

## **Episode 5: Dr. Huiping Liu on Following Your Passion**

*Host Camilla Frost-Brewer spends time with Alumni Star and translational cancer researcher Huiping Liu, MD, PhD, Associate Professor of Pharmacology and Medicine at Northwestern University Feinberg School of Medicine and Robert H. Lurie Comprehensive Cancer Center. Dr. Liu leads a cross-disciplinary team that uses advanced technologies to investigate the root causes of cancer. In this episode, she shares how a favorite teacher's cancer diagnosis launched her personal mission to cure cancer. She also shares her tips for cultivating a lab culture that prioritizes passion, collaboration, innovation and compassion.*

[INTRO MUSIC]

**[00:00:00.060] - Camilla Frost-Brewer**

Hello, listeners. This is Camilla for our next episode of *Cancer Luminaries* podcast, we are very excited to be joined by Dr. Huiping Liu. So I'm just going to dive right into the questions. If you can please introduce yourself to our listeners, and if you feel comfortable, can you share with us what made you want to become a cancer researcher?

**[00:00:24.300] – Dr. Huiping Liu**

Thank you. I'm Huiping Liu, Associate Professor of Pharmacology and Medicine at Northwestern University, Feinberg School of Medicine, and the Interim Director of the Breast Cancer Research Program at the Northwestern Lurie Comprehensive Cancer Center. I went to medical school when I heard my middle school teacher was diagnosed with leukemia and hoping to save her life. Unfortunately, she died in 1990s, right before the new drug, Gleevec, appeared to the market that could have extended her life. Therefore, I became a cancer researcher, dreaming of curing cancer one day.

**[00:01:05.980] - Camilla Frost-Brewer**

Oh, my gosh. That's really special. That just one person changed your life, essentially.

**[00:01:13.060] - Dr. Huiping Liu**

Yeah, totally.

**[00:01:13.750] - Camilla Frost-Brewer**

I usually don't do this, but can you tell me a little bit about your middle school teacher, what she was like?

**[00:01:19.830] - Dr. Huiping Liu**

She is a role model to all of the students in my class, especially. She was very inspiring, supportive, and then I basically followed her handwriting of the Chinese characters. She was my Chinese teacher, and we were very close to her. She inspired a lot of my career development, especially when I heard her diagnosis in high school, I was desperate to do everything to save her life. I said, Oh, I should go to medical school then. I actually in medical school, she was still sick. Then I actually hoped a new drug was called interferon gamma as a part of the immunotherapy, earliest immunotherapy. Then we managed to tell her and purchase some this drug from a foreign or international supplier, and she got immediately much better. However, it didn't save too much more. Then she died afterwards before a specific leukemic toxin drug developed. I was so disappointed. I said, Being a doctor may not be enough because for a lot of incurable diseases, we need more new drugs. So that's how I decided to pursue a researcher career, being a cancer researcher, hopefully developing new drugs in the future.

**[00:02:54.900] - Camilla Frost-Brewer**

Yeah. Wow. Number one, you are saving lives every day. I think being a doctor is enough. Not that you need me to tell you that, but that's just really special that she did change your life. I wonder, do you stay in contact with anyone else who maybe went to med school who is in your class?

**[00:03:19.460] - Dr. Huiping Liu**

Yeah. Many of my medical school classmates are actually in the hospital treating cancer patients. I got, of course, always inspired by talking to even patient advocates at cancer center. I know this is an urgent demand. There are a lot of patients out there waiting for new drugs to come, and then we hope our teamwork one day can really help save more patients.

**[00:03:47.540] - Camilla Frost-Brewer**

Wow. Thank you. Congratulations on being nominated to be an alumni star for the UChicago Medicine Comprehensive Cancer Center's 50th anniversary seminar series. Can you tell us a little bit when you were at Chicago and in what capacity?

