

2007 Paul F. Parker Award Speech by Kim L. R. Brouwer

Thank you for this great honor. I am truly humbled, for if I have accomplished anything, it is because of an amazing, loving and gracious God, who bestows on each of us, unique gifts and talents, and guides us purposefully through life, and also because of so many wonderful mentors (such as Paul); teachers (some of those are in the room today); very talented fellows and graduate students with whom I have had the privilege of working; colleagues; friends; most importantly, my parents, who invested so much of their time and talents in me; and last, but not least, my dear husband who has always been there for me, and, along with our 3 wonderful sons, puts up with my crazy schedule and my passion for my career. This is my opportunity to publicly say “thank you”.

The Parker award is, by far, the greatest honor, and the most meaningful award, that I could ever receive, because I have such immense respect for Dr. Parker, and for this residency program. Paul Parker was a true visionary and leader- one of clinical pharmacy’s most influential proponents. But to many of us, Dr. Parker also was a great mentor, someone who taught us so much more than textbook knowledge. It is my greatest privilege to have the opportunity to honor Dr. Parker today by sharing with you some of the *most important things* that he taught me.

I must first tell you that I am not used to speaking in this style. Normally, I have power point slides of the liver, pharmacokinetic models, lots of data, and no notes. And I don’t usually stand behind one of these things, where I can barely be seen! One of the most important things that Dr. Parker taught me during my administrative rotation was: if you are addressing an audience or leading a meeting, make sure you are perfectly clear about the information you want to convey, and know in advance what you want the outcome to be. I can’t tell you how often in recent years I wish that I had been paying more attention during that administrative rotation- but, I definitely got that point! So, the message today is: **“Prepare to be a leader, and plan to have an impact”**. I hope that the next few minutes, rather than being a typical, dry after-lunch address, will challenge each of you to consider thoughtfully what impact you plan to have...in your career, in the pharmacy profession...in life. Time flies, and before you know it, you will have gray hair, or less hair (or maybe no hair at all), and your short term memory won’t be as good, and you’ll have trouble reading the words on the page without your progressive lenses, and your short term memory won’t be as good, and...oh, did I already say that? So, what impact do you plan to have? Time goes really fast- make each day count for the things that really matter!”

As I said previously, when I give a talk, I normally have several schemes depicting the liver and the hepatocytes and transport proteins that move drugs into and out of the liver (P-gp, Mrps, Bcrp, Oatps)- all things that we knew absolutely nothing about when I was a Kentucky resident. Why, we weren’t even sure back then whether there was more than one P450 protein. Drug metabolism scientists had just discovered CYP448; remember the P450 that metabolizes theophylline that we now know as CYP1A2? Back then, we assumed that all drugs passively diffused across the hepatocyte membrane- the term “transport” was something related to a bus or a bike, unless you were watching Star Trek- not a term associated with drug disposition. Think for a minute about how much new knowledge we have gained in such a short period of time. Who could have predicted how rapidly technology, molecular biology and all the “omics” could drive our knowledge about pharmacotherapy forward? You see, knowledge about our world, especially about pharmacotherapy, is changing rapidly. **Lesson #1: To be a leader, and to really have an impact, you not only have to be looking ahead, you have to be ahead.** Paul Parker was a visionary. Look at his writings- he

was talking about the safe and appropriate use of drugs in the late 60's. In 1971, his article in the American Journal of Hospital Pharmacy defined clinical pharmacy services at the Albert B. Chandler Medical Center to include the following:

- All drug orders are reviewed by a pharmacist in the central area- problems are referred to the pharmacist/resident on the floors
- Pharmacists participate on rounds and in patient care conferences
- Pharmacists identify and control drugs brought to the hospital by patients, do medication histories, monitor drug programs (dosage regimens) for individual patients, interact freely with physicians, suggest drug therapy or changes in therapy when appropriate, participate in every cardiac or respiratory arrest emergency, observe drug actions and report reactions, and counsel patients before discharge regarding their medications

These are the same issues we struggle with today- Providing this level of service for all patients in all settings! This was written over 35 years ago- Dr. Parker was not only looking ahead, the Kentucky residency program *was ahead!* Certainly, it was the most highly regarded clinical pharmacy training program in the country, in the world for that matter, and still is! A testimony to this fact is the American Society of Health-System Pharmacists Foundation recognition of the University of Kentucky as the recipient of the 2007 Program Award for Excellence in Residency Training, which we are celebrating at this meeting. The UK residency program continues to attract very talented, highly motivated young pharmacists who want to make a difference in the way pharmacy is practiced. We all are passionate about clinical pharmacy- we want physicians and patients to know what a PharmD can really do! And Paul Parker made the expectation perfectly clear: pharmacists can make unique contributions to the health care team - we are the future leaders in pharmacy, and we not only need to be looking ahead, we have to be ahead!

