Nuclear bile acid receptor FXR: A signaling modulator to orchestrate feeding signaling & one carbon metabolism

Farnesoid X receptor is an endogenous bile acid receptor to control hepatic bile acid/cholesterol homeostasis, glucose and lipid metabolism, inflammation, liver regeneration. Recently, FXR has been emerged to suppress WNT and EGFR signaling pathway to repress cell proliferation in various cancer types, including colorectal cancer cell. We have recently reported that FXR activation repressed cell proliferation in intestinal cancer stem cell using organoid derived from intestinal tumors of APC^{min} mice. FXR activation led to inactivation of cyclin-dependent kinases to reduce cell proliferation in CRC model, implying that FXR activation would be interesting therapeutic strategy for the treatment of colorectal cancer.

Here, we now report that FXR activation induces one carbon metabolism to support signaling pathways for cancer cell survival. We will discuss the underlying mechanisms of how FXR modulate one carbon metabolism in colorectal cancer cell to sustain cell survival.