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15th November 2011-11-15

Subject: Report to European Society of Cardiology – First Contact Initiative Grant

Dear Sir/Madam:

My name is Ibolya Rutkai and I was chosen to receive a First Contact Initiative Grant. I would like first to express my sincere gratitude to the organizers for supporting my visit to a foreign institute. It was a great opportunity and pleasure for me to be selected.

I am a full-time Ph.D. student at the Institute of Cardiology, Division of Clinical Physiology, Debrecen, Hungary. During the last several years I have acquired extensive experience in vascular biology which include measurements of vascular diameter in isolated, cannulated arteries of the rat. I am also working on using the Mulvany-Halpern wire myograph system. I am experienced in using both systems to measure the changes in

myograph system. I am experienced in using both systems to measure the changes in intracellular Ca^{2+} concentrations simultaneously with the force recording (e.g. on basilar artery of the rat) and the measurement of vascular diameter (e.g. on gracilis artery).

I would like to express my gratitude to Dr. David W. Busija, who allowed me to visit his laboratory in the Department of Pharmacology at Tulane University School of Medicine in New Orleans from 19th October to 30th October, 2011. I chose to visit the laboratory of Dr. Busija because of my range of interests. The scientific topics on which the lab is focused are the control of brain vasculature during normal and disease conditions such as insulin resistance and stroke, cellular protective mechanism in neurons and endothelial cells, as well as the biology of mitochondria and biology of Ca^{2+} sparks.

During my visit I also became acquainted with other professionals in Dr. Busija's laboratory: Dr. Prasad Katakam, Dr. Edina Wappler, Dr. Paige Katz, technicians, and students. Everyone was very helpful and kind to me. Consequently, I acquired an overview of the ongoing projects and applied methods. It was very interesting to me that their lab and ours both examine vessels, however, we use different solutions for our respective experiments. Because of this difference we were able to exchange information and experiences.

This meeting was also useful for me because I was able to observe different methods of studying similar disease conditions. We use rats kept on high fat diet to examine the effect of type 2 diabetes and also use these stroke prone spontaneously hypertensive rats to study the haemorrhagic stroke whereas Dr. Busija's lab uses animal models such as the genetic model of type 2 diabetes or create stroke artificially by occlusion of brain arteries.

I was able to observe the process of cell isolation from rat pups and oxygen glucose deprivation treatment and also received some isolating protocols such as smooth muscle cell, endothelial cell, and neuronal cell protocols.

The lab has a confocal microscope and this raised my attention. I feel fortunate that I could participate in a basic level training provided by Zeiss to learn what opportunities are provided by this tool. Calcium sparks are studied by Dr. Prasad Katakam using the confocal microscope in the following way: a segment of the middle cerebral artery is pulled across a glass capillary and loaded with fluorescent dye, fluo-4. In contrast, our lab examines the changes in the intracellular calcium. For this purpose we use another type of fluorescent dye, fura-2, which is a ratiometric dye.

Every Friday, laboratory personnel usually attend organized seminars where either a lecturer from Tulane University or a lecturer from a different University gives a presentation.

I spent an unforgettable time in New Orleans and I was enriched by a great amount of new experience which will be beneficial for my future studies and work.

I would like to thank Dr. Busija and the lab workers once again for their kindness and helpfulness and I would like to thank my supervisor, Attila Toth for his subvention.

Yours sincerely,

Ibolya Rutkai
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