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(54) Title: METHODS AND COMPOSITIONS FOR ANALYZING PROTEINS

(57) Abstract: Methods, compositions and kits are disclosed for determining one or more target polypeptides in a sample where the target polypeptides have undergone a post-translational modification. A mixture comprising the sample and a first reagent comprising a cleavage-inducing moiety and a first binding agent for a binding site on a target polypeptide is subjected to conditions under which binding of respective binding moieties occurs. The binding site is the result of post-translational modification activity involving the target polypeptide. The method may be employed to determine the target polypeptide itself. In another embodiment the presence and/or amount of the target polypeptide is related to the presence and/or amount and/or activity of an agent such as an enzyme involved in the post-translational modification of the target polypeptide. The interaction between the first binding agent and the binding site brings the cleavage-inducing moiety into close proximity to a cleavable moiety, which is associated with the polypeptide and is susceptible to cleavage only when in proximity to the cleavage-inducing moiety. In this way, an electrophoretic tag for each of the polypeptides may be released. Released electrophoretic tags are separated and the presence and/or amount of the target polypeptides are determined based on the corresponding electrophoretic tags.