Endoglin enhances the progression of angiosarcoma through the regulation of non-Smad TGF-β signaling

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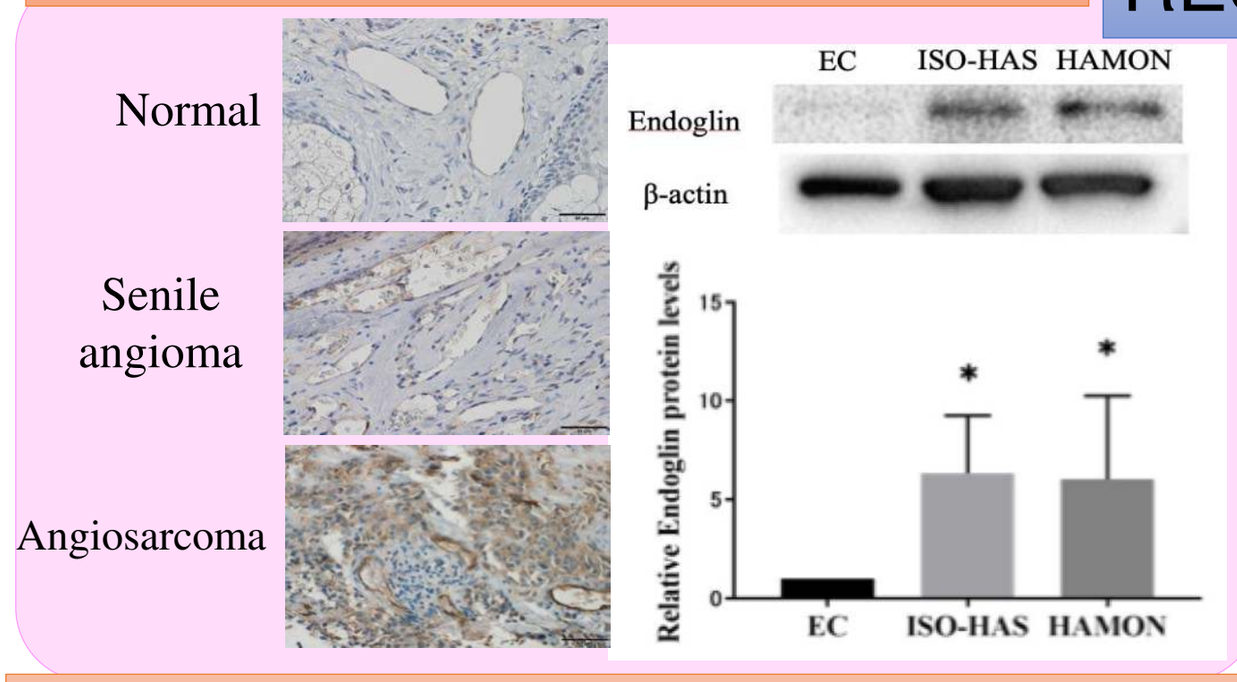
BACKGROUND OBJECTIVE

