



**CBmed**  
**Center for Biomarker Research in Medicine**  
**Programme: COMET – Competence Centers for Excellent Technologies**  
**K1-Centres**  
**COMET subproject, duration and type of project:**  
**Biomarkers for Colorectal Cancer, 03/2015 – 12/2018, multi-firm**

## Eukaryotic translation initiation factors to individualize treatment in colon cancer patients

CBmed addresses biomarker identification, validation and translation in various fields of oncology by comprehensively approaching the main issues of cancer heterogeneity, cancer progression and metastases, intrinsic therapeutic resistance and acquired resistance of cancer in cooperation projects with industry and academic partners. CBmed has a clear focus on the most frequent cancer entities such as colorectal cancer.

### **Personalized Medicine**

Over the past several decades, significant progress has been made towards improving clinical outcome of patients with cancer, which is attributed in part to the approval of several new drugs and incorporation into existing therapies.

However, a lack of validated predictive biomarkers for almost all therapeutic agents still restricts our ability to tailor specific drugs to individual patients and might be viewed as one of the largest barriers to the success of individualized cancer therapy.

Therefore, it is essential to identify patients who will benefit from cancer treatment while sparing others needless toxicity and the

financial burden of systemic therapy that will not work.

One research focus at CBmed is the characterization of new biomarkers that enable a personalized, effective treatment of cancer patients.

### **Translation in Colon Cancer**

This CBmed project specifically focuses on eukaryotic translation initiation factors (eIFs) and their potential use as predictive biomarkers and drug targets in colorectal cancer.

eIFs regulate the initiation of translation in eukaryotic organisms and have a major influence on the development of aggressive tumor forms.

Translation describes the formation of proteins in cells and thus the essential process of gene expression. Deregulated translation leads to abnormal gene expression and uncontrolled cell growth which can lead to the development and progression of cancer.

Twelve "core" eIFs are already known with different functions in cell division or cell growth and a proven involvement in the development of tumors. Some eIFs have tumor suppressive properties while others promote carcinogenesis in various types of cancer.

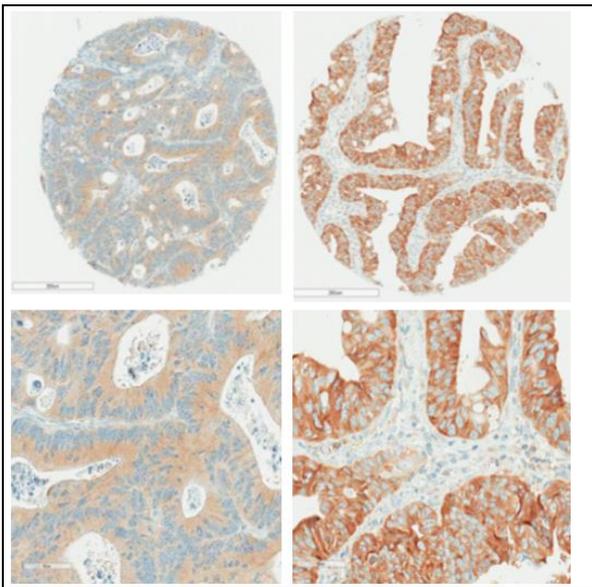


Fig. 1: eIF expression pattern (CBmed)

### Impact and effects

Together with the CBmed partners Eli Lilly, EPO AIT and MUG, this project has already successfully characterized several eIFs by using cutting-edge technologies for human tumour tissue analyses, cell culture experiments and molecular pathology in samples from colorectal cancer patients.

These eIFs were identified as the most promising candidates for predictive biomarkers and drug targets to be used for future therapeutic interventions.

The characterized biomarker candidates are currently being validated in a prospective clinical cohort in close cooperation with the Medical University of Graz.

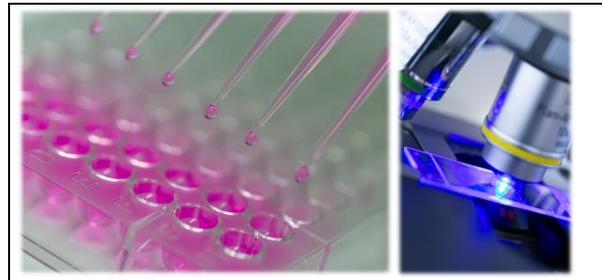


Fig. 2: Advanced laboratory platforms (CBmed)



#### Contact and information

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#### Project partners

Organisation	Country
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EPO	Germany
Austrian Institute of Technology (AIT)	Austria
Medical University of Graz (MUG)	Austria

Further information on COMET – Competence Centers for Excellent Technologies: [www.ffg.at/comet](http://www.ffg.at/comet)

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