AMP-activated protein kinase (AMPK) functions as an energy sensor and plays a pivotal role in maintaining cell metabolism homeostasis. We show that expression of AMPK catalytic subunit AMPKa1 is dramatically decreased in advanced human cancer samples, concomitant with dysregulated cell metabolism. Knockdown of AMPKa1 promotes EMT and cell mobility in vitro and tumor metastasis in vivo. Oncogenic Ras and PI3K inhibits AMPKa1 expression, resulting in disrupted cell adhesion program. In addition, deregulation of redox homoeostasis is critical for cancer cell sensitivity to metformin. These results indicate that metabolic reprogramming is intrinsically linked to cancer metastasis and that AMPK plays an important role in oncogenic signaling-induced cancer metastasis.

(1) Hu L/ Xiao ZXJ, ΔNp63a is a common inhibitory target in oncogenic PI3K/Ras/Her2-induced cell motility and tumor metastasis. (2017) Proc Natl Acad Sci USA, 114(20):E3964-E3973

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All are welcome!