

lake as our “summer” home. My parents bought the farmstead from a couple of old Norwegian bachelor brothers (don’t ask about the condition of the house!) and it lacked indoor plumbing and heat other than a Franklin wood stove in the “parlor” that didn’t really heat the bedrooms upstairs very well. We stayed in the farmhouse in the summers when my dad was on his yearly break from classes. He was a history teacher at the then called MSC – Moorhead State College – and our summer house was about 45 miles east of town. It provided a great escape from the hot and humid summers in Moorhead.

Unfortunately, the leaches in the lake were so numerous that we had to wear old tennis shoes when we went to swim and bring a large container of Morten’s salt with us down to the dock to get them off our legs and feet! The salt would make the leaches curl up and drop off. Kids today would never put up with that! Across the lake from our farmstead was a pasture and on that pasture were commercial turkeys – the original Free Range. Their manure helped to fertilize that muddy little lake and fed the leaches and who knows what else, but we didn’t think twice about that because the weather was hot and the water was cool. I remember going across the lake in a small rowboat with my dad and siblings and seeing all those turkeys come running down to the shoreline to get a good look at us. I felt like those turkeys were staring at ME! Little did I know what was going to unfold in my life later on.

College Years

I finished high school then went on to get a BS in Biology. Most of my classes were taken at North Dakota State University, but I actually graduated from the University of Alaska – Fairbanks which unintentionally facilitated my admission to veterinary school in Colorado due to the Western Interstate Commission on Higher Education (WICHE) program that allocated two seats a year to Alaskan residents for veterinary and medical schools. While I was at NDSU, I worked part-time in the lab of Dr. Ithel Schipper, DVM, PHD, a veterinarian who had graduated from the University of Minnesota in 1951 and was in charge of the North Dakota State Veterinary Diagnostic Lab by the time I was there in the late 1970’s. I LOVED working in that lab learning how to properly wash glassware, make media, clean and stuff pipettes with cotton, isolate viruses using tissue culture, and just generally assisting in keeping the lab clean and supplied. This was before the days of pre-made media and disposable everything else. I remember sitting at a long, black-topped lab bench one evening in the dark of winter after everybody had gone home and thinking “I want a lab just like this when I grow up!” That was the formative moment when I decided I needed to get the same credentials as dear old Dr. Schipper.

Well, as often happens, a romantic interest got in my way and I ended up getting married, driving the ALCAN highway (from Fargo, ND, to Fairbanks, AK) in a pick-up truck with a home-made camper on the bed and pulling a home-made utility trailer loaded with our worldly possessions along with a canoe, bicycles, extra tires, headlamps, chains, and shovels – everything you need to survive the rough gravel “highway” that goes 1,300 miles through the wilderness of Canada. We must have looked like Ma and Pa Clampett! Fortunately, being cheechakos (naïve, ignorant newbies), we lucked out by starting the trip *before* “break-up” in the spring while the roads were still snow-covered and frozen. The ALCAN highway after break-up is the stuff of nightmares – knee deep slippery mud, deep ruts, flying gravel that breaks headlights, and just generally miserable to drive!

Colorado State University – Veterinary School

After completing my bachelor’s degree at the University of Alaska – Fairbanks in 1982, I was accepted into veterinary school in Colorado. Being a horse lover, I thought I would go into equine practice and took extra rotations in equine reproduction and anesthesia, but that career focus ended up being only a very expensive hobby! The first job I was able to get back in Alaska was as a small animal veterinarian in an AAHA-approved practice north of Anchorage. The owner, Dr. James Leach, was the Chief

Veterinarian for the Iditarod Dog Sled race which sounded GREAT, except HE went to the races and I was left at home with the technicians and support staff listening to the great race on the “bush radio.” Oh well, it was a wonderful experience anyway.

