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Bioorganic team
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POSTDOCTORAL POSITION IN BIOORGANIC CHEMISTRY

TITLE: Photocatalytic bioconjugation of proteins for bioimaging applications.

KEY WORDS: Photoredox catalysis, bioconjugation, peptide synthesis, protein functionalization, fluorescence.

FUNDING: RIN (Network of Norman Interest)

EXPECTED STARTING DATE: December 2021 – January 2022

PROJECT: Effective analysis and interpretation of Big Data encourage the characterization of global sets of biomolecules such as DNAs, RNAs, proteins and metabolites, which has opened a new area in biomedical sciences in particular for healthcare. There are about 20,000 protein-coding genes in the human genome, moreover the activity of subsequent proteins can also be regulated by post-translational modifications such as phosphorylation, glycosylation, methylation, acetylation. Visualization of protein localization, dynamics and interactions give important information for understanding how cells respond to environmental, and genetic perturbations, or to (bio)chemicals in the context of drug discovery.

This project which is at the interface of chemistry and biology, involves the development of new photochemical tools for biological applications. Particularly, ligand directed chemistry enables the site-specific modification of proteins of interest with small-molecule organic fluorophores, while maintaining the requisite biological activity as intact as possible. In this project, visible-light-induced photoredox catalysis will be used for the selective and fluorogenic labelling of peptides and proteins of interest. This strategy will be examined for the late stage modification of peptides and proteins either isolated or in complex mixture such as in cell lysates.

CANDIDATE PROFILE: This project will require the synthesis of organic molecules with fluorogenic properties and the solid phase synthesis of oligopeptides. An important part of the project will be devoted to the chemoselective bioconjugation of proteins.

We are looking for outstanding and highly motivated candidates having an expertise in the bioconjugation and purification of proteins and a strong background in organic chemistry.

APPLICATION PROCEDURE: A detailed curriculum vitae, a short research summary, and two contacts able to provide a recommendation sent to:

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