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A novel tumor cell line cloned from mutated human embryonic skeletal muscle cells

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A novel sarcoma cell line, denominated MS0812, was spontaneously established from mutated human embryonic skeletal muscle. The cell line grew well and adherent in a plastic dish with strong self-renewal capability, the characteristics of growth was similar to the immortalized cell lines as reported. The cell line contained spindleor fibrous-shaped cells that revealed neoplastic and pleomorphic features. The karyotype of MS0812 cells was abnormal and they exhibited hyperploidy and the chromosome number was ranged from 50 to 158.

MS0812 was positive for vimentin, the marker for mesenchymal origins, They were also positive for desmin and actin, indicating their skeletal muscle origin. In serum-free medium culture conditions, MS0812 displayed neuron-like morphology and expressed neuron-specific markers. MS0812 were negative for CD31, CD34, AFP, CK18, CK8 and HLA-DR. And Glycogen can be demonstrated by periodic acid-Schiff stain (PAS) in the cytoplasm of the MS0812. Electron microscope showed the surface of cells has many microvilli and process, lipid droplets and glycogen granules were present in the cytoplasm. MS0812 cells could differentiate into lipid droplets-containing adipocytes *in vitro*. MS0812 was negative for p16 by immunocytochemistry, and p16 gene deletions were identified by PCR.

The MS0812 cells resulted in tumors in Balb/C nude mice *in vivo* (15/15). Microscopically, the main tissue in tumor was fibrosarcoma, chondrosarcoma islets were also found in the tumor tissues, indicating cartilage formation from MS0812 , chondrosarcoma cells were positive for S100 protein, one tumor contained two components, including fibrosarcoma and chondrosarcoma, this pathological presentation was consistent with dedifferentiated chondrosarcoma, so a novel immortalized cell lines with dedifferentiated chondrosarcoma characteristics was established. We established 7 monoclonal cell lines from MS0812, they showed the same pathological appearance *in vivo*, and we postulate that fibrosarcoma and chondrosarcoma may be monoclonal origin in human. These findings suggested that MS0812 may be a novel tumor cell line with capability of multiple differentiation. It may provide evidence for the theory that cancer originates from stem cells.

***Keywords*:** stem cell, sarcoma, chondrosarcoma, cell culture, immortalization

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