University of Minnesota – PhD Veterinary Microbiology

Unfortunately, a few personal tragedies intervened and I found myself relocating back to Fargo, ND, in mid-winter to stay with my mom. My older daughter, Sophie, was only 4 months old and I was suddenly an unemployed single parent with a whole lot of student loan debt. I scanned the JAVMA magazine every month looking at the job postings and eventually I saw one that took me back, in spirit, to Dr. Schipper’s lab those many years ago. Dr. Dave Halvorson was looking for a DVM graduate student to work in his lab while completing a PhD in Veterinary Microbiology. I had a phone interview with him and the most memorable question he asked me was - did I mind working with turkeys? I replied that I had worked with quite a few turkeys before, the human kind, and didn’t think this would be a problem! Honestly, I’d never seen a turkey close up at this point so it was a blind jump into the unknown! I moved to St. Paul with Sophie in the fall of 1989 and started another four years of grad school working in a research area that would prove to be career defining for me – Avian Influenza.

At that time, turkeys were all raised on range in Minnesota and were subject to repeated low path Avian Influenza infections. It became such a persistent problem that the industry eventually gave up range production and moved the birds indoors for their entire lifespan. I’m grateful to the Minnesota Turkey Grower’s Association for funding my research and have tried to maintain a connection with the Minnesota turkey industry in spite of the fact that I went to the “dark side” – broilers – and have never worked directly for them.

I was blessed to work with some of the smartest people in the AI world – Drs. David Swayne, Dick Slemons, Max Brugh, Charlie Beard, Viathianathan Sivanandan (Siva), and, of course, Dave Halvorson. They were wonderful mentors and colleagues and I really appreciate them taking me under their “wing”, so to speak.

Career Progression

Solvay Animal Health

After completing my graduate degree, I was hired by Dr. Bruce Stewart Brown at Solvay Animal Health in Mendota Heights, MN. I was thrown like a baby into the bathwater by being asked to deliver poultry disease lectures at two of their famous Solvay Chicken Schools and one Turkey School at their production facility in Charles City, IA. Remember - I hadn’t raised poultry, other than a disastrous flock of broilers my parents inadvisably raised and home butchered while I was in my teens, didn’t complete an MAM, and hadn’t studied any poultry diseases other than AI! I remember sitting in a café in Charles City the morning before my first “class” and nearly having an anxiety attack thinking about what was coming! Fortunately, nobody threw rotten eggs at me and we all had a fun time eating delicious thick Iowa pork chops, drinking beer, and playing pool once the first day was behind us. Salsbury Labs started offering those schools in the late 1920’s and eventually put on over 400 of them. They were especially important for training young service personnel and farmers back in the day and are still remembered fondly.

Perdue Farms

After being with Solvay for a few years as a Technical Services Veterinarian, I was called out of the blue at the end of a work day and asked if I wanted to join Dr. Mark Dekich, Perdue Farms, as their Health Services Research Laboratory Director in Salisbury, MD. If you grew up in the Midwest, you knew that

the East Coast was BAD – too many people, too urban, too scary, too mean (coming from the state whose residents are labeled with the nickname Minnesota Nice)! Well, it turned out that the Eastern Shore (aka the DelMarVa peninsula) was *very* rural in the early 1990's and the people were very nice as well. Not many big box stores or chain restaurants, just lots and lots of chicken farms! People used to say you could walk across DelMarVa on the rooftops they were so close together!

I owe Dr. Dekich a lifetime of gratitude for being an unwavering mentor and champion for me my entire career. He is responsible for getting me initiated into the world of commercial poultry disease management and pushed me to participate in organized veterinary medicine by naming me to industry committees for organizations such as the Delmarva Poultry Industry (DPI) and AAAP before I had a clue what I was doing. Nothing like learning on the job! Thank you, Mark!

The Health Services Research Lab team at Perdue had better research facilities than most universities and we were able to complete nearly 50 poultry health trials of various kinds each year looking for solutions for diseases ranging from Infectious Bursal Disease and Marek's Disease to *Salmonella* control. We had the luxury of having our own Horsfall-Bauer isolation units, colony houses on research farms, and could effectively implement paired house farm trials, week-on week-off trials, and eventually roll out health solutions across the complexes.

Very virulent Marek's Disease (vvMDV) was a big problem in the early 1990's with processing plant condemnation of carcasses often affecting 50% of infected flocks. There were huge concerns that the virus was going to evolve to the point that the Rispin's vaccine would no longer protect against it. Many anguished meetings were held on this topic and we all looked to our U.S. Marek's Disease specialist, Dr. Ton Schat, Cornell University, for guidance on what actions could we possibly take to stop this virus from spreading.

