

**DOTTORATO DI RICERCA IN TECNOLOGIE CONVERGENTI PER I SISTEMI
BIOMOLECOLARI
UNIVERSITÀ DEGLI STUDI DI MILANO BICOCCA**

**DEVELOPMENT OF REAGENTS AND BIOCONJUGATES,
DERIVING FROM PROTEINS AND RECOMBINANT
ANTIBODIES, FOR IMMUNODIAGNOSTIC APPLICATIONS**

In vitro diagnostics provides more and more reliable diagnosis, and it allows to undertake appropriate therapeutic treatments and to monitor the results. It provides also useful data for epidemiological studies. In particular, the immunodiagnostic landscape is becoming increasingly challenging, especially for the identification and validation of new diagnostic targets, and for emerging or re-emerging infectious agents. This increases the urgency of producing high-quality monoclonal antibodies and recombinant antigenic proteins (key reagents for immunodiagnostic assays) in order to develop tests with the required sensitivity and specificity. To this end, it is necessary to have adequately advanced biotechnology platforms as well as a wide range of skills, ranging from biotechnology to chemistry, bioconjugation, and immunometry. Specifically, the recombinant expression of target proteins often requires the use of fusion partners or ad hoc engineering to meet the desired functional and physicochemical properties. As for the antibodies, the use of recombinant antibodies, or fragments thereof, represents an appealing and growing strategy which allows greater versatility and functional benefits than traditional in vivo development. Eventually, for the development of immunodiagnostic reagents, proteins and antibodies have to be chemically conjugated to peptides, dyes, tags, solid phases, or synthetic scaffolds, using traditional or more advanced methodologies, as appropriate.

The PhD program will be part of this field, having as its main objective the exploration and development of new reagents and solutions for applications in immunodiagnostic assays. The activities of the program will mainly focus on the following topics:

- purification and biochemical characterization of recombinant proteins, antibodies, and fragments thereof;
- recombinant expression of proteins incorporating non-natural amino acids;
- chemical conjugations of proteins and antibodies to dyes and tags, through chemoselective techniques;
- functional evaluation of bioreagents on automated chemiluminescence immunoanalyzers

The program will take place at the DiaSorin Research Center- Gerezano (VA).

DiaSorin S.p.A. (<http://diasorin.com>) is an Italian multinational company, leader in the field of *in vitro* diagnostics, which develops, produces and markets in vitro diagnostic kits worldwide.

For further info, please contact Dr Paolo Ingallinella, paolo.ingallinella@diasorin.it