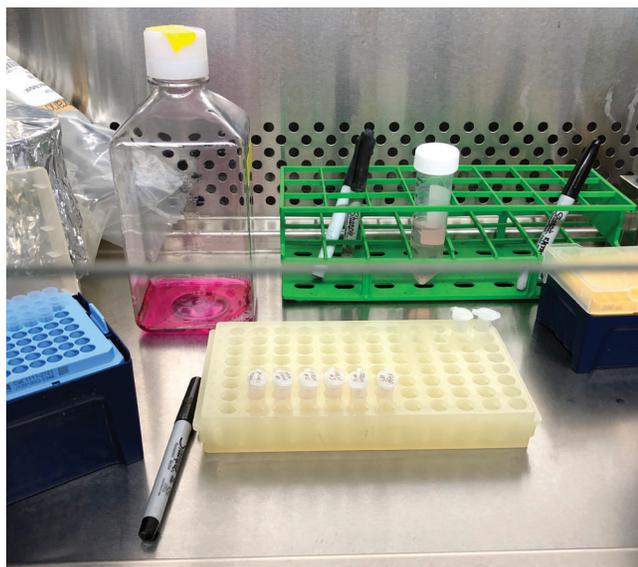


## PHARMACY

### The Effect of Fatty Acid Synthase (FASN) Depletion in Pulmonary Metastatic Formation in Breast Cancer Murine Models

**Student researcher:** Zilin Xianyu, Senior

Recent studies show that the five-year survival rate for women with metastatic (spreading) breast cancer is 28% whereas this number for women with nonmetastatic invasive breast cancer is 90%. Therefore, prevention of metastatic formation can be an effective way to reduce the mortality rate for breast cancer patients. Epithelial-mesenchymal transition (EMT) is a process that supports cancer to spread and is a vital mechanism that has been studied for decades. Through this process, epithelial (less mobile) cells can obtain mesenchymal (migratory) phenotypes to move from its original location to distant organs. Once they reach their destination, mesenchymal-epithelial transition (MET) will happen to help them become epithelial again to attach to the new epithelia. As a key enzyme in fatty acid production, fatty acid synthase (FASN) is increased with EMT induction and overexpressed in distant organ metastasis of breast cancer.



Lab materials.

As a result of that, we are interested in the influence of FASN in EMT in breast cancer metastasis. Our long-term goal is to develop FASN-targeting medications that can inhibit formation of pulmonary metastases originating from breast cancer cells. To achieve this goal, we will investigate the influence of a lack of FASN in pulmonary metastasis formation in breast cancer murine (mice) models. Our central hypothesis is that FASN is a vital protein for breast cancer metastasis, so a lack of FASN will inhibit the formation of pulmonary metastasis. Through this project, we hope to obtain a deeper understanding of FASN and its role in EMT to provide more options for breast cancer treatments.

*Research advisor Eylem Kulkoyluoglu Cotul writes: "Zilin Xianyu focused on cancer metabolism aspect of metastatic breast cancer. She uses shRNA approach to deplete fatty acid synthase (FASN) gene in metastatic breast cancer cell lines. In the future, these cell lines will be used to investigate the role of FASN enzyme in cancer metabolism in vitro and in vivo."*