# ICT - INTERDISCIPLINARY CENTER FOR SMART SPECIALIZATION IN THE FIELD OF CHEMICAL BIOLOGY, RO-OPENSCREEN

## GENERAL INFORMATION

- *Beneficiary*: "Coriolan Dragulescu" Institute of Chemistry - ICT, Timișoara
- Project co-financed by European Regional Development Fund under the Competitiveness Operational Program 2014-2020
- *Priority Axis 1* – Research, Technological Development and Innovation to Support Economic Competitiveness and Business Development
- *Investment priority 1a* – Improving research and innovation infrastructures and capacities to develop excellence in RDI and promoting centers of expertise, especially those of European interest
- *Action 1.1.1* Large research and development infrastructures
- *Period*: 20.07.2020 – 31.12.2023
- *MySMIS Code*: 127952
- *Investment Value*: 42,587,899.61 RON (~9.1 million euro)

**PROJECT DIRECTORS**: Liliana Cseh (01.06.2022 – 31.12.2023) / Liliana Pacureanu (20.07.2020 – 31.05.2022)

**TEAM MEMBERS**: Alina Bora, Ramona Curpan, Elisabeta Szerb, Ildiko Buta, Luminita Crisan, Livia Deveseleanu-Corici, Adelina Andelescu, Manuela Crisan, Alexndru Ilin, Sanda Cioaba, Simona Stoicheci, Arleta Suciu, Sofia Chera, Ana Poenaru, Sergiu Blidariu, Florin Ancuta, Stoica Radu, Diana Cristea, Stoica Alina, Ramona Costache, Mirela Dragomir, Cosmina Banica.

## GENERAL OBJECTIVE

The aim of the **RO-OPENSCREEN** project implemented by "Coriolan Dragulescu" Institute of Chemistry is to increase the capacity, quality, and efficiency of the research-development-innovation (RDI) activity of the "Coriolan Drăgulescu" Institute of Chemistry (ICT), by creating a modern research infrastructure and equipping the newly created laboratories of the Interdisciplinary Center for Smart Specialization in Chemical Biology, RO-OPENSCREEN with high-performance research equipment and tools, aligned to the European infrastructure network EU-OPENSCREEN (European Infrastructure of Open Screening Platforms for Chemical Biology) in order to stimulate the competitiveness of the Romanian scientific research and its integration in the European research space.

The Center will carry out integrative research by applying advanced technologies of automated management of compound libraries, chemical synthesis, structural analysis, determination of biological activities and chemoinformatics.

## DESCRIPTION OF THE INVESTMENT

The implementation of the project consists of two main components:

- **I.** Modernization/consolidation of two of our own buildings under conservation, namely C20-Materials warehouse and C21- Laboratory. These two buildings considered for development of the new ICT interdisciplinary research center are located in Timișoara, 22 Cornelia Salceanu Street. The modernization/consolidation works include: design and technical assistance, obtaining approvals and authorizations and the actual works: site organization and modernization/consolidation works of the two buildings.
- **II.** The provision of research tools and equipment for three laboratories with specific interdisciplinary biological chemistry, united in the new ICT research center, will ensure the functionality of the following laboratories: (*i*) - Chemoinformatics laboratory; (*ii*) - Chemical bookstore laboratory; (*iii*) - Chemical synthesis, characterization and analysis laboratories. The thermal power plant, reagent transfer station, IT and communication systems are located in the C20-Materials warehouse.

The laboratoratories will be set up with **147** high-performance research and IT equipment's including e.g. automated imagining and multimode microplate reader, automated liquid handling and acoustic transfer of nanovolumes platforms, SAXS/WAXS diffractometer with GISAXS module, polarized and fluorescence optical microscope with hot stage, benchtop NMR spectrometer, ultra-performance liquid chromatography–high-resolution mass spectrometry, thermogravimetric analysis/ FTIR-Raman, circular dichroism coupled with chiral liquid chromatography, high-performance computing and communication system, etc will place the Center within a rich national and European scientific networks.

The new Center will offer an integrated research infrastructure, unique in Romania, that allows extensive physico-chemical investigations and complete analytical services on the structure of chemical compounds following approved European procedures. Moreover, the center's interdisciplinary research infrastructure developed by combining chemical screening and *in vitro* bioassays will accelerate the process of discovering new compounds with biological activity. These compounds will form the ***National Library of Biological Activity Compounds (LNCB). unique in Romania.***

## DESCRIPTION AND VALORIZATION OF THE RESULTS

- The research infrastructure provided by the project will facilitate the collection and quality management of LNCB's chemical compounds. This library will be connected with the EU-OPENSCREEN's compounds collection through the RoChemBioNet national network. High-capacity, systematic and automatic biological screening workflow of chemical compounds in LNCB, will be implemented. The LNCB will enable the scientific community to explore chemical space with the goal of developing new molecular structures transferable to the clinic and the drug industry.
- The complex and high-performance equipment, mandatory to organize an integrated system of research laboratories dedicated to synthesis, structural characterization and primary biological evaluation, will facilitate the increase of ICT competitiveness and attractiveness for new cooperation initiatives at national, regional and European levels. Moreover, the infrastructure will afford to continue the current topic research to a superior

level and allow new research directions by developing complex drug discovery projects, agricultural agents, cosmetics, etc.

- The training programs through the project implementation will provide a framework to develop strengths, encourage innovation and will boost adherence to high research standards of human resource.

Overall, it is RO-OPENSCREEN's focus on a high-quality compound library and modern research infrastructure that strengthens our attractiveness as a location that facilitates the research scientific community with knowledge exchanges, access to perform tests, determinations and analysis on state-of-the-art equipment and exploring the chemical space through a unique compound collection.



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