Drug & Target Screening Unit

DTSU | A Scientific Alliance for the Fight Against Cancer
Comprehensive Cancer Center CCC / Medical University of Vienna
IMPRESSUM

Editorial
Drug & Target Screening Unit DTSU
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Is one of the world’s leading medical universities and research organisations with historic roots of more than 600 years: It was founded as Medical Faculty of the University of Vienna in 1365, and now operates as an independent autonomous University since 2004. It follows the „triple track“ strategy including research, education and patient care with emphasis upon quality control in all areas of its activities.

Is the largest medical organisation in Austria and is a top-level research institution in Europe which operates within the General Hospital (Allgemeines Krankenhaus, AKH) which serves around 100,000 patients / year.

Is a modern research institution covering an area of 40,000 m². It employs a staff of 5,000 including 1,800 researchers and 1,600 physicians involved in patient’s care. It comprises 31 departments covering all areas of medical specialities and fields of research. » www.meduniwien.ac.at

Comprehensive Cancer Center

CCC is a unique academic research, teaching and medical care organization which integrates more than 30 top clinical care and basic research units.

CCC provides the critical mass and modern platforms for innovative approaches to improve cancer therapy at national and international levels.

CCC coordinates care for patients with cancer in an interdisciplinary way, unifies basic and translational research in malignant diseases performed at the Medical University Vienna, cares for pre- and postgraduate teaching and reaches beyond the University’s limits by generating a bridge towards other institutions with similar points of gravitation in Vienna.

» www.ccc.ac.at

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Drug & Target Screening Unit (DTSU)

Mission

With an ever growing field of knowledge, target identification and drug development in oncology it is necessary to build strategic alliances between academic institutions and other important players including scientific organisations, international health agencies and pharmaceutical industry. Such alliances merge clinical experience, basic research expertise and modern biotechnology to guarantee successful drug development programs resulting in an improvement of cancer treatment options.

Function

DTSU is a translational research unit which speeds up the process of drug development and the design of effective cancer therapy in cooperation with important institutions engaging in the identification of treatment targets and the applicability of their function modulation in the clinic.

The unit provides a drug testing platform, merges clinical data, genomics, proteomics and biomarkers to generate evidence-based surrogate endpoints which predict drug efficacy in oncology and hematology.

Facility

The unit is part of the Comprehensive Cancer Center (CCC) of the Medical University Vienna and the General Hospital and is located within the Department of Medicine I. Its core facility operates in the tumor microenvironment laboratory within the Clinical Division of Hematology and Hemostaseology.

DTSU possesses modern research infrastructure, a well trained research team, ex vivo models for drug testing and target validation and is connected to the microarray and proteomic units.

DTSU has access to primary materials and tissue banks from patients with hematological malignancies and solid tumors, their clinical characteristics, genomics and proteomics and biomarkers to generate evidence-based surrogate endpoints which predict drug efficacy and accelerate drug development in oncology and hematology.
DTSU Experimental Models

DTSU is dedicated to apply reliable experimental models for drug testing which realistically mimic the in vivo situation and guarantee the generation of reliable data. The models are based on using primary cells from cancer patients in in vivo-like experimental models taking in consideration the dependence of tumor cells on their microenvironment and surrounding tissues.

Leukemia Model

The leukemia model is based on using primary human marrow stromal cells as an ex vivo microenvironment model for drug testing, exploring cell signaling and target validation. The model is unique and strictly applies human, non-transformed and non-immortalized stromal cells to minimize the experimental artifacts.

Solid Tumor Model

The solid tumor microenvironment model is based on using primary tumor associated fibroblasts, endothelial cells and macrophages. The model could be applied for drug testing, target validation and overcoming drug resistance.

Mouse Models

In advanced stages of drug development program, DTSU will provide in vivo drug testing in the relevant mouse models in an available mouse facility.
Multitargeted approaches & Drug Pre-Testing model

Due to the significant role of the tumor microenvironment in cancer initiation, progression and drug resistance, DTSU follows a combined therapeutic strategy based on targeting tumor cells and cell signaling, interfering with the survival signal provided by tumor microenvironment and the recovery of the tumor suppressor functions of stromal cells. This model has been proved effective, successful and appealing for our current academic and pharmaceutical partners.

Drug Combination Studies

Since drug combination is essential for targeting cancer, DTSU has established standard methods and approaches for drug testing and evaluation of the additive, synergistic or antagonizing effect of drugs in ex vivo and in vivo models. The advantages of new compounds as single agents or in combination with standard therapy could be efficiently evaluated in human cells.
Surrogate Endpoints & Biomarkers

In order to perform a successful, cost effective drug development program, it should be necessary to generate robust biomarkers and surrogate endpoints for monitoring drug efficacy. In parallel to ex vivo drug pretesting, DTSU performs sequential gene expression profiling together with secretome and proteome analysis to identify response and resistance gene signature and generate new biomarker and surrogate endpoints for drug response and efficacy.

Clinical Validation

DTSU provides the best basis for initiation of clinical testing. All pre-clinical studies are performed on materials from fully characterized patients which allow the identification of patients with the highest probability of benefit from a specific therapeutic program. The availability of highly qualified medical staff, the link to national and international working groups, scientific and clinical societies and health organizations permits DTSU/CCC to perform clinical evaluation on a global level.
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Drug & Target Screening Unit (DTSU)  
Selected Publications


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General Hospital
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