DKTK RadPlanBio

Platform for customized translational (pre-)clinical trials

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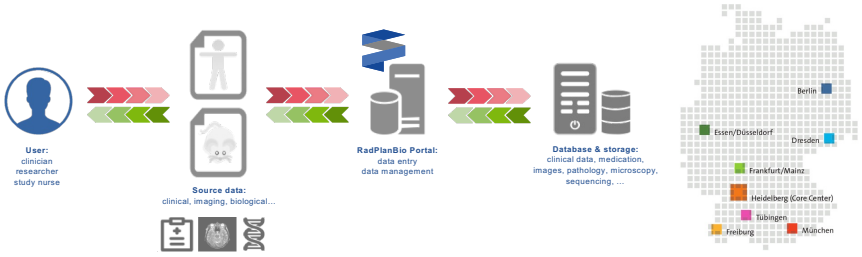
Abstract

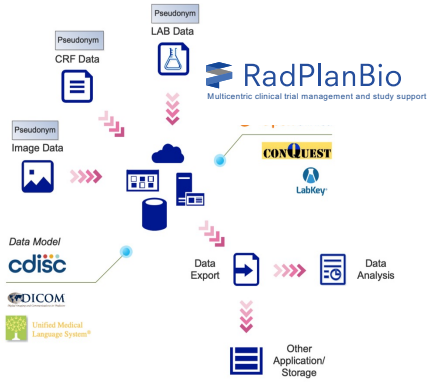
RadPlanBio ***is a comprehensive platform developed within the framework of the German Cancer Consortium (DKTK) to facilitate the storage and management of multimodal spatial and longitudinal data from clinical and preclinical trials - so far in the context of radiotherapy. With a strong emphasis on "data sharing" among experts in the radiooncology and radiobiology communities, RadPlanBio adheres to international standards such as the Clinical Data Interchange Standards Consortium (CDISC) or Digital Imaging and Communications in Medicine (DICOM) to achieve data interoperability. By efficiently managing both preclinical and clinical data, RadPlanBio promotes data sustainability and reusability, enabling future secondary analyses.***

Introduction

RadPlanBio provides services to support multicenter clinical and preclinical trials. Each site can request access to manage their studies. RadPlanBio supports multimodal data such as case report form (CRF) data, imaging data such as CT or MRI, and assay data from laboratory experiments. Data is managed by project with separate access for each participating site.



Components and how it works



Data Entry and Validation

For data entry, RadPlanBio is equipped with an electronic data capture (EDC) component to create a customized case report form (CRF). The EDC implements data validation rules and provides an API for programmatic data transfer. Users can upload data objects such as DICOM images and molecular data to the RadPlanBio PACS and LAB component.

Data management

Data are stored at the subject level in respective project, and structured according to events. The use of CDISC standard such as the Study Data Tabulation Model (SDTM) is recommended for data harmonization and interoperability.

Data access

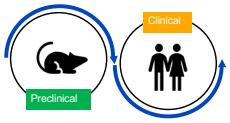
Accessing stored data is enabled through data export. Supported formats are component and type dependent, for example, tsv/csv or Excel, CDISC ODM.xml. End point is available from LAB to connect with R or Python. Object data such as DICOM images and molecular data are accessible as well via WebDAV.

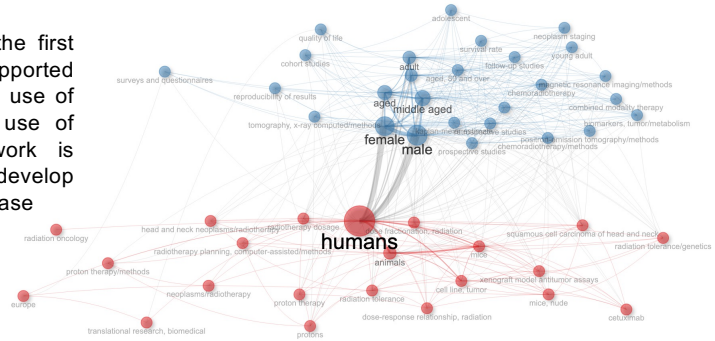
Data results

To date, RadPlanBio has supported a range of radiotherapy studies, encompassing both preclinical and clinical topics, and significantly contributing to research publications.

Outlook

The establishment of a second RadPlanBio instance at DKFZ (the first instance is located at the DKTK partner Dresden) has supported collaborative research and data sharing. It enables the secondary use of datasets and thus achieves the goal of data reusability. The use of international standards increases interoperability. Currently, work is underway to semantically link data from different projects to further develop the platform into a comprehensive cancer radiotherapy knowledge base for translational research. RadPlanBio is open and available to the DKTK community use.





Co-occurrence network generated from the keywords of research publications, that uses either primary or secondary data from RadPlanBio.

DKTK German Cancer Consortium

http://www.dktk.org

https://helmholtz.software/software/radplanbio

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