Stress Chaperone Mortalin - Discovery to Drug Target

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Abstract—*Stress chaperone mortalin/mtHsp70 was first cloned in our laboratory while screening for proteins associated with cellular mortal or immortal phenotypes. Upregulated in cancer cells and tissues, it has been shown to play several life-essential functions including mitochondrial import of proteins, chaperoning, intracellular trafficking, control of cell proliferation, ROS production and apoptosis. In cancer cells, it interacts with tumor suppressor protein, p53, and causes inactivation of its several activities (transcriptional activation, control of centrosome duplication and apoptosis) that are tightly related to carcinogenesis. Furthermore, it promotes cancer aggressiveness and metastasis by activation of telomerase, hnRNP-K, and several other factors involved in epithelial-mesenchymal transition (EMT). Cancer stem cells possess high level of mortalin that was found to mediate their drug resistant properties. Mortalin knockdown in cancer cells caused their apoptosis in vitro and in vivo and sensitized cancer stem cells to a variety of drugs. Based on these findings, mortalin is proposed as a potential target for cancer diagnosis and therapy.*

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