culture adapted IBV strains with a 20-antibody-unit method of plaque-reduction virus- neutralization testing. Characterization of a new IBV isolate (Clark 333) included identifying some chemical and physical properties and conducting serological and pathogenicity studies of this isolate. This PhD oriented research was interrupted in 1972 to address Barrett's diagnosis of malignant melanoma. Fortunately, surgery resolved this problem. His PhD thesis preparation was an important focus in terms of keeping health off his mind. He was delighted to receive a PhD degree (committee members; Drs. S. B. Hitchner, chairman, and R. F. Kahrs, and L. E. Carmichael) in August of 1973. The skillful assistance given and the genuine interest shown during these studies by Mr. Dean L'Amoreaux was sincerely appreciated. In September of the same year, he and his wife were blessed with the birth of a wonderful daughter, Marcella Lucia.

As a Department employee, Barrett continued to contribute to the department's research focus on infectious diseases of importance to the poultry industry. It was his pleasure to assist Dr. N. A. Menendez (Research Associate, Universidad de La Plata, La Plata, Argentina) with research on the localization of avian reovirus in tissues of mature chickens and also experimental egg-transmission studies with the same virus. At this time Barrett was awarded a promotion to Research Associate for his dedication to the research effort of the Department which was deeply appreciated. Not only was the quality of his work recognized on the Cornell campus, but members of other institutions remarked about the value of his research contributions. A year later, Barrett and Ruth were blessed with the February birth of a wonderful son, Matthew Alfredo.

The next research was of considerable effort, but very rewarding, as it addressed a suspected avian adenovirus (group 1) effect on egg production, shell quality and feed consumption in poultry flocks. This research effort was initiated by Drs. B. W. Calnek and B. S. Cowen with a study of serological groups using a 20-antibody-unit method of plaque-reduction virus-neutralization testing of chicken adenoviruses. Barrett and co-authors continued this research focus by identifying broad intergroup antigenicity exhibited by some avian adenoviruses followed by addressing the effect of these viruses on egg production and shell quality. Next, he

and co-authors evaluated the pathogenicity of some of these adenovirus isolates. Additional studies included an adenovirus survey of poultry flocks during the growing and laying periods and the effect of the same viruses on egg production, shell quality and feed consumption.

In February of 1978, Barrett left Cornell for a job (offered by Mr. Walter Staples) at Cobb Incorporated of Concord, MA. His first responsibility was assisting Mr. Staples at the Cobb Poultry Research Laboratory, located in Milton, NH. He provided leadership for research and the quality control program and at the time of Mr. Staples retirement, Barrett was promoted to the position of Laboratory Director and Quality Control Manager. He developed and managed a $250-300 thousand per year budget and supervised five full-time and two part-time personnel. Administration of vaccination and serological and bacteriological monitoring programs for Cobb owned and contract breeder flocks was the primary responsibility of this program. Additionally, this program provided technical service support for the identified flocks above and customer flocks. Another responsibility was conducting applied research to support the corporate practice of providing customers with high quality product; for example, Salmonella paratyphoid and lymphoid leukosis control, reduction or eradication. Salmonella control was implemented using pressure differential dipping of breeder hatching eggs with gentamicin sulfate. Complement fixation-for-avian leukosis (COFAL) testing for the eradication or reduction of lymphoid leukosis was also initiated. The Laboratory was also responsible for the rearing and maintenance of Cobb owned specific pathogen-free (SPF) White Leghorn and White Plymouth Rock flocks. Additionally, he developed a proposal for the commercialization of SPF chickens and eggs. Barrett also provided national and international (e.g., Great Britain and Europe) technical assistance for Cobb and customer breeder flocks.

In 1981, Cobb decided to sell their real estate (i.e., laboratory, experimental bird containment building and a caretakers cottage) in Milton, NH and move this activity into a new research and quality control laboratory (which Barrett assisted with the design and provided oversight of its construction) in Concord, MA. He continued to provide leadership for this activity in the new facility for another year. In the spring of 1982, he was offered an Associate Professorship at The Pennsylvania State University (PSU) in the Department of Veterinary Science. As a result of major changes at Cobb Inc., he decided it was in his (and his family's) best interest to accept this offer.

