STSM Scientific Report

COST STSM Reference Number ECOST-STSM-FA1205-150314-043030

COST Action: FA1205

STSM Applicant: M.Sc. Olga Bondarenko, Faculty of Fisheries and Protection of Waters, University of South Bohemia in Ceske Budejovice,389 25 Vodnany(CZ), toolgab@gmail.com

STSM Topic: Molecular and ionic regulatory mechanisms of sturgeons sperm motility

Description of the work done and the main results:

During my stay in MMBS (Japan) I was focused on molecular and ionic regulatory mechanism for sturgeon sperm motility. By using of spectrophotometry method, membrane potential alteration of sturgeon sperm was recorded in whole period of motility in different ionic media. During the stay, I was studied several cell physiology techniques: sperm-motility analysis using high-speed camera, the computer-assisted sperm analysis (CASA), Ca^{2+} imaging analysis and the evaluating method of membrane potential by using fluorescent probes. We found, that membrane potential of sturgeons' spermatozoa alters in different ion composition media and has correlation with motility parameters. Since membrane potential reflects ion currents (by definition) our results suggest that ion currents control motility of sturgeon sperm not just during activation but whole motility period.
I was also studied molecular biology techniques such as molecular cloning and PCR. Surprisingly, we were able to clone a big (over 1000 bp) part of $Na^{+}/Ca2^{+}$ exchanger gene presented in sterlet testis, although there is little information on the sturgeon genome.
Results obtained in MMBS will be useful for my feature laboratory work in FROV JU as well as for my PhD thesis and supposed to be published in future.

Additionally, this stay intensified the research cooperation between our Institutes and contributed to the future plans to continue the work started. Intersection of our research interests in spermatozoa physiology will result in valuable outcomes for scientific publications.

Signed: Olga Bondarenko