

LEGENDS IN UROLOGY

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Legend I am not; honored I am to have been asked to summarize my career in urology for *The Canadian Journal of Urology*, and humbled considering those that have previously done so. Urology is a field that attracts very talented individuals, and I have been the recipient of mentorship by many. Three true legends (Darracott Vaughan, Donald Coffey, Patrick Walsh) had a great impact on my life, my views about patient care, and the opportunities for discovery in academic medicine.

Before residency training in urology, I was blessed with loving parents that emphasized hard work and perseverance as the keys to success, a wonderful wife that provided encouragement and grounding, and a brother in urology who introduced me to the specialty and taught me about patient centered care long before that became a popular phrase. I grew up in a small town of about 8,000 – Lake City, SC – where tobacco was the main economic engine. My father owned a dry-cleaners and my mother was a musician who taught piano and voice, and who was the music director for the Lake City Presbyterian Church. Fortunately for me, in my small neighborhood there were 16 boys of similar age who grew up together, all sharing multiple sets of parents and giving us wonderful guidance during those early years. I learned the value of self-discipline and respect for others while working in a warehouse with my grandfather who bought and sold tobacco. The first day on the job he introduced me to my new bosses, two African American men (Rock and LD) who were very kind, and would teach me about repackaging and reselling tobacco. During middle school, I had an outstanding biology teacher – Mrs. Myers – who exposed me to anatomy by dissection of bull frogs that she caught in the swamp behind her house. I think her influence stimulated my interest in anatomy and physiology that continued into medical school.

My college days were spent at Furman University in Greenville, SC where my grandfather and both of my parents had been educated. However, with average grades, I had to take a detour and enroll in pharmacy school when I was not admitted to medical school on the 1st attempt. After 2 years in pharmacy school, I matriculated to the Medical University of SC in Charleston (MUSC) where I finished 2nd in my class. During medical school, I was interested in all specialties but fascinated by pathology, independently performing autopsies on the weekends and signing the cases out with an attending during the week. Recognizing that I was headed for a career in pathology, my brother William Carter who was training in urology at MUSC, gently suggested that I might miss interacting with patients and talked me into a rotation in urology. Like many who choose urology as a career, I was initially sold by the personalities – William Turner, Stephen Rous, Fletcher Derrick, and the residents in urology.

I decided to spend 2 years in general surgery at the NY Hospital (Cornell Medical Center) so my wife could commute to Philadelphia to get her PhD. I was then planning to train in urology at Washington University. However, during my general surgery training at the NY Hospital, Darracott Vaughan offered me a position in his residency program and I accepted. I was most fortunate to have trained from 1983-1987 with Dr. Vaughan, one of the great educators in urology who shared with me his love for life-long learning and discovery. I spent many a Saturday morning on rounds with Dr. Vaughan answering questions about the renin-angiotensin aldosterone system and adrenal and renal physiology, which was his passion. Even 3 decades after completing residency during a meeting of the American Association of GU Surgeons, Dr. Vaughan presented one of his recent cases at a breakfast table of 5 people, and called on me saying “what’s the diagnosis Bal”. Thankfully I remembered enough about Cushing’s disease to not disappoint him. Dr. Vaughan never stopped teaching, and was the one who encouraged me to pursue a laboratory experience post residency.

With Dr. Vaughan's help, I was awarded an AUA Scholarship to work with Donald Coffey for 2 years in the Brady Urological Institute at Johns Hopkins School of Medicine. Don's lab was an amazing place to be during those years, not just for the opportunity to work with Don, but the number of individuals that I met who shaped my career – John Isaacs, William Isaacs, Evelyn Barrack, Tom Chang, Bill Nelson, Ken Pienta, Rob Getzenberg, Alan Partin, Jonathan Simons; the list is long. I spent my time in the laboratory working on predictors of metastatic potential using the Dunning tumor model, an experience that framed my interactions with future colleagues and collaborators. Listening to Don late into the night discuss my work and that of others, and listening to his lectures both formal and off the cuff that spanned topics from creativity to "Why are the testicles located between the legs", gave me even more determination to continue an academic career. During my fellowship, Patrick Walsh offered me a faculty position which I accepted to begin practice at Hopkins in 1989. To say that Patrick Walsh had an impact on my professional life would be an understatement. His generosity in mentorship truly launched my career in urology. I was also fortunate to have been surrounded by an amazing group of colleagues at Hopkins who were generous in giving advice to a junior faculty colleague – Fray Marshall, Chaz Brendler, Jacek Mostwin, Ray Stutzman, Bob Jeffs and John Gearhart.

The late 1980's, when I began practicing urology, was a time when it was not clear how PSA, transrectal ultrasound, and digital rectal examination could be best used together to identify prostate cancer early. By chance I attended a Dean's lecture by Dr. Leon Gordis from the School of Public Health on Screening for Cancer, and this triggered my interest in prostate cancer screening that persists today. At Pat Walsh's suggestion, I was able to forge a relationship with the Baltimore Longitudinal Study of Aging (BLSA) that lasted for decades and enabled evaluations of the development of prostate disease with age. These collaborations taught me 1) the importance of collecting longitudinal data and carefully annotating outcomes 2) the importance of bio-specimen storage; both would impact my later work in men with low risk prostate cancer. My collaboration with scientist at the BLSA led to the concepts of PSA velocity or rate of change in PSA, mid-life PSA levels as a predictor of prostate cancer 2-3 decades later, lengthening intervals for PSA testing, appropriate ages to begin and discontinue PSA testing, and other studies of risk factors for the development of prostatic enlargement and prostate cancer with age. Of course, this was also a time when radical prostatectomy rates were exponentially increasing among men with low grade prostate cancer identified through PSA testing – another fortuitous opportunity for discovery.

In 1994, Jonathan Epstein published his landmark work on the use of prostate biopsy criteria and PSA density to predict the presence of small volume, low grade prostate cancer at radical prostatectomy. Recognizing that PSA testing was uncovering a substantial number of prostate cancers consistent with what was found at autopsy in most men dying of other causes, and that these men were undergoing radical prostatectomy for cure, we began to use the Epstein criteria in 1995 to enroll men in a longitudinal study of expectant management or surveillance. This work enabled by a dedicated assistant – Patricia Landis – who coordinated the program and continues to do so now for more than 20 years, and that of many at other institutions, led to a reduction in over treatment of prostate cancer and identification of factors predicting the need for later treatment. Perhaps as important, the acceptance and widespread use of surveillance led the US Preventive Services Task Force in May 2018 to change their prior recommendation against PSA screening, and endorse the offer of PSA testing to men age 55-69 years. In a very real sense, active surveillance saved PSA.

My modest contributions to urology, as compared to that of others, would have been impossible without the gift of mentorship from Darracott Vaughan, Donald Coffey, and Patrick Walsh. The opportunities afforded me for collaborative research with urologists, basic scientist, and data scientist; and the immeasurable reward of serving the urologic community by participating in guideline development for prostate cancer screening, and as a Trustee of the American Board of Urology, would not have occurred without their help.

At the risk of sounding valedictory, the most important life lesson that has made all the difference in my career is – listen more than you talk. We are fortunate in urology to be surrounded by so many thoughtful individuals who have dedicated their lives to our profession; listen very carefully especially to those who do not agree with all that you believe. My hope in retirement is to continue to listen and learn from others who have had different experiences than mine, and to seek volunteer opportunities in a southern community where many individuals have not been given the opportunities that I described above.

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