Preface

The enzyme-linked immunosorbent assay (ELISA) (/ɪˈlaɪzə/, /ˌiːˈlaɪzə/) is a commonly used analytical biochemistry assay, first described by Eva Engvall and Peter Perlmann in 1971. The assay uses a solid-phase type of enzyme immunoassay (EIA) to detect the presence of a ligand (commonly a protein) in a liquid sample using antibodies directed against the protein to be measured. ELISA has been used as a diagnostic tool in medicine, plant pathology, and biotechnology, as well as a quality control check in various industries.

In the most simple form of an ELISA, antigens from the sample to be tested are attached to a surface. Then, a matching antibody is applied over the surface so it can bind the antigen. This antibody is linked to an enzyme and then any unbound antibodies are removed. In the final step, a substance containing the enzyme's substrate is added. If there was binding, the subsequent reaction produces a detectable signal, most commonly a color change.

Performing an ELISA involves at least one antibody with specificity for a particular antigen. The sample with an unknown amount of antigen is immobilized on a solid support (usually a polystyrene microtiter plate) either non-specifically (via adsorption to the surface) or specifically (via capture by another antibody specific to the same antigen, in a "sandwich" ELISA). After the antigen is immobilized, the detection antibody is added, forming a complex with the antigen. The detection antibody can be covalently linked to an enzyme or can itself be detected by a secondary antibody that is linked to an enzyme through bioconjugation. Between each step, the plate is typically washed with a mild detergent solution to remove any proteins or antibodies that are non-specifically bound. After the final wash step, the plate is developed by adding an enzymatic substrate to produce a visible signal, which indicates the quantity of antigen in the sample.[1]

In the present book, fifteen typical literatures about the enzyme-linked immunosorbent assay published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on the enzyme-linked immunosorbent assay. We hope this book can

[1] https://en.wikipedia.org/wiki/ELISA

demonstrate advances in the enzyme-linked immunosorbent assay as well as give references to the researchers, students and other related people.