

New European Project Squares Off Against Paediatric Cancer

The iPC project is now underway and bringing hope to children with cancer

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Cancer in children is rare but when it happens, clinically prescribed treatment options are not always as efficient as one would hope. In fact, on average, only a quarter of oncological patients respond to the drug therapy they receive. Evidence shows that a personalized treatment plan or treatment that is based on *patient's* clinical, molecular and phenotypic data can significantly enhance treatment outcomes. When recommending treatments for children, it is as important to identify the treatment that leads to the optimal therapeutic outcome, as it is to minimize the short and long-term side-effects associated with it.

Under the technical leadership of Dr. María Rodríguez Martínez from IBM in Switzerland and the coordination of the Austrian-based private research company Technikon, consortium scientists have recently kicked off a European Commission funded research project entitled iPC (individualizedPaediatricCure). In this € 15 million, four-year endeavor, 21 partners from eleven different countries, including nine European Union Member States (Austria, Belgium, Switzerland, Germany, Spain, France, Italy, Netherlands, Slovenia), along with the USA and Australia will work together with the goal of giving clinicians the tools and knowledge to create individualized treatment plans to children with cancer. The project team will focus on identifying effective personalized medicine for paediatric cancers and will address a multitude of challenges, including domain specific challenges. To meet these challenges, a comprehensive computational effort to combine knowledge-base, machine-learning, and mechanistic models to predict optimal standard and experimental therapies for each child will be proposed.

The goal of the iPC project is to collect, standardize and harmonize existing clinical knowledge and medical data and, with the help of artificial intelligence, create treatment models for each patient. Armed with these treatment models, scientists will then test them on virtual patients to evaluate treatment efficacy and toxicity, thus improving both patient survival and their quality of life.

While the ever-present complexities of cancer continue to challenge our scientific community, it is reassuring that European projects like iPC are using the latest technology and brightest minds to find solutions which, in turn, usher in better patient care. In summary, iPC will address the critical need for personalized medicine for children with cancer, contribute to the digitalization of clinical workflows, and enable the Digital Single Market of the EU data infrastructure.

The iPC partners are

- TECHNIKON FORSCHUNGS- UND PLANUNGSGESELLSCHAFT mbH (Austria)
- IBM RESEARCH GMBH (Switzerland)
- BAYLOR COLLEGE OF MEDICINE (United States)

- INSTITUT CURIE (France)
- TECHNISCHE UNIVERSITÄT DARMSTADT (Germany)
- UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II. (Italy)
- UNIVERSITEIT GENT (Belgium)
- BARCELONA SUPERCOMPUTING CENTER - CENTRO NACIONAL DE SUPERCOMPUTACION (Spain)
- XLAB RAZVOJ PROGRAMSKE OPREME IN SVETOVANJE DOO (Slovenia)
- PRINSES MAXIMA CENTRUM VOOR KINDERONCOLOGIE BV (Netherlands)
- MAX-PLANCK-GESELLSCHAFT ZUR FÖRDERUNG DER WISSENSCHAFTEN EV (Germany)
- Academisch Medisch Centrum bij de Universiteit van Amsterdam (Netherlands)
- UNIVERSITÄTSKLINIKUM HEIDELBERG (Germany)
- INSTITUT DE INVESTIGACIO EN CIENCIES DE LA SALUT GERMANS TRIAS I PUJOL (Spain)
- ALACRIS THERANOSTICS GMBH (Germany)
- UNIVERSITÄT ZÜRICH (Switzerland)
- DEUTSCHES KREBSFORSCHUNGSZENTRUM HEIDELBERG (Germany)
- LUDWIG-MAXIMILIANSUNIVERSITÄT MÜNCHEN (Germany)
- THE CHILDREN'S HOSPITAL OF PHILADELPHIA NON PROFIT ORG (United States)
- CONSIGLIO NAZIONALE DELLE RICERCHE (Italy)
- CHILDREN'S MEDICAL RESEARCH INSTITUTE (Australia)



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