

## Department of Molecular Biology



The Department of molecular biology at the Hydrobiological Institute is the most recent and a still developing one. There are two laboratories:

- Laboratory of molecular biology
- Laboratory of histology

**STAFF:** PhD Lidija Velkova-Jordanoska, associate professor

### EDUCATION

- **1996-1997** In the course of her postgraduate studies she worked for several months at the Research Center for New Technologies with the Macedonian Academy of Sciences and Arts where she mastered the methods for DNA isolation, PCR amplification and dot-blot hybridization.
- **2002** She completed her Master's thesis at the Laboratory of Molecular Biology with the Faculty of Natural Sciences and Mathematics in Skopje. She defended her Master's thesis "Histopathological and molecular-diagnostic study of hepatal capillarity in black barbel (*Barbus meridionalis petenyi* Heck.) in Lake Ohrid" at the above-mentioned Faculty – University "St Cyril and Methodius" in Skopje and was awarded the title Master in biology - major molecular biology.
- **2002** She was appointed a research assistant with the Department of Molecular Biology at the Hydrobiological Institute in Ohrid on 13th December 2002.
- **2009** She defended her PhD Thesis "Population-genetic structure in species of the *Barbus* genus (Pisces, Cyprinidae) in Republic of Macedonia determined by allozymes and molecular (RAPD) markers" at the University "St Cyril and Methodius" in Skopje and was awarded the title Doctor in biology science.
- **2009** She was appointed a research scientist with the Department of molecular biology at the Hydrobiological Institute-Ohrid.
- **2012** She was appointed a assistant scientist with the Department of molecular biology at the Hydrobiological Institute-Ohrid.

- **2015** She was appointed a associate scientist with the Department of molecular biology at the Hydrobiological Institute-Ohrid.

### RESEARCH:

Major research interests are in molecular genetics of fish, particularly of genus *Barbus* (Pisces, Cyprinidae) in lakes and rivers of R. Macedonia. In the case of molecular genetics the technique employed was protein electrophoresis, and the types of protein markers that we have used are enzymes (EST, AAT, LDH, MDH, SOD) and establishing allele variants in them.

**Current research interest** - definition of the population-genetic structure of several fish species

### GRANTS:

- Study stay in Institute of fisheries and aquaculture in 2003,2004,2005,2006 and 2007, Varna, R. Bulgaria;
- Awarded with grant to participate in Schoole of Conservation Biology in 2005, Rovinj, Croatia;
- Grant for participation in Course of bioinformatics in 2005, Sofia, R. Bulgaria, supported by UNESCO.

### PUBLICATIONS:

1. **Velkova-Jordanoska L.** (2002): Histopatological and molecular-diagnostical study of the hepatic capillarity in black barbel (*Barbus meridionalis petenyi* Heck.) in Lake Ohrid. MSc Thesis, Univ. St.Cyril and Methodius, Skopje, R. Macedonia (in Macedonian)
2. Spirkovski Z., Taleski T., Stojanovski S., **Velkova-Jordanoska L.**(2002):Lake Ohrid fish: Histopathological evidence of pollution impact to Lake Ohrid barbel (*Barbus meridionalis petenyi* Heckel). Hydrobiological Institute-Ohrid, *Limnological investigations of Lake Ohrid*, Vol. 1&2, pp. 210-214
3. **Velkova-Jordanoska L.** (2002): Histopathological analyses of the biliary tree in black barbel (*Barbus meridionalis petenyi* Heck;Pisces) in Lake Ohrid. Hydrobiological Institute, *Review*, Vol.35, No.1: 119-129 (in Macedonian)
4. Roganovic-Zafirova D., Jordanova M., Panov S., **Velkova-Jordanoska L.** (2003): Hepatic Capillariasis in the Mediterranean barbel (*Barbus meridionalis petenyi* Heck.) from Lake Ohrid. *Folia Veterinaria* , Vol.47(1): 35-37
5. **Velkova-Jordanoska L.** (2004): Granulomatous inflammation on liver in Mediteranean barbel (*Barbus meridionalis petenyi* Heck.) at five localities in Lake Ohrid. *Journal of animal science*, Vol. XLI No.3: 11-12