All R's learn quickly that the unique contributions that pharmacists bring to the health care *team* can only be provided in a setting in which there is cooperation and support. **Lesson #2: We can accomplish much more as a team than as individuals.** Successful clinical pharmacists build collegial relationships with physicians, nurses, pharmacist colleagues (whether they are staff pharmacists or clinical specialists), and other members of the health care team. Creating an environment that fosters and nurtures a team approach, and emphasizes the need to work effectively as a member of the health care team, or an interdisciplinary translational research team, is a challenge for leaders in pharmacy at all levels, whether they are directors of hospital pharmacy, community pharmacy directors, residency program directors, division chairs or deans. I often reflect back on my neurosurgery rotation as a UK resident, and the wonderful, collegial relationship that existed between the neurosurgeons and the clinical pharmacists. The greatest example of the value of a pharmacist's contribution to drug use and to medication therapy management, was right there under the watchful eye of Bob Rapp!

Of course, a real key to the success of building a team is selecting the right starting material. Paul Parker and his team knew that, and they were masters at interviewing and selecting the next class of outstanding residents. I'll never forget some of the questions that John Butler asked me- of course, he would never get away with asking some of those questions today, but he was clearly trying to assess how well-balanced we were- would we crack under the pressure of a code? Would we still be awake for rounds and class after working the 3rd shift in unit dose? Were we team players? We spent a lot of time during the interview interacting socially with the current residents- this is always very informative, for both the program and the applicant. Usually, I learn much more about a candidate during the informal rather than the formal part of the interview process- when they share in a more

impromptu manner their actions and reactions. Of course, this can work both ways. For example, I interviewed in Lexington on the heels of a major snow storm in the winter of 1978. My first introduction to Southern hospitality was when one of the senior residents *carried me* through a snow drift (that was taller than me!) at the Howard Johnson's motel! (Don Letendre R#76, my "big buddy" in the program when I was a first-year resident, and an excellent mentor for me over the years, has subsequently confessed to this gesture of Southern hospitality.) Now that was impressive for a young woman from Portland, Oregon. Oregonians in that era were known for their more liberal thinking, equal rights and equal opportunities for women, which included opening your own doors and figuring out yourself how to get through the snow drifts! My interview at UK was certainly a memorable experience! I left Lexington *feeling* the comradery of a group of individuals who had accepted the challenge of creating change in the way drugs were used and pharmacy was practiced, and I wanted to be a part of that movement in clinical pharmacy! But I was interested in something more. I wanted to be a clinical scientist. Let me share with you part of a letter that I wrote Paul at the time of his retirement in 1984.

"Dear Dr. Parker:

When I first met you while interviewing for the PharmD-Residency program in early 1978, I never dreamed of the impact your guidance would have on my personal and professional development. In those days, I was intent on bridging the gap between clinical pharmacy and the basic sciences, and was convinced that pursuing a combined PharmD-Residency and PhD program in Pharmaceutical Sciences at the University of Kentucky was a first step in that direction. I will always be grateful for the encouragement, support, and enthusiasm you provided in helping to make that combined academic program a success.

You encouraged us, as residents, to be innovative within a creative environment. I believe the freedom to be individual was a great asset to the Kentucky program. Hence, the graduates of your PharmD-Residency program are far from carbon-copies of one another. What resulted is a group of individuals who, in the years to come, will have a broad and diverse impact on pharmacy, pharmaceutical education, as well as all of the health science professions. We will always credit you for your foresight in creating such a flexible residency experience."

Look around this room. We come from different backgrounds, different perspectives, but we share common bonds, an R# (you know the saying, "...once an R, always an R!..."), an understanding of clinical pharmacy practiced at the highest level. But, it is our diverse interests, goals and career paths that have made this program so unique and so remarkable. **Lesson #3: Value diversity.** This is one of the greatest strengths of the Kentucky residency program.

