

Field Report – My stay at CU Denver and the Salk Institute of Biological Studies

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PART I: 2 months stay at CU Denver in the lab of Asst.Prof. Angelo D’Alessandro

I arrived to Denver with huge expectations, not only regarding the city, but also regarding the expertise I could gain here in Mass Spectrometry. The lab of Angelo D’Alessandro is one of the leading labs in the field of metabolomics, and every time I searched for papers related to this topic on Pubmed, I found Angelos name on it. Before deciding to attend his lab, we already started a collaboration with his group after a tip off of a colleague from Cambridge, who was very happy with the collaboration with Angelo. After several skypes with Angelo, we decided it is a better idea if I get to perform this analysis on my own, which would give me a better understanding of the technique, why certain things are possible and others are not, and above all of how to interpret the data best.

The lab is situated a little bit outside of Denver in the suburbs, where they build a huge research center called the Anschutz Medical Center, where hospitals and research labs are in close proximity. The lab is built in a way to enable a lot of communication and exchange between the researchers, which is a much nicer way of working than what I am used to in our lab in Innsbruck. Collaboration seems to an important part of research at this institute (Biochemistry and Molecular Genetics), which contributes to the success of this research group.

Compared to other groups at the institute, Angelo had a very free way of leading his research group, which consists of half Italians. People here have a lot of freedom to try different things and following up on various hypotheses, which is not only a matter of his collegial way of leading a team, but also because he is a very successful PI, which is shown by all the grants he manages to get (meaning a lot of money for his research). It was pretty impressive to work in an environment like this, since, despite his young age, Angelo seems to be omniscient in his field. By just showing him a graph of my data, he knows immediately what is going on in the cell, being able to cite several papers and previous findings related to the topic. Since Angelo of course is a very busy man, it was not too easy to get a hold of him during my stay here and I rather worked together and learned from his students how to perform the analyses. However, when I met Angelo on a more private occasion, I could get a picture on how it is possible to be such a successful PI at the age of 35: he admitted to not have had a life until now, centering his whole life around work.

Due to the international (or better to say Italian) environment in the lab, it was very easy to get involved in the group, be it at work or in our free time. Due to my status as visitor at CU Denver, it was not always too easy to be up to date about the news, like blizzards that force you to stay at home and I also did not have access to all the facilities I needed, making me kind of dependent on my colleagues, which worked fine though.

All in all, I really enjoyed my stay at Angelo’s lab at CU Denver. The working group has a great working environment, making me feel welcome and part of the team immediately upon arriving, which also enabled me to learn a lot from the people here. Understanding the method helps me now to improve the way I plan future experiments involving metabolomic analysis. It is important to see how the preparation of your samples can influence the quality of the analysis and it was great to learn how to improve it for future experiments. All in all, I really recommend CU Denver for a stay abroad, not only because of great science, but also

because of the living standards in Denver, despite being one of the most expensive areas in the US. People in Colorado are laid back and the city of Denver is a great place to enjoy your free time with plenty of opportunities to do so in nature as well as cultural activities. The proximity to the Rocky Mountains gives you a lot of opportunities in summer as well as winter to get active and gives the city a vibe similar to Innsbruck and instantly made me feel like home.

PART II: 2 months stay at the Salk Institute of Biological Studies and UCSD

Since my project involves a lot of different methods, we decided to split my stay abroad onto two sites, being able to do the experiments with focus on Mass Spectrometry in Denver and cell culture and sequencing in San Diego. Compared to Denver, the lab of Rusty Gage, where I spend most of my time, is a huge lab with several Postdocs working on a huge variety of projects. The Salk Institute, despite being a private institution, is very open to collaborations with UCSD and internationally. However, compared to the Angelo's lab, here at the Gage lab you can feel the competition that is present in science. Productivity is very important and everything here is very structured: before working anywhere, you need a specific introduction by one person that is qualified to do so, online trainings for specific methods, sexual harassment and HR meetings throughout the stay. This high organization of the institute also has its advantages: in the lab everything is running very smooth as there are a lot of technicians responsible for seemingly every little job in the lab. While in smaller working groups, students and Postdocs are responsible for keeping everything in stock, ordering stuff, preparing plasmids or doing cell culture, in a big lab like the one of Rusty Gage, many tasks are performed by others, leaving the scientist with planning and analyzing experiments. This is especially great for doing a Postdoc, since you can spend your time effectively, generating lots of high impact papers (having Rusty Gage as last author also makes publishing in high impact journals way easier). However, in my opinion, being a PhD student in a lab like this spoils you and leaves you without certain skills, like cloning or general lab organization.

During my time here, I could work together with a technician and another PhD student to show me around and help me with my experiments. Besides the hands-on experiments, I could also take part in a lot of seminars from researchers at Salk and invited speakers, as they have one or more seminars every week. I met with a lot of Postdocs from the lab, the PI Rusty Gage and some scientists from the UCSD campus, working on various sequencing methods, to get their input on my data.

Without a doubt, I could learn a lot during my time at the Salk Institute. Presenting my data to Postdocs with different backgrounds left me with a lot of new ideas on how to publish and continue with my project. Even though not everything worked out as planned regarding the hands-on experiments, I could take home a lot of knowledge about raw data processing and interpretation of my data. This stay was especially useful for the writing of my first research paper.

The Salk Institute is a great place for even greater science. San Diego, apart from the Salk institute is a hotspot for biological sciences, being home for several private institutions, UCSD and hundreds of biotech companies. The possibilities here for collaborations are endless and most research groups are open to contribute to your science. Besides science, San Diego is a great place to spend some time, as the weather is great, they have the ocean and the mountains and some great cuisine. Many people go surfing or paragliding during lunch break

or before/after working, as the institute is basically located right at the beach. To conclude, I would definitely recommend doing a research stay in San Diego.