Roles of Tsc-22 family proteins in tumor development

Hiroyuki Suzuki

Experimental Pathology, Faculty of medicine, University of Tsukuba

Carcinoma cells exhibit a high level of robustness against environmental stresses, metabolic disorders and therapeutic efforts. Here, we provide a novel mechanism connecting oncogenic signaling and robustness by THG-1, a Tsc-22 family protein. THG-1 localized in the basal layer of normal squamous epithelium and overexpressed in squamous cell carcinomas. THG-1 knockdown suppresses the cell proliferation, invasiveness and tumorigenicity. THG-1 is phosphorylated by the receptor tyrosine kinase-Ras-ERK pathway, which is required for oncogenic Ras-mediated tumorigenesis. Furthermore, THG-1 interacts with several factors that regulate the cytoprotection, metabolism and microenvironment. These findings highlight the pivotal role of THG-1 as a novel regulator of cellular robustness and tumorigenesis under the oncogenic signaling pathway.