

## Master position

### in Epigenetics and non-B DNA Structures in Lung Cancer

The research group of Univ.-Prof. Dr. Angela Risch is looking for an AG (training lab) student with the possibility for a master thesis on the project “DNA secondary structures and their impact on DNA methylation” supervised by Ing. Dr. Angelika Lahnsteiner.

#### ***Project description:***

DNA secondary structures such as G-quadruplexes and R-loops have gained particular interest in recent years, since they play pivotal roles in many biological processes like cell differentiation, chromatin looping, regulation of transcription, telomere maintenance and origin of replication firing. Deregulated formation is often found during cancer formation and addition, it has been shown that these structures have also impacts on DNA methylation.

We identified several differentially methylated regions (DMRs) in lung cancer overlapping putative non-B DNA forming sites. **Therefore, the aim of this project is to analyze, if the observed changes in DNA methylation are linked non-B DNA formation.**

In order to address this question, we propose to generate genome-wide non-B DNA maps with Permanganate/S1 footprinting and DNA:RNA immunoprecipitation. In addition, DNA methylation and gene expression levels will be analyzed with Pyrosequencing and qPCR.

#### ***What we offer***

- A motivated and young research team
- Access to state-of-the-art technologies (Illumina Next Generation sequencing Platform, Pyromark sequencer, S1 and S2 cell culture) and methods (standard molecular biology methods, DNA:RNA immunoprecipitation (DRIP), whole-genome detection of DNA secondary structures with Illumina, siRNA knockdown, DNA methylation analysis, Luciferase reporter Assays)
- Introduction to bioinformatics analysis with Galaxy and R

#### ***Requirements***

- Bachelor in molecular biology, biology, biotechnology, pharmacy or a related discipline
- High interest in cancer genetics and epigenetics
- High level of self-motivation
- Lab practice
- Good verbal and written communication skills in English

#### ***Responsibilities:***

- After the training lab, the master student will be responsible for performing own experiments with guidance of a postdoctoral researcher.

If you are interested, send your application including a letter of motivation and your CV as pdf to Angela Risch ([angela.risch@plus.ac.at](mailto:angela.risch@plus.ac.at)) and Angelika Lahnsteiner ([angelika.heissl@plus.ac.at](mailto:angelika.heissl@plus.ac.at)).

Starting date: as soon as possible