**[00:04:03.800] - Dr. Huiping Liu**

Thank you. Yes. I'm honored to join the University of Chicago Comprehensive Cancer Center's 50th Anniversary Seminar Series. I feel like really coming back home because all of my PhD training, part of my postdoc training, were at University of Chicago. I first came to UChicago as a visiting student in 2000, 24 years ago. Can you believe it? Then I was enrolled to the PhD program in Medical Sciences in 2001, and I joined Dr. Kay Macleod's lab in 2002 and finished my PhD thesis work by 2006. Then I went to Stanford for my post-doc training. The reason I went to a very specific lab on cancer stem cell research was because of when I was assigned to give a lecture on stem cells being a TA to cancer bio one. That was led by Dr. Suzanne Conzen. I really appreciate that task, that TA job. Made me got so inspired by the cancer stem cell work. I thought that was a dream topic I really wanted to work on. I pursued a lab to do postdoc work. After two years, I came back to UChicago because I got a word of the Chicago Fellows program.

**[00:05:37.910] - Dr. Huiping Liu**

I was one of the first three being awarded. So honored to be back in Chicago for finishing my postdoc work with Dr. Geoff Greene. A lot of co-mentors and collaborators I have worked with, including Funmi Olopade, Eileen Dolan, and actually helped me really pursue an independent cancer research career afterwards. And then I spent another four years from 2009 to 2013 to finish my postdoc work before I left UChicago and then started my own lab at Case Western in 2013. That's my journey. I really appreciate it, that training.

**[00:06:25.840] - Camilla Frost-Brewer**

Wow. Yeah. That's really awesome that you did your initial training in the United States at UChicago. And then you went away and you're like, you know what? No, I need to come back. Our last podcast, we actually had Dr. Conzen on. So hopefully you'll be able to give that episode a listen as well.

**[00:06:49.500] - Dr. Huiping Liu**

Yeah. I just saw her name today. It's so exciting.

**[00:06:54.470] - Camilla Frost-Brewer**

So I know you shared at the beginning where you are now. You're at Northwestern. And Feinberg School of Medicine and Lurie Comprehensive Cancer Center. Can you share with us just a little bit about what you do there? I imagine you have your own lab. So just talk to us about what a day looks like for you.

**[00:07:15.030] - Dr. Huiping Liu**

Sure. I'm an associate professor in Department of Pharmacology as well as Department of Medicine and Hematology and Oncology. So I do a lot of translational research, not only just basic science, although my original training was for basic science or cancer research. Now, I actually organize a program, Breast Cancer Research program, in collaboration with many basic scientists, as well as physician scientists, including breast oncologist, breast surgeon, pathologist, and also engineers. I'm so excited about this dream job to me to be able to follow our passion about cancer research and also trying to really identify high impact projects, develop new drugs, understand the disease better so we can actually hope to move the next generation drugs into the clinical side. Then we also take human samples and analyze biomarkers, new drug targets. Then we have this translational research and combining the basic science expertise as well as clinical research expertise to really foster the translational direction and to benefit patient care eventually.

**[00:08:44.090] - Camilla Frost-Brewer**

Yeah. I will be honest, I did not know you did that. I'm curious what it's like to lead a team with such varied expertise. And if you have anyone on the team who maybe does some of the data analysis, data processing, and what is it like to have all those minds coming together?

**[00:09:05.380] - Dr. Huiping Liu**

Right, yeah. It is a great opportunity to bring data scientists as well as the bench scientists and as well as clinical scientists. Collecting big data together is a huge job and requires a lot of complementary expertise. I think the team synergy is important to bring people together and people feel we learn from each other, and then we make our job a lot more efficient way by complementing each other.

**[00:09:39.240] - Camilla Frost-Brewer**

Yeah. I feel like our other guests have shared similar comments that it's so rare nowadays that there are physicians, basic researchers that have every piece of knowledge to go into writing a journal article, for example, making a new discovery. So team science is so critical to moving the needle on cancer research and care.

**[00:10:03.890] - Dr. Huiping Liu**

Right. I agree.

**[00:10:05.920] - Camilla Frost-Brewer**

You shared with us about how University of Chicago provided the groundwork for you to get interested in the stem cell area of research. How did this influence your career trajectory? I know you said you went to Stanford for a specific lab. You came back here. Are there other ways that UChicago influenced what you do now?

