Serine/threonine-specific protein kinase

A serine/threonine protein kinase (EC 2.7.11.1) is a kinase enzyme that phosphorylates the OH group of serine or threonine (which have similar sidechains). At least 125 of the 500+ human protein kinases are serine/threonine kinases (STK).

In enzymology, the term non-specific serine/threonine protein kinase describes a class of enzymes that belong to the family of transferases, specifically protein-serine/threonine kinases. These enzymes transfer phosphates to the oxygen atom of a serine or threonine sidechain in proteins. This process is called phosphorylation. Protein phosphorylation in particular plays a significant role in a wide range of cellular processes and is a very important posttranslational modification.

The chemical reaction performed by these enzymes can be written as

ATP + a protein ⇌ {\displaystyle \rightleftharpoons } \rightleftharpoons ADP + a phosphoprotein

Thus, the two substrates of this enzyme are ATP and a protein, whereas its two products are ADP and phosphoprotein.

The systematic name of this enzyme class is ATP:protein phosphotransferase (non-specific).