Master degree project / Research training / Internship
Multi-omics analysis on Acute Myeloid leukemia using machine learning approaches

We are looking for an ambitious student with an interest in Machine Learning, Bioinformatics and mainly multi-omics analysis and experience in R programming.

Acute Myeloid Leukemia (AML) is a cancer in the myeloid line of cells in the blood. Many patients with AML relapse multiple times and the outcome is often adverse. Different types of data from both adult and pedeatric patients have been collected and used to build machine learning models that discern between adult and pedeatric patients or relapse and diagnosis. Based on these models features that might drive relapse have been identified. To gain further understanding of these complex processes it is vital to integrate different types of data and to find connections between the candidate drivers that have been identified by single omics, also to investigate the involved pathways.

In this project you will

1. Apply rule-based modeling and run our inhouse tools to create machine learning models for multi-omic data.
2. Run integrative unsupervised tools (such as Icluster) to explore patient subgroups and link it to molecular mechanisms.
3. Run different statistical tests for comparing results and produce integrative plots for different types of data (gene expression, methylation and SNP data)

The project will be a continuation on previous work so it is mainly focused on creating new R scripts and running R scripts, you will be in close contact with the experimental group led by Linda Holmfelldt and Jan Komorowski. You will learn more about new machine learning approaches and how to handle multi omic data.

Please contact Sara Younes for more information, sara.younes@icm.uu.se, Institute for Cell and Molecular Biology, Computational Biology and Bioinformatics program, Uppsala University.

Desirable skills: R programming mainly data wrangling and plotting, bioinformatics experience, Data analysis and machine learning experience is considered a merit.