Docket #: S19-253

Targeting Osteopontin: Novel Strategy to Treat Cancer and Inflammation

Researchers at Stanford have developed humanized therapeutic antibodies to treat cancers, particularly melanoma, as well as inflammatory disorders. The target is osteopontin (OPN), a protein that may be cleaved by thrombin and enable immune-modulation, especially in tumors. Blockade of OPN cleavage or blocking of OPN fragments provides a novel approach to regulating cancer progression and survival. Previous studies have implicated OPN in promoting invasive and metastatic progression of many cancers. The researchers' experimental mouse models indicate that thrombin cleavage of OPN plays a critical role in the growth and progression of B16 melanoma *in vivo*.

Figure

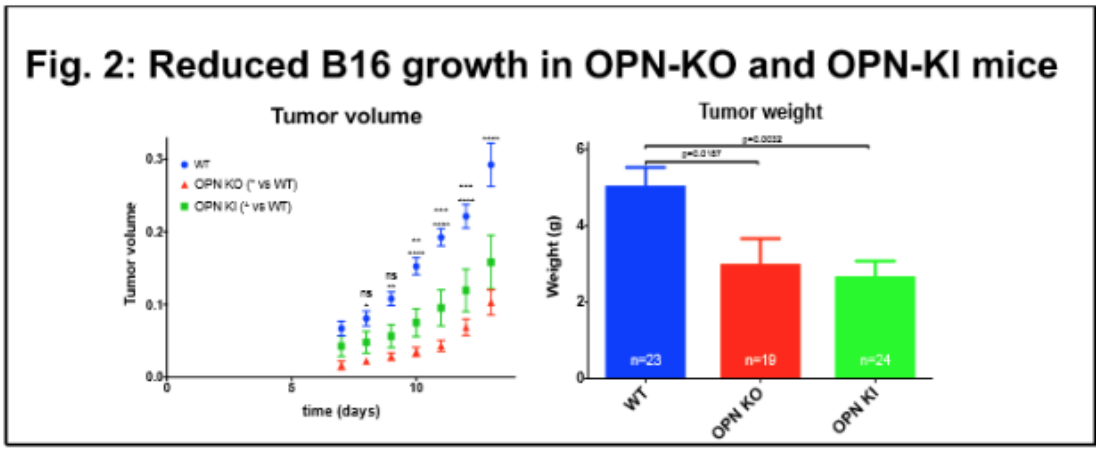

Figure description:

Subcutaneous B16 tumors grew slower on OPN-KO and OPN-KI mice than the wild type, suggesting all of the effects of OPN deficiency are via thrombin cleavage of OPN (Fig. 2).

Stage of Development

Mouse studies elucidating the role of thrombin cleavage of osteopontin (OPN) in the pathology of inflammatory disorders and cancers. Specifically, the growth of B16 melanoma cells is suppressed in OPN knock-out (KO) mice. In summary, the data show that thrombin cleavage of OPN is critical for tumor growth and therefore targeting thrombin cleavage of OPN and cleaved OPN fragments provides a legitimate approach in regulating cancer progression and survival.

Applications

- Treatment of melanoma and other cancers, either as a monotherapy or in combination
- Treatment of inflammatory disorders

Advantages

- Similarly reduced tumor growth in KO and KI mice shows, for the first time, the pathophysiological importance of thrombin cleavage of OPN

Patents

- Published Application: WO2021030209
- Published Application: 20220324956

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