UE 3.10C – Bio-organic Chemistry – 3 ECTS

Instructors’ names:
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Pedagogical objectives:
Nucleic Acids and Chemistry. Function and structure; Synthesis of chemically modified oligonucleotides. Nucleic acid analogues
Oxidative modifications on cysteines and redox signaling.
Biochemistry of sulfur metabolic compounds (cofactors and radical chemistry)

Course pre-requisites:
Bases in organic chemistry and molecular biochemistry

Program:

Chemistry of nucleic acids:
Synthesis of chemically modified oligonucleotides The post-synthetic approach by solid phase synthesis (with modified –nucleobase, sugar or phosphoramidite), by enzymatic process, by semi-synthesis.
Nucleic acid analogues (PNA, LNA, triazole-linked DNA).

Oxidative modifications on cysteines and redox signaling:
Oxygen and nitrogen reactive species (ROS/RNS): formation and reactivity. Biological chemistry of sulfenic acids and nitrosothiols.

Sulfur metabolic compounds and hydrogen sulfide:
Overview of sulfur compounds metabolism in mammals. Focus on S-adenosylmethionine as a source of chemical groups and hydrogen sulfide (biogenesis, degradation and reactivity).

Acquired skills:
Knowledge and understanding of the nucleosides and nucleotides chemistry. Overview of sulfur compounds metabolism and biological chemistry of sulfenic acids and nitrosothiols.

Evaluation:
Final written exam (50%)