

REPORT

From a business trip to Budapest, realized in the framework of Tempus project EDUVET 544270-TEMPUS-1-2013-1-RS-Tempus-JPCR

Official visit to the Faculty of Veterinary Science in Budapest was realized in the period 15.11.2014. to 11.29.2014., in the framework of Tempus EDUVET project. Primary objective of the trip was exchange of experiences regarding the teaching process in subjects Microbiology and Epidemiology, infective diseases (analogue to our Infectious diseases); secondary objective was to visit the University Small animal clinic.

The Faculty has an uninterrupted teaching record for more than two centuries, making it thus one of the oldest veterinary schools in the world. After Helsinki, London, Bern, Copenhagen, Vienna, and Gent the Faculty of Veterinary Science in Budapest is the seventh Veterinary School to fulfill strict requirements expected by the EA EVE (the European Association of Establishments for Veterinary Education).

Teaching in Microbiology and Epidemiology, infectious diseases is organized by the Department of Microbiology and Infectious Diseases, founded in 1933.

Microbiology is designed as a complex of three compulsory subjects: Virology (IV semester), Bacteriology (V semester) and Immunology (VI semester). As the visit to the Faculty was carried out during "odd" semester, it was not possible to attend classes of Virology and Immunology.

Students of veterinary medicine attend Bacteriology during the winter semester of the third year of bachelor studies. In the framework of the subject Bacteriology the students learn general bacteriology, specific bacteriology and mycology with a special focus on pathogens of veterinary importance. In the practicals students have to acquire simple bacteriological laboratory techniques and identification procedures. Teaching is organised in the form of lectures and laboratory practicals, in Hungarian, German and English.

Computer aided lectures are given in one of the lecture theatres of the campus (Figure1). Lectures



Figure 1. The lecture on disinfectants. Teacher: dr Fodor László

are held by full professor and head of the Department dr Fodor László and associate professor dr Makrai László. Classes are held in accordance to the curriculum that is, along with the handouts, available for the students on the Internet (<http://www2.univet.hu/sc1/tantargy.php?id=563&action=detail&lang=en>) (Appendices 1 and 2).

The practicals are held at the 16-head-practical room of the Department (Figure 2); they are held by associate professor dr Makrai László and PhD student Sárközi Rita. Topic of the practicals is always in accordance with the theme of the last week lectures. At the beginning of each practical students are asked short questions related to the current topic and all uncertainties are being discussed. Afterwards, students are doing simple True/False test (Appendix 3) (during the semester, students do a total of 12 tests on which they must collect the

minimum of 60% of correct answers; based on the test results, teacher evaluates the practical work of the student at the end of the semester).



Figure 2. Prof. Dr. László Makrai with students during the practicals of bacteriology with “unidentified” culture of bacteria, and the following tasks are assigned: to prepare two streak plates using different growth media, to do the Gram staining and, finally, to identify the bacterial species given (Figure 4a, 4b, 4c).

As the initial information in the process of identifying students use the results of Gram stain and observed cultural characteristics of the colonies. Other information (type and origin of the specimen, case history, results of the biochemical series, physiological characteristics) considered relevant to the identification, students receive by asking questions to the teacher (Figure 4d); students are also allowed to use the handouts and lecture notes. If the identification is not successfully completed by the end of the exercise, students choose between the possibility to find out the correct answer from the teacher and the opportunity to try again on the following practicals.

After the test, and the joint discussion of the PowerPoint presentation on the most significant cultural, biochemical and other characteristics of the bacterial species that were planned for the practical, students turn to the practical work, in pairs. Each pair of students has one microscope, two inoculating loops, one Bunsen burner, pack of microscope slides, dyeing tub, set of appropriate chemicals (crystal violet, fuchsin, Lugol’s iodine, 95% ethanol, saline, distilled water) and a pad of filter paper (Figure 3). Each pair is given a plate (petri dish containing appropriate growth medium) with



Figure 3. Each pair has one set of equipment necessary for staining and microscopic examination of bacteria

