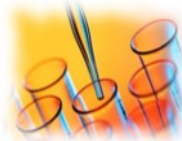
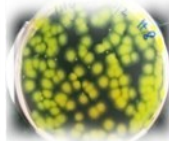
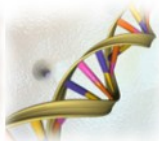
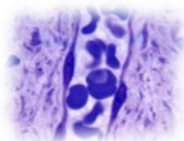




**UNIVERSITÀ
DI SIENA**
1240

DIPARTIMENTO DI
**BIOTECNOLOGIE
MEDICHE**
— DBM



DOTTORATO DI RICERCA IN BIOTECNOLOGIE MEDICHE

**DOTTORATO DI INTERESSE NAZIONALE IN INNOVAZIONE NELLA DIAGNOSI, PREVENZIONE E
TERAPIA DELLE INFEZIONI A RISCHIO EPIDEMICO-PANDEMICO**



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Post-Graduate Course

Biophysical Methods for Protein Quality Control and the Study of Protein-Ligand Interactions

**Prof. André Matagne
Dr. Marylène Vandevenne**

Laboratory of Enzymology and Protein Folding
Centre for Protein Engineering, University of Liège, Belgium



***June 3-9, 2026, 10:00-13:00
Polo Didattico San Miniato – Aula 14***

**Organizer: Prof. Jean-Denis Docquier, Department of Medical Biotechnologies
(info: jddocquier@unisi.it - 0577/23 3134)**

Faculty and programme

Prof. André Matagne



André Matagne is Professor of Enzymology and Protein Folding and the founder of Robotein[®], an automated high-throughput biomolecular and biophysical protein analysis platform, part of the European Instruct-ERIC (European Research Infrastructure Consortium for structural biology research) network.

Dr. Marylène Vandevenne



Marylène Vandevenne holds a PhD in Biochemistry from the University of Sydney, Australia, under the supervision of Prof. Joel Mackay. After spending several years in the biotech industry (Eurogentec), she is currently the Facility Manager at Robotein, Centre for Protein Engineering, University of Liège, Belgium.

This course will explore how biophysical methods can be used to characterize proteins with a particular emphasis on protein quality control. We will first introduce the optical properties of proteins and show how spectroscopic techniques (i.e., UV-visible absorption, fluorescence, infrared and circular dichroism) can be applied to study protein folding and stability. These principles will be illustrated using concrete case studies (such as β -lactamases, single-domain antibody fragments and lysozymes), combining a brief theoretical background with data from the literature.

Building on this, the course will further address protein quality control strategies through a series of complementary biophysical approaches. We will cover light scattering methods (dynamic and static), differential scanning fluorimetry and their use in assessing protein stability and formulation.

Finally, we will focus on techniques to analyse protein-ligand interactions, including kinetic-based methods (surface plasmon resonance, biolayer interferometry), thermodynamic approaches (isothermal titration calorimetry) and equilibrium-based techniques such as microscale thermophoresis. Together, these topics will provide an integrated view of how to evaluate and optimize protein quality in both fundamental and applied contexts.