As a result, he left Cobb in July of 1982 to initiate 15 years of service at Penn State. The Department Head, Dr. C. S. Card, requested him to become the Coordinator of Wiley Laboratory with the responsibility of managing several laboratory animal care and clerical personnel. Barrett's research and scholarship area of interest (supported with Hatch and General funds) was the epidemiology and pathogenesis of respiratory, enteric and urinary tract viral infections/diseases of poultry and commercially reared game birds. This work included the identification of the etiology of new and emerging diseases of poultry and game birds; and the development of disease control measures, viral diagnostic methodologies and vaccination strategies. In addition to the above identified areas of interest, he was also responsible for providing diagnostic assistance (including Dr. M. O. Braune), extension services (including Dr. L. D. Schwartz) and biologics production (MG, MSD, and HE vaccines). Dr. C. S. Card

additionally assigned him the responsibility of establishing and maintaining specific-pathogen-free (SPF) White Leghorn and White Plymouth Rock flocks essential for infectious disease research and assisting with the development and oversight of the construction of a "biological safety level three (BSL-3)" infectious disease containment facility. Barrett was also assigned the responsibility for graduate teaching and training.

Barrett's first year of department service was dramatically initiated with a historical outbreak of a low-path avian influenza (H5N2 strain of AI) in the spring of 1983. With the passaging of this virus in numbers of commercial flocks, it mutated into a high-path form of this H5N2 virus in the fall of 1983. As a result of this serious outbreak of AI (which spread to numbers of adjoining states), his activities were focused on providing diagnostic assistance (virus isolation and identification) and extension services (assisting poultry and game bird producers with diagnostic, biosecurity and depopulation needs). As a consequence of this serious outbreak, Drs. Card, Cowen, and Schwartz requested the support of Federal and State Representatives and the Pennsylvania Department of Agriculture with the acquisition of funds for the construction of a BSL-3 containment facility and avian disease research. This effort resulted in a successfully acquired State Line Item Budget.

Because of this timely need, the initial research focus at PSU was evaluating available H5N2 vaccines. SPF White Plymouth Rock chickens were immunized with a Maine Biological Laboratories' H5N2 inactivated vaccine with adjuvant followed by an evaluation of antibody response and protection against mortality, morbidity, and virus shedding. Post immunization and challenge (conducted at the National Animal Disease Laboratory; USDA, in Ames, Iowa) tests demonstrated very good antibody levels and remarkable protection against mortality, morbidity and virus shedding. Unfortunately, USDA policy prohibited the use of H5N2 vaccines at that time.

Research activities at Wiley Laboratory and associated facilities, addressing current needs of the poultry, game bird and pet bird industries were continued with the participation of undergraduate (6 in number) and graduate students (6 in number) and collaborating or assisting Veterinary Science and Poultry Science faculty. Research was primarily focused on a variety of IBV, FAV, and AI studies

Additionally, Barrett had the good fortune to volunteer for the Volunteers in Overseas Cooperative Assistance (VOCA). He conducted research on hydropericardium syndrome (Angara Disease; adenovirus etiology) at the National Agricultural Research Center in Islamabad, Pakistan (5 weeks in 1990).

In 1992 he initiated a two- year binational, collaborative research project with faculty of the School of Veterinary Medicine (Universidad Nacional) in Heredia, Costa Rica. The focus of the project was the identification and control of IBV in commercial farms of Costa Rica.

In 1994, he was awarded a sabbatical leave; spending one month at the National Fisheries Research Center in Kearneysville, West Virginia, learning primer/PCR-based technology for the rapid diagnosis of viruses. This was followed with six months at the School of Veterinary

Medicine at Universidad Nacional in Heredia, Costa Rica, evaluating PCR and PFLP procedures for the rapid detection and subtyping of IBV.

He was also asked to conduct a training program on Avian Diagnostic Virology Procedures for the Ministry of Agriculture in Santiago, Chile in August 1996.

