Biomarker Research for Personalized Medicine

Nano World Cancer Day, Vienna, 31st January 2018

Prof. Dr. Thomas Pieber

COMET K1 Competence Center
CBmed (Shareholders and Scientific Consortium)

Shareholders / Main Scientific Partners

Other scientific consortium members with LOC

+others (especially in non-K and associated)
Industry Partners (selection)

> 50 international partners on 4 continents
CBmed Vision

CBmed GmbH is a research center of excellence established in 2014 focused on translational biomarker discovery and validation.

Our vision is to become the world’s most recognized center for biomarker research in personalized medicine by 2030.

This will be achieved by integrating cutting-edge technologies with international and interdisciplinary expertise in the fields of cancer, metabolism and inflammation.

Together with our scientific and industry partners, we will develop solutions and products for patient care and cure.
CBmed Core Labs

Core Lab
Complete NGS Workflow

Core Lab
Digital Pathology

Core Lab
MALDI

Core Lab
Immunology

Core Lab
Metabolomics

Core Lab
Proteomics & In-vivo Imaging

MEDICAL UNIVERSITY OF VIENNA

Medizinische Universität Graz

BBMRI-ERIC
Biobanking and BioMolecular resources Research Infrastructure

CONFIDENTIAL - Property of CBmed
Partners for Clinical Research
Facts & Figures

Retrospective & Prospective Clinical Cohorts

Vienna General Hospital (AKH)  Styria region, incl. LKH Graz

Biobanks

BBMRI-ERIC & BioBank Graz

In Top 10 of largest hospitals in EU
> 450 specialized outpatient units
~2,000 beds
~114,000 inpatients /yr
~1,773,000 outpatients /yr

Network of 23 hospital sites
in Styria incl. LKH Graz
~5,800 beds
~250,000 inpatients / yr
~950,000 outpatients / yr

European Biobank Consortium
with HQ in Graz:
515 biobanks with
> 60 mio biospecimens
> 7 Mio in Graz directly
Only research collaborations can provide a sound basis for accessing human biological samples and associated medical data.
Likelihood of Approval (LOA) with or without selection biomarkers from Phase I to Approval:

Fusion of CBmed Core Lab Technologies to increase likelihood of identifying relevant prognostic / predictive biomarkers in specific clinical settings.
CBmed Strategy: Colon Cancer

Scientific Rationale

• Colon Cancer (CC) = 3rd most common cancer worldwide

• Surgery in stage II CC

• Subgroup of stage II CC-patients develops early recurrence

• Unproven benefit of postoperative CTX for stage II patients

• Clinical parameters still unreliable in predicting recurrence free survival (RFS)

• Clinical need for predictive biomarker
CBmed Strategy Fusion Technology

Fusion of Core Labs

- Clinical data
- Proteomics
- Metabolomics
- Next Generation Sequencing
- Digital Pathology
- Flow Cytometry
- Multi-OMICS Approach
- in-vivo Imaging

CBmed combines
Requirements for Biomarker Research

Biomarker research without corresponding (prospective) clinical data is a “blind flight”.

Biospecimen

Biomarker Discovery and Validation

Clinical Data
Towards Digital Biomarkers

Industry Partner

Clinical Trial Recruitment
Real-world data analysis
Biobank sample annotation
Clinical cohort builder

Electronic Health Record Systems
Structured data
Lab, Admin, QM, Registries
Unstructured data (text)

Staging Area

Clinical Data Warehouse (CDW)
Medical Research Insights (MRI)

Semantic Enrichment
Text Mining
De-Identification

Ontologies
Terminologies

Connected Health Platform

CBmed FUSION Interface
FUSION of Processed Clinical Data

Industry Partners + Scientific Partners

Clinical data

Next Generation Sequencing

Digital Pathology

Flow Cytometry

Multi-OMICS Approach

- Proteomics
- Metabolomics
- MALDI-MS

Structured data
- Lab, Admin, CCM, Registries

Unstructured data (text)

Electronic Health Record Systems
1. Clinical Data Warehouse

- Clinical data prioritization / visualization
- Clinical and administrative decision support
- Semantic Biobank Broker
- Cohort builder

2. Biospecimen Annotation

- Deep molecular phenotyping and precise annotation of biospecimens in cooperation with clinics & biobanks

3. CBmed Data (FUSION)

- Next Generation Sequencing
- Digital Pathology
- Flow Cytometry
- Multi-OMICS Approach
- in-vivo Imaging

Deep molecular phenotyping and precise annotation of biospecimens in cooperation with clinics & biobanks
Management Team

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Clinical Oncologist

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