

Interview Dra. Ludmila Cristina Oliveira

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She has a bachelor's degree (2007) in Biological Sciences from the Centro Universitário de Formiga, a master's degree (2009) and a doctorate (2015) in Genetics and Plant Breeding from the Universidade Federal de Lavras, with a sandwich doctorate at the University of Wisconsin-Madison, USA (2013-2014). She did post-doctoral studies at the Federal University of Lavras (2015-2018) and at the Biology Center of the Czech Academy of Sciences, where she is currently a researcher working on plant centromeres.

1. Your trajectory is notable for your ability to stay focused, overcome obstacles and be resilient. Tell us a little about the beginning of your path to becoming an international researcher, from being a commercial worker (something valuable) in the city of Formiga, to graduating with a degree in Biology from UNIFOR/MG. How important was the scientific initiation at UNIFOR/MG at the

start of your career and in your subsequent academic training?

Dr^a. Ludmila: I started my degree at UNIFOR in 2004 and at the same time I started working in the Formiga business to pay for my studies. I'm very grateful to Retran, where I worked for almost four years, for this opportunity. In the last semester of my degree, I realized that doing a scientific initiation would be crucial for me to get started in research and thus prepare me for

a master's degree, which had been in my plans since high school. I had the opportunity to begin a research project with Professor Dr. Pascoal Júnior and working with him in the microbiology laboratory made all the difference to my education. There, I began to visualize what research is and how it is done, to have a better idea of scientific methods and I was able to confirm that this was what I wanted for my professional life.

2. Tell us a little about why you chose an academic journey studying, coordinating and participating in projects involving plant genetics. Tell us about the origin of this interest, and what motivates you to continue studying this field.

Dr^a. Ludmila: My passion for genetics began even before I graduated, when I was still in high school. The first time I had contact with genetics, which was introduced to me by the late professor Antônio Eustáquio (Tacão), I was fascinated. And there, still in high school, I decided that I wanted to specialize in Genetics. I ended up

following the research line of Plant Genetics because I'm very sensitive to the animal cause and it would be very painful for me to work with animals in the laboratory. And also because I was very inspired by Professor Dr. Lília Ribeiro, whose career had been in a Plant Genetics and Improvement program. This even encouraged me to ask for her guidance for my final course work, which was therefore already focused on this area. My greatest motivation for continuing to study Genetics is really my fascination with understanding better all the complexity of what biologically influences so much of who we are.

3. Many UNIFOR/MG students are interested in continuing their academic careers after graduation, but when they encounter the difficulties inherent in doing so, they end up giving up. Tell us briefly about your decision to move to Lavras, to a prestigious university like UFLA. What are the advantages and challenges of leaving Formiga and pursuing high-level

research at master's, doctoral and post-doctoral level?

Dr^a. Ludmila: I focused a lot on UFLA because it offered the course I was interested in, with a prestigious CAPES concept, because it was a university of excellence in general, relatively close to home and where professors who were a reference for me studied, such as the aforementioned Dr. Pascoal and Dr. Lília. I was approved to study for a master's degree on my third attempt. Especially as I wasn't approved straight away, UFLA presented itself as a very viable opportunity. That's because while I wasn't approved, I was able to continue living with my parents in Formiga, teaching dependency subjects at UNIFOR, an opportunity given to me by Professor Lília, and at the same time go to Lavras once a week to take a master's subject as a special student. Later, after failing my second attempt, I decided to move to Lavras, do a full-time internship in the cytogenetics laboratory and take two more subjects as a special student, so that by the time I passed my third attempt, I had already completed

half of the credits needed to complete my master's degree. So I can say that the process can be very arduous and frustrating, but that if it's important to you, it's worth persisting.

4. During your doctorate you had the opportunity, and took advantage of it, to study at the University of Wisconsin - Madison - United States. Tell us about the difficulties of studying and living abroad, studying at a major North American university, also talk about the benefits of this experience, and how you overcame the obstacles of language and culture, in a different country, with an advisor from another background, in short, this cosmopolitan experience.

