Brief Personal Biography – Niels C. Pedersen

I never thought about being a veterinarian before college even though I grew up on a poultry farm in Southern California and had all sorts of animals. I moved to Southern Nevada in High School in 1957 and volunteered time on a local cattle ranch that ranged cattle over large areas of government land. My goal upon entering college at the University of Nevada Reno was to be a teacher of vocational agriculture. However, I was inspired in my second year by a course that I took in Veterinary Science taught by a veterinary researcher, Dr. Donald Marble, in the Veterinary Sciences Unit. He opened my eyes to a career in veterinary medicine, something I had not even contemplated before his course. I was hooked and applied to veterinary school at the University of California, Davis in 1963. I loved veterinary school and considered training in veterinary medicine to be the greatest learning experience in biology and medicine that is available. My first experience with feline infectious peritonitis (FIP) was in 1964 when I worked with a PhD student in the veterinary pathology program. The cause of FIP was unknown at that time and there was no disease in animals or humans that was quite like it. My first paper as a co-author came out of this work and was published in 1967. My interest in feline medicine grew in veterinary school, largely because of my love and experience with feral cats on my father's poultry farm years earlier. The lack of knowledge of cats and their diseases became apparent to me in my classroom and clinical experience and I was convinced as a senior that my interest was in infectious and immunological disease with emphasis on cats and dogs. This was quite a chance from someone who started out to be a cattle doctor. I did an internship in small animal medicine and surgery at Colorado State University from 1967-68 and then travelled with wife and young daughter to Australia, where I did my PhD training at the Australian National University, John Curtin School of Medical Research on experimental pathology and immunology. My three years at Canberra was the second greatest learning experience of my life and led to a life-long fascination with the Australian outback, and in particular, the flora of Western Australia. I earned my PhD from the ANU in late 1971 and returned to the School of Veterinary Medicine at UC Davis as a cancer researcher in early 1972. This was not a good fit form me, but fortunately my Dean recognized my clinical abilities and asked me to join the clinical faculty as an Assistant Professor. I have been at Davis ever since and retired in 2010 as a Distinguished Professor, Emeritus. I remained active in research at the school until 2020, when I fully retired.

My years at UC Davis as a faculty member are filled with a lot of memories and experiences. I was an active clinician with expertise in small animal internal medicine for 17 years, taught courses in infectious diseases, immunologic diseases and feline medicine for 21 years, and then spent most of my time in administration and research. I served as a department chairman, and was later director of the Veterinary Genetics Laboratory, and founder and Director of the Center for Companion Animal Health. My major research interests were in feline infectious disease and I was able to make important contributions to our understanding of feline leukemia, feline calici, feline herpes, and feline immunodeficiency virus infections. However, my greatest obsession was feline coronavirus and how it related to feline infectious peritonitis. I discovered that feline coronavirus was closely related to coronavirus of dogs and pigs, that it existed as a ubiquitous and largely non-pathogenic enteric virus of cats (named feline enteric coronavirus -FECV). The most important discovery was the relationship of FIP to FECV and the postulate that the FIP virus was a specific mutation of FECV that was similar, yet unique, for each cat. This was not a simple learning experience, because FIP grudgingly yielded its secrets bit by bit over several decades. We now have an almost complete understanding of how FIP virus occurs and how it causes the various clinical forms of FIP. Although we understand how FIP viruses cause disease,

all attempts to develop protective vaccines have ended in failure. This led to studies on how host and environmental factors affect the incidence of FIP. Although we have a better understanding of these factors and may have reduced the incidence of FIP through this knowledge, FIP continued to be a main killer of cats. It was around 2015 that I realized that we would not be able to effectively prevent FIP and that we should be attempting to find a cure instead. The possibility of a cure was based on the increasing application of anti-viral drug therapy for human virus diseases caused by herpesvirus, influenza virus, HIV, and hepatitis C virus. The experience of curing hepatitis C virus, also an RNA virus, was especially important. Inhibitors of the viral protease enzyme were particularly noteworthy in the cure of hepatitis C virus infection. A paper on viral protease inhibitors for RNA viruses of animals from investigators at Kansas State University caught my attention. This led to the first important collaboration and the discovery that a viral protease inhibitor called GC376 could cure one-third or more of cats with FIP. Subsequent research on another class of antiviral drugs, called nucleoside analogs, for Ebola also led to a collaboration with scientists at Gilead Sciences on one of their compounds called GS-441524. Two quite different ant-viral drugs, both able to cure cats of FIP, discovered within a two-year period. The rest is history - thousands of cats have been cured of FIP worldwide over the last two years with GS-441524.

It is seldom in the life and career of a scientist that they can be involved in virtually every stage of learning about a new emerging infectious disease such as FIP and to end their career with finding a cure. FIP was first reported in the late 1950s and there is no evidence that it existed much before that time. Therefore, FIP in cats is much like COVID-19 in people, and the fact that they are both caused by a coronavirus, should not go unnoticed. Hopefully, it will not take COVID-19 researchers 50 years to understand SARS-CoV-2 infection and to find a cure. I am happy with my career and my contributions to feline health on many fronts besides FIP, but FIP has always been the worthy adversary that has captured my attention. There is still much more to learn, and I hope that a younger generation will continue to study this fascinating disease. -Niels C. Pedersen, January 31, 2021