At Perdue, we did a large number of trials looking at vaccination strategies to control Marek's using the notorious "Alabama Red Leg" field isolate as the challenge strain. This particular strain not only caused skin and visceral tumors, but also had a characteristic effect of the shanks causing them to turn red. It was highly pathogenic for broilers. Fortunately for all of us, these Marek's strains have appeared to largely died out and the currently available vaccines have effectively controlled the disease since then. I've always been of the view that these epizootics (and pandemics as well) have a life cycle of their own and, often, we just ride the tide thinking we are controlling them because they nearly all go away on their own at some point!

Wampler Foods

I spent nearly three years working for Perdue before being offered the position of Director of Chicken Veterinary Services with Wampler Foods in the beautiful Shenandoah Valley of Virginia in 1997. I had remarried and had another 4-month old baby, Jenny, so we pulled up stakes and moved to Harrisonburg, VA. I worked for Mr. Walt Shafer there for eight years during which the company was sold to Pilgrim's Pride and the Valley experienced the worst outbreak of Avian Influenza in commercial poultry since the big HPAI Pennsylvania outbreak in 1983. We were now nearly 20 years out from that outbreak and had to dust off the typewritten Emergency Disease Management manuals stuffed in the company lab bookcases and scramble to get this disease under control.

The USDA-APHIS came in and set up the first Incident Command structure for animal disease control. They modeled their program on one used by the Department of the Interior for fighting wildfires. They set up their Incident Command Center in a vacant building in Harrisonburg and we spent the next four months meeting every morning at 6:30 am to find out which farms had tested positive, which ones

were on the depopulation schedule, and which ones were under-going “barrel” testing – a process implemented by APHIS whereby the farmer would bring the nightly mortality down to the end of their driveway and put them in a galvanized trash can. APHIS organized teams of barrel testers who would drive out to the farms and swab the dead birds for AI testing. Because of the massive size of this outbreak, the State of Virginia had to bring military personnel in to help process samples at the diagnostic lab! In 2002, we did not have commercially available PCR, had not worked out acceptable ways to do mass euthanasia, and did not have approved procedures for disposing of the dead birds.

At the time, Virginia was ranked 5th in turkey production, 9th in broiler production, and 31st in egg production. All of the turkey production was in the Shenandoah Valley and the majority of the broiler production extended up and down the Valley as well as into eastern West Virginia. In total 56M turkeys and chickens from over 1,000 farms were infected. An estimated 4.7M birds were depopulated, 78% of which were turkeys. The economic cost has been estimated to exceed \$130 million dollars.

Needless to say, it was a very stressful experience for all and I feel permanently bonded to many people, especially Drs. Marion Garcia, formerly Pilgrim’s Pride turkeys, Dan Karunakaran, formerly Cargill turkeys, and Rick Sharpton, Perdue Farms, all production veterinarians. Dr. Bruce Akey was the Director of the Virginia Diagnostic Lab system and was extremely helpful with making sure we had accurate test results ensuring uninfected flocks would not be depopulated unnecessarily. Mr. Hobey Bauhan, Virginia Poultry Federation, was instrumental in handling the public communications and facilitating the political negotiations needed to obtain indemnification funds from APHIS. At this time, none of the current H5/H7 LPAI programs existed and APHIS was unprepared to compensate growers and companies for the loss of birds due to low path avian influenza. Many more people working in live production for Cargill turkey, Pilgrim’s Pride chicken and turkey divisions, and Tyson chicken were also instrumental in getting this outbreak stamped out. We were very fortunate to not lose the entire industry to this disease.

US Poultry & Egg Association

Eventually, Pilgrim’s relocated the corporate level jobs out of the Valley to their headquarters in Pittsburgh, TX. I wasn’t all that interested in moving there so I accepted a new position in Atlanta as the Vice President of Food Safety & Productions Programs with the US Poultry & Egg Association working for Mr. Don Dalton in 2004.

