**Lay Description of Important Outcomes**

Research articles published –

Hao Liu, Hui Lyu, Guanmin Jiang, Danyang Chen, Sanbao Ruan, Shuang Liu, Lukun Zhou, Minqiang Yang, Shanshan Zeng, Zhimin He, Hongsheng Wang, Hongsheng Li, Guopei Zheng, and **Bolin Liu.** ALKBH5-mediated m6A demethylation of GLUT4 mRNA promotes glycolysis and resistance to HER2-targeted therapy in breast cancer. ***Cancer Research*** 2022; 82: 3974-3986

Hui Lyu, Fei Shen, Sanbao Ruan, Congcong Tan, Jundong Zhou, Ann D. Thor, and **Bolin Liu.** HER3 functions as an effective therapeutic target in triple negative breast cancer to potentiate the antitumor activity of gefitinib and paclitaxel. ***Cancer Cell International*** 2023; 23: 204

Hao Liu, Sanbao Ruan, Margaret E. Larsen, Congcong Tan, **Bolin Liu\*,** and Hui Lyu\*. Trastuzumab-resistant breast cancer cells-derived tumor xenograft models exhibit distinct sensitivity to lapatinib treatment *in vivo*. ***Biological Procedures Online*** 2023; 25: 19

**Summary of important findings**

Herceptin refractory breast cancer cells maintained their aggressiveness in *in vivo* condition, as the cells grew rapidly into tumors in mouse models.

The levels of IGF-2 in the serum might be able to serve as a biomarker predictive for the sensitivity of HER2-targeted therapy, such as lapatinib and Herceptin.

The tumors generated from different Herceptin refractory breast cancer (SKBR3-pool2 and BT474-HR20) cells showed different responses to lapatinib treatment in mouse experiments.

It seemed that the increased IRS1 levels and activation of Akt played a role in the decreased response of BT474-HR20-tumors to lapatinib *in vivo*.

Our data suggest that the levels of IGF-2 (serum) and IRS1 (tumors) should be closely monitored during the treatment of MBC. The therapeutic methods, which can potently reduce IGF-2 and IRS1 levels, would be very effective to treat MBC.