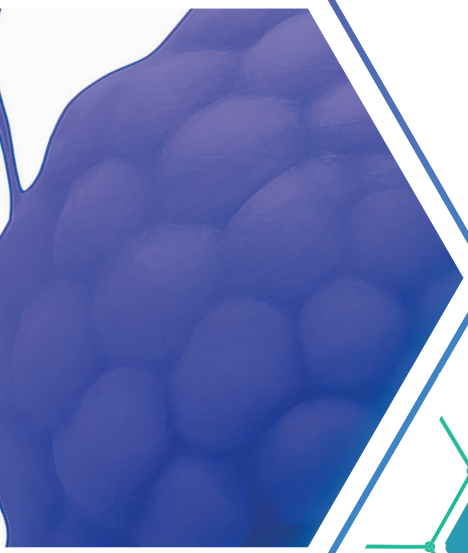
CancerScan

SMART PATHOLOGY SLIDE SCANNER FOR DIAGNOSIS AND PATIENT-SPECIFIC TREATMENT RECOMMENDATION IN ONCOLOGY



www.cancerscanproject.eu

PROJECT **BACKGROUND**

In routine oncology, doctors rely on clinical guidelines, such as ASCO or NCCN, which often fail to address the unique details of each patient's tumour. Decision-making is further influenced by personal factors like confidence and expertise, limiting the precision of treatment recommendations. Existing personalised medicine systems correlate historical biomarker datasets with standard patient outcomes but lack the ability to determine the optimal drug, sequence, timing, and dosage for individual patients. Achieving this level of precision requires addressing the complexities of the tumour microenvironment (TME), which impacts drug efficacy by physically hindering drug reach and modulating cancer cell drug resistance through a complex signalling network.

The CancerScan project aims to introduce advanced analytics into the treatment decision process by creating personalised tumour digital twins. Drawing an analogy to a proto-language, the project seeks to identify the core rules governing cell communication within the TME. By leveraging semantic knowledge representations, network analysis, and machine learning, CancerScan will incorporate these rules into drug effect simulations, enabling precise predictions of treatment outcomes. These personalised tumour digital twins, embedded in a smart pathology slide scanner, will allow doctors to analyse potential treatment effects directly from biopsy slide scans. Starting with pancreatic cancer as a model system, CancerScan will lay the groundwork for a transformative platform to assist doctors in optimising drug selection, timing, sequence, and dosage for individual patients.

PROJECT **OBJECTIVES**

MAP the influence of the tumour microenvironment (TME) on the efficacy of chemotherapeutic treatments.

DEVELOP a standardised knowledge graph that integrates experimental, public, and ontological data to represent the TME's influence on drug efficacy.

LEARN the proto-grammar of tumour communication identifying structural properties and implementing statistical pattern analysis and machine learning.

DESIGN & VALIDATE a platform for the automated generation of tumour digital twins for specific tumour scenarios.

CREATE an embedded hardware/software system for automating the creation of tumour digital twins from digital slides and getting simulation results.

BOOST awareness of the project outcomes through communication and dissemination activities and engage main target groups.

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PROJECT FACTS

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01/2024 to 12/2027

Programme
Horizon Europe
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HORIZON-EIC (HORIZON EIC Grants)

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SYNYO GmbH

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