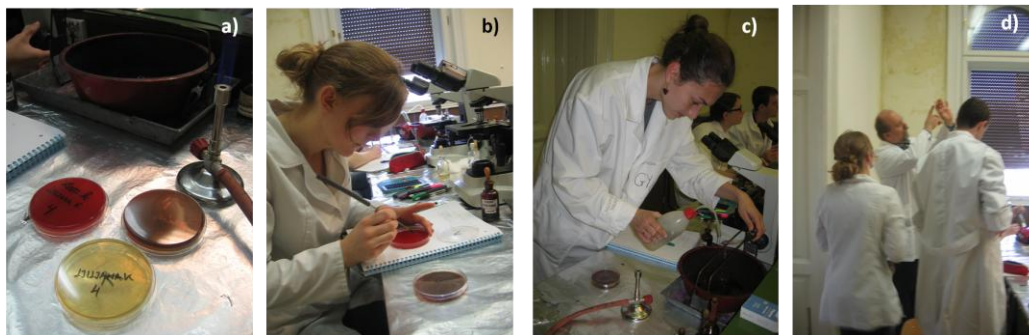


Figure 1. a) “unidentified” culture on blood agar and clear nutrient and blood agar plates; b) inoculation; c) Gram staining; d) Prof. Dr. Makrai helping students to determine the type of hemolysis.

Along with the unidentified culture, students often receive heat-fixed smear of a familiar bacterial culture, to dye and examine under the microscope, independently. The demonstration material is prepared in the bacteriology laboratory of the Department. Infectious material is being introduced to the practicals twice during the semester: on the first practical, for the purpose of laboratory diagnostic procedure

demonstration and just before the end of the semester, for the purpose of mastering the bacteria isolation technique.

Attending the practicals is compulsory, absence should be retaken. Retake can happen on the same week by joining another group or attending the extra practical on the last week of the semester.

Students can sit to the examination after attending all practicals and if they showed at least satisfactory level of knowledge (60% of correct answers on the tests) during the semester. Exam days are to be agreed with the teachers; the minimum number of examinees is 8, the maximum is 14 per day including the English and the Hungarian class. The final exam is of an oral type. The students receive two questions, one each on general and specific bacteriology. The final note is defined by the oral exam (66%) and the achievements during the practicals i.e. test results (33%).

For the exam preparation, following literature is recommended:

- Quinn, P.J., Markey, B. Leonard, F.C., Hartigan, P., Fanning, S., Fitzpatrick, E.S.: Veterinary Microbiology and Microbial Disease. 2nd Ed. Blackwell. Oxford 2011,

Exam questions (Appendix 4) and other teaching materials (Appendix 5 and 6) are also available for the students.

For further reading, following literature is recommended:

- Hirsh, D.C., Zee, Y.C.: Veterinary Microbiology. Blackwell Oxford 1999
- Quinn, P.J. - Carter, M.E. - Markey, B. - Carter, G.R.: Clinical veterinary microbiology. London: Wolfe, 1994.
- Rolle, M., Mayr, A.: Medizinische Mikrobiologie, Infektions und Seuchenlehre. 7. Ed. Stuttgart: Enke Verlag, 2002

The subject of **Epidemiology, infectious diseases** (hereinafter: Epidemiology) is taught two semesters in the form of Epidemiology I and Epidemiology II. In order to attend the Epidemiology I lectures, students must first pass the exams in Microbiology and Pathology. The subject of Epidemiology comprises: general epidemiology and history, occurrence, etiology, epidemiology, symptoms, pathologic lesions, diagnostic methods, differential diagnostics, treatment, prevention and control of various infectious diseases caused by viruses, bacteria and prions. Food hygienic and public health significance are also discussed. Teaching is carried out in the form of lectures and practicals and the teaching staff includes: associate professor Dr. Tamás Bakonyi, full professor Dr. Fodor László, associate professor Dr. Makrai László, full professor Dr. Tamás Tuboly and professor emeritus Dr. János Varga.

Epidemiology I is taught in the winter semester of the fifth year of the bachelor studies. Computer aided lectures are given in one of the lecture theatres of the campus (Figure 5). Classes are held in accordance to the curriculum that is available for the students in the short (Appendix 7) and long online form (<http://www2.univet.hu/sc1/tantargy.php?id=564&action=detail&lang=en>). During the semester, students take two tests (Midterms) which they must complete successfully in order to earn the signature of the teacher and sit for a final exam.



Figure 2. Lectures in Epidemiolog; Teacher: Dr. Fodor László

Practicals are organized in the form of plenary practicals and diagnostic laboratory practicals.

Plenary practicals are held in two classes every second week, in the same theatre as lectures and using the same equipment and methods that are used in lectures. The topic of the plenary practicals is the differential diagnosis of infectious diseases of animals. Attending the plenary practicals is compulsory and in case of absence it has to be retaken. Retake happens in the form of a written or oral exam at the end of the semester.