When I interviewed for a faculty position at UNC, the only tenure-track position that was available was in Pharmaceutics. I was focused on developing an NIH-funded clinical research program, and was interested in the potential I saw at Carolina, an incredibly collaborative environment, a "full-service" university with all 5 of the health sciences schools on campus (medicine, pharmacy, dentistry, nursing and public health) in close proximity to the Medical Center and General Clinical Research Center (GCRC). And who at UNC was in the faculty office right next to me? None other than R#7, Dick Kowalsky- yes, the Kentucky mentoring from more senior residents will continue throughout your life! For those of you who don't know Dick Kowalsky, let me share with you a little about your colleague R#7. Dick is a nuclear pharmacist who single-handedly has developed and maintained one of the most highly regarded nuclear pharmacy training programs in the country and authored a leading textbook in the field. Dick and I used to joke that we were Parker's "black sheep"- probably the only 2 R's in the whole lot who ended up as Pharmaceutics faculty. Where had Paul gone astray with us? But Dick and I began to collaborate on site-specific intestinal drug absorption

studies in healthy volunteers, and more recently on clinical studies using his connections in nuclear medicine to evaluate the hepatobiliary disposition of some technetium-labeled imaging agents. That research program, which is funded today by NIH, has served as the foundation for some novel studies that we are just initiating in patients with hepatocellular carcinoma to try and individualize dosage regimens to enhance efficacy and minimize toxicity in this difficult to treat population.

So, it was this appreciation for diversity, which I first recognized during my interview at UK, which really made me want to be a Kentucky resident. At that time, I was a pharmacy student at Oregon State University, and I wanted to be a clinical scientist. After talking with a number of OSU faculty, including Keith Parrott (R#34- my career path is a testimony to the significant influence of the “R” network), I had decided that a combined PharmD/PhD program was the best track for me. But there weren’t any of those training programs in the country. When I talked with faculty members at other Colleges of Pharmacy with highly regarded training programs in clinical pharmacy/pharmacokinetics, they said that they didn’t have this type of combined program, and that I would either need to get one degree or the other. But Paul Parker didn’t tell me that! He knew that the Millis Commission report had proposed the development of training programs for clinical scientists. Dr. Parker believed that clinical scientists were needed to create and develop drug research programs in the medical center environment- it was the precursor of what we define today as translational research programs. He knew, as he wrote in the American Journal of Hospital Pharmacy in 1985, that “if we are to become a clinical profession, then we must have clinical scholars- clinical scholars who can innovate, conceptualize, do research, and publish.” Of course, Kentucky didn’t have a combined program in place either, but Dr. Parker valued diversity, and he and Dr. Kostenbauder, who was Associate Dean for Research and Director of Graduate Studies at the UK College of Pharmacy, were innovators, and proposed the development of a combined doctoral degree program including the 3-year residency component. **Lesson #4: Be innovative!** “Think outside the box”- be creative!

I know that many of you are expecting me to talk today about translational research, the role of the clinical scientist in bridging the gap between clinical pharmacy and the basic sciences, and the development of clinical scientist training programs. As a profession, we have made slow progress in training clinical scientists. It is only recently, with the new Roadmap initiatives at NIH, that translational research (from the bench to bedside, and from the patient to population) has really “caught on”. I am disappointed that it has taken us so long. For many years, we embraced the fellowship model for training clinical scientists, and only a few programs, such as the Kentucky program led by Bob Blouin R#53, my long-time mentor and current Dean, have offered PhD training with a concentration in the Clinical Sciences. Part of the reason for the slow progress is that high quality clinical research training programs require the right environment and the right faculty- only a few programs have the right combination of excellent clinicians and basic science faculty with an established track-record of true, interdisciplinary collaborations necessary to be successful. Training clinical scientists is a delicate balance- too much emphasis on basic research and the clinician may lose the very skills that enable the research to be translated from the bench to the bedside- skills that make the clinical scientist so unique. Too little emphasis on training in mechanistic, hypothesis driven research and the clinical scientist may not be prepared to develop and maintain an investigator-initiated research program. Industry-sponsored clinical trials as a means for clinical scientists to augment their research programs may be a double-edged sword; they consume significant time and effort, the results may not be amenable to publication, and the training may not be appropriate for doctoral dissertation research projects. With the new emphasis on translational research driven by the NIH Clinical Translational Science Awards (CTSA- the morphing of the GCRCs) I am optimistic that established training programs in the clinical sciences, like the Kentucky

and UNC programs, will flourish, and that new programs will emerge to meet additional training needs for clinical scientists. The profession needs a well-trained cadre of clinical scientists to translate to patients the new scientific knowledge that is rapidly emerging. I encourage those of you who share with me a passion in this area to be creative and “think outside the box” as we continue to develop innovative programs.