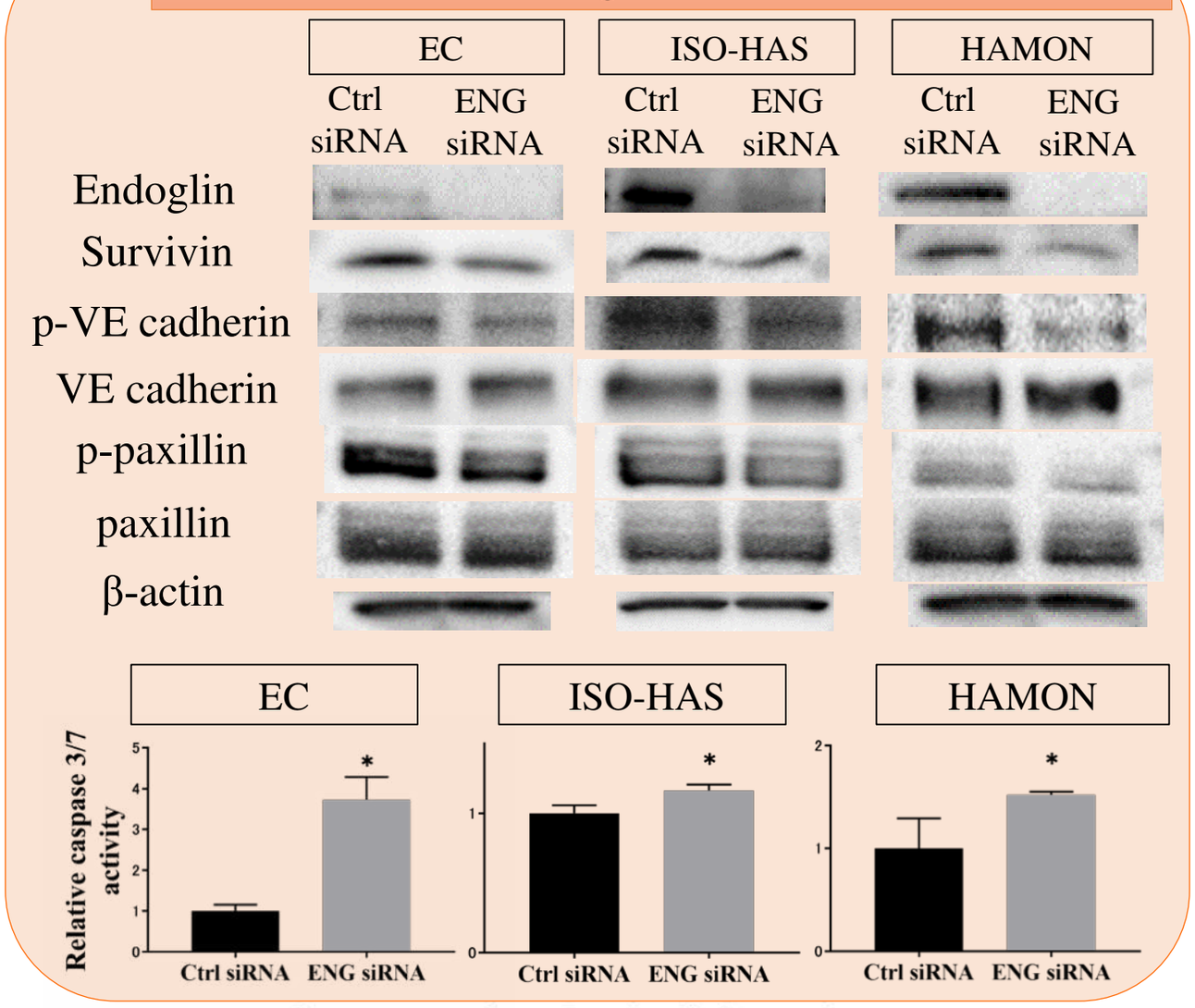
Angiosarcoma is a rare malignant tumor derived from endothelial cells and its prognosis is poor because advanced angiosarcoma is resistant to standard chemotherapy, and new therapies are urgently needed. Endoglin (CD105) is a membrane glycoprotein that acts as a coreceptor for transforming growth factor-β (TGF-β) signaling. Endoglin is overexpressed in the tumor-associated endothelial cells, and it enhances angiogenesis. Numerous clinical trials are testing the effectiveness of anti-endoglin antibody in various types of malignancies. Here, we investigated the role of endoglin in the pathogenesis of angiosarcoma and whether the inhibition of endoglin may have anti-tumor activity.