**[00:10:30.680] - Dr. Huiping Liu**

Yeah, there are many things, definitely. I learned at UChicago and also benefited my entire career. I want to just highlight a few things. First, I'm extremely grateful for the supportive mentorship by my PhD advisor, Dr. Kay Macleod. She's such a role model for women scientists, and especially for me, and also as a mother of three, there's a lot of work to balance between your career and the life. I became a mother of two in her lab as a PhD student because she's so supportive, not only supportive, but also protective, and then protecting me from getting exposed to any toxic chemicals in the lab. She would ask other lab mates to help me and then protect me. I was just so grateful. As such a supportive mentor, I feel so fortunate. Then she has also been very supporting the career development of women scientists, sending me to conferences and talking to pioneers in the field. I really got so much support. I feel has been really inspiring to me, and it makes me feel it's my job to support the next generation, young scientists, especially women scientists who are coming from the minority background who may not have such opportunities previously.

**[00:12:08.010] - Dr. Huiping Liu**

They can feel supported. That's very essential for a young generation of scientists, especially women scientists, to really grow.

**[00:12:21.510] - Camilla Frost-Brewer**

Yeah, I'm curious, what is some of the work that you do to mentor, help train, educate women, and maybe underrepresented scientists coming up in the field?

**[00:12:34.280] - Dr. Huiping Liu**

I think to support the growth and provide a lot of opportunities, specifically these kind of scientists that are important. I used to go to AACR, and then my mentors, including Kay and also Geoff, when he was my postdoc advisor, they are very supportive, always allowing me or providing the opportunities for me to go to the workshops and also the conferences, especially.

You feel not only inspired because you also feel you are part of the community, and then you can find your collaborators, you can talk to the people who have different ideas. You can actually have innovative discoveries possible from there. Then I think that's very important to have your creative ideas by collaborating with others from different fields, cross-disciplinary research is going to help you. Maybe out of box, you can actually find a new strategy and innovative ideas that really is helpful.

**[00:13:50.520] - Camilla Frost-Brewer**

That's awesome. I believe one of our other guests also talked about the power of imagination and creativity in projects, group papers, team science, however you want to couch it, but the real importance of creativity and what young investigators especially bring to that and how it is critical to nurture that creativity and not stamp it out.

**[00:14:11.830] - Dr. Huiping Liu**

Exactly. Yeah. Innovation is a key or is the key to really pave the road to breakthroughs.

**[00:14:18.750] - Camilla Frost-Brewer**

Are there any key moments or things you learned while you were here that you've carried with you throughout your career, or maybe does it show up in your current position?

**[00:14:28.870] - Dr. Huiping Liu**

Certainly. I have a few things to share. First, I think I appreciate the Chicago Fellows program because it is a semi-independent program supporting postdocs in transition to independent career. I felt that program was really putting me in the mindset to prepare myself for such independent career. And then I was able to get additional funding from DOD and other resources or NIH later on, like a K99. I feel my career was really boosted by the Chicago Fellows program. And then I was able to mentor a subgroup of people in Dr. Geoff Greene's lab. I have a tech, have undergraduate work with me. Then later on, a graduate student was so interested in my work, so she wanted to join my group, too. We had a small group. I really was enjoying the independence and actually directing as a group of people to pursue a scientific curiosity and generating new models and then actually obtaining new discoveries. So it was really helpful for my preparation to independence.

**[00:15:56.020] - Camilla Frost-Brewer**

Yeah, that's such a critical piece of training. I don't work a lot with our basic science departments in general. But my colleague, Dr. Christina Roman, does doing diversity, equity, and inclusion work, and she actually did her PhD here as well. And she talks about this missing bridge for postdocs, specifically, to resources to access funding that is independent of a PI. So it's like, how do I move into understanding how to run my own lab if I don't have any training in that? And how to mentor other scientists.

**[00:16:33.170] - Dr. Huiping Liu**

Yeah, that's a great opportunity. I really appreciate it. I think the training at UChicago is the most important part of my training period, being a PhD student here, being a postdoc here preparing me for an independent faculty job. That was just a perfect setting for me. And that anyone would have dreamed of.

**[00:16:54.380] - Camilla Frost-Brewer**

This is a large question that I'm going to ask, but where do you hope to see cancer research research, care, discoveries, or advancements go in the next 50 years?