6. **Velkova-Jordanoska L.** and Kostoski G. (2005): Histopathological analysis of liver in fish (*Barbus meridionalis petenyi* Heck.) in reservoir „Trebenista”. *Natura Croatica*, Vol. 14, No.2
7. **Velkova-Jordanoska L.** (2005): Liver lesions in the wild population of ohrid roach (*Rutilus rubilio ohridanus*, Karaman 1924) in lake Ohrid. *Natura Montenegrina* Vol.4: 71-75
8. Ivanova, P., **Velkova-Jordanoska, L.**, Dobrovolov, I. (2006): Genetic divergence among barbel populations from some Bulgarian rivers and some tributaries of river Vardar (Macedonia). *Journal of animal science*, Vol.12: 290-296
9. **Velkova-Jordanoska, L.**(2006): Molecular-biological analysis of the parasite *Capillaria sp.* of the liver of barbel (*Barbus meridionalis petenyi* Heck.) in Lake Ohrid. *Journal of animal science*, Vol.12: 315-319
10. **Velkova-Jordanoska L.**, Ivanova P., Dobrovolov I.(2006): Biochemical-genetical markers as useful tools for determination and population structure of *Barbus meridionalis petenyi* Heck. in Lake Ohrid. Conference on water observation and information system for decision support BALWOIS 23-26 May, 2006, Ohrid, R. Macedonia
11. **Velkova-Jordanoska L.**, Ivanova P., Dobrovolov I. (2006): Genetic comparisons between *Barbus petenyi* Heck. from Lake Ohrid (Macedonia) and Eleshnica River (Bulgaria). II International Kongress of ecologists of Montenegro, Kotor, Proceedings: 197-201
12. **Velkova-Jordanoska L.**, Ivanova P., Dobrovolov I. Kostoski G., Uzunova E., Stojanovski S., Tsekov A. Apostolou, A. (2007): Allozyme electrophoretic analysis of genus *Barbus* from Macedonian and Bulgarian rivers and lakes. I Symposium for protection of the natural lakes in Republic of Macedonia, Proceedings: 138-148
13. **Velkova-Jordanoska L.**, Kostoski G., Jordanoska B. (2008): Antioxidative enzymes in fish as biochemical indicators of aquatic pollution. *Bulgarian Journal of Agricultural Science*, Vol. 14(2): 235-237
14. Jordanoski M., **Velkova-Jordanoska L.**, Veljanoska-Sarafiloska E. (2008): Ecological effects of River Sateska and its tributaries on ancient Lake Ohrid. *Natura Montenegrina*, Vol.7(2): 541-547
15. **Velkova-Jordanoska L.** (2009): Population-genetic structure in species of the *Barbus* genus (Pisces, Cyprinidae) in Republic of Macedonia determined by allozymes and molecular (RAPD) markers" PhD Thesis, University of St. Cyril and Methodius, Skopje (in Macedonian)

