



UNIVERSITÀ DEGLI STUDI DI NAPOLI "FEDERICO II"

Dipartimento di Scienze Chimiche

*Dottorato in Scienze Chimiche - XXXIII Ciclo*

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**Research Doctorate (Ph.D.) in Chemical Sciences**

**33<sup>rd</sup> Cycle – Academic Year 2017/2018**

**Tutor**

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***Project Information***

**1. Title**

*In vitro* and *in vivo* investigation of functional protein complexes

**2. Key words**

Conformational analysis, limited proteolysis, functional proteomics, mass spectrometry

**3. Abstract**

The identification of protein components of *in vivo* functional complexes as well as the *in vitro* investigation of their three-dimensional structure constitutes a fundamental prerequisite for the elucidation of their biological functions at molecular level.

This PhD project will be addressed to the characterization of protein complexes both *in vivo* and *in vitro* using functional proteomics approaches and limited proteolysis methodologies coupled to advanced mass spectrometry techniques. Investigation of *in vivo* protein complexes involved in pathologies will be carried out by identification of individual protein components using functional proteomic approaches to understand the role of these interactions in the onset of diseases. The interaction between proteins and ligands (metals, proteins, lipids, DNA/RNA, drugs) will be investigated *in vitro* by ESIMS analysis, limited proteolysis and cross-linking experiments, to define complex conformation and protein-ligand interacting regions.