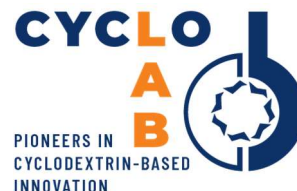


PRESS RELEASE



Next Generation of Nanocontainers for Cancer Treatment, NextNano4Cancer (ERA4HEALTHNANO-293)

Project leader: Dr. Kovácsné Prof. Dr. Bácskay Ildikó Katalin

Contract No: 2024-1.2.1-HE_PARTNERSÉG-2025-00036

Project description:

The Consortium of CYCLOLAB, Kft. and the University of Debrecen submitted a funding application registered under number 2024-1.2.1-HE_PARTNERSÉG-2025-00036 in response to the call for proposals entitled "Support for Hungarian organisations successfully participating in joint international calls of Horizon Europe European partnerships" (call code: 2024-1.2.1-HE_PARTNERSÉG), which was approved by the National Research, Development and Innovation Office (hereinafter: the Funder) by its decision bearing reference number IKT-2025-900-I1-00000435/0000007, dated 2 June 2025.

The title of the project is "Nano and Advanced Technologies for the Prevention, Diagnosis and Therapy of Diseases (NANOTECMEC)".

Scope of the project:

The effectiveness of chemotherapy is still required to be improved by combating new pharmacological targets and overcoming multidrug resistance (MDR). New nano-scale drug delivery systems can increase the efficiency of anticancer drugs and fight against MDR. Macrocyclic molecules such as dynarene and calixarene derivatives have potent anticancer effects by interacting with cancer-related biomolecules. At the same time, they act as nanocontainers for the delivery of drugs, similar to cyclodextrins (CD). Our previous results showed that by the combined application of these macrocycles, supramolecular structures can be formed, enhancing the solubilization of the drug and applying the pharmacological effects of the macrocycles. In this project macrocycles will be used with CDs for the formation of larger supramolecular complexes for the solubilization and delivery of new casein kinase 2 inhibitors (CK2i). The aim of our project is to reach TRL 5 of a new chemotherapeutic injectable formulation containing the above-mentioned components in a self-associated nanosystem. In the frame of the project, macrocyclic molecules and CK2i will be synthesized and tested for their interactions by molecular modelling and solubilization studies. The best compositions will be applied to form a ternary supramolecular system containing CK2i+calixarene/dynarene+CD. The pharmacological efficiency of the product will be tested on cancer cell lines and animal cancer models. Special attention will be paid to

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the feasibility study of the scale-up in the field of synthesis and formulation. At the end of the project, a scale-up plan for manufacturing will be constructed and a GMP process development will be initiated. The effectiveness of the macrocycle-based supramolecular systems combined with anticancer agents has not been tested yet and their combined formulation has not been presented, thus this system will attract significant scientific and societal interest.

Project implementation period: May 1, 2025 – April 30, 2028

Total project funding: €1,061,709

Funding for domestic partners: HUF 77,100,000

Funding for CYCLOLAB Ltd.: HUF 38,550,000

Consortium details:

Lead applicant: University of Debrecen

Consortium partners:

Claude Bernard University Lyon 1 (CBU) – Lyon, France

Centre de Recherche en Cancérologie de Lyon (CRCL) – Lyon, France

CYCLOLAB Ltd. (CYCLOLAB) – Budapest, Hungary

Consejo Superior de Investigaciones Científicas (CSIC) – Spain

Universitatea de Vest Vasile Goldis din Arad (UVVG) – Arad, Romania

Department of Microbiology and Immunology, School of Medicine, College of Medicine, Taipei

Medical University (TMU) – Taipei, Taiwan



NATIONAL RESEARCH, DEVELOPMENT
AND INNOVATION OFFICE
HUNGARY

PROJECT
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