

Abstract (300 word limit)

The α-enolase expression is known to be significantly correlated with reduced survival and poor prognosis in many cancer types, such as lung cancer. There is currently no therapeutic antibody against α-enolase approved for clinical use, hence, we generated four anti-α-enolase monoclonal antibodies (mAbs) through mouse hybridoma screening. One of these anti-α-enolase mAbs, ab-X-22, was found to decrease cancer cell proliferation and invasion capability in vitro. It is worthwhile developing anti-abX for cancer molecular imaging and therapy. Moreover, we clarify the biological significance of α-enolase in tumor progression and invasion. It can increase cancer cell proliferation and invasion ability in cancer cells. In the present study, we demonstrate that α-enolase increases cell invasive ability. In the future, we may explore the detailed mechanisms of α-enolase of ENO1 contributed-cell invasion ability and the mechanisms of action through which this antibody is effective for cancer therapy.

Image

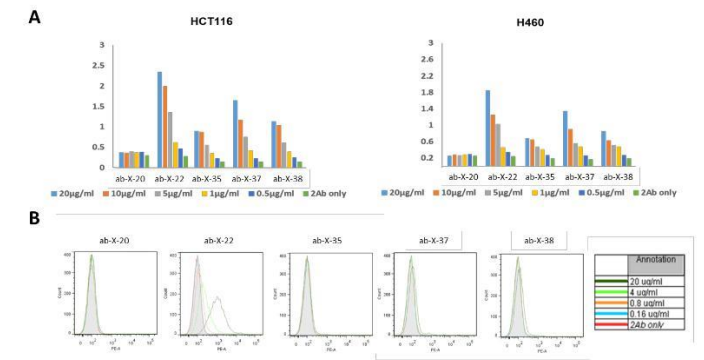


Figure 1. Binding specificity of 5 mouse mAbs against α-Enolase is analyzed by ELISA analysis to HCT116 and H460 cells (A). (B) Binding specificity is analyzed by flow cytometry to live H460 cells using phycoerythrin (PE)-conjugated goat anti-mouse IgG. X axis, intensity of PE fluorescence; Y axis, number of events.

Photograph



Biography (150 word limit)

I have a background in cancer biology which has evolved into fields of cancer metastasis, epigenetics and signaling transduction. This has been motivated by tumor therapy concepts and characterization tools to areas of biotechnology and mouse tumor model. As a PhD student, I have been successful at completing projects resulting in quality publications in top-level journals (first author journal: oncogene; Ranking:13/241) and represents my expertise in experimental design, interpretation of data and the subsequent communication. I believe I will become an outstanding researcher due to my scientific expertise as well as personal traits. I have gotten the position of Academia Sinica Postdoctoral Fellowships for more than one year, and my study would like to develop platform for generating humanized antibodies that specifically bound to a tumor-specific gene generated from hybridomas. Then I want to characterize the diagnostic and therapeutic effect of mouse monoclonal antibodies (mAbs) against this gene.

Notes/Comments:

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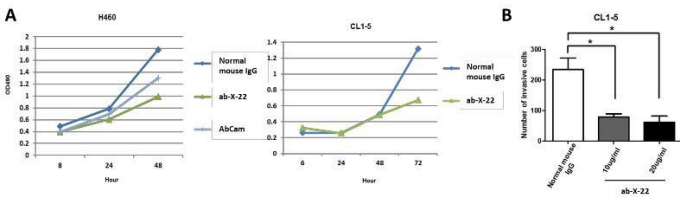
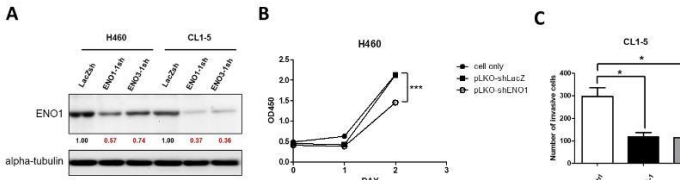


Figure 3. Study of the molecular functions and mechanisms of α-Enolase in cancer progression. (A) Expression of α-Enolase in H460 or CL1-5 cells infected with lentiviruses harboring control shRNA (shLacZ) or α-Enolase shRNA (shENO1-1 and shENO1-2) was analyzed by western blot analysis. alpha-tubulin was used as an internal control. (B) Cell proliferation (WST-1) assays were performed using α-Enolase knockdown H460 cells. (C) Matrigel invasion assays were performed using α-Enolase knockdown CL1-5 cells.

Recent Publications (minimum 5)

- Capello, M. (2011) alpha-Enolase: a promising therapeutic and diagnostic tumor target. FEBS J 278(7): p. 1064-74.
- Hsiao, K.C. (2013) Surface alpha-enolase promotes extracellular matrix degradation and tumor metastasis and represents a new therapeutic target. PLoS One 8(7): p. e69354.
- Fu, Q.F. (2015) Alpha-enolase promotes cell glycolysis, growth, migration, and invasion in non-small cell lung cancer through FAK-mediated PI3K/AKT pathway. J Hematol Oncol 8: p. 22.
- Zhan, P. (2017) alpha-enolase promotes tumorigenesis and metastasis via regulating AMPK/mTOR pathway in colorectal cancer. Mol Carcinog 56(5): p. 1427-1437.
- Qian, X. (2017) Enolase 1 stimulates glycolysis to promote chemoresistance in gastric cancer. Oncotarget 8(29): p. 47691-47708.