As for diagnostic practicals, students have to attend a six-week-long laboratory practical after the 10th semester. During the practical they have to learn the laboratory diagnostics of infectious diseases, including post mortem examinations, methods used in pathohistology, immunology, bacteriology, virology, parasitology and toxicology. Their work has to be summarised in a diary which is to be sent to the Department for evaluation. Successful completion of laboratory practicals is a precondition of the final examination. At the beginning of the final exam, students are doing the test that consists of 25 questions – a passing mark is a precondition for taking the oral exam, where they draw three questions.

As a guide in the preparation of the exam students use presentations from lectures (Appendices 8 i 9) and the exam questions list (Appendix 10). In addition, the following literature is recommended:

- Craig, E.G.: Infectious Diseases of the Dog and Cat, 4th Edition, Saunders 2011.
- Gyles, C.L., Prescott, J.F., Songer, J.G., Thoen, C. O. (Eds.): Pathogenesis in bacterial infections in animals. Wiley-Blackwell. 2010. Ames, Iowa. U.S.A.
- Kahn, C. M. (Ed.): The Merck Veterinary Manual Merck & o. Whitehouse Station, N.L., U.S.A. 2010.
- Quinn, P.J., Markey, B. Leonard, F.C., Hartigan, P., Fanning, S., Fitzpatrick, E.S.: Veterinary Microbiology and Microbial Disease. 2nd Ed. Blackwell. Oxford 2011.
- Rolle, M., Mayr, A.: Medizinische Mikrobiologie, Infektions und Seuchenlehre. 7. Ed. Stuttgart: Enke Verlag, 2002
- Saif, Y.M. (Ed): Diseases of poultry. Eleventh edition, 2003 Iowa State Press A Blackwell Publishing Company.
- Straw, B.E., Zimmerman, J.J., D’Allaire, S., Taylor, D. J. (Eds): Diseases Of Swine. 9th Edition. 2006 Blackwell Publishing
- Timoney, J. F. et al.: Hagan and Brunner’s microbiology and infectious diseases of domesticated animals 8. Ed. Ithaca: Cornell Univ. Press, 1988

Visit to the **Small animal clinic** was organized by the head of the Department and Clinic of Internal Medicine Prof. Dr. Vörös Károly.

Small animal clinic was designed to simultaneously provide external services to the pet owners and serve as a teaching environment in the subject of internal medicine, surgery and obstetrics.

The clinic is well equipped with a large waiting room, 5 examination rooms for dogs and cats, ambulance for exotic animals, premises for receiving therapy, specialized cabinets for computed tomography, echocardiography, radiography, endoscopy, orthopedics, two operational blocks, separated stationaries for dogs and cats and intensive care unit (Figure 6, Appendix 11/Figure 1).



Figure 6. a) therapy room; b) dogs in a postsurgical care stationary; c) cat in an oxygen chamber (intensive care unit)

Upon arrival at the clinic, patient's condition is being assessed at the reception department and the patient allocated into one of the examination rooms or, in a case of emergency, into intensive care unit. After the examination, patients are referred to the home treatment or retained in intensive care unit. The specialist examinations are scheduled and patients are being sent directly to the specialized cabinet upon their arrival.

Small animal clinic's staff consists of: doctors/teachers, technicians and assistants. Working hours of the clinic is from 8am to 8pm (ambulance and specialist examinations from 9am to 4pm), while emergency service is available 24 hours a day, 365 days a year. Students are required to do duty hours (including night-shift) two days (one day if it falls on a holiday) per semester.

Students start obligatory clinical practice at the 4th year of the studies, primarily in the context of internal medicine and then in other subjects such as Obstetrics and reproduction and Surgery. Current practice in Internal medicine is that each student spends two weeks at the clinic during the semester. Every day during these two weeks, students attend the internist meeting at 8.30 am, at which current cases (patients who are currently in the ICU) are being discussed, and then go to a clinic where they spend the rest of the day until 4pm. During this time, students follow the work of one or more doctors in the examination rooms as well as in the intensive care unit. Whenever the opportunity arises, teachers give students insight into the results of specialist examinations and help them in reading thereof (Appendix 11/Figures 2 and 3).

Each unit/cabinet has the appropriate written working protocols (Appendix 12), both in Hungarian and English, that students are obliged to consult during their activities in the clinic.

Novi Sad,
03.12.2014.

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