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STK24 mediates immunosuppressive and tumor promoting conditions in tumor microenvironment

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Immunosuppressive and tumor promoting conditions are generated by cancer cell’s gene alterations in tumor microenvironment, but their mechanisms have not been well understood. In this study, we attempted to identify new signaling molecules which involved in these conditions. Using the kinase siRNA library, we screened kinases which are involved in the human melanoma cell’s production of immunosuppressive cytokines affecting on dendritic cells (DC), and found Serine/Threonine kinase 24 (STK24) was involved in the production of IL-10, TGF-β, and CCL2 by melanoma cells. Phosphorylated STK24 was increased in various human cancer cell lines and melanoma tissue samples. When the human melanoma cell line transduced with lentiviral STK24-shRNA was implanted in nude mice, tumor growth was decreased compared with mock-melanoma. Decreased tumor growth was accompanied by higher DC ability to stimulate T cells along with decreased IL-10 and increased TNF-α production, as well as by decrease of CD11b+ macrophages in tumor. These results indicate that STK24 in cancer cells is involved in the generation of tumor promoting and immunosuppressive tumor microenvironment.