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1. What sparked your interest in science in general and drug delivery in particular?

Since I was a teenager, I was interested in chemistry, and wondered how chemical compounds worked in the body when fighting disease. During my studies towards my degree in Pharmacy, I took Biopharmaceutics and Pharmacokinetics, and I became aware of how little we knew about how drugs move through the body and how they interact with its biological systems. Later, during my Ph.D. studies, I realized how powerful the-at that time-new concept of Drug Delivery could be in terms of improving the efficacy of a treatment. I guess, deep down, I found exciting to be able to create more effective drugs and, thus, improve the quality of life of many people, and, eventually, even save lives.

2. Share a turning point or defining moment you experienced in your work as a scientist.

I can think of two important turning points in my career, both of them during my post-doctoral studies. The first took place when I was working in Paris with Prof. Patrick Couvreur, the second during my stay with Prof. Robert Langer in MIT.

During my Ph.D. studies in Spain, as I worked in solid dispersion systems, I had my doubts about the value of the research I was doing, and even wondered if what I was doing was truly research. Later, I realized that my doctoral work had been, in fact, a rigorous scientific study; however, it had been so systematically organized that it left little room for creativity. Looking back, I understand that, given the extremely low research budget we had in the 80's in Spain, this cautious approach was justified, as researchers could not take risks.

It was, in 1986, during my first post-doctoral position that I was introduced to the nano-drug delivery world by Prof. Couvreur. My research, that included working with immunosuppressed mice in a model that simulated a cancer-suffering situation, seemed to me a worthy contribution to the biomedical sciences. This was a turning point in my career for it was then I realized that I wanted to be a researcher for the rest of my life. I will always be thankful to the contagious passion of Patrick Couvreur. I also thank Nick Peppas, who was in a sabbatical leave at the time in the same lab, for opening my eyes to this exciting world.

During my second post-doc (1991-92) with Prof. Langer in MIT, my excitement about my research was continuous because I learned that I could do whatever I wanted. I gained significant self-confidence being part of a very talented and stimulating research group and I believe my creativity increased as well. Prof. Langer just made it happen. I also

started experiencing the pleasure of communicating sciences. Hence, I was ready to go back to Spain and to start my own lab.

Another critical point on my career was deciding whether to stay in Academia or take a job with a Pharmaceutical company. A job in industry would have been easier at first, not only because back in the 1990s in Spain the financial support was minimal at the University, but also because working in a Pharmaceutical company would have allowed me to move down the translational path more freely. I chose to stay at the University, and don't regret it. Although I had to start from zero, my path to the present has been difficult, but also extremely rewarding.

3. Tell us about the exciting ways in which your particular field is progressing.

My main interest is the design of nanocarriers intended to help macromolecules (proteins, antigens, monoclonals, RNA) to overcome biological barriers using nanotechnology. I find it passionating that these biological drugs are gaining increasing recognition at the clinical level. These drugs are, indeed, very powerful, but they also have important biopharmaceutical problems, i.e. premature degradation, inability to overcome biological barriers, and, hence, they need a safe delivered system. These are the challenges we must address. The advances in biology and chemistry are helping us to identify new targets, new drugs, and also new biomaterials. The possibility of rationally engineer nanocarriers to transport these macromolecules to their targets is very exciting. My lab is devoting significant time to facilitate the transport of antigens, protein drugs, and RNA across the ocular, nasal, and intestinal mucosae. We have also achieved significant advances in the design of new oncological therapies that involve the use of monoclonal antibodies against intracellular targets, as well as the use of RNA molecules to control the activity of tumour associated macrophages. Overall, I find exciting that these new macromolecules and biological drugs are able to treat diseases that were not treatable until now, and I love having the chance to contribute to this success by providing these macromolecules with an adequate delivery strategy.

4. What is the best piece of professional advice you have received and from whom?

I have received useful professional advice from each of my three mentors, Prof. Vila-Jato, Prof. Patrick Couvreur, and Prof. Robert Langer. My favourite piece of advice from Prof. Vila-Jato is, "Do what you are supposed to do now, and you will be able to do what you want later. You need to go into the game rules". Prof. Couvreur advised me, "Try to be different, creative, try to experience the real meaning of science". Finally, the most memorable message I received from Prof. Langer was, "Think big, take risky challenges, think about actual health problems you would like to solve". These three pieces of advice have helped me with different aspects of my work, but what helped me even more was to count with their continuous support and friendship over the years. I believe I was very fortunate when I chose them as mentors. I also want to acknowledge the inspiration and support I have received from many fellow scientists, many of which I met

at the Controlled Release Society (CRS) annual meetings. The CRS has been my professional home, a figurative place where work and friendship coexist.

5. Would you change anything about your career path if you could start over?

During the course of my career, I went through some difficult times when my research data did not fit my premises. These unexpected results undermined my self-confidence. But I think for most people the process of gaining confidence takes time and, although frustrating, undergoing difficult experiences is part of the process.

6. What advice would you give to someone who is starting their scientific career?

I believe working as a researcher is more a passion than a job. I do not believe you need a genetic predisposition to become a scientist, but that it is an acquired profile you gain over time: the more you give to your research, the more you get from it. Having the chance to develop your own ideas, to contribute to the improvement of people's well-being is a wonderful feeling. Obviously, this path does not lack significant and continuous obstacles, but you get used to them. At the beginning of your career, you may think that these obstacles are impossible to overcome, but rest assured that this is not the case. Ambition and determination is all it will take to accomplish your goals.

My path started with enormous difficulties due to the social, cultural and economic situation in Spain in those early years of my carrier (end 80's-90's). I must admit, it is still difficult nowadays due to important economical restrictions. However, as I tell my students, we are supposed to do as much as we can with what we have. If you aim to accomplish a lot, much more than you effectively can, you may end-up doing much more than you imagine. Our work allows us to touch people's lives all around the world and this is really rewarding.

Another advantage I have always found critical about my work is the flexibility of my schedule. This allows me to make compatible my family and personal life, and my work. I do not have to be in my office to be working; I can use my time at work in a quite effective manner; I can share my research experiences with my family. Also the fact that I love my work translates in my being happy, a feeling I can share with my loved ones. Overall, this happiness gives me the harmony I need in my personal and professional life.

7. What do you enjoy doing outside of the lab? What are your hobbies/interests?

As I said before, I do not have to be in my lab to be working. My personal and professional lives are intertwined, because I am passionate about both of them, both of them touch my heart. My work is my hobby. However, I do like to spend time with my family and friends. I do need people around, I need their love, their conversation, and their company. Visiting places around the world or simply hiking and admiring the beauty of nature are activities I enjoy doing with my family. I also enjoy watching movies, listening to music, and reading novels, especially historical novels written by women.