**[00:17:05.970] - Dr. Huiping Liu**

That's a great question. I cannot imagine we can prepare that long, but I can try. I hope to see accelerated advances of cancer research, personalized cancer care, and the fundamental discoveries with breakthroughs in technologies such as spatial multiomics, tumor immune interactions, and well-annotated big data and then artificial intelligence, including machine learning and deep learning, that will help facilitate and accelerate the cancer research and then cancer care. And then, ideally, I hope exponential growth in cancer research, care, discoveries, and advancements in technologies will make a real cancer GPS for all of us to navigate a system in much better, efficient or more efficient way than maybe what we have today compared to 50 years later. So if not a continent of the cancer, ChatGPT, I hope it's a real cancer GPS to help us navigate the system, accelerate discoveries, accelerate drug development, and really improve personalized medicine. To monitor the treatment, maximize efficacy, but minimize toxicity and side effects so the patients can really get benefit from this personalized care, but very precision targeted approach, you would imagine, I would think that will be getting close to curing cancer.

**[00:18:52.530] - Camilla Frost-Brewer**

Knock on wood. Wow. That was put so beautifully. And I love this vocabulary of cancer GPS. I think that's a phenomenal way to visualize where we hope to be in 50 years. I mean, if we look at 50 years ago, I'm not going to say it was terrible, but we have come so far. And as technology grows, like you said, exponentially, as our ability to be and stay connected with other people grows, and just as AI, we become more familiar and comfortable with it. I think these are all possible goal posts.

**[00:19:27.840] - Dr. Huiping Liu**

Yeah, I believe so. It will definitely transform a lot of the fields in both research as well as clinical care.

**[00:19:39.270] - Camilla Frost-Brewer**

Absolutely. So my last question is not related to the future, necessarily. But as you've been very successful in your professional career, if you can reflect maybe just for a little bit on how you got to this point, is there anything in your personal life that you would like to share or any advice for young investigators on ways to balance your professional career and your personal life?

**[00:20:06.120] - Dr. Huiping Liu**

Thank you. That's a very important question, especially for young investigators or young scientists to find a good way to maybe enhance the success. I have thought about it briefly. I believe there are a few essential traits or maybe the characteristics can help us succeed. First, I want to highlight passion. Passion is the energy and gas driving us tirelessly to accomplish our goals. Passion is contagious and inspiring. Passion brings a positive and optimistic attitude to the workplace and home. I think passion is really maybe one of the most important, if it's the most important factor in our life and career. Second, I want to really emphasize innovation as we discussed a little bit. Innovation is the key to making ground-breaking discoveries and the paradigm-shifting impact on cancer research and care. Third, I like to highlight the importance of collaboration or team synergy. We have also discussed a little bit, collaboration and team synergies are accelerating the process of cancer discoveries and then complementing the puzzle pieces together for new breakthroughs. Fourth, I want to add compassion. Compassion is critical for understanding the other parties of your team or the other side of any issues you wanted to solve.

**[00:21:52.690] - Dr. Huiping Liu**



A lot of times, conflicts may develop. How do you solve conflicts is also important. So you actually avoid any negative factors in your life and in your career. So I think a lot of times solving conflicts with social, I would say social or EQ that can help you remain in a positive always mood and then moving forward because you need a good social group and then dealing with all the other issues potentially raised in your life or in a workplace. So the capabilities to solve with compassion, I think it's helpful. I learned in a harder way, but I found that that could be useful, especially for different team members. Maybe a group of people are more empowered, other people are not empowered, so each can understand both sides. And actually help each other and then really remain in positive collaborative attitude to move forward. So I think those four things, I think might have been playing a very important role to my personal life and career as well. So I think I wanted to share with the young generations. So not only a compassion, innovation, those collaborative, but also make sure you are in a very positive, supporting environment so can be very cohesive and you feel included.

**[00:23:44.060] - Camilla Frost-Brewer**

I love that. As someone who does diversity, equity, and inclusion work, I think we all could use a little bit more compassion for each other and for ourselves. And maybe this is a call to action to remind folks that you can be the culture maker of your lab, of your office, your unit, whatever. You could be the positive change. And that could make innovation, collaboration, and passion just so much clearer and have just a brighter future. So Dr. Liu, thank you so much for joining us. I really appreciate it, our time together. And I hope you have a great rest of your time.

**[00:24:24.550] - Dr. Huiping Liu**

Thank you so much. I'm so honored to be part of this program.

**[00:24:28.270] - Camilla Frost-Brewer**

Awesome. We'll see you in the next episode.

**[00:24:30.350] - Dr. Huiping Liu**

Thank you.

[OUTRO MUSIC]

[END OF EPISODE]