

Protein kinase

Protein [kinases](#) are [enzymes](#) that add a [phosphate](#) (PO₄) group to a [protein](#), and can modulate its function.

The phosphate groups are usually added to serine, threonine, or tyrosine amino acids on the protein: most kinases act on both serine and threonine, the tyrosine kinases act on tyrosine, and a number (dual-specificity kinases) act on all three. There are also protein kinases that phosphorylate other amino acids, including histidine kinases that phosphorylate histidine residues.

Phosphorylation regulates many biological processes, and protein kinase inhibitors can be used to treat diseases due to hyperactive protein kinases (including mutant or overexpressed kinases in cancer) or to modulate cell functions to overcome other disease drivers.

A [protein](#) kinase is a [kinase enzyme](#) that modifies other proteins by chemically adding phosphate groups to them (phosphorylation). Phosphorylation usually results in a functional change of the target protein (substrate) by changing enzyme activity, cellular location, or association with other proteins. The human genome contains about 500 protein kinase genes and they constitute about 2% of all human genes.

see [Cyclin dependent kinase](#)

see [DNA dependent protein kinase](#).

see [Mitogen activated protein kinase](#)

see [AKT](#)

see [Serine threonine protein kinase](#)

Protein kinase A

see [Protein kinase A](#)

Protein kinase C

see [Protein kinase C](#)

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