
Legends and Legacies Book Chapters

10-1-2008

Guillermina Lozano, PhD

Guillermina (Gigi) Lozano PhD

The University of Texas MD Anderson Cancer Center

Follow this and additional works at: <https://openworks.mdanderson.org/legendsandlegacieschapters>



Part of the [Oncology Commons](#), and the [Women's Studies Commons](#)

Recommended Citation

Lozano, Guillermina (Gigi) PhD, "Guillermina Lozano, PhD" (2008). *Legends and Legacies Book Chapters*. 14.

<https://openworks.mdanderson.org/legendsandlegacieschapters/14>

This Book is brought to you for free and open access by OpenWorks @ MD Anderson. It has been accepted for inclusion in Legends and Legacies Book Chapters by an authorized administrator of OpenWorks @ MD Anderson. For more information, please contact rml-help@mdanderson.org.

Guillermina Lozano, Ph.D.



**Professor and Chair of Genetics
Mattie Allen Fair Research Chair**



Gigi shows her winning smile at age 1.



Daughter Rebecca enjoyed visiting the Galapagos Islands with Gigi in 2004.



Gigi was happy to see her postdoctoral advisor Arnold Levine, Ph.D., when he attended a conference at M. D. Anderson in 1995.



s a child growing up in a Hispanic family, I never dreamed I would be an academician, much less a scientist. My father was born in Marin, Nuevo Leon, Mexico, and my mother, on a farm in El Porvenir. Neither of my parents had a high school education. They were married in Mexico and moved to East Chicago, where I was born a year later. My father worked in the steel mills, and my mother raised six children. Growing up, I was totally consumed with learning English (I spoke no English when I started school), learning the ways of a new culture, and in general trying to “fit in.” Even then, I knew that I loved learning and loved a challenge.

In grade school, I found science to be the most boring subject I ever took. I thought we spent too much time regurgitating facts, and I hated science projects because I never had any ideas or the materials to put a project together. (In contrast, I thought math was fun, as it was very logical.) However, once I got to high school, my views about science changed completely. Originally, I was to attend the local high school, but, since racial riots were occurring there, my father instead sent my younger sister and me to an outstanding Catholic high school, Bishop Noll. As a sophomore there, I had an amazing biology teacher who opened up a world for me that I had not even known existed. I still remember learning how cells divide and how genes are inherited! The following year, we moved to a nice neighborhood, and again I was scheduled to attend the local high school. Excited about all that I was learning, I wanted to continue at Bishop Noll, but the tuition payments were hard on the family. So, I found a job preparing and cooking food at a local restaurant with the help of a friend and paid my own tuition and transportation so that I could remain at Bishop Noll. As a junior, I had another great teacher in chemistry — and I was hooked! I *knew* then that I wanted to do something in science.

The summer before my senior year of high school, we moved again, this time to McAllen, Texas. My father was losing his eyesight and hearing because of Usher’s syndrome, an inherited autosomal recessive disease, and wanted to be close to his family in Mexico. The schools in south Texas were not as good as in Chicago, and I spent a depressing senior year rehashing a lot of what I had already learned. Even my physics class was easy.

I attended a local college in south Texas, Pan American University, thinking that I was going to be a biology teacher. I had no idea what careers were available for scientists — much less that anyone could actually do research. I was invited to join the honors program, and one of the requirements was to produce an honors thesis, so I began searching for a biology mentor to help me with my research. Although many of my teachers were not enthusiastic about mentoring a student, a new young faculty member, Terry Schultz, took me under his wing. The laboratory

was small but brimming with activity. Dr. Schultz made me aware of other research opportunities, and so I applied and was accepted to the summer research program at the Oak Ridge National Laboratory in the summer of my junior year. That summer, I spent hours in the lab isolating frog embryos and examining the first steps of development. A few months later, I finished my honors thesis and graduated *magna cum laude*.

Even after graduation from college, I still had no reason at that point to think that I would ever be a successful scientist. As the oldest of six children — and a girl — born to immigrant parents from Mexico, I was expected to grow up, get married and have children. Furthermore, I had attended a school few had ever heard of and had not read my first scientific journal until I was a junior in college (and that was only because I went to the UT library in Austin when my parents and I went to pick up my brother, a freshman at UT). After graduation, I bucked my parents' wishes that I stay home in Texas. I remember having a long conversation with my father. I told him that just because he had decided to spend the rest of his life in south Texas didn't mean that I had to do the same. I think it was my thirst to learn, to do research and to see the world that motivated me to take this bold step. I had caught a glimpse of that exciting world, and there was no turning back.

I spent the summer after graduation at the National Institutes of Health in Bethesda, Maryland. I was thrilled! My supervisor, Gabriel Vogeli, chose my application from a table strewn with others because he liked my name. He picked me up at the bus stop in Bethesda, and I stayed with his family for a couple of days until I found a place to live. At the NIH, I interacted with many famous scientists and was always in the lab. Restriction enzymes had just become available, and I ordered my own! I learned molecular biology and was co-author on a manuscript (my first!). These opportunities cemented my love for research.