In the remaining few minutes, there are some other issues that we need to talk about. Let me share more of my letter to Dr. Parker when he retired with you:

“Dr. Parker, you and Addie Catherine made the residents feel like family. That was important for many of us who were far away from our home and families. But more importantly, it established bonds of friendship and comradery with fellow residents (survivors of the program, if you will) that remain invaluable. Indeed, it is this personal quality that distinguishes an advisor from a mentor, and separates a good from an outstanding academic program. In unique ways, you have made an impact on each one of us as former residents, with whom you have spent personal time and effort. For that I am especially grateful!”

I have wonderful memories of social events at the Parker’s home- who could forget Addie Catherine’s fabulous cooking! Paul and Addie Catherine were like surrogate parents to us. Family was very important to them, and they treated us like family. **Lesson #5: Make the time to be an outstanding mentor.**

I met Ken, my husband of 24 years, at the end of my PharmD residency program. Ken, a pharmacist from Michigan, was a first-year graduate student in the PhD program in pharmaceutical sciences at UK. He came to the basement of the Medical Center (Dr. Blouin’s pharmacokinetics laboratory) to introduce himself one day (under the guise of borrowing an internal standard for an HPLC assay). Always remember, internal standards for assays are VERY IMPORTANT! Over the next couple of years, Ken and I came to know Paul and Addie Catherine in a very special way. To make a long story really short, my parents (who had lived in Portland, Oregon for more than 30 years), did not approve of their daughter marrying a graduate student from some foreign country like Holland, Michigan. Paul went above and beyond the “call of duty” as a mentor to try and convince my parents to be supportive of our engagement and planned marriage. Paul and Addie Catherine even invited my parents over for dinner during one of their visits to Lexington, and shared with them some of their own personal challenges as parents, and how difficult it is sometimes to let go, especially if you think your child isn’t making the right choices, or at least the choices that you would like him or her to make. Paul Parker, the Director of the Hospital Pharmacy and of this residency program, took time to really get to know his residents. This wasn’t some superficial relationship where he had the name of your spouse or significant other, and a few key facts about you, on some index card that he pulled out of his pocket just before meeting with you to try and impress you. All the residents were part of the Parker extended family, and if we had some problem, he wanted to know about it- he wanted to be there for us, to provide advice, to help us through the difficult times, and to encourage us. He was the ultimate role model of a real mentor, and I believe that this is one of the qualities that distinguish a good from a truly great program.

After Ken and I completed our training programs and moved to Chapel Hill, we kept in touch with Paul and Addie Catherine through our yearly Christmas letters. Speaking of the Parker’s Christmas letter...every year as I’m scrambling to get myself to Midyear- stuffing my briefcase and bag with recruitment materials and preparing for the Personnel Placement Service, I think of Addie Catherine. She told me that she always completed her Christmas cards in the hotel room at Midyear- while Paul

was off at meetings. Every year I try really hard to get the labels and stamps on the envelopes and the Christmas letter ready to go by Midyear, just like Addie Catherine. Ha! Ha! For those of you that receive our Christmas letter, you know that it usually arrives on Dec 24 (or shortly thereafter)- almost 30 years and I still haven't got it figured out! What we all need is an Addie Catherine at our house, to keep us organized and on schedule, to help with the entertaining, and to cook those delicious meals!! For those of you planning a family and a busy professional career, make sure your spouse shares your ambitions with you. At our house, Ken does almost all the cooking- he is a fabulous cook and really enjoys cooking. We plan the meals together, but I do all the shopping- I like to shop. Play to your strengths. We live in the country, with lots of fruit and fig trees and a garden- Ken takes care of most of the outdoor maintenance- I do the laundry and attend to indoor maintenance. We are a team. Remember Lesson #2: We can accomplish more as a team than as individuals. Paul and Addie Catherine had that all figured out!

