



## BIOLOGY CENTRE ASCR

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### Supervisor's evaluation of Iosif Kaurov

Iosif Kaurov, who everyone knows as Josef, joined the lab in May, 2014. His first project was to take advantage of a newly developed genome-wide, RNAi-screen to look for synthetic rescue of swelling mitochondria due to downregulation of the  $K^+/H^+$  antiporter Letm1; we presumed that simultaneous downregulation of the then mysterious mitoK<sub>ATP</sub> channel would lead us to the molecular identity of this uniporter. To do this, Josef had to remake the RNAi-library in *Trypanosoma brucei* capable of inducible Letm1 RNAi-silencing. He followed the very involved steps in this effort to join the handful of people on Earth who constructed the library from scratch. Unfortunately, scratch was also the result as we soon found out that the cells became insensitive to Letm1 RNAi-silencing during the library construction.

At the same time, I started working on the *T. brucei* MICOS complex. I found two Mic10 paralogs and had tagged them to show their mitochondrial localization. Since his project was not going well and mine was, we decided to switch projects. But Josef's problems did not end there. For one, we learned that we were not alone in this pursuit: Professor André Schneider's excellent group was also looking into MICOS. André and I made an agreement that we would work independently for about one year and then share our results with each other and decide how to publish. But Josef and I recognized this was a David and Goliath type situation and it wouldn't suffice to show up to that meeting with a sling and a few rocks.

We had a little over a year to find the subunits of MICOS by immunoprecipitation and verify these are indeed MICOS subunits by reverse genetics. To make matters worse, we had no phenotype when we tried to downregulate the Mic10 paralogs! Josef led the trypanosome bench work. He took a bachelor's student under his wing, Rudy Cadena. They got to work. And they rose to the challenge. One year later, we had pretty defined the composition of *T. brucei* MICOS. Thanks to the team's hard work, led by Josef on the bench, we were able to demonstrate to André that we can be equal partners and this led to a wonderful collaboration!

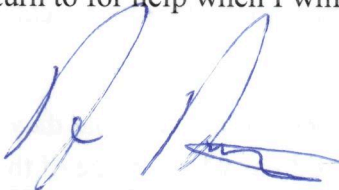
In early 2019, Josef went to André's lab to learn how to isolate mitochondria in a way that they were capable of *in vitro* protein import. We needed this know how to address whether one of the MICOS subunits called Mic20 was indeed the central catalyst for protein import into the intermembrane space (IMS) between the mitochondrial inner and outer membranes—a surprising finding from the MICOS project. During his 6 week stay, he learned to isolate mitochondria and perform the assay. Josef made a very good impression on André, who appreciated his hard work and facility to learn such difficult methods so quickly! He even appreciated Josef's great sense of humor! In fact, the data he generated in the lab for originally pedagogical reasons ended up being a critical contribution to the resubmission of an articles communicated by André showing MICOS is divided into two subcomplexes, one of which appears to be responsible for protein import.

OK, that summarizes the history of Josef's doctoral studies under my supervision. But, what do I think of him after five years of collaboration? Well, it is readily apparent to anyone who meets him that he is an extremely introverted person. Even after all this time, it is very hard for me to read him. But letting his work speak for himself, I can say he is extremely hard-working, motivated and engaged. He is also a kind person who always is willing to help. I never doubted his commitment to his projects or his genuine interest in science. He is also staunchly independent, which is a double-edged sword.

Now, I take him as a trusted colleague that I can depend on and have discussions with. But it was not always this way. Prior to his decision to study molecular parasitology and mitochondria, he was educated at Moscow Pedagogical State University to become a zoologist. And at first, this showed. But the initial lack of advanced knowledge about molecular biology was not what disturbed me. It was our often messy communication and the seeming lack of higher level of thinking that every researcher needs. And his staunch independence had sometimes led to misunderstandings because he in these cases he did not ask for clarification or help.

His development into the person we see now before us has been one of the most my most rewarding experiences. After a somewhat awkward beginning, he has developed into an excellent thinker. I encourage him to continue along this trajectory. Sometimes I see the negative aspects of his staunch independence emerge, such as when in the closing stretch of thesis he was struggling with writer's block; I only found out only after approaching him about his progress. My advice is that in these cases, he should take the initiative and seek help. Sometimes just talking to someone helps one out of a fix. And getting stuck is normal.

Luckily for me, Josef has agreed to stay and continue our collaboration to really find out what Mic20 is doing, with whom and to whom. I look forward to this, knowing I have a reliable partner I can turn to for help when I will inevitably get stuck.



Doc. Hassan Hashimi, Ph.D.

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