Everything was going beautifully, we loved being in Georgia, and my older daughter had finished high school and was starting college at Georgia State University in the fall. We were living the good life in the Georgia pines when, unexpectedly, that old friend Avian Influenza showed up as a HPAI problem in Europe. It originated in China around 1996 and was now on the move in migratory wild waterfowl heading west to Eastern and Western Europe. FAO and WHO were very concerned that this strain of HPAI would evolve into a worldwide pandemic on the order of the 1917 Spanish Flu outbreak.

U.S Agency for International Development

I received a call from a non-governmental organization that was a contractor to the U.S. Agency for International Development asking me if I would be willing to travel to Yerevan, Armenia, to help them prepare for a potential influenza pandemic. The first human fatality due to AI outside of Asia had occurred in a nearby city in Turkey and was within 50 miles of the Armenian capital. This started the next chapter of my career which led me to resigning my position at USPOULTRY and to start working as a contract Senior Technical Advisor for USAID in their Avian and Pandemic Influenza Preparedness and Response Unit out of their Washington, DC, offices. Our team represented the United States Department

of State and USAID in the multi-national efforts to combat the potential Bird Flu pandemic. In a 16-month period between November 2006 and May 2007, I participated in 15 USAID-funded missions to nine countries providing HPAI preparedness and response assessments, training, and aided in the programming of USAID and other donor (such as World Bank, FAO, and WHO) HPAI funds in close cooperation with host government's Ministries of Agriculture and Health in developing and recovering economy (former Soviet Union) countries in Europe and Eurasia. I saw a whole lot of poultry production in parts of the world that I'd never imagined going to before!

I had several poultry industry colleagues who were also part of this effort, namely, Drs. Dan Karunakarn, Andrea Miles, and Armando Mirande. Initially, none of us knew the others were also participating in this effort so imagine the surprise when we ran into each other on the other side of the planet! Dr. Dan still talks about stumbling into me at a restaurant in Armenia smoking a cigar (which I hereby neither confirm nor deny)! Fortunately, the Bird Flu epizootic never did escalate into the much feared global pandemic and our efforts at educating the Ministries of Health and Agriculture and poultry veterinarians in the countries at risk were completed – Mission accomplished, at least for now!

Mountaire Farms

I always tell this story with a chuckle. Dr. Don Ritter, Mountaire Farms, called, unexpectedly of course, asking if I would meet him for lunch at the upcoming IPPE in Atlanta. I had known Don for years, but had never been asked out to lunch by him before so my antennae went up – what was he up to? Long story short, I accepted the position of Director of Food Safety and Quality Assurance for Mountaire Farms and moved back to the Eastern Shore almost exactly ten years after I left for the Valley!

You may wonder how I ended up in QA in the processing plants after being a live production vet for over ten years, but I have to blame Walt Shafer, Wampler, for pushing me into the plants to brace the USDA inspectors on air sacculitis condemnation! I think it's safe to say that most live production personnel, including vets, have a healthy fear of the processing plant – too many people, too many USDA rules and regulations, too big, too noisy, etc. I felt the same way, terrified that I was out of my element and had absolutely NO idea how I was going to win any arguments with the government's inspectors. Well, one thing led to another and as the USDA-FSIS *Pathogen Reduction; Hazard Analysis and Critical Control Point (HACCP)* Final Rule was being implemented in poultry processing after its publication in 1996, it became apparent that the plant personnel needed help in writing the programs and procedures required for compliance to the new regulations. At that time, I also managed the company's microbiology laboratory in Broadway, VA, so I started my journey into the complex world of pathogen control, especially *Salmonella*, in the poultry processing plant environment.

I had worked on several live side *Salmonella* projects while at Perdue Farms in the early 1990's, but not at the plant level. Dr. Carita Schneitz, Orion Corp from Finland, was a frequent visiting scientist in our lab. She was one of Dr. Nurmi's (originator of the Nurmi Principle) graduate students and came to help us commercialize the first competitive exclusion products designed to prevent *Salmonella* colonization of the naïve intestine of newly hatched chicks. Unfortunately, the products that worked the best, namely Broilact, from Finland, and AviGuard, Bayer Animal Health, were eventually denied FDA approval due to concerns about the products containing undefined antimicrobial resistance determinants. Perhaps these products will be given a fresh look now that we have better microgenomic technologies available.

