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### Roles of Akt-girdin signaling in cancer progression

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Girdin is an actin-binding Akt substrate that plays an important role in actin organization and Akt-dependent cell motility in fibroblasts and cancer cells. Girdin is expressed in a variety of cancer cells including breast cancer cells and glioblastoma cells, and is phosphorylated by the stimulation of growth factors. Girdin knockdown markedly inhibited migration and invasion of cancer cells *in vitro* and *in vivo*. Recently, we found that Girdin is also expressed and activated by Akt phosphorylation in cancer-associated fibroblast (CAF) and blood vessels within the tumor microenvironment. We established a knock-in mouse line (designated SA mice) engineered to express a Girdin mutant that lacks the Akt phosphorylation site at serine 1416 (S1416A). The growth of allogeneic tumors (Lewis lung tumors) was decreased in SA mice compare with wild-type (WT) counterparts. Notably, the co-transplantation of tumor cells with either skin fibroblasts or CAF derived from SA mice also attenuated tumor growth compared to co-transplantation with WT fibroblasts or CAF, indicating the *in vivo* relevance of Girdin phosphorylation in formation of the tumor microenvironment. Our results revealed a role for Akt-mediated Girdin phosphorylation in CAF during tumor progression, highlighting the need to inhibit Akt function in both tumor cells an CAF.

### Biography

Masahide Takahashi received his MD and PhD from Nagoya University in 1979 and 1983, respectively. He carried out Postdoctoral research at Dana-Farber Cancer Institute in Boston. He joined Aichi Cancer Center Research Institute (Nagoya) as a research scientist in 1985 and moved to Nagoya University as an Assistant Professor in 1990. He was promoted to full professor of Department of Pathology at Nagoya University in 1996. He was a director of Center for Neurological Disease and Cancer at Nagoya University (2003-2012). His research interests include oncogene function, cancer invasion and metastasis, and development of the nervous system.

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