LEGENDS IN UROLOGY

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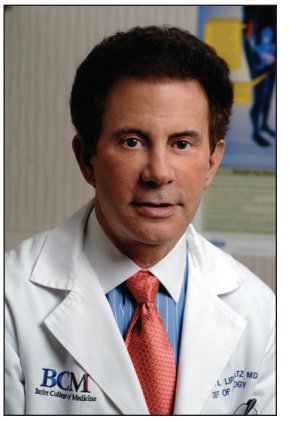

In June of 2021 at Baylor Urology's yearly graduation ceremony, I awarded certificates of completion to two graduating fellows. As we took pictures and exchanged farewells, I could not help but reflect on the many outstanding individuals who had helped me over the years to reach this position where I had the satisfaction and distinct honor of sending forth yet another pair of newly trained "andrologists." The process, in retrospect, seemed to have taken only a moment; yet, in reality, the route was long and circuitous.

The year was 1975. Margaret Thatcher became the first female leader of the British Labor Party, Franco of Spain died, the Vietnam war finally ended, and the American Urological Association decided to embark on a mission to directly fund young clinician-scientists. These new investigators were to be named "AUA Scholars." The hope was that the funding for scholarships would be money well spent, with new investigators generating novel scientific data that could lead to the more rapid application for R01 grants, subsequent earlier funding, and a solid footing for a future in academic medicine.

As a urology resident at the University of Pennsylvania considering a future in academics, I knew that I needed an area of focus. There was very little scientific knowledge at that time regarding male infertility, and only a handful of clinicians even had an interest in the subspecialty. Female infertility, however, was emerging as a new and exciting area of focus. We were still 3 years away from the birth of Louise Brown and a new era of IVF-based reproductive medicine. Oral contraceptives had become available in 1960, and now the gynecological focus had turned to those women who were having difficulty achieving a pregnancy. Dr. Luigi Mastroianni was chairing the program at the University of Pennsylvania in 1969, when I was rotating as an intern on the service. At Grand Rounds I heard his frequent lament: "…if we only had someone to see the male patients!"

The time seemed right to try to establish a Male Fertility Center at the University. Two years later during my research year, I worked on my research projects developing a systematic approach to diagnose male reproductive failure 4 days a week, and spent 1 day a week seeing new male infertility patients. One clinical text was available — *Male Infertility*, First Edition, by Richard Amelar and Lawrence Dubin. I visited with them in New York City as well as with Dr. Sidney Shulman to learn about his focus on antisperm antibodies.[1] Not having a specialist in-house to act as a mentor in the field, I even sought a meeting with Dr. John MacLeod, a legend in the area of male fertility and a pioneer in understanding the basics of the semen analysis and how it defined a fertile male. I took a course from what was then the American Fertility Society (now the American Society for Reproductive Medicine) given in Washington by the very young Drs. Stuart Howards, Patrick Walsh, and Richard Sherins. Of note, I had to pay for my train trip to Washington and the course fee myself! I was developing an insight into what I thought could be a new, exciting, and innovative area of urology and men's health. When I asked Dr. Walsh what specific area of male infertility he thought would be productive for me to study, he counseled that I should "Find a tall tree and climb it!" At that point, my career began to take a new direction. There was a hiatus in my academic career as I was drafted by the Army to replace a partially trained urologist who had resigned. I was at William Beaumont Army Hospital for 2 years, during which I established the first male reproductive laboratory and fertility service in the Army and received an unexpected commendation when I finished.

In early 1974, during my chief year, Dr. Joseph N. Corriere, Jr., the new Chairman of Urology at the fledgling University of Texas Medical School at Houston (UTMSH) and a former faculty mentor and true role model of mine at University of Pennsylvania Urology, contacted me. He suggested that I apply for the new AUA Research Scholar Program and focus on a basic research project in male infertility. He further opined that I should try to work under Dr. Emil Steinberger, who was likewise at the University of Texas at Houston, chairing a unique clinical and research department focused on reproduction. If all went well, I would be an assistant professor in urology and, if accepted by the AUA, concurrently an AUA Scholar under the mentorship of Dr. Steinberger. Fortunately, the following July found me to be the newly appointed first AUA Scholar in the research laboratory of Dr. Steinberger's Department of Reproductive Medicine and Biology. Thus, at the very beginning of my academic career I was being mentored by two very different yet synergistic leaders: Joseph N. Corriere, Jr., MD, and Emil Steinberger, MD, PhD.