Dr^a. Ludmila: This was a very exciting part of my career, but it took a lot of courage and determination. I had always dreamed of studying abroad, but I didn't think it was possible. At the beginning of my PhD, my advisor returned from a post-doc at the University of Wisconsin and mentioned the possibility of me doing part of my PhD there. I

could barely speak a sentence of English. I immediately enrolled in a language school and took four courses a semester. It was intense, but I managed to learn enough to feel reasonably confident. I was quite scared of what was ahead of me, but I packed my bags and went. It was a wonderful experience, which enabled me to write a high-quality thesis and opened my eyes to the many possibilities around the world. It really was a turning point in my career. The cultural barrier exists, as do the language obstacles, but in my opinion there are two ways of dealing with it. In the first, you can be tempted to focus on how different everything is from where you came from and let yourself get carried away by melancholy. In the second way, you can focus on how valuable the opportunity is to get to know a new culture, a new way of life, the chance to improve in a language as important as English, among other advantages. Of course, I didn't always succeed, but most of my days there I dealt with everything with the second option in mind.

5. You've been involved in research projects since you were an undergraduate, then in postgraduate studies, you've even coordinated groups, and you're currently involved in a research group. Tell us about the importance of this work and experience, and what the difficulties and advantages of team research are.

Dr^a. Ludmila: Working in a team is not always easy. People have different ways of looking at work and thinking, priorities are often different and there are often disagreements about how to resolve issues and problems that may arise along the way. But teamwork is extremely essential. In research, nobody does anything alone, absolutely nothing. And this reality is becoming increasingly important. Nowadays, the best jobs are those that involve the most diverse types of analysis, and it is impossible for a single person to know how to do everything. Therefore, being able to deal with interpersonal differences is as important as having a good CV.

6. Today you are working in a research center in the Czech Republic, a beautiful and culturally rich country, but not perceived by many as a reference in international research, like the USA, England or France, for example. What led you to Eastern Europe? How did you get to this laboratory? Why did you choose this country? Do you feel fulfilled? Have you experienced any language or cultural barriers, or any kind of prejudice?

Dr^a. Ludmila: My experience in the USA was of fundamental importance for me to get the position I have today because there was a joint project involving the group I was working in, Dr. Jiming Jiang's, and my current working group, Dr. Jiří Macas'. Our collaboration has started ever since. During my first post-doc, I had the opportunity to visit Dr. Jiří's laboratory and take part in a workshop offered by him, when we met in person. A few years later he offered me a postdoctoral position. It's true that the Czech Republic is not perceived as a benchmark in international research, but research in general is extremely

compartmentalized, in my view. This means that the best research groups won't always be in the most developed or internationally recognized countries. Today I can say that I have at my disposal everything I need to do cutting-edge research and that, within my line of research, I work in one of the most prestigious and recognized groups in the world and I feel very fulfilled and honored to have this opportunity. The language barrier is enormous, since the Czech language has Slavic origins and the level of difficulty in learning it is much greater than learning other languages of Latin origin, such as English or French. The cultural and climatic differences are also great, but once again, this can be seen more as a barrier or more as an opportunity to explore new things, which I try to do. And yes, I have suffered from prejudice and xenophobia, which is very difficult. But most of the time I've been respected. So when I put it all on the scale, the good still outweighs the bad!

7. Taking advantage of your work, can you explain a little about your

professional passion for plant centromeres, and also explain what this is in a simplified way for our readers? What is the importance of this type of research? How did a research institute in the Czech Republic get interested in hiring a Brazilian specialist in this field?

Dr^a. Ludmila: The centromere is the region of the chromosomes where the so-called spindle fibers connect to promote their movement during the cell cycle. It is therefore a structure of fundamental importance in the processes of mitosis and meiosis, which are vital for the maintenance and propagation of life. This structure is well known in yeasts, humans and animals in general, but has not been explored much in plants. Since it is so important, there is a great need to increase the knowledge base about it. I think many factors contributed to the institute's interest in hiring me: my background in general, but especially my experience of more than five years at the time (now ten) working in this line of research, our previous collaboration, the good

reputation that plant cytogenetics has in Brazil, and I believe that the fact that they also had good references to me as a person and not just to my work was very decisive. I'm increasingly certain that just as important as a candidate's CV is their ability to work in a group and get on well with others, and that this is very much taken into account when hiring, especially outside Brazil, where there is more freedom when it comes to selecting a candidate.

