

UNIVERSITY OF NOVI SAD
FACULTY OF AGRICULTURE
DEPARTMENT OF VETERINARY MEDICINE

assistant professor, Nikolina Novakov

Report for Tempus project
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In the period of 25.05.2015 - 07.06.2015. I made a professional visit to the University of Veterinary Medicine in Vienna, Clinic for Poultry and Fish Medicine (Clinical Unit for Fish Medicine). The aim of this visit was professional training in the field of fish diseases and aquatic organisms, which were done through active participation in working with colleagues employed on the clinic as well with students doing practical exercises.

I also made a good communication with all colleagues of the clinic including the head of the clinic, what is the basis and an important starting point for our future cooperation. This cooperation would be reflected in the joint publications, the possibilities of re going to a clinic or sending someone of our PhDs students upgrading of the work on the preparation of a doctorate, as well as opportunities to partner applications for future projects.

Clinic for fish medicine works as a part of educational and scientific infrastructure of the University of Veterinary Medicine in Vienna, and as a clinical unit of the Clinic for poultry, reptiles and fish, and also works closely with other organizational units of the University.

At the clinic there is a total of 10 employees. Of these, four employees involves in teaching, while others are employed in research and scientific professions and as technical staff. The structure of employees is 2 professors, 2 assistants, 4 post doctoral students who are doing science and 2 technicians.

The clinic deals with education through teaching and with scientific research through a numbers of projects that are funded both by Austian and international funds. Specifically should be noted that clinic is the national reference laboratory for the whole Austria, which carries out a program of monitoring and diagnostic of fish diseases.

Within the Clinic there are facilities for a reception of samples and clinical examination of patients, section and parasitological examination of fish, operating room, laboratories for molecular studies (Figure 1), a laboratory for cell culture, bacteriological laboratories, aquariums for fish, which comprise the greater number of separate pools that are used for artificial infection experiments and other experiments (Figure 2), facility for growing and keeping of oligochetae and other intermediate host (Bryozoarium), and room with aquariums containing ornamental fish, especially species *Discus discus*, which are also used for scientific research. The clinic is equipped with modern equipment, which is necessary in order to work with the students, as well as for diagnostic and scientific work. If it is necessary, in the case of certain diagnostic procedures it can be performed on other clinics or laboratories at the University.



Figure 1. Laboratory for molecular research

Opening hours of clinic are Monday - Friday 08:00 a.m to 04:00 p.m., with organized duty during weekends and holidays, primarily for maintenance of aquarium systems, and if there is an urgent case it is possible contact using emergency number.



*Figure 2. Aquarium, which contains trout infected with *Myxobolus cerebralis**

Student participation in the work of the clinic depends on which semester and which study program they are attending. Teachings related to fish diseases start within a few subjects

ranging from the X semester and is carried out in the block as a theoretical and practical classes where students together with teachers actively participate in the work with patients (patient admission, clinical diagnostics, therapy, care for patients). Student's practical training is organized and on the principle of clinical rotations where certain they spend a certain time at the clinic and actively participates in all activities. After arrival of new clinical case, or after receiving the samples for the diagnosis and monitoring of fish diseases in accordance with the national program, medical history is collecting and the clinical examination of live or dead fish is performed. Samples for further diagnostic procedures are taking (Figure 3). Ornamental as well as fish from aquaculture or from farms are inspecting. Examination is different depending on whether the animal is alive or dead.



Figure 3. Examination of the fish for the diagnostic of diseases

When live fish are inspecting a skin examination and sampling of gills can be done, then parasitological examination, bacteriology, testing to presence of Koi herpes virus, mycological examinations, blood smear and blood tests, ultrasound, endoscopy, X-ray, analysis of cell and tissue samples and examination of feces.

When dead fish comes necropsy and histopathology are performed, bacteriological and virological tests, mycology, parasitology, molrecular methods and testing for specific pathogens.

After completion of diagnostics proceedures, therapeutic treatment in both individual and fish from aquaculture is proposing and performing in accordance with the needs. Also, the other measures that are necessary and are primarily related to the technology of growing and environmental conditions the fish are suggesting. If there is a need for surgical interventions, particularly in the ornamental fish they are performing in surgical hall of the clinics with prior preparation and anesthesia (Figure 4).

All procedures and data obtained from the previously described methods, are entered in the cartons, or appropriate records. It also performs computer data archiving.



Figure 4. Coi carp anastetic

In addition to undergraduate students who perform practical training at the clinic, there is also a certain number of doctoral students who are doing doctoral dissertations and scientific papers. Currently, one the the clinic are 4 doctoral students working on different tasks, primarily releted artificial infections of fish and intermediate hosts, co-infections and monitoring of various immunological parameters in fish.

Scientific work is organized and financed over several projects that are the greatest part performed by researchers who frequent the post doctoral studies as everyone else either in teaching or in scientific positions. Every week, head of the clinic organize a meeting for all staff, where discuss of current topical events in science, what is interesting for them, what to do and what to published in scientific journals.

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