Method for ENO1-based compound screening to modulate glycolysis in cancer cells

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Challenge

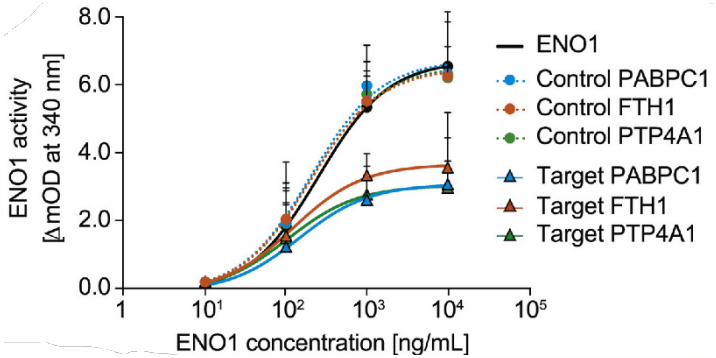
- Despite tremendous efforts on diagnosis and treatment, cancer remains a major cause of death in humans. Current therapeutic options include surgery, radiation therapy, chemotherapy and immunotherapy, but they encompass major side effects and the risk for drug resistant cancers.
- Most cancer cells rely on glycolysis for energy supply, which led to an increased interest in this pathway and its regulation for oncological treatments. Enolase 1 (ENO1) is a glycolytic enzyme ubiquitously expressed in adult human tissues.
- The overexpression of ENO1 has been associated with multiple tumors and cell proliferation and has therefore become an interesting target for the development of new compounds.

Commercial Opportunity

The technology has been demonstrated in HeLa cells and mESCs. We offer a technology evaluation program as well as collaboration and licensing opportunities.

Technology

- A technology for screening and characterizing compounds that modulate ENO1 activity as basis for the treatment of cancer or other proliferative diseases.
- Set of synthetic RNA ligands (corresponding to the specific binding regions of various mRNAs of the cellular transcriptome) inhibiting ENO1's activity in vitro and in cells, diminishing glycolysis in HeLa cells as well as specifically altering glycolytic metabolite levels and serine synthesis in pluripotent mouse embryonic stem cells (mESCs).



RNA ligands inhibit ENO1's activity in vitro: Enzymatic activity assay of recombinant human ENO1; increasing enzyme concentrations exposed to different control and target RNAs (see Huppertz et al.)

Further Reading

Huppertz et al., Molecular Cell, 2022

EMBL group Prof. Hentze

Hentze et al., Nature Reviews Genetics 2020

Intellectual Property

A priority patent application has been filed.

Internal EMBLEM Reference

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