Meet the Professor

# Professor Wenguo Jiang: my experience and opinion on molecular and cellular mechanisms of cancer invasion and metastasis

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Wen G. Jiang

Professor Wen G. Jiang is from Metastasis & Angiogenesis Research Group Institute of Cardiff University School of Medicine, Cardiff U.K. Professor Jiang now is Professor in Surgery and Tumour Biology, Director for Cardiff University-Peking University Oncology Joint Institute at Cardiff and Academic Director for International Relations, Cardiff University. His team's research interest focuses on the molecular and cellular mechanisms of cancer invasion and metastasis and the clinical implication thereof. The current research theme includes: tumour induced angiogenesis and lymphangiogenesis and intervention, targeting invasion and metastasis inducing molecules, molecular screening and profiling of tumour metastasis related genes, development of new anti-angiogenesis and anti-metastasis agents. Further research interests include molecular and cellular events in tissue repair and wound healing, protein kinases and phosphotases in tissue repair and cancer metastasis.

***TGC: Could you please give us a brief introduction about the cancer research according to your experiences?***

**Professor Jiang:** Thank you for giving me this opportunity. I am going to briefly talk about cancer research in the UK, which is in some ways very different from what happened in China and other countries. Maybe the emphasis is different, which I'm going to briefly introduce in my lecture. It may be reflected by the different cancer incidences between UK and China. For example, both in China and UK, in females, breast cancer is the No. 1 cause of death. But in men, it's very different In UK the No. 1 cancer for the male, is prostate cancer. While in China, it's barely reached top 10. And a good reason to explain this, for example, is to get stomach cancer or gastric cancer. While in UK, in both men and women, it is not reached top 10. But here in China and in Far East in general, the gastric cancer still ranks No. 2 in these regions. So as a result, the emphasis in the UK is very different. I am going to reshow to the audience that before the 1990s, a great emphasis in the UK, in terms of investment, research funding, treatment development, so on and so forth, and more let us focus on breast cancer for many reasons from the early 1990s to the next 20 years, of course, it's almost focused on for prostate cancer and urological cancer. Now, for the last 3 years, the focus has changed dramatically. UK is now going to focus on some cancers that are highly threatening, for example colorectal cancer, lung cancer and pancreatic cancer.

***TGC: What do you think doctors from other countries can learn from your research and experiences?***

**Professor Jiang:** Well. I think this is all global economy and the research is also global. We shouldn't just say others learn from us, and we should learn from each other. I think generally UK is quite advanced in certain areas. For example, it has played a major role in human genetic projects. It has very leading biomedical cancer research, particularly basic cancer research. So in many ways we are collaborating widely with countries such as China, but that's not saying that we are not learning from our Chinese colleagues. We do come here to learn too. Thus, I think UK may be, in some ways, shines on translational and basic research and we do learn from our colleagues in many countries. However, Chinese is escalating very fast in all areas of research, including basic, clinical and translational research.

***TGC: One of your research interests is the molecular and cellular mechanisms of cancer invasion and metastasis; could you give us a brief introduction about this?***

**Professor Jiang:** If you have learnt the last day's conference, you will realise that cancer metastasis is central. I know, Professor Fan talked about early cancer. But eventually everybody can reach a late stage. A late-stage cancer is more or less reflected by cancer metastasis. In fact, it is cancer metastasis that kills almost all the patients. So in many ways, I think, cancer metastasis is really important. But unfortunately, this is in late stage. So sometimes I found that the effort or emphasis on metastasis is not as much as we should put. Maybe sometimes everyone have an event related to what they do in the future. For me, my first paper ever I published in my life was when I worked as a young surgeon in Beida Hospital, Peking University. I think the paper published in 1986 which I looked at why spleen didn't have metastasis. That's amazing, and in many ways has triggered me and my lifetime interests into metastasis research. My team, in the UK, has spent last 20 years working in this area. It's very rewarding. I believe it is very important for our patients.

***TGC: So what's the latest progress in your research? How can we apply it in clinical research?***

**Professor Jiang:** Well, I should declare no conflict research interest. Some of the latest progresses haven't been published yet. So I am going to share with my colleagues here today this study conducted in Cardiff University. We have studied a new Chinese medicine drug, called *Yangzheng Xiaoji* for the past two years. From 1992, I have personally become interested in traditional medicine, herbs and anything. My team and I have been testing a variety of Traditional Chinese Medicine (TCM) and TCM compounds for the past 20 years. About 2 years ago when I had accidently had a chance to be in touch with those herbs, we tested it. It's so interesting. Of course clinical study or evidence was found from Beijing, where there were clinical trials on liver cancer. In the UK and from a neutral and curiosity point of view, we tested the formula in our cancer models. This turned out to be one of the highly effective herbal medicines we have tested. In many ways, we found out it's really affecting the metastasis or metastatic cancer cells.

***TGC: How does the development of molecular and cellular research can help to treat gastrointestinal cancer?***

**Professor Jiang:** For the last 20-odd years, when molecule biology accelerates, in somewhere it is a revolutionary medical research. Think about the technology, biomarkers, and much information in the explosive age, we have found out a lot of targeted methods. Maybe to me, one of the biggest contributions of molecular gastric cancer is diagnosis, because the technology is so sensitive and so powerful and we are able to use some very advanced methods for early detection and also looking for particular targets to devise and personalize medicine.

***TGC: What kind of methods would you recommend for early detection?***

**Professor Jiang:** There are so many methods are currently undergoing research and evaluation. I think, probably, one is cell markers, because they are easy. You can take a drop of blood from patients, and use sensitive molecule biology and specific tumor marker. But this is also challenging. Hence there are many methods now and developments on the trials. So that's maybe the easiest method. And from tumor itself after surgery for example, after biopsy we also can also use the method to detect certain markers, to therapy response, to prognosis and so on.

***TGC: You have studied molecular screening and profiling of cancer and cancer metastasis related genes. Is there any updated progress in this field?***

**Professor Jiang:** Indeed. In fact, I have also studied on molecular screening. When I was much younger, we studied

 

from 1998 in the UK. It's based on a molecular method, with which we were looking for markers or genetic expression patterns, and linked to patients' metastasis, prognosis and mortality, which was very successful. The commercialization of the findings has been challenging, as you know. It always takes a long time. Subsequently, we went on to develop other tests in other tumor types, such as colorectal and gastric cancers. In practice, there are available gene expression based tests, for example the Mammaprint and OncoType-DX that were developed in the Netherlands and California. Expensive though, these type tests do offer tangible benefits to patients

***TGC: What can be expected in the future development of molecular and cellular mechanisms of cancer invasion and metastasis?***

**Professor Jiang:** We always hold high hopes. My hope is maybe in a decade or two that we will be able to deliver some therapies that are not as toxic as those we are having now, like chemotherapy. We will be clearer about the mechanism(s) of cancer invasion and metastasis. We will be able to develop a more specific and less toxic therapy. In fact, there are some good examples like Avastin, an antiangiogenesis drug. It is very beneficial to the patient, with very low side effect. I just hope in next 20 years, more drugs like this but more effective will be developed, focusing on metastasis which will bring a great deal of benefits to our patients at early and late stage of cancer.

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