



DIPARTIMENTO DI BIOTECNOLOGIE MEDICHE  
DOTTORATO DI RICERCA IN BIOTECNOLOGIE MEDICHE



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## Structure and function of proteins: Theory and practice

**Prof. André Matagne**

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

*June 19-22, Polo Didattico San Miniato*  
*10:00-13:00*

*Prof. Luisa Bracci,  
Head, Department of  
Medical Biotechnologies*

*Prof. Francesco Iannelli,  
Coordinator, Doctoral School in  
Medical Biotechnologies*

*Organizer: Prof. Jean-Denis Docquier, Department of Medical Biotechnologies  
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## Faculty and programme

**Prof. André Matagne**



**University of Liège, Belgium**

André Matagne is Full Professor of Enzymology and Protein Folding and Director of the Centre for Protein Engineering. He is 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.

The objective of his course will be to illustrate how optical methods (UV-visible absorption, fluorescence, infrared and circular dichroism) can be used to study protein folding, dynamics and stability. The course will include a review of the optical properties of proteins. Then, concrete examples (e.g.  $\beta$ -lactamases, single-domain antibody fragments, lysozymes) will be analysed in details, on the basis of theoretical background (shortly reviewed during the course) and data found in the literature.

Detailed programme (approx. 10 hours):

- 1 - Optical properties of proteins and characterization of conformational changes
- 2 - Case study of protein folding: the TEM-1 class A  $\beta$ -lactamase
- 3 - V<sub>H</sub>H (single chain antibody or nanobody) stability and applications
- 4 - Case study of protein folding: the BcII metallo- $\beta$ -lactamase