Project Work: Investigating the binding of hnRNP A1 to mitochondrial G-Quadruplexes

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The group of Prof. Michaela Dzurov-Krafizkova is investigating how biomolecular structures drive cellular communication. In particular, mitochondrial nucleic-acid signalling is being examined. Accordingly, the project focused on characterizing the interaction between the protein hnRNP A1 and mitochondrial G-Quadruplexes.

First, we recombinantly expressed the protein and then purified. Since it was the first time that hnRNP A1 was expressed and purified in the BioSCom lab, the most convenient workflow for the purification of hnRNP A1 had to be established yet. Further, G-Quadruplex forming mitochondrial DNA had to be found and then characterized. Finally, the binding of hnRNPA1 with the sequences was tested with EMSA.

Due to time limitations we were not able to start with the cell biology, which would have enabled to look at the interactions in vivo. However, I learned a lot, selecting DNA sequences, starting a project, meaning looking up a lot of protocols how hnRNP A1 has been purified before, then actually trying to reproduce it, then to fail, to then start again to then finally getting a relatively pure protein. Further, I learned how to characterize the DNA sequences, which meant again a lot of trial and error. Nevertheless, in the end we were able to get some cool preliminary data, which ended the project work very well :)

The BioSCom lab is still a very young and small lab, with a very friendly and helpful environment. We had as well a team building event, where we went hiking around Brno. This gave the possibility to get to know the group better. Michaela helped a lot with organizing beforehand and during my stay we were always able to discuss the current stage of the project. Further, I was able to bring up my own ideas. I really enjoyed working in the group and it was a great experience to start a project and finishing it with some preliminary data.

Even though the university campus is outside of the city, I was able to experience Brno as a wonderful city with its castle and the old city centre where a lot of nice cafes and bars are located. Apart from Brno, I had the chance to visit Bratislava and Vienna, which are each 1 1/2 hours by train.