RESULT

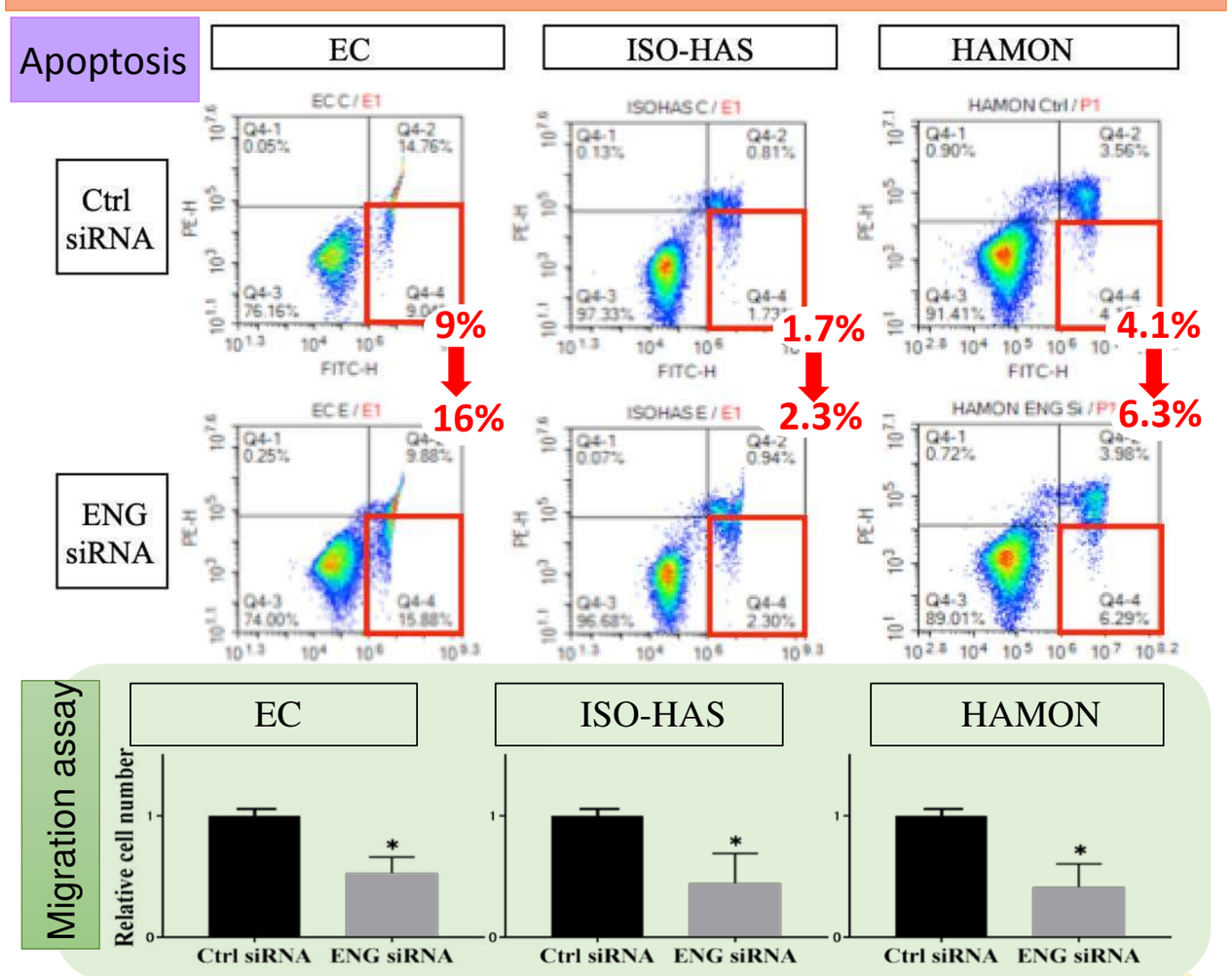
Overexpression of endoglin in angiosarcoma



