Johannes Kepler University in Linz
Faculty of Engineering and Natural Sciences

Opinion for the thesis:
Amino Acid Distributions at Oligomeric Membrane Protein Interfaces
Author: Anna Drechslerová

Anna's work is a continuation of another project where a dataset of specific membrane proteins – aquaporins was gathered in order to be used as a training dataset for a machine learning task and also for analysis.
A pipeline was already established for that project.

Anna's thesis contributes in the process of obtaining even bigger and more diverse collection of oligomeric membrane proteins where the amino acids orientation is properly labelled (using the knowledge of already resolved PDB structures), making it possible to perform further analysis of the differences in the amino acid distributions between the interfaces and comparisons with the already obtained aquaporins dataset. Anna performed Protein BLAST for 12 different membrane proteins (already annotated) and after that she successfully adapted and applied the established workflow to her data, getting the final dataset of membrane proteins, ready for analysis. That included several steps for which the usage of different bioinformatics tools was required: filtering out duplicates and irrelevant results; multiple sequence alignment and also manual check of the alignment files in order to keep only the proteins with the proper annotation in the dataset. Afterwards, her final task was to analyse the dataset, make illustrative visualizations and draw conclusions, using the programing language Python.

We communicated actively during the process, she asked questions and we exchanged opinions. She also showed creativity and curiosity by expressing some additional ideas about the whole pipeline.
I recommend her work for the defence of bachelor thesis.

22.05.2021

Natasha Trajkovska