

## ITC CONFERENCE GRANT SCIENTIFIC REPORT

This report is submitted for approval by the grantee to the MC Chair.

**Action number: CA15203**

**Conference title: 20th European Bioenergetics Conference**

**Conference start and end date: 25/08/2018 to 30/08/2018**

**Conference attendance start and end date: 25/08/2018 to 30/08/2018**

**Grantee name: Shur Kucman**

### ACTIVITIES DURING YOUR ATTENDANCE AT THIS CONFERENCE:

(max.500 words)

20th European Bioenergetics Conference that took place in Budapest (Hungary) covered many bioenergetic topics within which mitochondria were especially interesting for me. My main activities during the conference included participation in lectures and poster sessions. I was also happy to present, as a poster, data obtained during last months of my PhD studies (details of the poster).

My special focus attracted lectures describing bioenergetics of cancer, role of mitochondria in cancer, especially in context of glioblastoma, breast cancer targeting of mitochondrial hexokinase 2. The presented topics covered all aspects of mitochondria including structure, physiology, signaling, motility and role of these organelles in pathology development.

The most interesting to me were topics touching hypoxia and mitochondria since they are main object of my studies. Mitochondrial potassium channels, including my favored object- mitoBK<sub>ca</sub>, play significant role in cytoprotection during ischemic/reperfusion injury. Therefore, all aspects describing regulation of mitochondrial physiology during ischemia/reperfusion attract my special interest.

Another interesting topic discussed during the conference was related to development of mitochondrially based diseases. Here, I enjoyed lectures focusing on problems with assembly of respiratory chain, especially cytochrome c oxidase. With similar attention I participated in lectures focused on activity of mitochondrial respiratory chain in relation to reactive oxygen species (ROS) production. There I learnt about UCP3's role in regulation of ROS production and cardioprotection in oxidative stress.

These topics are closely related to my field because mitochondrial potassium channels interact with mitochondrial respiratory chain. Moreover, potassium channels are regulated by redox signaling and on the other hand, activity of the channels directly influences mitochondrial ROS. This regulation is believed to be a part of cytoprotective pathway stimulated by activation of mitochondrial potassium channels.

In addition, I found interesting lectures focused on evolution and biogenesis of mitochondria. Here, my attention was directed to mitochondrial machineries for import and assembly of mitochondrial proteins. This area is fully new to me, however, in my opinion this knowledge will help me in better understanding of possible targeting mechanisms and assembly pathways of proteins responsible for potassium fluxes in mitochondria.

Finally, I really enjoyed session presenting new findings about channels and transporters. I could listen about glutamate transport, Na<sup>+</sup>/Ca<sup>2+</sup> exchanger, VDAC isoforms in *S. cerevisiae*, mitochondrial regulation of mitoK channels, structural mechanism of transport by ADP/ATP carrier.

During the Conference I visited exhibition stands of leading Biot-tech companies presenting novel solutions for the laboratory work. I found it very valuable and inspiring for my future work.

**IMPACT ON YOUR RESEARCH AND FUTURE COLLABORATIONS (if applicable)**

(max.500 words)

Attending to 20th European Bioenergetics Conference was a really great experience for me as for PhD student. I could see many excellent scientists from around the globe.

I learnt about new mitochondrial function assay technology that will help to understand how mitochondria change during disorders that have a mitochondrial basis.

Based on some seminars I noticed couple cell methods and technologies that I was not aware of. I am looking forward to trying them in my laboratory on my cell lines. For example, presentation of prof. Werner J.H. Koopman showed that variability of cells is related to the moment when freshly prepared medium is used for the first time instead of passage number, serum batch, age of the medium. I believe that will add up to be a better way to present my biological results from different angle. Thanks to this knowledge I think I will achieve better results.

I found especially stimulating round table discussion regarding mitochondrial permeability transition pore. This event showed the importance of proper methodology as well as critical data interpretation. What is also important, I could learn from experienced scientists how to present obtained data in an attractive way. In my opinion appropriate data presentation is a part of success in scientific carrier. I would like to improve my presentation skills.

Since my laboratory collaborates with some abroad groups I could meet several members of these laboratories during the conference. Thanks to my attendance I could listen to lectures presented by some of them. The meeting was also a good occasion for discussions of our data and making plans for future.

Summarizing, my attendance in the Conference was very stimulating experience and provided me number of new ideas that I will try in the nearest future in my laboratory work and all the activities I mentioned above add up to be great guidelines in mitoBK<sub>Ca</sub> channel interpretation.