Exploring the mechanisms of metastatic onset for novel treatment strategies

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Curriculum Vitae

Gangyin Zhao (Chinese: 赵刚印) was born in Fuyang, Anhui province, China on June 24, 1992. He completed his secondary education at Xiamen No. 1 High School in 2011 and was subsequently admitted to the Department of Biology within the School of Life Sciences at Yunnan University later that same year. In 2015, after successfully earning his bachelor's degree, he furthered his academic journey by enrolling at the University of Science and Technology of China. There, he pursued his master's degree with a focus on Cytology within the School of Life Sciences. During his time in the Cell Dynamics Laboratory, his research predominantly revolved around cell mitosis and migration. One of his key accomplishments during this period involved employing CRISPR/Cas9 technology to insert various tag-proteins into specific gene sites, facilitating gene labeling at the cellular level. This process allowed for the tracking of dynamic cell mitosis. Additionally, he was involved in the synthesis and purification of human proteins using various systems, such as E. coli and the Bac to Bac plant virus system. His work extended to the investigation of protein structure and kinase dynamics, contributing to a broader understanding of these biological processes. In 2018, he completed his master's study and received his master's degree.

From December 2018 to June 2019, Zhao Gangyin commenced an internship at Beike Biology Company. During this period, he primarily focused on the research and development of Car-T cells. In June 2019, he was awarded a scholarship by the China Scholarship Council (CSC) and subsequently embarked on his Ph.D. journey at Leiden University in the Netherlands, commencing his studies in September. His doctoral research was conducted under the esteemed guidance of Prof. Dr. B. E. Snaar-Jagalska and Prof. Dr. phil. Marianna Kruithof-DeJulio from the University of Bern, within the domain of Cellular Tumor Biology. Throughout his Ph.D. studies, Gangyin's primary research focus was the exploration of various drug treatment options through a comprehensive investigation of the molecular mechanisms associated with tumor cell metastasis. Notably, he forged a productive collaboration with Prof. Dr. Alexander Kros' research group, concentrating on anti-cancer research involving tumor cell-targeted nanoparticles for the delivery of siRNA and mRNA. In addition to his work with Prof. Dr. Alexander Kros, Zhao Gangyin also engaged in collaborative research efforts with Prof. Dr. Sylvestre Bonnet's research group. This collaboration was directed towards the study of the anti-cancer effects of light-activated drugs targeting tumor cells, utilizing zebrafish models. After several years of dedicated research and contributions to the field of Cellular Tumor Biology, Gangyin Zhao completed the work described in this thesis in 2023.

List of Publications

1. **Gangyin Zhao**, Marvin Scheers, Gabriel Forn-Cuni, Pier Pieterszoon Lindenbergh, Jie Yin, Quint van Loosen, L. Passarini, Lanpeng Chen and B. Ewa Snaar-Jagalska. Simultaneous targeting of AMPK and mTOR is a novel therapeutic strategy against prostate cancer. *(Submitted)*

2. Lanpeng Chen[#], **Gangyin Zhao**[#], Marta De Menna, Stefano Coppola, Nick Landman, Sebastiaan Schieven, Arwin Groenewoud, George N. Thalmann, Thomas Schmidt, Marianna Kruithof-de Julio and B. Ewa Snaar-Jagalska. Mechano-signaling axis serves as a key determinant of prostate tumor-initiating cells driving metastasis. (*Preprint available in bioRxiv*)

3. Arwin Groenewoud, Maria-Chiara Gelmi, **Gangyin Zhao**, Jie Yin, Gerda E. M. Lamers, Remco van Doorn, Rob. M. Verdijk, Martine J. Jager, Felix B Enge and B.E Snaar-Jagalska. Melanin enhances metastatic melanoma colonization by inhibiting ferroptosis. (*Submitted*)

4. Jie Yin, **Gangyin Zhao**, Helen Kalirai, Sarah E Coupland, Aart G Jochemsen, Gabriel Forn Cuni, Annemijn P.A. Wierenga, Martine J. Jager, B. Ewa Snaar-Jagalska and Arwin Groenewoud. Zebrafish patient-derived xenograft model as a preclinical platform for Uveal Melanoma drug discovery. (*Pharmaceuticals 2023, 16(4), 598*)

5. Liyan Zhang, Peiyuan Wang, Xuequan Zhou, Ludovic Bretin, Xiaolong Zeng, Yurii Husiev, Ehider A. Polanco, **Gangyin Zhao**, Lukas S. Wijaya, Tarita Biver, Sylvia E. Le Devedec, Wen Sun and Sylvestre Bonnet. A pair of chiral integrin-targeted ruthenium-peptide conjugates as photoactivated anticancer drugs. *(Accepted by Journal of American Chemical)*

6. **Gangyin Zhao**[#], Yubao Cheng[#], Ping Gui, Meiying Cui, Wei Liu, Wenwen Wang, Xueying Wang, Mahboob Ali, Zhen Dou, Liwen Niu, Haiyan Liu, Leonard Anderson, Ke Ruan, Jingjun Hong and Xuebiao Yao. Dynamic acetylation of the kinetochore-associated protein HEC1 ensures accurate microtubule. *journal of biological chemistry 2019, 294(2):576-592*

7. Huijuan Yu, Fengrui Yang, Peng Dong, Shanhui Liao, Wei R Liu, **Gangyin Zhao**, Bo Qin, Zhen Dou, Zhe Liu, Jianye Zang, Jennifer Lippincott-Schwartz, Xing Liu, Xuebiao Yao. NDP52 tunes cortical actin interaction with astral microtubules for accurate spindle orientation. *Cell Research 2019, 29(8): 666-679*