

## Dr. Yibin Kang: the microenvironment of breast cancer stem cells and metastasis

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October 21, 2017, the 12th Shanghai International Breast Cancer Symposium (SIBCS) successfully ended with wide-range scientific content and different categories. The Symposium started in 2005 and is aimed at providing a nationwide academic platform for breast cancer experts to have further communication.

During the meeting, we were honored to have an interview with Dr. Yibin Kang (*Figure 1*). Dr. Kang has dedicated his career to research about the molecular mechanisms of breast cancer metastasis. As an invited speaker at the symposium, he gave an excellent presentation on the topic “The microenvironment of breast cancer stem cells and metastasis”.

During the interview, Dr. Kang mentioned cancer stem cell is believed to be the root of cancer. Most of breast cancer mortality can be traced back to three major reasons: recurrence, resistant to treatment and metastasis. For all these three processes cancer stem cell is fundamentally important. By understanding how cancer stem cells are controlled or regulated we might develop new ideas about how to more effectively eliminate cancer stem cells and remove the root of cancer.

Dr. Kang mentioned bone metastasis is a major problem for late stage breast cancer patient because clinically it has been documented that over eighty percent of breast cancer patients have skeletal events. Bone metastasis is usually resistant to standard treatments such as radiation or chemotherapy. Dr. Kang’s Lab recently discovered that when we treat the bone metastasis with chemotherapy, the bone microenvironment is also inadvertently altered and changes in a way that make it more fertile for the tumor cell to survive. They have come up with the approach of developing a therapeutic antibody to block that protection effect and make chemotherapy much more effective in treating bone metastasis.

When it comes to work in Princeton University, Dr. Kang said Princeton is one of the leading institutions in the



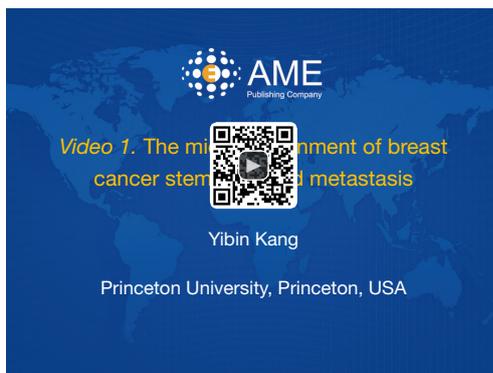
**Figure 1** Dr. Yibin Kang.

U.S. known for its high quality basic science research but this is also the only Ivy school that does not have a medical school. By small size and central focus on basic science, Princeton gives Dr. Kang an ideal environment to interact in a very multidisciplinary way with faculties from other disciplines and make fundamentally innovative discoveries in breast cancer research. Dr. Kang’s group collaborates with many colleagues in clinical cancer research all over the world to translate basic discovery into potential better treatments for breast cancer.

Let’s enjoy the interview video (*Figure 2*).

### Interview questions

- (I) Today your speech is about breast cancer stem cell and metastasis, would you please give us a brief introduction about breast cancer stem cell?
- (II) Looking through the topics this year in Shanghai International Breast Cancer Symposium, which one impresses you most and why?
- (III) We have noticed that, in your high school, you won



**Figure 2** The microenvironment of breast cancer stem cells and metastasis (1).

Available online: <http://www.asvide.com/articles/1888>

the first prize in National High School Chemistry Competition and was member of National Select Team for the 22nd International Chemistry Olympiad, how have your achievements in Chemistry impact your research career in Molecular Biology?

- (IV) Would you like to talk about mechanism of treatment resistance of metastatic breast cancer, such as bone metastasis?
- (V) In your opinion, how would basic research in breast cancer metastasis influence future trends of breast cancer treatment?
- (VI) Princeton University is known for its excellence in basic science research, but it does not have a medical school or cancer center. How do you maintain a highly productive breast cancer research program at Princeton?
- (VII) You are trained a cell biologist and geneticist using viruses a model system during your graduate study at Duke. Why do you become interested in studying breast cancer metastasis?

### Expert's introduction

Dr. Yibin Kang is a Warner-Lambert/Parke-Davis Professor of Molecular Biology at Princeton University. He graduated with a bachelor's degree from Fudan University in Shanghai in 1995. After completing his graduate study at Duke in 2000, Dr. Kang became an Irvington Institute postdoctoral fellow with Dr. Joan Massagué at the Memorial Sloan-

Kettering Cancer Center and pioneered a functional genomic approach to elucidate mechanism of breast cancer metastasis. Dr. Kang joined the faculty of Princeton University as an Assistant Professor of Molecular Biology in 2004. He was promoted to Associate Professor with tenure in 2010 and to Endowed Chair Full Professor in 2012.

Dr. Kang's research focuses on the molecular mechanisms of breast cancer metastasis. Dr. Kang has published over 150 original articles in leading journals including *Cell*, *Cancer Cell*, and *Nature Medicine*. His work discovered new genes that promote recurrence, metastasis and chemoresistance of breast cancer, delineated tumor-stromal interactions that are essential for metastatic growth, and identified novel regulators with dual functions in mammary gland cell fate determination and tumor progression.

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1. Zhang K. The microenvironment of breast cancer stem cells and metastasis. *Asvide* 2017;4:569. Available online:

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