

POSTDOCTORAL POSITION IN BRNO, CZECH REP.

(STARTING BETWEEN MARCH-JULY 2016, 2-3 years position)



THE NON-CODING AND CODING RNA NETWORKS IN THE MICROENVIRONMENTAL INTERACTIONS OF B-CELL LEUKEMIAS AND LYMPHOMAS

The laboratory of **Marek Mraz, M.D., Ph.D.** at the **CEITEC**-Central European Institute of Technology (Masaryk University, Brno, Czech Rep.) is recruiting a Postdoctoral Fellow.

PROJECT:

The objective of the laboratory is to study the biology of hematological malignancies with a focus on molecular pathways that regulate malignant immune cells' microenvironmental interactions. It is now understood that pathways like the **B-cell receptor (BCR)** signaling are deregulated during the onset of most B cell leukemias and lymphomas. The BCR pathway is considered the most promising target for therapy in B cell malignancies. For numerous pathological processes the principal deregulation takes place at the level of such non-coding RNAs in B cell malignancies (Mraz et al., Leukemia, 2009; Mraz et al., Blood, 2012; Musilova and Mraz, Leukemia, 2015). We have recently performed studies which revealed that microRNAs regulate the B-cell receptor signaling which represents the essential pathway for the fate of normal and **malignant B cells** (Mraz et al., Blood, 2014; Mraz and Kipps, Leuk Lymph 2013). However, the role of non-coding RNAs in microenvironmental interactions of immune cells is largely unclear.

The post-doctoral fellow will perform integrated analysis of coding and non-coding RNAs in the regulation of fundamental microenvironmental interactions of B cell, namely adhesion and BCR signalling. The project will focus on short **non-coding RNAs (microRNAs)** and identification of their targets, but also on **long-noncoding RNAs**. This will be performed using NGS technics (Illumina) in collaboration with the Genomics Core Facility of CEITEC MU, and experts in NGS data analysis (Uni Torino, CEITEC, EMBL). The candidate will use our in vitro models for microenvironmental interactions, and artificial activation/inhibition of BCR signalling to decipher the regulatory loops that involve coding and non-coding RNAs in primary leukemia cells and in lymphoma cell lines. This will also utilize co-culture of malignant B cells with stromal cells, and/or scaffold materials that mimic human bone marrow. Overall, the understanding of microenvironmental interactions is of great interest since it drives the discovery of combinatorial therapy. We will further use the knowledge of gene expression networks to reveal molecular inhibitors that should be used clinically. The interactions within the immune niches are the basis for relapse, persisting minimal residual disease, failure of the immune system to target cancer cells, cell resistance to therapy and, in principle, the incurability of many hematological malignancies.

HOW TO APPLY:

Candidates should have a PhD or MD with experience in cancer biology or molecular biology (cell culture, cloning technics, WB, flow cytometry), and should possess the ability to conduct independent research. Our institute provides outstanding laboratory facilities (including NGS) and a highly supportive environment. The successful applicant will work in a team of young investigators and will also have the opportunity to supervise doctoral/diploma students. The research will be conducted at CEITEC MASARYK UNIVERSITY (ceitec.eu) in close collaboration with Dept. of Int. Medicine, Hematology and Oncology (University Hospital Brno).

To apply, please submit a CV, a brief statement of research interests, reprints of publications by email to: marek.mraz@email.cz

OTHER INFORMATION:

The mission of the institute is to advance the understanding of the underlying molecular and cellular mechanisms of hematological malignancies. Our laboratory is located University Campus (Kamenice 5, 4kms outside the city center). The campus provides a vibrant, multidisciplinary and highly collaborative scientific environment. The lab is located in Brno, the second-largest city in Czech Rep. that hosts 6 major universities with the biggest concentration of biomedical research in this European region. Brno is one of the major cultural hubs, with a vibrant and lively atmosphere housing ~60000 students. The city has a very good public transport and plenty of interesting places to visit within the reach of trains. Located in the heart of Europe, Brno is within small distance of several major cities (Prague, Vienna, Bratislava, Budapest) and close to international airports (Prague, Vienna).