Ken and I made a point of stopping to visit Paul and Addie Catherine whenever we were traveling through Lexington. Paul loved to show us his well-tended yard and beautiful orchids that he had blooming in the greenhouse – his retirement gift. He took great pride in those beautiful orchids- all the care and nurturing that they required before they produced such an elegant and striking blossom- it must have reminded him of us inexperienced residents. **I hope that we will all be like those beautiful orchids, blooming in Paul's garden; Paul would want his residents to really stand out and have an impact on our profession and the world around us.** I have pictures of our two oldest sons (the red-heads) on Paul and Addie Catherine's lap the last time we visited with them in August of 1996 (we were celebrating our 13th wedding anniversary)- based on Addie Catherine's red hair and Paul's mischievous look, the 2 of them could easily have been mistaken as the grandparents! Addie Catherine made these really wonderful pickles, and that last afternoon while we were visiting with them, she served us pickles and they shared with us some stories about the Parker family tradition of making bread and butter, and sweet pickles. Somehow, I had never pictured Paul in the kitchen helping can pickles, but it was clear from the discussion that he was experienced at that too! Addie Catherine shared her recipes with us, and every summer since, it has been a tradition in our family to pick, wash and preserve Addie Catherine's pickles. The summer of 1998, when our youngest son was born, I wasn't up to canning pickles, and boy did I hear about that from the boys! **Lesson #6: Make time for family- make special memories and create lasting traditions.**

We live on Kinetic Way in Chapel Hill (well, what did you expect 2 pharmacokineticists to name their street?), and we have 3 wonderful sons, Kirk (16 and planning a career in engineering), Kent (14 who has his sights set on pediatric cardiology), and Kip (who likes anything that flies and claims that he wants to be a pilot) (yes, they are all KRBs). The "boys" as I fondly refer to them, are our pride and joy. Ken couldn't be here to celebrate this honor with me because the boys all sing in the North Carolina Boys Choir, and they had several Christmas concerts this week (Kent is their lead soloist this year). Raising a family, juggling the responsibilities of Division Chair in a unit of 20 faculty and 80+ fellows, graduate students, research and administrative staff, and running an NIH-funded research program makes a 3rd shift in unit dose with a PChem exam at 8 am the next morning look like a piece of cake. Certainly, the Kentucky Residency program was great training for my current life: 20-hr days and little sleep! Seriously, my first semester at UK I was taking some graduate level coursework in addition to the PharmD courses. Physical Chemistry was at 8am, and the PChem teacher, Dr. Butterfield, just loved to call us randomly to the board to work through problems. It never failed! Every time I worked the 3rd shift, Professor Butterfield called me to the blackboard to solve some complicated PChem problem- that's where my morning caffeine/coffee habit developed! One of the most important things that I learned in the UK residency program was how far I could

push myself without going over the edge. One of the most useful lessons was how little sleep I really needed to get by. It's really amazing how much time some people spend sleeping! And then there was Joe Dipiro- he would appear to sleep through pharmacotherapy lectures only to wake up and answer the most difficult question with the right answer. Joe, I was always envious that you figured out how to work and sleep at the same time- must be one of those Dean traits! But why did we subject ourselves to all of that? Because we were passionate about clinical pharmacy, and what we were doing or planning to do for our career, and for the profession.

Lesson #7: Be passionate about what you do, be an expert in your area, be the best that you can be- Aim High! Without passion- you will just be average. And if you don't set ambitious goals, you will surely never reach them. At the same time, you need to be an expert in your field- know your stuff! During my pediatrics rotation at UK, there was a little boy who was admitted to the pediatric ICU. His parents had given him aspirin for a fever. He died of Reye's syndrome- his liver just shut down. In retrospect, that had a big impact on me- how could we know so much, yet so little? What causes drug-associated liver injury, and why couldn't we do a better job predicting who would be susceptible to that sort of reaction? Pharmacokinetics, and how the liver handles drugs, was a natural fit for my research program. I have a passion for this research focus area, because of those real life experiences. It is this passion that drives me to develop practical tools, such as the patented B-CLEAR system, to predict hepatobiliary drug disposition, and to develop methodologies to individualize dosage regimens to enhance efficacy and minimize toxicity in cancer patients. This passion fuels my keen interest in educating the next generation of clinical scientists. In closing, I urge you to have passion for what you do, make a positive impact, and make each day count for what really matters. Paul Parker would have expected that from you, as a Kentucky Resident!