

GPX4

Glutathione peroxidase 4, also known as GPX4, is an [enzyme](#) that in humans is encoded by the GPX4 gene.

GPX4 is a phospholipid hydroperoxidase that protects cells against membrane [lipid peroxidation](#).

[Ferroptosis](#) is a [cell death](#) mode featured by [lipid peroxide](#) accumulation that can be attenuated by [GPX4](#), yet whether and how [MYCN](#) regulates [Ferroptosis](#) are not fully understood.

Lu et al. reported [MYCN](#)-amplified NB cells are sensitive to GPX4-targeting [Ferroptosis](#) inducers. Mechanically, MYCN expression reprograms the cellular [iron metabolism](#) by upregulating the expression of [TFRC](#), which encodes [transferrin receptor 1](#) as a key [iron transporter](#) on the [cell membrane](#). Further, the increased [iron](#) uptake promotes the accumulation of labile iron pool, leading to enhanced [lipid peroxide](#) production. Consistently, [TFRC](#) overexpression in NB cells also induces selective sensitivity to GPX4 inhibition and [Ferroptosis](#). Moreover, they found that MYCN fails to alter the general [lipid metabolism](#) and the amount of [cystine](#) imported by System Xc(-) for [glutathione](#) synthesis, both of which contribute to [Ferroptosis](#) in alternative contexts. In conclusion, NB cells harboring [MYCN](#) amplification are prone to undergo [Ferroptosis](#) conferred by [TFRC](#) upregulation, suggesting that [GPX4](#)-targeting [Ferroptosis](#) inducers or [TFRC](#) agonists can be potential strategies in treating MYCN-amplified NB ¹⁾.

¹⁾

Lu Y, Yang Q, Su Y, Ji Y, Li G, Yang X, Xu L, Lu Z, Dong J, Wu Y, Bei JX, Pan C, Gu X, Li B. MYCN mediates TFRC-dependent [Ferroptosis](#) and reveals vulnerabilities in neuroblastoma. Cell Death Dis. 2021 May 19;12(6):511. doi: 10.1038/s41419-021-03790-w. PMID: 34011924.

From:
<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:
<https://neurosurgerywiki.com/wiki/doku.php?id=gpx4>

Last update: **2024/06/07 02:55**

