Project 1.4 Verification of personalized therapeutic strategy for myeloid leukemias with PTPN11 mutations

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Background:

Myeloid neoplasms, especially highly heterogeneous Acute Myeloid Leukemia (AML), represent the most common types of leukemia in adults. Apart from intensive development of research and advanced therapies, very little improvement in survival of those patients has been achieved over the past decades. Therapies are insufficient and survival rates are low. Development of combined personalized therapies that target key proleukemic regulatory molecules, designed for selected patients identified by genetic screen, to be the best current strategy. Our project combines basic and translational research and addresses major needs to develop novel therapies for myeloid malignancies with PTPN11 mutations and Ras pathway overactivation, which are characterized by high resistance and bad clinical outcomes. Previously we have identified prosurvival signaling controlling stress response, which can be a novel potential target for combined treatment and eradication of resistant cells leading to effective therapy in those leukemias.

Aim:

The studies will verify the therapeutic strategy based on specific combined targeting of elements of proleukemic signaling in PTPN11-mutated myeloid leukemias.
Using advanced methodology, including in vitro cell cultures, in vivo mice models, broad spectrum of cell and molecular biology techniques, including sc-RNAseq, multiparameter flow cytometry with unsupervised data analysis, as well as signal transduction studies we plan to investigate the effects of the proposed combined treatment on the prosurvival signaling pathways and gene expression in leukemic cells, eradication f resistant cells, remodeling of microenvironment-driven resistance and finally development of the disease.
Studies include collaboration with national and international scientific and medical institutions.

Requirements:

- high motivation, curiosity and passion for research,
- the candidate should have accomplished master degree in biomedical, biology, medicine, biotechnology or related studies,
- experience in laboratory work in the area of cellular biology/immunology/ medical biology is required,
- knowledge of techniques in the field of cell biology, cytometry, immunology,
- experience in work with primary blood cells and /or mouse models would be an important advantage,
- candidate should be able to collaborate and work in the team,
- good English skills are required.