

Project title: Investigating the role of fibroblast growth factor receptors and STAT transcription factors in the targeted therapy of acute myeloid leukemias

Name of the unit: Faculty of Biotechnology of the University of Wrocław

Job title: PhD Student

Requirements:

- eligibility to apply to the Doctoral School,
- experience in laboratory work in the field of mammalian and bacterial cell culture, isolation of proteins and nucleic acids, electrophoresis of proteins and nucleic acids, PCR and RT-PCR, spectrophotometric measurements, fluorescence and confocal microscopy, protein detection by ELISA and western-blot,
- knowledge of Python and Origin Pro programming languages,
- knowledge of English at C1 level,
- communicative knowledge of the Polish language,
- the ability to present scientific data in English,
- readiness to undergo a 6-months internship in a reputable research centre abroad in order to conduct in vivo research,
- full-time commitment,
- ability to work individually and in a team.

Task description:

- conducting research on cell lines,
- conducting research on cells from patients' bone marrow,
- analysis of data from publicly available transcriptomic databases,
- analysis of transcriptomic data from own research,
- preparation of scientific reports and publications,
- presentation of research results during international conferences,
- teaching classes.

Requirement documents:

- application
- a copy of the diploma,

- curriculum vitae, including research skills, scientific achievements and distinctions,
- language certificates,
- letter of motivation,
- contact to at least two people who can provide references (name and surname, place of employment, email address).

NCN call type: PRELUDIUM BIS – NZ

Deadline for submitting offers: June 18, 2023, 00:00

Form of submitting offers: email ema@cs.uni.wroc.pl

Successful candidates will be asked to meet in person or via the web application.

Conditions of employment:

Employment conditions: A person qualified for the implementation of the project will be admitted to the Doctoral School of the University of Wrocław and will obtain the rights of a doctoral student and a doctoral scholarship from the PRELUDIUM BIS grant. In order to qualify for the project, the required documents should be sent to ema@cs.uni.wroc.pl.

Project description:

Fibroblast growth factors (FGFs) and their receptors are very important for normal embryonic development and proper wound healing. However, mutations in the genes encoding FGF receptors can lead to the development of tumors, both solid and leukemias. Some of these mutations are so-called gene amplifications that cause the cells to have too many receptors on the surface. It is unclear how common these amplifications are in leukemias, because this type of mutation is not routinely diagnosed in leukemia patients. Our team has recently discovered that too many FGF receptors in leukemia cells make them more sensitive to the active form of vitamin D, which is called 1,25-dihydroxyvitamin D. We also found that patients could benefit from blocking a transcription factor called STAT using the inhibitor fludarabine.

The main role of vitamin D, which after exposure to sunlight is produced by the human body from cholesterol, is to regulate calcium-phosphate metabolism, to prevent rickets and osteoporosis. It has been documented recently that 1,25-dihydroxyvitamin D is important for the development of blood cells, the proper functioning of the immune system, and that vitamin D deficiency promotes the development of autoimmune diseases and some cancers. Under the influence of 1,25-dihydroxyvitamin D, the cells of some leukemias begin to resemble normal cells of the immune system. Therefore, we would like to know how often amplification of the genes encoding FGF receptors occur in leukemias, and whether in leukemias with such mutations, therapy with 1,25-dihydroxyvitamin D and fludarabine could improve the condition of the patient.