

## **Xionan Zhang**

Xiaonan Zhang completed her bachelor's degree in China and then studied at Chalmers University for her master's degree. Subsequently, Zhang had the opportunity to pursue a PhD at Karolinska Institute, where she stayed until 2015. Following that, she spent over a year in the United States, and eventually returned to Uppsala University, where she is currently employed.

Zhang's interest for science started as early as in high school, where she learned about the intricate workings of biology, which fascinated her. Her interest in science grew further when she encountered cancer through her mother's friend, and witnessed emotional and financial struggles related to illness during hospital internship. Zhang questioned why cancer was different from common illnesses like colds and fevers, and why there was no cure. These experiences ignited a strong desire to understand the mechanisms behind diseases like cancer and find ways to help. As a result, she developed a passion for cancer research and science as a whole.

Before starting work as a researcher in the Department of Immunology, Genetics and Pathology in Uppsala, Xiaonan Zhang had the opportunity to study in the US where she became involved in a group working on ovarian cancer. Prior to that, she had not heard much about ovarian cancer because it is considered rare, and is not as common as other cancer forms. However, as she delved deeper into the subject, she realized the severity and deadliness of this type of cancer. The advanced stages have a survival rate of only around 20%, resulting in an overall five-year survival rate of 50%, which is significantly lower compared to breast cancer. Unlike breast cancer, which has widespread awareness campaigns, ovarian cancer doesn't receive as much attention. Attending ceremonies for ovarian cancer survivors further impacted her as she felt their gratitude for the research and support that helped them beat their disease. This experience motivated her to contribute more to ovarian cancer research and raise awareness about its significance.

The current research project that Zhang is working on, focuses on solid tumors, particularly examining the behavior of cells within these tumors. Solid tumors consist of cells that are either in close proximity to blood vessels, receiving adequate oxygen and nutrients, or cells that are located farther away from blood vessels, experiencing a lack of oxygen and nutrients. The latter type of cells tends to enter a dormant state, reducing their metabolic activity to survive in a nutrition-restricted environment. These dormant cells are often resistant to conventional cancer treatments, as they remain unaffected by typical chemotherapy drugs that primarily target active cells near blood vessels. Consequently, when treatment is halted, these dormant cells can rapidly proliferate, leading to tumor recurrence.

Zhang's research aims to investigate strategies to eliminate these dormant or sleeping cells. Over the course of her PhD and the past decade, she has been studying ways to target and eradicate these cells. By understanding the mechanisms that govern their dormancy and

developing innovative approaches, they hope to enhance treatment efficacy and improve patient outcomes. Ultimately, their goal is to develop strategies that effectively eliminate dormant cancer cells, potentially leading to improved survival rates and better quality of life for cancer patients.

Her motivation to persist in the research stems from personal experiences and a deep curiosity about why cancer cannot be treated in a similar manner as other diseases. From a young age, Zhang has wondered why cancer remains a formidable challenge that cannot be easily addressed like a common cold or allergies, which can be managed with certain medications. She believes that even if the complete eradication of cancer cells is not currently achievable, there should be ways to improve the quality of life for patients and enable them to live with cancer for extended periods. This intrinsic motivation fuels her dedication to finding solutions and enhancing the lives of cancer patients.

One of the main challenges she has encountered is the limited availability of clinical samples for her research. While she primarily conducts experiments using pre-clinical models, obtaining clinical samples from surgeries would allow her to better understand the real tumor environment and align her research with the needs and conditions of patients. Finding ways to obtain these samples and ensuring that her findings can be effectively applied to clinical research and treatment is a significant challenge that she is actively working to overcome in this project.

Xiaonan Zhang has two main hopes for the field of ovarian cancer research. Firstly, she hopes that more efficient diagnostic methods can be developed to detect ovarian cancer at an early stage when it is harder to detect. This would greatly improve patient outcomes and provide better treatment options. Secondly, she hopes that through her research, they can find ways to target and effectively treat the dormant cells in ovarian cancer, in combination with conventional treatments. Ultimately, her dream is for ovarian cancer patients to feel confident and assured, knowing that there are experts, advanced medicines, and effective strategies available to help them overcome this disease. Zhang is grateful for the opportunity to contribute to these goals and pursue her aspirations in this field.

Xionan Zhang was interviewed by Moa Jernberg & Filippa Larsson