In 1977, as the third member of the Division of Urology at the University of Texas at Houston, my chairman, Joseph Corriere (a.k.a. "Joe"), selflessly saw himself as having one primary goal as chairman — to academically advance his young faculty members. He and I had started working together when I was still a college student looking for a summer job. Joe was a urology resident at Penn at the time, and our initial research was focused on using radionuclide-labeled colloid particles to mimic the action of bacteria in pediatric ureteral reflux.[2] This project utilized the prototype of the radionuclide scanner, then under development by Dr. David Kuhl of the University of Pennsylvania and then referred to as proton emission tomography.[3] Joe moved from the University of Pennsylvania to the University of Texas Medical School at Houston when I returned to Penn in 1973 after serving in the military. We literally met for a few hours in Dallas as I headed south and he back to the north. Two years later, after being accepted as an AUA Scholar at Texas, I packed up my family and essentially followed him to Houston. Somewhat ahead of its time in terms of gender "freedom," our early surgical advances focused, among other things, on transgender surgery, and we performed more than 75 operations together.[4]

In addition, Joe came to me one day and said he had scheduled a vasectomy reversal for the next morning and thought that I should carry out the procedure. The following day, having read the only article I could find on the technique, I completed my first vasovasostomy using 3.5-powered loupes and 5-0 sutures. Interestingly, the patient and his wife went on subsequently to have five children, and every Christmas, without fail, I would receive a card with each new offspring in one color and the three original pre-reversal children in a different color — a great beginning in many ways.

When I left the University of Texas in 1981 to become part of Baylor Urology, I had become a full professor in less than 10 years of academic practice — an accomplishment made possible only through the continued support, leadership, and advice of Dr. Corriere. As President of the AUA in 2005, Dr. Corriere presented me with the Hugh Hampton Young Award and was deeply involved in my acceptance into many important urologic societies. He and I graduated the first fellow in male reproductive medicine and surgery in the United States from the University of Texas in 1981 and, working with Dr. Steinberger, helped establish the American Society of Andrology in 1975.

On a parallel track, my basic research while under the directorship of Dr. Steinberger was directly mentored by one of his faculty, Dr. Barbara Sanborn. Dr. Sanborn later became the head of the Department of Biomedical Sciences at Colorado State. She guided me with patience and in her characteristic quiet, yet extremely focused, manner. I knew very little about basic research techniques, so I am sure Dr. Sandborn found my bench training and education challenging. I finished my projects with her with a much clearer understanding of the precision and attention to details so necessary for quality research. Our research focused on looking at unique messengers of Sertoli cell function in humans using testis biopsy specimens with the hope of establishing a translational clinical assay to assess Sertoli cell physiologic integrity.[5]

What happened next is a little known part of my academic history. Near the end of my first year of fellowship, I found a "pink slip" in my school mailbox. Dr. Steinberger was removing himself from being my scientific mentor. He was convinced that I "would never become a serious investigator." In hindsight, I think that what really had happened was that I was not fulfilling the traditional role of a basic research fellow. It was partly my fault — I was too independent. I was becoming clinically more active in reproductive surgery, separating myself by my skill

set from what Dr. Steinberger saw as my scientific mission. Had I waited until my fellowship was completed to become an active clinician, this event in my educational history would never had occurred. Dr. Steinberger and I went our separate ways, a decision that lasted almost 20 years. We were colleagues in the end, each acknowledging the other's unique contributions, and we remained friends.

However, because of Dr. Steinberger's recusal, I was faced in 1976 with an important decision: who would mentor me for my second fellowship year? At the time, Dr. Bert O'Malley's new and soon to be legendary Department of Cell Biology at Baylor was already making bold advances. I spoke to Dr. O'Malley, and he directed me to Dr. Roy Smith, then hard at work investigating his later ground-breaking work on the human progesterone and estrogen receptors. I visited with Dr. Smith, who was intrigued by my work and partnered me with his faculty colleague, Dr. James Norris, who had taught Dr. Smith the finer techniques of cell culture and how to establish primary cultures of cells from fresh tissue specimens. My collaboration with Dr. Norris using his innovative techniques ultimately translated into our developing a human Sertoli cell culture system.[6] The cells we cultured were extracted from Sertoli-cell-enriched, highly estrogenized testes that we removed from transsexual patients — a true melding of clinical innovation and basic research.[7] Interestingly, the data that we generated formed the basis of an R01 grant proposal for which I received funding in 1978, attesting to the AUA's goal of supporting young investigators with sheltered research time. Dr. Smith's postdoctoral fellow, Dr. Dolores Lamb, ultimately succeeded Dr. Smith as Baylor Urology's Director of Clinical Research, and she was ultimately named the Director of the Center for Reproductive Medicine at Baylor. She and I productively nurtured this clinical and basic science partnership for 25 years. We have co-mentored 36 clinical/research fellows, five of whom now hold international department chairs in urology and are among a total of more than 120 fellows that we have trained in our combined program.

If it were not for these giants in their field — Drs. Joseph Corriere, Emil Steinberger, Barbara Sanborn, Roy Smith, and Dolores Lamb to name but a few — I would never have been in an academic position to even be asked to review my personal accomplishments. In thinking about the superb interactive support from which I have so greatly benefited, I now realize that the fellows whom I have helped to train have benefited indirectly yet significantly from those who trained me. My career exemplifies the classic description as stated by Sir Isaac Newton, "If I've seen further than others, it is by standing on the shoulders of giants."

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