

Report on the outcomes of a Short-Term Scientific Mission¹

Action number: CA17103

Grantee name: ANDREA LÓPEZ MARTÍNEZ

Details of the STSM

Title: iPSC management and differentiation for antisense oligonucleotides screening

Start and end date: 16/03/2023 to 30/06/2023

Description of the work carried out during the STSM

Description of the activities carried out during the STSM. Any deviations from the initial working plan shall also be described in this section.

(max. 500 words)

This research stay was planned for three months and two weeks, but in the eCOST application was listed to last for ten days, from 07/04/2023 to 17/04/202. Therefore, I'm filling the report although the working plan described in the application is ongoing.

1. Learn how to culture, maintain, and avoid unspecific differentiation of iPSCs → This task was performed at Alex Garanto's lab. During these weeks I've learned how to discriminate between healthy iPSCs and those differentiated cultures. Also, I've learned basic techniques as iPSC freezing and thawing, passaging and maintenance in a clean cell culture environment.
2. Learn how to differentiate iPSCs to fibroblasts and myoblasts → iPSC differentiation into myoblasts requires at least 30 days of culturing and daily medium refreshments. At this point, I've seen how the protocol starts and I've also have worked with some iPSC-derived myoblast that were already available at Alex Garanto's lab. I've learned which is the proper coating, seeding and conditions of the culture for differentiation, how to visually assess differentiation prior to characterization and troubleshooting among the process. This task was performed at Alex Garanto's lab (working with already differentiated myoblasts) and Rick Wansink's lab (myoblast differentiation protocol).
3. Characterization of the iPSC-derived fibroblasts and myoblasts → This task will be performed in the following weeks.
4. Test different AOs chemistries targeting DM1 → This task will be performed in the following weeks.

¹ This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the GH for payment of the Grant.

Description of the STSM main achievements and planned follow-up activities

Description and assessment of whether the STSM achieved its planned goals and expected outcomes, including specific contribution to Action objective and deliverables, or publications resulting from the STSM. Agreed plans for future follow-up collaborations shall also be described in this section.

(max. 500 words)

As mentioned in the STSM application, the main expected results of this research stay were focused on the application of the learned techniques at the home lab, so we could gain an expertise and increase our opportunities of further collaborations by getting in-person training on how to manage iPSCs but also how this model is applied in a daily lab routine. Therefore, in these weeks I've learned valuable knowledge on a new model system currently used in AOs evaluation. Working with this new model will increase the robustness and reliability of my results as, by differentiating fibroblasts to iPSCs and these iPSCs to myoblasts, we will have the possibility of increasing the number of samples used in our experiments and represent *in vitro* a wider spectrum of the disease.

On the other hand, this stay has opened the possibilities of a new collaboration within the Action, between Virginia Arechavala's lab (Bilbao, Spain) and Alex Garanto's lab (Nijmegen, Netherlands), for the further development of the project initiated at this point but also in the elaboration of the manuscript including results obtained thanks to the techniques and cell characterization performed during this STSM.

Also, the connection between these labs within the Action has initiated a collaboration with a different lab outside the Action. This connection can help raise awareness on the importance of COST Action networks, even for groups outside of it, as this research stay will end up in the joint publication of some of the results obtained and, in a near future, in joint project proposals in further calls.

Personally, this has been an extraordinary opportunity in my career as young researcher as it has allowed me to know how to work in different labs, share common concerns, learn how we differently respond to similar issues... All this knowledge will be very precious in my career, but also in my personal life.