After that summer at the NIH, I began graduate school at the Oak Ridge National Laboratory. My academic background had not prepared me for the rigors of a graduate program, and I was always playing catch up. On the first day of graduate school, we learned that the graduate program had accepted too many students and could only afford to keep half of us. After that, learning became very competitive. (To this day, I prefer a nurturing environment instead of cut-throat competition.) After that first year of graduate school, I examined my options. I spent another summer at the NIH in the same laboratory and then accepted a job as a research technician at the Max Planck Institute for Biochemistry in Munich, Germany.

This was for me a time of exploring new professional and personal horizons. I got my first passport and then lost my plane ticket and had to call Dad to ask if I could use his credit card to buy another one. (Fortunately, he

said that I could.) I spent two wonderful years in Germany discussing research projects with students, postdoctoral fellows and faculty (everyone wanted to practice their English); editing manuscripts; and learning new techniques. I gained valuable research experience. Importantly, I also pursued my passion for traveling. I traveled Europe with new friends and visited Paris for the first time, Berlin behind the Iron Curtain, and Czechoslovakia (as it was then known). I drank fabulous wines in Bordeaux and walked the streets of Venice and Rome. I hiked and climbed the Alps any chance I could get. Reaching the top of a peak after so much labor to get there is one of life's most rewarding experiences, not unlike a scientist's struggles and achievements in the lab. In between all these adventures, I worked hard and published my first paper as a first author. I had the best boss — Peter Mueller, still a close friend — and he encouraged me to return to school. He was confident that I had the intelligence, drive and skills to obtain a Ph.D. and succeed as a scientist. I was having the time of my life, so returning to graduate school was not an easy decision for me to make. Yet I realized that I really, really liked research and also that creative opportunities for technicians were limited. I had too many ideas of *my own*. I decided to apply to one school, Rutgers University, to work with one person, Bjorn Olsen, in the same area that I had published in, the extracellular matrix. I wanted to spend as little time as possible in graduate school, as I was eager to move forward to the next phase of my life. Three years and two months after starting graduate school, I defended my thesis.

I have many wonderful memories of graduate school. When I presented my findings from studies I had done in Germany at a group meeting, one of the professors thought that I was a new postdoc! I studied with friends and did well in my classes. I even passed my language exam in German. I met a wonderful older couple who became my New Jersey parents and fed me Sunday dinner on a regular basis. I also met my husband, Gregory May, a postdoctoral fellow at the time, in journal club. We were married less than a year after our first date.

Princeton was my next stop. I was surprised to get many offers for a postdoctoral fellowship but finally decided that it would be “cool” to manipulate the DNA of a mouse to understand the biology of oncogenes. So, I accepted a postdoctoral fellowship at Princeton University with Arnold Levine, who was doing research in that area. I had a long commute, but fortunately, my husband Greg was and is a great cook and had dinner ready most nights when I got home. At Princeton, I met many wonderful students, postdoctoral fellows and faculty.

My first few months as a postdoctoral fellow were difficult. I had completely changed fields and was on a steep learning curve. I was learning to manipulate fertilized one-cell mouse embryos and to implant them into

pseudo-pregnant females. I soon realized that the two people I needed to learn from were not talking to each other. Then, a Southern blot of my mouse-tail DNA samples disappeared from my bench. I diplomatically plowed ahead.

By 1987, my husband had already spent four years as a postdoctoral fellow and was ready to move on, whereas I had spent less than two years as a postdoc. His best offer was in Houston. Again, I got offers for postdoctoral positions in Houston but knew that I would be looking for a permanent position as an independent scientist in the near future. Then I learned that the chief of the laboratory I had worked in at the NIH, Benoit de Crombrughe, was moving to Houston as chair of the Department of Molecular Genetics at M. D. Anderson Cancer Center. I met with him and applied for a position. Dr. de Crombrughe was very supportive and initially offered me a 'super' postdoctoral position but since I wanted to write a grant, I asked whether it could be a faculty position instead. I guess I must have impressed him since he offered me an instructor position and promised me promotion to assistant professor after one year. I grabbed the opportunity, and we (my husband and I *and* the mice) moved to Houston.

The hardest and most rewarding thing I have ever done is set up my own laboratory. Independent scientists are not trained to manage people, money and resources, yet that is exactly what we have to do to succeed. One of the first major decisions I made was to fire the first two people who worked for me. One was a technician assigned to me who had no molecular biology experience and had previously worked in a laboratory that allowed her to leave early. I was willing to train her, but she showed no interest in learning molecular biology. The second person, whom I had hired to work with the mice, had 10 years of experience with animals but could not tell the difference between a male and a female mouse. I realized that if my career depended on these two individuals, I would be "sunk." I tried to work with the technician to improve her performance, but it became obvious that she did not want to work with me, and she eventually transferred to another laboratory. I eventually fired the animal technician. Firing someone is never easy, but sometimes it is essential to move forward.

