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Stepping out of the shadows: Oncogenic and tumor-promoting protein tyrosine phosphatases

Running title: Oncogenic and tumor-promoting PTPs

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#### Abstract

Protein tyrosine phosphorylation is critical for proper function of cells and organisms. Phosphorylation is regulated by the concerted but generically opposing activities of tyrosine kinases (PTKs) and tyrosine phosphatases (PTPs), which ensure its proper regulation, reversibility, and ability to respond to changing physiological situations. Historically, PTKs have been associated mainly with oncogenic and pro-tumorigenic activities, leading to the generalization that protein dephosphorylation is anti-oncogenic and hence that PTPs are tumor-suppressors. In many cases PTPs do suppress tumorigenesis. However, a growing body of evidence indicates that PTPs act as dominant oncogenes and drive cell transformation in a number of contexts, while in others PTPs support transformation that is driven by other oncogenes. This review summarizes the known transforming and tumor-promoting activities of the classical, tyrosine specific PTPs and highlights their potential as drug targets for cancer therapy.

#### Abbreviations:

ALL            Acute lymphoblastic leukemia

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