I have to thank the various leaders of our trade associations, the National Chicken Council and the National Turkey Federation, for their unfailing support, encouragement, and, especially, patience as we all digested the magnitude of the changes this regulation brought to our daily lives. We all spent many

hours in meetings in D.C. negotiating with regulators on this issue as well as with the FDA on the antimicrobial resistance issues related to *Campylobacter* and fluoroquinolones antibiotics. We were beginning to lose our bacterial control tools one by one which has ultimately resulted in over 50% of the U.S. broiler industry now being produced without the use of antibiotics. In addition, concerns about Animal Welfare started to gain traction and the industry had to make a big shift in their thinking in regard to poultry rearing, euthanasia, and slaughter practices. It has been a very busy couple of decades!

I spent eight wonderful years with Mountaire working with a superb team of quality assurance managers, supervisors, and QA technicians along with a fully supportive executive and live production team. Dr. Don Ritter made me laugh when times were tough and I'll always be grateful to him for his support and encouragement!

Ingham's Group Ltd

Of course, that was not to be the end of the story for me. One day, unexpectedly again, I received an email from a global executive recruiting company looking for someone to fill the role of Director of Technical Services for the largest poultry company in Australia/New Zealand. Honestly, I was very happy and settled where I was – living as an empty nester in a beach community in Delaware and working with people I really enjoyed, but... The call of the wild got to me and I agreed to relocate all the way to the other side of the world to work for a company called Ingham's Group Ltd. They had been purchased by a private equity firm a few years before and were in the process of doing a "management reset" with plans to list it on the stock market within 2 years. Well, that was a mind-blowing experience in a multitude of ways – I had to learn to speak a new language ("Ozzie"), eat strange foods, drive on the wrong side of the road in a major urban area (Sydney), and navigate a business environment that was very British, but not very American! The experience was life changing and I made several lifelong friends "Down Under" through taking advantage of the opportunity to learn to sail and to refresh my scuba diving certificate (diving on the Great Barrier Reef is a must do on anyone's bucket list!). It broadened my understanding of poultry production, sales, and more European-style customer expectations immensely and gave me an in-depth appreciation of the complexity of working in a totally different culture. Fortunately, the language barrier was overcome fairly quickly and I even became adept at using some Australian slang!

American Association of Avian Pathologists (AAAP) Service

I joined the AAAP as a graduate student in 1993 and have maintained my membership since then, nearly 30 years. In the period between 1998 and 2005, I was a member of the board of directors in various roles starting with a Director-At-Large position and culminating in being elected as the first female president of the association in 2003 - 2004. As you may be aware, participating on the AAAP board requires a significant investment in time and effort since the board meetings typically run for several days during the AAAP annual meetings, but it is definitely worth the effort. The organization was being run by Dr. Robert Eckroade during that time and we always had a myriad of diverse issues to address and propose solutions for. During this time, I was also active on several committees with the AVMA including the *Steering Committee on Antimicrobial Resistance*, *Clinical Practitioner's Advisory Committee*, and the *Food Safety Advisory Committee*. I learned a tremendous amount about our organization and the AVMA as a whole and am grateful to have been given the opportunity to have a voice in both.

Food Safety Risk Management Consulting LLC

After two years abroad, I returned home to help Mr. Joe Moran at Allen Harim Foods for about a year before I hung out my own shingle and started a consulting practice. I'm now on the downhill side of my

career and can honestly say that it has been the most exciting, challenging, and exhilarating journey, absolutely none of which I could have predicted 30 years ago! I am proud to be a veterinarian in food animal production and am extremely grateful to everyone I've met, worked for, and worked with in the industry, allied industry, and government over these many years. While we didn't always agree, I knew that we all had the same objective in mind – doing the best job we could to safeguard the health and welfare of the birds in our care, produce safe and wholesome poultry products for our customers and consumers, and make a huge impact on reducing poverty and feeding a hungry world. My only career advice to those coming up behind me is to be willing to embrace challenges, get out of your comfort zone, and try new types of roles within our industry. Like the blind men and the elephant, you can start out your career on the trunk and end up on the tail or somewhere in between! There are so many different ways our skill sets can be utilized in addition to being a production veterinarian and all are critical to the success of our industry in the long run. Thanks for reading!

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