8. Your curriculum vitae shows that you have published in high-level, high-impact international journals, but many Brazilian researchers find this difficult. Give us suggestions, tips, on how to achieve this goal, after all, these journals are very strict when it comes to selecting articles.

Dr^a. Ludmila: It's very important to keep up with what's being done in the line of research you're working in, to learn and apply the latest technologies. I know this is not an easy task and the process can often be costly. That's also why it's very important to look for partnerships, in different

universities and research centers, that increase the possibilities for better answering the question at the heart of the research. Multidisciplinary is fundamental. And a key issue is to change a mentality that is very common in Brazil, as follows: instead of thinking: "Do I have enough data to publish?", think: "Have I done everything I could do to answer this question in the best possible way?". This takes the focus away from numbers and onto the quality of publications. It would be interesting if the research funding bodies in Brazil, as well as all the calls for proposals that evaluate researchers' CVs, also started to worry more about the quality than the quantity of articles published, which unfortunately is not a reality in my view.

9. The USA, now the Czech Republic, a very rich international experience from a relatively small town in the interior of Minas Gerais, many of our students dream of following a similar path, give us some precious tips from those who must have gone through a lot to get there. What were your biggest difficulties?

What strategies did you use to overcome them?

Dr^a. Ludmila: Some tips: take what you set out to do seriously and do it to the best of your ability; think about the future, reflecting on what you would be happy doing, after all we spend most of our lives at work; study other languages, especially English, it opens many doors; talk to people who have already walked a path similar to the one you want to walk; whatever you want to do professionally, try it, and don't give up if the first door closes. Difficulties will always exist. In my case, it's currently the distance from my family, but the strategy is to always try to focus on the good side of the experience. It's also very important to always put everything on a scale, to recognize and respect your limits. I don't think you always have to insist on a dream, because dreams can also change. Insist as long as the journey is enjoyable and as long as your eyes still sparkle when you imagine the finish line.

10. A question that is often asked in Brazil is whether it is worth dedicating so much to an academic career - it's a lot of study, a lot of challenges and, supposedly, little financial return and little recognition. Do you agree with this view? Does your experience corroborate this perception? Or do you see many achievements in this journey? Leave to our readers a message of encouragement for academic life.

Dr^a. Ludmila: I partially agree. I don't think I've ever lacked recognition, but that's very relative. I think I have recognition from the community that matters to me. But it is a career that requires constant dedication and study. Perhaps it's not the path that offers the greatest financial return, although in most cases you can earn a decent income. But that it's what I love doing, and being in academia is what has enabled me to broaden my knowledge and get to know so many places, cultures, and people. That's the most important thing for me, because if there's anything after this life, the only thing we might take

with us is the knowledge and experiences we've had here. I feel very fulfilled with my career and I'm very proud of it. I think it's important to say that at the beginning, although I already wanted to do a doctorate, I even doubted that I would finish my degree. When I couldn't pass my master's, I even thought that an academic career wasn't for me. I shuddered at the prospect of going to the United States. I thought I would never be fluent in English. When I finished my first post-doctorate, I tried to apply for grants in Brazil, but the government at the time no longer invested in education and research, so I didn't get one. I even managed to get a post-doctorate in China and had my ticket bought to go there, although I was quite scared of the cultural shock, which I knew would be immense. Anyway, there have been many setbacks along the way, but when we face life's challenges, I think we have a lot to gain. At least that's how it was for me. For those of you who are interested in pursuing an academic career and perhaps think: "But I couldn't do all this" or "This isn't for me", know that it's

normal to doubt your own ability and that I didn't always have the confidence that I seem to have today. Try to think that while we're not better than most people, we're not worse either and that if so many people can do it, you can too. And if something you want scares you, go for it with fear, but go for it!