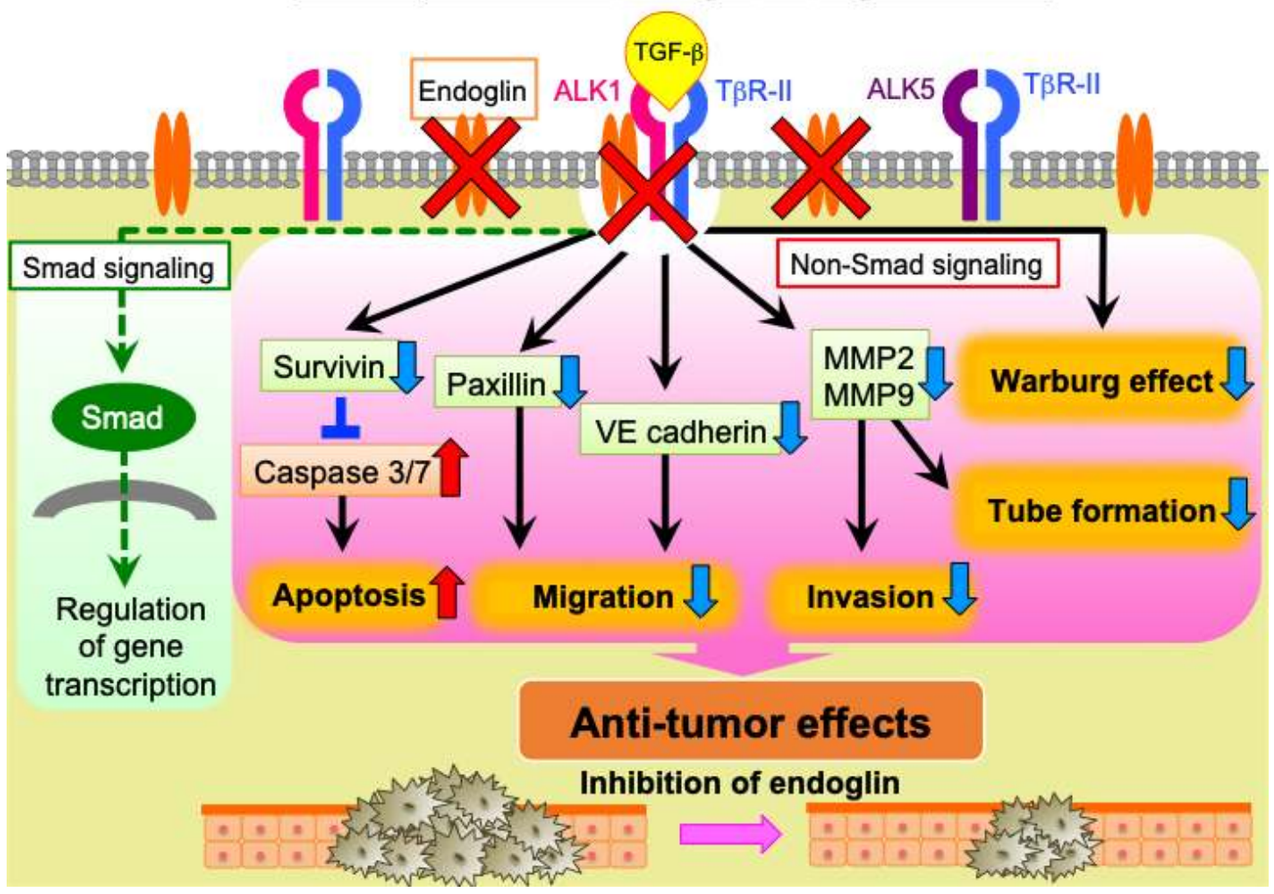
Regulatory molecular mechanism of endoglin in angiosarcoma



Knock-down of endoglin promoted apoptosis and suppressed migration, invasion, and the Warburg effect in angiosarcoma cells

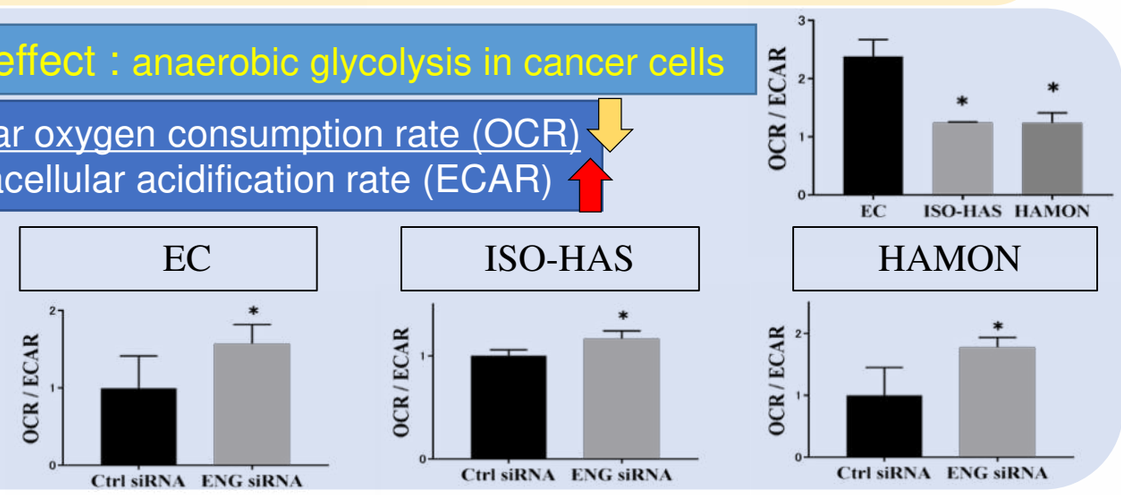


Overexpression of endoglin in angiosarcoma



Warburg effect : anaerobic glycolysis in cancer cells

cellular oxygen consumption rate (OCR)
extracellular acidification rate (ECAR)



CONCLUSION

- Knock-down of endoglin promoted apoptosis and suppressed migration, invasion, and the Warburg effect in angiosarcoma cells.
- Anti-tumor effect of endoglin for angiosarcoma was not based on the regulation of Smad signaling, but non-Smad TGF-β signaling.
- Endoglin could be a novel therapeutic target for angiosarcoma.