# CURRENT POSTGRADUATE STUDENT

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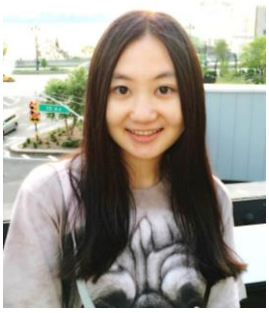
| **SURNAME** | WANG |  |
| **NAME** | Nuozhou Nicki | |
| **PROGRAM** | PhD in Surgery | |
| **DATE OF REGISTRATION** | 1 August 2015 | |
| **SUPERVISOR** | Professor CHEN Gong George | |
| **FIELD OF RESEARCH / INTENDED THESIS TITLE** | ZBP-89 and cancer stem cells in hepatocellular carcinoma | |
| **KEYWORDS FOR RESEARCH** | HCC, cancer stem cells, ZBP89, drug resistance | |

**RESEARCH STUDY:**

Liver cancer is the fifth most common cause of cancer death in the worldwide. It is an aggressive malignancy, with a poor five-year survival rate after diagnosis. Hepatocellular carcinoma (HCC) is one of the major types of primary liver cancer, which comprises more than 70% of liver cancer cases. It occurs more often in developing countries including China due to the prevalence infection of hepatitis B virus (HBV). Moreover, the incidence of HCC is rising throughout the world, including the western countries. Despite accumulated advances in HCC therapy, the high rate of recurrence and tumor heterogeneity remain a huge barrier to the efficient treatment development.

Studies have been shown that incidence of recurrence and tumor heterogeneity can be explained by the function of cancer stem cells (CSCs). CSCs possess the capability of self-renew and are able to generate heterogeneous lineages of cancer cells that form the tumor. Liver CSCs can be enriched by surface markers, including epithelial cell adhesion molecule (EpCAM), CD133, CD13, CD44 and CD90. CSCs are considered to be the initiator of hepatocellular carcinoma and give rise to the metastases, chemotherapy resistance and relapse after surgery. Indeed, the identification of novel HCC CSC-associated pathways and potential therapeutic targets is of paramount importance.

Looking at cancer stem cells, my project will be focused on the regulation of HCC stemness characteristics by transcription factors such as ZBP-89. ZBP-89 (also known as ZNF148, BFCOL1 and

BERF-1) is a Krüppel-type zinc-finger protein with several distinct functional domains. ZBP-89 primarily acts as a transcription factor and binds to GC-rich sequences in gene promoters to either activate or repress various genes involved in cell growth and apoptosis. ZBP-89 was found to be differentially expressed in HCC. The high expression level of ZBP-89 was closely associated with a better survival in HCC patients. ZBP-89 can inhibit HCC via epigenetic upregulation of pro-apoptotic Bak. We believe that there are other mechanisms which may also contribute to its inhibitory effect. Establishment of HCC stable cell lines with ZBP-89 overexpression through lentivirus infection can provide us the approaches to study the influence of ZBP-89 on the formation and maintenance of tumor spheres. Through a series of in vitro and in vivo studies, we aim to reveal the molecular mechanisms of transcription factor-mediated regulation on liver cancer stem cells and its potential to improve the therapeutic effectiveness of sorafenib and 5F in hepatocellular carcinoma.

**CONFERENCE TITLE / ABSTRACT / POSTER:**

N/A