Cell lines from patient with inflammatory breast cancer

Cell lines EMF-011 (FCCC Tech ID# 503-MC) and FC-IBC-02 (FCCC Tech ID# 310-MC) were derived from pleural effusions of a patient with inflammatory breast cancer (IBC), each three months apart. Both cell lines grow *in vitro* and *in vivo*.

EMF-011 is less aggressive than FCIBC-02. In vitro, EMF-011 grows slowly compared to FC-IBC02. In vivo, EMF-011 is less aggressive than FC-IBC02 when injected in severe combined immune-deficient (SCID) mice.

Both cell lines produce brain metastases in 20% of SCID mice when injected in the fat mammary pad. Thus, EMF-011 and FC-IBC02 are excellent models to study brain metastases, and can be utilized to test inhibitory properties of different drugs, both *in vitro* and *in vivo*.

We found that focal adhesion kinase 1 (FAK1) is upregulated and phosphorylated (active) in IBC. We showed that FC-IBC02 and other IBC cell lines expressed p-FAK1 (Tyr397). CEP-37440, a dual FAK1/ALK inhibitor, was able to reduce proliferation and tumor growth of these cells by reducing p-FAK1 (Tyr397) expression (Salem et al., 2016). Both cell lines show nuclear and cytoplasmic localization of p-FAK1 (Tyr397). It was shown that nuclear FAK1 increased the expression of CCL1, CCL5, CCL7, CXCL10, and TGFβ2, chemokines and cytokines responsible for recruitment and expansion of Tregs. FAK1 kinase inhibitors represent a form of effective "immune-modulatory" therapy that reduces Tregs in the tumor environment. FC-IBC02 and EMF-011 are excellent models to test FAK inhibitors in combination with immune checkpoint inhibitors (ICIs).

References

•Salem et al, Breast Cancer Res. 18 (1), 2016. The effects of CEP-37440, an inhibitor of focal adhesion kinase, in vitro and in vivo on inflammatory breast cancer cells.

•Fernandez et al., Breast Cancer Res Treat. 140(1):23-33 (2013). Inflammatory breast cancer (IBC): clues for targeted therapies.