16. **Velkova-Jordanoska L.**, Ivanova P., Dobrovolov I, Stojanovski S., Kostoski G., Atanasov G. (2009): Population-genetic structure of *Barbus cyclolepis* (Pisces, Cyprinidae). *Biotechnol. & Biotechnol. Eq.*, Special edition / on-line; Vol. 23:281-284
17. **Velkova-Jordanoska L.**, Kostov V., Stojanovski S., Kostoski G. (2010): RAPD analysis of genetic variations in *Barbus peloponnesius* (Pisces, Cyprinidae) from River Vardar. Conference on water observation and information system for decision support BALWOIS 25-28 May, 2010, Ohrid, R. Macedonia, Prossidings, ([www.balwois.com](http://www.balwois.com))
18. **Velkova-Jordanoska L.**, Kostov V., Stojanovski S., Kostoski G. (2010): Use of RAPD fingerprinting for study and conservation of fish populations. *Biotechnol. & Biotechnol. Eq.*, Special edition / on-line; Vol. 24:257-262
19. Stojanovski S., N.Hristovski, P.Cakic, M.Hristovski, **L.Velkova-Jordanoska**, D.Blazekovic.(2010): Monogenean trematods of chub (*Leuciscus cephalus albus* Bonaparte, 1838) from the Lake Ohrid (Macedonia). *Biotechnol. & Biotechnol. Eq.*, Special edition / on-line; Vol. 24:623-627
20. Stojanovski S., **Velkova-Jordanoska L.**, Hristovski N., Blazekovic-Dimovska D., Rokiski A.J., Hristovski M. (2012): Fauna of digenean trematods - parasites of some cyprinid fishes from Lake Ohrid (Macedonia). V all-Russian Conference with international participation on theoretical and marine parasitology. Proceedings, pp: 202-205
21. **Velkova-Jordanoska L.**, Stojanovski S., Kostoski G. (2012): Histopathological analysis of liver in fish (*Chondrostoma ochridanum*) in river Crn Drim. *International Journal of Ecosystems and Ecology Science*, Vol.2(4): 401-404
22. **Velkova-Jordanoska L.**, Stojanovski S., Lokoska L., Veljanoska-Sarafiloska E., Kostoski G. (2012): Histopathological analysis of liver in fish population of reservoir „Tikves,,. *Acta zoological bulgarica*, Suppl.4:223-227
23. Stojanovski S., Hristovski N., **Velkova-Jordanoska L.**, Blazekovic-Dimovska D., Atanasov G. (2012): Parasite fauna of chub (*Squalius squalius* Bonaparte, 1837) from Lake Ohrid. *Acta zoological bulgarica*, Suppl.4:119-122
24. **Velkova-Jordanoska L.**, Panov S., Kostov V., Stojanovski S., Kostoski G. (2013): Molecular (RAPD) identification of the four species of the genus *Barbus* in lakes and rivers in R. Macedonia. *Natura Montenegrina* , Vol.12 (3-4): 687-699
25. Stojanovski S., **Velkova-Jordanoska L.**, Blazekovic-Dimovska D., Smiljkov S., Hristovski N., Rusinek O. (2013): Parasite fauna of *Chondrostoma nasus* (Linnaeus, 1758) from Lake Ohrid (Macedonia). *Natura Montenegrina*, Vol. 12 (3-4): 753-760

26. **Velkova-Jordanoska L.**, Stojanovski S., Kostoski G. (2014): Histopathological analysis of gills in fish population of reservoir Strezevo. *International Journal of Ecosystems and Ecology Science*, Vol.4(3): 441-444
27. Stojanovski S., **Velkova-Jordanoska L.**, Karabolovski N., Smiljkov S. (2014): New findings of parasite fauna of Ohrid moranec (*Pachychilon pictum* Heckel&Kner, 1858) (Teleostei: Cyprinidae) from Lake Ohrid, Macedonia. *International Journal of Ecosystems and Ecology Science*, Vol.4(3): 409-411
28. Stojmir Stojanovski, Dijana Blažekovic-Dimovska, Nikola Karabolovski, **Lidija Velkova-Jordanoska**, Jerzy Rokicki, Stoe Smiljkov (2015): Helminthofauna of Ohrid gudgeon (*Gobio ohridanus* Karaman, 1924) from the Lake Ohrid, Macedonia. *Annals of parasitology* (in press)
29. **Velkova-Jordanoska** (2015): Review of researches made on genus *Barbus* (Pisces, Cyprinidae) in R. Macedonia in the period 2000-2015 year. *Review*, Vol. 43(1): 131-146