DESIGN AND SYNTHESIS OF NEW CARDIOPROTECTIVE AGENTS

The opening of a nonspecific pore in the inner mitochondrial membrane (the so-called mitochondrial permeability transition pore, mPTP) triggers the alteration of mitochondrial permeability, which plays a key role in the mitochondria-promoted cell death (apoptosis). This process is responsible for several disorders including ischemia-reperfusion injury (IRI)-based cardiac diseases, such as the acute myocardial infarct.
To date, there are no treatments able to prevent IRI, and mPTP is emerging as a promising pharmacological target. Indeed, mPTP opening in the reperfusion stage helps to increase the infarct size.

GOALS

- Development of new potent and selective inhibitors of mPTP opening as potential cardioprotective agents
- Design and synthesis of the first mPTP selective covalent/fluorescent probes.

INSTRUMENTS AND METHODS

The compounds are synthesized with the standard equipment for traditional liquid phase synthesis. Flash chromatography and preparative HPLC, mass spectrometry, analytical HPLC, NMR, IR techniques will be used to isolate and characterize the synthesized compounds.

MAIN SUBJECTS

Medicinal chemistry, organic chemistry, pharmacology, molecular biology

RESEARCH GROUP

Delia Preti
Remo Guerrini

COLLABORATIONS

Prof. P. Pinton, Prof. C. Trapella, Prof. C. Giorgi (University of Ferrara)