The next major challenge was writing my first grant. I read the NIH instructions 10 times (literally). Then, before submitting the grant, I had other scientists read my first draft and was crushed by their criticisms, although they were warranted. I worked hard to revise the application, and it paid off. The application was funded, and I was off and running.

My new technician, the daughter of an old family friend (the one who got me that first job in Chicago), was fresh out of college and eager to learn. I hired my first postdoctoral fellow from Canada, and a surgical oncology fellow and my first graduate student joined the lab. It was a great research

team, and my ideas started moving forward. Our first major discovery was that the tumor suppressor p53 was a transcription factor. I still remember holding the film in the hallway and thinking, "Wow, I know something that no one else in the world knows!" Three years after setting up the laboratory, we published our first paper in *Science*.

Compared to setting up the laboratory, the rest of my career has been relatively easy. I was tenured and promoted to associate professor. The laboratory grew, and eventually we were all contributing ideas to the research effort. I enjoy being surrounded by smart people and love batting around ideas with my team. The most fun I have is the thrill of discovering something new. I continued to write grants and publish our findings. I was offered the chance to lead a section in Cancer Genetics at M. D. Anderson and jumped at the opportunity to bring in new faculty and create a cohesive program. I have a one-step-at-a-time philosophy. I start small, learn, build, and then steamroll down the hill. Last year, my section became the Department of Cancer Genetics with me at its helm. This year, we merged with the Department of Molecular Genetics and became the Department of Genetics. Now I have been at M. D. Anderson for more than 20 years. I have wonderful colleagues, and I have been given the opportunity to grow.

I sometimes think about why I have been so successful. My scientific curiosity tops the list of reasons. I have always wanted to learn new things; for example, when I read a manuscript, I have hundreds of questions. Also, my mentors (all men) gave me the confidence I needed to go to the next step. I never planned too far ahead because I had no idea what opportunities were available to me, but when an exciting opportunity arose, I was quick to take it. I have been very lucky and have always done my best. And while not all of my decisions have been right, I have always learned from their consequences.

My strong and supportive family is another major reason for my success. My husband, Greg, is also a scientist, and we often discuss ideas on the way home from work or at the dinner table. My daughter, Rebecca, was born while I was an assistant professor, and even though she is now a teenager, she still keeps me sane. If not for her and Greg, I would work non-stop and probably would have burned out by now. Fortunately, both Greg and Rebecca love to travel as much as I do, and we have traveled the world.

I think it is vitally important to have interests outside the laboratory. Besides enjoying my family, I grow orchids and play the piano. It is very rewarding to nurture a plant into full bloom, and it takes much less time than nurturing a graduate student. I learned to play the piano as an adult; it was something that I had always wanted to do as a child, but my family could not afford lessons, let alone a piano. I find playing the piano to be very refreshing because it frees my mind from all other issues. When I play, I must

concentrate very hard on which hand or fingers to use, how hard to press the keys, and whether the notes are connected or staccato. While I am playing, I cannot think about anything else.

Another reason for my success is that I am somewhat competitive. O.K., I am *very* competitive and always have been. When one of my teachers in high school said that boys were smarter than girls, I set out to prove him wrong, and I did — I had the top grade in that class all year. Years later, when I learned that another researcher had already submitted a competing manuscript, a postdoctoral fellow and I wrote and submitted our manuscript in one weekend. Also, I have learned to focus on the important issues, and I try not to get stuck in the mire of every detail. This lesson is important not only in scientific inquiry but also in the administrative realm. Any one of those jobs can be overwhelming. Identifying the most important criteria for success is critical to achieving it. For example, I learned early on that funding and publishing were two essential aspects of my career. They trump everything else I do. I, therefore, spend the most productive hours of my day reading and writing.

I think that to be successful in any endeavor, it is very important to know your strengths and weaknesses and to play to your strengths. I am well organized, a skilled writer and a logical thinker, but I know my weaknesses and I am constantly learning to overcome them. For example, tooting my own horn is not something I do well. I have always thought that my accomplishments would speak for themselves and that everyone would recognize and acknowledge what I have done. However, I have learned that in this busy world I need to remind others of my accomplishments, although I still don't like to do it.

Juggling personal and professional demands is not easy. Fortunately, I have a husband who contributes substantially to the chores at home, including doing the grocery shopping and all the cooking. Most nights, we have dinner as a family and catch up on each other's day. I often take work home with me, and my daughter loves that we are both doing "homework." I try to limit my travel to once a month (though it doesn't always work out that way), and I have become choosy about the meetings I attend and the invitations I accept — I have learned to say no to many. And when I am all stressed out and overwhelmed, I take a deep breath, leave my watch at home, and decide which meetings I can afford to skip and which deadlines are soft ones. Finally, I don't take myself too seriously, and I laugh with friends as often as I can.

