Phospho-proteomics is a field of study that focuses on the analysis of phosphorylation, a key post-translational modification that regulates protein function and activity. Phosphorylation involves the transfer of a phosphate group from ATP to a target protein, which modifies its activity and localization and often acts as a switch to activate or inhibit its function.

Phospho-proteomics seeks to identify and quantify changes in the phosphorylation status of proteins in cells, tissues, or organisms under different conditions, such as in response to stimuli or during disease development. This information can provide insights into signaling pathways and cellular processes and can inform the development of new diagnostic and therapeutic strategies.

Phospho-proteomic studies are typically performed using mass spectrometry-based techniques, which allow for the identification and quantification of thousands of phosphorylated peptides in a single experiment. This information can be integrated with other omics data, such as transcriptomics and proteomics, to provide a more comprehensive understanding of cellular processes.