

Name of the student: Sylvia Ramírez

Thesis: Analysis of the expression of transcripts at imprinted loci across mammalian species during early development

Supervisor's statement

Sylvia started working on her thesis project in October 2018 and completed it within six months. During this relatively short period, she acquired skills in classical RNA-seq data processing and mapping, de novo transcriptome assembly and expression quantification, various types of RNA-seq data analysis and visualisation using programs Seqmonk and R, and she developed several Python scripts for filtering of gtf files based on various parameters. In addition, she had to grasp not so easy biological background of the project regarding epigenetics, imprinting, DNA methylation and developmental biology, to be able to understand the meaning of the analysis she was doing, and to interpret the data. This was particularly challenging, considering the contrast between the advanced level of the knowledge required, and limited amount of exposure to molecular biology topics of bioinformatics students.

Sylvia worked hard and in a very conscientious and thorough way. I think she achieved a lot, in terms of both results and skills. I was happy with her work, and she clearly wanted to have an excellent thesis and put all the effort into accomplishing this goal. Her thesis consists of two parts – RNA-seq data processing, mapping and transcriptome assembly using the existing tools, and then the actual analysis to answer biologically relevant questions. Unfortunately, the first part took much longer than expected due to the long waiting times in queues for computer cluster resources and initial large scope of the project. This caused that the second part was done in a short amount of time and less thoroughly than originally planned. Nevertheless, Sylvia showed that she was able to perform what was needed for this type of bioinformatics work, and was mostly able to troubleshoot the problems independently.

When writing her thesis, Sylvia showed her capabilities to work with scientific literature and to understand the biology behind her bioinformatics project, I was positively surprised by the level of her theoretical background chapter. She also referenced the literature appropriately and correctly. For results and discussion chapters, she made great progress between the first draft and final version, again showing her willingness to learn and improve. In addition, even she admitted she did not enjoy programming, she wrote several scripts for filtering gtf files without any guidance from me, and was able to troubleshoot problems I encountered when I was trying to use these scripts on other datasets for a different project.

Overall, my impression of Sylvia was very positive, I recommend her thesis for defence and I suggest grade 1 (excellent).

In České Budějovice, on 17.5.2019

Mgr. Lenka Gahurová, Ph.D.