In August of 1997, Barrett left PSU to assume a position of Senior Research Scientist and Director of Research at Biomune Company in Lenexa, Kansas. He was responsible for the research and development of conventional live and inactivated viral vaccines for the poultry and game bird industries. Supervision of research laboratory support personnel and the provision of technical support for customers. He was fortunate to acquire a very intelligent and experienced microbiologist, LaDonna M. Grenz, to assist him and thereby make an important contribution to all of the research activities.

His accomplishments included the development of a live tissue culture (i.e. anchorage independent cell line) origin chicken infectious anemia virus (CIAV, at the time classified as belonging to the family Circoviridae) which contains the Del Ros strain (a naturally avirulent field strain) of this virus. This is a live virus vaccine which is in liquid form and administered via the wing web or the drinking water to breeder chickens (9- to 12-weeks of age). It has also been approved for vaccination of one- week-old broilers and is also administered via drinking water.

Another research project addressed comparative features of fowl adenoviruses associated with inclusion body hepatitis (IBH) and hydropericardium-hepatitis syndrome (HHS) in chickens. The results of this study found that the preferred routes of chicken embryo inoculation for FAV isolation and/or propagation are yolk sac or dropped chorioallantoic membrane. Continuous avian cell lines are comparable to primary avian cell culture in their ability to support the growth of FAV. FAV of diverse antigenic composition are associated with or incriminated in IBH outbreaks. HHS outbreaks appeared to be associated primarily with serotype four FAV. Variability in FAV pathogenicity is a characteristic feature of group I avian adenoviruses.

An inactivated, oil-emulsion KR5 strain (LMH cell-culture-origin) FAV vaccine with adjuvant was developed and administered in 12-week-old SPF White Leghorns. An evaluation of the antibody response of the chickens and protection against mortality and gross lesions of progeny 1-day-old chicks challenged with homologous vs heterologous FAV serotypes resulted in very good responses to both parameters.

Retirement Years: Barrett left Biomune in June 2001 to commence retirement. However, he continued professional activities including international consulting and one year of laboratory personnel supervision at Wiley Laboratory (PSU) during the first six years of retirement.

Career-Related Activities/Accomplishments

Consulting:

Provided technical advice to fourteen different national and international organizations on an ad hoc or retainer basis.

Presentations and Publications:

Presented papers at 68 (14 invited) national and 43 (25 invited) international and professional meetings.

Published 48 (23 first author) refereed journal articles, one book chapter, and 16 popular press articles.

Professional Associations and Honorary Societies:

American Association of Avian Pathology

American Society of Microbiology

Conference of Research Workers in Animal Diseases

World Veterinary Poultry Association

American Association of Veterinary Laboratory Diagnosticians, Inc.

Phi Kappa Phi

Sigma Xi

Professional Honors and Awards:

Poster Award Winner of the American Association of Avian Pathologist Section of 127th Annual American Veterinary Medical Association Meeting, San Antonio, Texas, July 21-25, 1990.

J. William Fulbright Scholarship (Central American Republic Research Program; 1994-1995 academic year), awarded, February 1994.

Editorial Board, Avian Diseases, 1994-2003.

Editorial Board, Journal of Applied Poultry Research, 1992.

Best Paper Award, XIV Latin American Poultry Congress, Santiago, Chile, October, 10-13, 1995.

Development of a USDA Licensed CIAV Vaccines, 2001.

Member Emeritus, Northeast Conference on Avian Diseases, presented at the 76th Annual Meeting, June 9-11, 2004. Pennsylvania State University, University Park, Pennsylvania.

The Marquis Who's Who Publications Board recipient of the Albert Nelson Marquis Lifetime Achievement Award, 2017.

Biography solicited by the Committee on the History of Avian Medicine, American Association of Avian Pathologists.

Additional biographical materials may be available from the AAAP Historical Archives located at Iowa State University. Contact information is as follows:

Special Collections Dept. & University Archives

403 Parks Library

Iowa State University

Ames, IA 50011-2140