

## CHEMISTRY OF RADIOMETALS FOR MEDICINE

Nuclear medicine is an intrinsically molecular imaging technology, which allows monitoring non-invasively metabolic processes occurring in living tissues by using radiolabeled single-molecule probes. Metallic radionuclides play a key role in the production of diagnostic and therapeutic agents for a variety of diseases. The research in this field is focused on the production of exotic metallic radionuclides and of the corresponding radiopharmaceuticals employed either as simple inorganic ions or comprising a bioactive ligand.

### *GOALS*

To synthesize highly sensitive biological probes, radiolabeled with metallic radionuclides, for exploring biological processes at the molecular level. To exploit this information for developing diagnostic and therapeutic (theranostics) agents for the treatment of major diseases.

### *INSTRUMENTS AND METHODS*

70-MeV high-current, high-energy cyclotron (Best Theratronic, Canada), proton beam lines and targets, fully equipped radiochemical laboratories, clean rooms, PET/SPECT/CT small-animal scanner, gamma spectroscopy laboratory.

### *MAIN SUBJECTS*

Inorganic chemistry, nuclear physics, radiochemistry, medicinal chemistry, radiopharmaceutical chemistry, molecular biology, molecular imaging, positron emission tomography (PET), single photon emission tomography (SPECT), theranostics.

### *RESEARCH GROUP*

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### *COLLABORATIONS*

- National Institute of Nuclear Physics at the National Laboratories in Legnaro (LNL-INFN, Italy)
- Arronax GIP, Nantes (France)
- International Atomic Energy Agency (IAEA, Vienna, Austria)
- Institute of Bioimaging and Molecular Physiology (Bicocca University, Milan, Italy)
- University 'Goce Delcev', Stip, Republic of Macedonia