



Advanced Training in Structural Biochemistry of Proteins and Strengthening the Cooperation in Structural Biology

Final Report by Lenka Slachtova, MSc

Background

My research at 1st Faculty of Medicine, Charles University in Prague is aimed to molecular genetics of inherited metabolic disorders. As a researcher, I have been working to identify DNA - mutations or phenotype affecting polymorphisms, establishing new techniques and training students for nine years. Next step in understanding the mutations effects is based on their characterization at protein level. Therefore, I have applied for the AFCSLS Young Leaders Program with the goals to enhance my proteomic skills, to strength the collaboration on international level and to spread the obtained knowledge among colleagues and students.

Checking news at 1st Faculty of Medicine websites, I have noticed the advertisement of Young Leadership Program and at the same moment decided to apply. Discussing several options with my PhD supervisor prof. Pavel Martasek, MD, DrSc I have chosen to stay in prof. C.S. Raman and prof. S. Veeraraghavan laboratory at Department of Pharmaceutical Sciences, School of Pharmacy, University of Maryland in Baltimore. This decision proved as a key one and the lucky one. Dealing with the American Partner was going very smoothly, also thanks to prof. Veeraraghavan, the graduate program director at School of Pharmacy in last years.

American Partner

School of Pharmacy (SOP) at University of Maryland, Baltimore, is the fourth oldest school of pharmacy and one of the top public research university in the United States. Given long standing tradition it continues to grow and develop as evidenced by expanding current facilities and building new ones. Strengths of the school are linked cross field centers with very good equipment providing innovative research in proteomics, metabolomics, nanotechnology or pharmacogenomics as well as diverse international environment. Outstanding research of SOP scientific groups results in several patents.

Brief Evaluation Statement

The goals of YLP fellowship were to enhance my proteomic skills, to strength the collaboration on international level and to spread the obtained knowledge among colleagues and students. My three months stay has a broad impact in several areas: Specific research – Proteomics training, Academic (writing publications, databases and on-line resources access, networking and discussing how to supervise and lead students effectively) and Cultural (American culture, international environment, multicultural enrichment).

Detailed Description

Regarding to the goals of the program, most of the time I've spent participating the specific proteomic research providing valuable hands-on experiences in prof. Raman and prof. Veeraraghavan`s lab. In the beginning I underwent Safety laboratory training as well as Bloodborne pathogen exam provided by Environment Health and Safety office at SOP. After several weeks of training with prof. Veeraraghavan I

was able to work independently. Following established protocols and data published previously I performed mutagenesis, transformation and expression testing of the specified protein. After the confirmation the success and correctness of previous analyses by sequencing I've prepared the protein in a large amount for subsequent analyses.

Prof. C.S. Raman and prof. S. Veeraraghavan are accomplished experienced scientists with the top published results in structural biology and related fields. Besides this, they have been spending big effort creating friendly environment for students and young scientists. Thanks to their dedication to young colleagues, explicit environment presented in their lab and many encouragements and advices I was able to ask and learn fast and unlimited. I also appreciate their trust in my work and possibility to work separately with a possibility to discuss any troubles and suddenness. This I consider as the very important part of the program.

Apart from the research project I attended several lectures at SOP – for example prof. Pochapsky speech about non-covalent interactions in biochemical systems. As prof. Veeraraghavan is teaching Drug Development and Biochemistry courses, I was also able to visit several lectures given by her. Then we discussed different teaching and mentoring approaches. Besides that, I have attended the courses held by University of Maryland Writing Center covering academic writing, project presentation or career development.

Organization and Time Schedule

In conformity with the program schedule I was invited by professor C.S.Raman for 3 months of the stay at the Department of Pharmaceutical Sciences, SOP, Baltimore. Depending on the announcement of obtaining the AFCSLS funding in June 2013, I was able to handle all essentials including visa and university agreements and start the program in October 2013. Expected duration of the program was 3 months expiring at end of December 2013. From the current point of view I would recommend 6 months for next participants. However not all institutions are willing or able to miss an employee for longer term period.

Program Cost

When designing anticipated costs of the program I used expenses at www.numbeo.com and for accommodation from the student's websites. However, it is important to count with higher costs especially for short term housing. Also, for next participants I would highlight that stay in a safe area can be more expensive.

Item	Estimated Cost USD	Final Costs USD
Executive training seminars	0	0
Internship	0	0
Administrative fees	400	350
International travel	800	860
Local transportation	360	170
Medical insurance	635	220
Monthly maintenance	2,250	3,070
Contingency	300	0
Supplies (books)	0	70
Total	4,745	4,740

Program Benefits

My stay at Department of Pharmaceutical Sciences at SOP, Baltimore mediated by YPL was definitely the breaking experience in my career. I had the opportunity to work with a people from different background in the diversity supporting environment. This experience was promising for the existing and future collaboration within the international research teams and definitely strengthened the collaboration with prof. Raman and prof. Veeraraghavan laboratory. Due to the almost unlimited opportunities I had improved leadership, teaching and academic skills.

From the personal point of view the improvement in time management and aiming was also important. Staying with the very inspiring scientist and excellent supervisors was immeasurable. I would also highlight the critical value of opening new research area – molecular biology of transcription factors and proteomics. Conducting experiments from basic science has inspired me for next projects and will be used in new projects design and proposals as well as in students mentoring at 1st Faculty of Medicine, Charles University in Prague. The experiments I have participated on will be published in respected scientific journal.

Risks

As a general risk – or limits, to be more precise, I would mention the different environment with more limited opportunities in Czech Republic compared to US. Therefore, some of the teaching or leadership approaches can be more challenging. However the obstacles I consider as a stimulants of creativity and not the reason for giving up. I was also aware of the missing laboratory equipment at my home institution, but some of necessary instrument was bought recently and another experiment can be performed with another department's collaboration. At the end, this approach supports networking and could be more rewarding. Another thing is the lack of general availability of the open access resources which was simplifying scientific work in US.

Acknowledgement

I am very thankful to AFCSLS for the generous support and possibility to participate in the Young Leadership Program. Supporting young talented people education or development I consider as a best investment to national growth.

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