

Computational PhD position on the role of synonymous mutations in cancer

Ref. BAP-2020-16

The laboratory for Disease Mechanisms in Cancer (KU Leuven, Belgium, www.LDMC.be) is looking for a motivated PhD researcher. Many labs, including ours, have performed exome and transcriptome sequencing on large series of tumor samples with the aim to discover cancer driver mutations. In most studies, only mutations that cause amino acid changes are considered, assuming that synonymous mutations in protein coding regions are meaningless. Nevertheless, several experimentally tested synonymous mutations have been ascribed a causative role in disease. Our data support that synonymous nucleotide changes can enhance gene expression and cell transformation via novel mechanisms, independent of splicing, and hence we hypothesize that the role of synonymous mutations in cancer is underestimated.

Project

The PhD student will be involved in developing bioinformatics and statistics approaches to delineate the landscape of synonymous driver mutations in publically available cancer genomics datasets. Mutational effects on functional DNA or RNA elements will be assessed and integrated in a ranking of mutations according to their likeliness to be cancer drivers. Top candidate driver synonymous mutations will be experimentally tested for effects on gene expression and cancer cell behavior by colleagues in the lab, with special attention for mutations that are expected to affect novel modes of protein translation dysregulation, as our lab has extensive expertise in this field.

Profile

- You obtained a Master's level degree in bioinformatics, biostatistics, computer science, or a related degree. We also value candidates with a biological/biomedical degree with a strong interest in bioinformatics.
- You obtained high grades during your training.
- Experience with computational biology such as -omics data analysis, pathway and network analysis.
- The candidate should be experienced in Matlab, R, and Python with machine learning applications.
- Familiarity with Unix command line.
- Strong interest in cancer biology and knowledge of molecular biology.
- You are fluent in English, both written and spoken.
- Apart from being a true team player, the candidate is expected to develop a high degree of independence after initial training, to have a problem-solving attitude and have strong analytical abilities in addition to excellent communication and presentation skills.

You might also have the following relevant expertises:

- Experience in website design and in relational database querying (e.g. MySQL, PostgreSQL)
- Knowledge of systems biology, pharmacology, oncology, genomics tools such as BioMart, Ensembl, UCSC, COSMIC, NCI Genomic Data Commons, GEO, and similar would be a strong plus
- Proficiency with systems biology tools like Cytoscape, igraph,...
- Working in a computing cluster environment

Offer

- An exciting job in a friendly and dynamic lab.
- A stimulating and supportive international research environment at KU Leuven, an international top research institute.
- You will be part of an excellent doctoral school programme offering a variety of training opportunities to broaden your knowledge and academic career skills.
- 1-year PhD position that will be extended for 3 additional years provided a positive evaluation after year 1. The successful candidate will also be encouraged and will get full support to obtain an own fellowship (e.g. from FWO).
- Our lab is situated in Leuven, a vibrant university city

Starting date: to be negotiated

Interested?

For more info Contact Prof. Kim De Keersmaecker
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You can apply for this job no later than February 29, 2020

via the online application tool:

<http://www.kuleuven.be/eapplyingforjobs/light/55519555>