

Horizon Europe Partner Search Form

Link: <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-widera-2023-access-02-01>

- I offer my expertise to participate
 I am planning to coordinate a proposal and I am looking for partners

Short summary of my partner search (3 lines max.):

We are looking for research teams interested in bladder cancer – genomics, gene expression, new diagnostic and prognostic biomarkers, and immune response. Our focus is on finding teams willing to aid with big data management and analysis generated by high-throughput sequencing methods (Illumina, Nanopore) for whole-genome and cell-free DNA sequencing

Topic

Topic we are interested in:

Twining Bottom-Up (HORIZON-WIDERA 2023-ACCESS 02-01)

Project information

Tentative title:

Integrated Whole-Genome Sequencing and Multi-omic Analysis of Urothelial Cancers: A Pathway to Precision Oncology

Project idea:

I. Introduction

The rapid evolution in genomics, marked by the completion of the Human Genome Project and advances in next-generation sequencing technologies, has rendered Whole-Genome Sequencing (WGS) a realistic tool in predicting cancer risk. When applied to tumor tissues, WGS data may lead to better precision in prescribing treatment options. This research proposal aims to perform an exhaustive molecular characterization of urothelial cancers, focusing on the analysis and correlation of molecular species such as cell-free DNA, microRNA, and cytokines with WGS data.

II. Objectives and Methods

1. **Whole Genome Sequencing:** The core initiative involves the use of the third-generation sequencing platform from Oxford Nanopore Technologies for performing whole genome sequencing on matched cancer and normal samples. The advantages of long-read Single-Molecule Real-Time (SMRT) sequencing, including DNA and epigenetic base modifications, will be harnessed to generate an in-depth understanding of cancer evolution, systemic changes, and potential therapeutic targets.
2. **Cell-free DNA Analysis:** The liquid biopsy-derived cell-free DNA will be quantified as a biomarker for cancer copy number variation (CNV). This approach benefits from the scalability of nanopore sequencing and the associated cost reductions for patients. The innovative aspect of this stage involves linking the cell-free DNA data, inclusive of base modifications, with the specific cancer origin cell.
3. **MicroRNA Characterization:** MicroRNA has been proven instrumental in understanding cancer origin, evolution, prognosis, and the immune system's role in distinguishing between self and non-self cells. This research aims to quantify microRNA, linking it to detectable DNA modifications. The workflow involves high-throughput microRNA expression profiling via short-read sequencing on the MiniSeq from Illumina, followed by a validation study using quantitative real-time PCR with TaqMan Advanced miRNA assays from Applied Biosystems.
4. **Cytokine Profiling:** Cytokine levels will be assessed using the Luminex platform and the Cytokine Human Panel from Thermo Fisher Scientific. This platform facilitates monitoring of significant cytokines, chemokines, and growth factors involved in cancer development and progression.

III. Expected Outcomes

The goal is to generate novel insights into urothelial cancer biology by integrating genomic data with the analyses of cell-free DNA, microRNA, and cytokines. The correlations established between these biomarkers and genomic data will offer new avenues for personalized cancer treatment and patient monitoring strategies.

IV. Future Direction

This comprehensive and integrative approach to studying urothelial cancers can serve as a prototype for studies on other types of cancer. It opens up the potential for advancing precision oncology and fostering the development of novel therapeutic strategies, thereby significantly enhancing cancer patient care. The experiences gained during this project will also contribute to the development of an active network and knowledge base in the field of cancer genomics research.

Potential contribution of my organisation to the project:

- Research capacity/approaches
- Scientific mediation. Capacity to build citizen participative scientific programs
- Coordination of scientific projects and capacity to write down a scientific and cultural program.
- Communication skills
- Capacity to organize large scale events

- Capacity to mobilize the research community, the business communities, and public authorities in its own country.

Role in the project:

- Research
- Training
- Dissemination
- Technology Development
- Other (artistic residencies)

Experience as a coordinator:

- Yes but National funded projects
- No

Experience as a partner in a collaborative project:

- Yes
- No

Consortium:

University of Medicine and Pharmacy 'Carol Davila', Bucharest, Romania (UMFCD)
Hospital Clínic Foundation for Biomedical Research – August Pi i Sunyer Biomedical
Research Institute, Barcelona, Spain (FRCB-IDIBAPS)

Target Coordinator/Partner sought

Organisation type:

- Higher Education/University
- Public Research Organisation
- Large Scale Enterprise
- Small and Medium Scale Enterprise
- Public Body/Authority
- International NGO
- National NGO
- Other, please specify:

We are looking for the following expertise/competencies:

Whole-genome sequencing of human samples
WGS data management and analysis

Contact details

Contact person :	Prof Dr Ileana Constantinescu, Dr. Dimitri Apostol
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Additional information on the organisation (previous projects, publications, etc.):	

University of Medicine and Pharmacy “Carol Davila” References :

microRNAs expression profiles in Romanian patients with urinary bladder cancer - preliminary results. Maria Mirela Iacob, Costin Petcu, Tatiana Vassu-Dimov, Ileana Constantinescu. Immunogenetics : Open Access –2018 ; 3(1):1-6.

Are changes in microRNAs expression a relevant biomarker for urinary bladder cancer prognosis? Maria Mirela Iacob, Tatiana Vassu-Dimov, Natalia Cucu, Ileana Constantinescu, Biomedical Journal of Scientific & Technical Research (IF-0.548), DOI: 10.26717/BJSTR.2020.24.004084, ISSN 2574 -1241, 2020

MicroRNAs – new biomarkers in the management of urinary bladder cancer. Maria Mirela Iacob, Costin Petcu, Ileana Constantinescu, Ana Moise, Catalin Baston, Natalia Cucu, Tatiana Vassu-Dimov, Ioanel Sinescu, Congresul UMF “Carol Davila” ed. a VI-a, 07-09.06.2018, Bucuresti, MAEDICA-a journal of clinical medicine, vol 13 Supplement, ISSN 1841-9038

Expresia speciilor de microARN reflecta modificarile histopatologice la pacientii cu cancer de vezica urinara
Maria Mirela Iacob, Tatiana Vassu-Dimov, Natalia Cucu, Costin Petcu, Catalin Baston, Ileana Constantinescu, Ioanel Sinescu, MAEDICA-a journal of clinical medicine, ISSN 2501-6903, ISSN-L 2501-6903, 2019 – lucrare premiata la Congresul UMFCO, 2019

The Role of MiR in Bladder Cancer – A Review of the Literature, Costin Petcu, Catalin Baston, Emil Angelescu, Maria Mirela Iacob, Ileana

Constantinescu, Ioanel Sinescu, Revista Romana de Medicina de Laborator,
ISSN: 1841-6624, DOI: <https://doi.org/10.2478/rrlm-2021-0001> , vol.29,
nr.1, 2021, FI: 0.945