

SEARCHING FOR CELLULAR FUNCTIONS AND LOCALIZATION OF KIAA0090, A NOVEL CONSERVED HUMAN PROTEIN

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Previous studies in our laboratory using ORESTES clones led to the identification in melanoma cells of the gene KIAA0090, located in the human chromosome 1p36. The gene encodes a highly conserved 993 amino acid polypeptide present in all eukaryotes from yeast to humans and for which no function was determined. The full-length coding region from KIAA0090 cDNA was cloned in mammalian and bacterial expression vectors. Immunostaining of the endogenous protein in cultured mammalian cells with a polyclonal antibody generated against the KIAA0090 N-terminal region strongly co-localized with mitochondrial markers. Conspicuous staining was detected in smooth and striated muscles, adrenal gland, trachea, and testis. Intriguingly, great differences were found between KIAA-EGFP and EGFP-KIAA fusion proteins. KIAA-EGFP co-localizes with the endoplasmic reticulum (ER) without affecting the normal distribution of the organelle, whereas EGFP-KIAA rapidly aggregates in a perinuclear region promoting a dramatic mitochondrial co-aggregation. Fluorescence recovery after photobleaching showed that the protein associated to the ER is highly mobile but not when bound to mitochondria aggregates. Expression of either fusion proteins leads to cell death in cultured melanoma cells, detected by Annexin V, propidium iodide or TUNEL staining. Taking together these results point to an essential role of KIAA0090 in cellular processes relevant to development and tumorigenesis.

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