



Molecular diagnostics of infectious diseases

ECTS: 2.00

SUBJECT MATTER CONTENT

LECTURE

Application of molecular examinations in diagnostics and differentiation of infectious diseases. Molecular methods of detection and identification of pathogenic bacteria and fungi. Application of molecular biology in diagnostics of viral diseases. Analyses of nucleic acids based on PCR technique to apply in diagnostics of infectious diseases. Molecular techniques to quantify determinations. Contaminations, risk and preventive procedures. Diagnostics of transmissible spongiform encephalopathies. Alternative methods of nucleic acids amplification. Microarrays in diagnostics of infectious diseases.,CLASSES AUDYTORYJNE:Acquaintance with nucleic acids isolation methods, quality and quantity evaluation of isolated DNA and RNA originated from infectious material. Acquaintance with selected molecular biology techniques used in diagnostics of infectious diseases, for example yersiniosis (multiplex PCR), distemper (RT-PCR, nested PCR), feline leukemia (HotStart PCR). Application of PCR – RFLP method to evaluate gene polymorphism based on animal papillomaviruses, sample preparation for sequencing.,CLASSES PRAKTYCZNE:Acquaintance with nucleic acids isolation methods, quality and quantity evaluation of isolated DNA and RNA originated from infectious material. Acquaintance with selected molecular biology techniques used in diagnostics of infectious diseases, for example yersiniosis (multiplex PCR), distemper (RT-PCR, nested PCR), feline leukemia (HotStart PCR). Application of PCR – RFLP method to evaluate gene polymorphism based on animal papillomaviruses, sample preparation for sequencing.

TEACHING OBJECTIVE

DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:

Symbols for outcomes related to the discipline:

R/WA_P7S+++

Symbols for outcomes related to the field of study:

A.W4. +, B.U6. +, B.U8. +, A.W10. +, B.U7. +, A.W14. +, K.11.+, K.9.+, K.5+, A.W13. +, K.8.+, A.W15. +

LEARNING OUTCOMES:

Knowledge:

W1 – Describes and explains the metabolic processes on molecular and cellular level. Defines and describes the rules and processes of inheritance, diagnoses, genetic disorders

Legal acts specifying learning outcomes:
682/2020
Disciplines: Veterinary science
Status of the course:Fakultatywny
Group of courses:B - przedmioty kierunkowe
Code: ISCED 0841
Field of study:Veterinary Medicine
Scope of education:
Profile of education: General academic
Form of studies: full-time
Level of studies: uniform master's studies
Year/semester: 4/7

Types of classes: Lecture, Classes, Practical classes
Number of hours in semester:Lecture: 10.00, Classes: 6.00, Practical classes: 14.00
Language of instruction:Polish
Introductory subject:
Prerequisites:

Name of the organisational unit conducting the course:Katedra Epizootiologii
Person responsible for the realization of the course:prof. dr hab. wet. Aleksandra Platt-Samoraj
e-mail: platt@uwm.edu.pl

Additional remarks: Laboratory exercises in small groups.

and knows bases genetic engineering. Speaks modern foreign language in extent enabling communication and use foreign source materials.

Skills:

U1 – Is able to work in multidisciplinary team. Takes, protects and knows the rules for transport of samples and performance of standard molecular tests as well as correctly analyses and interprets the results of molecular examinations. Use diagnostic equipment according to its destination and security rules for animals and humans.

Social competence:

K1 – Complies with the ethical principles. Possess a habit of lifelong learning to enhance knowledge and improve skills. Is able to organize the work of team.

TEACHING FORMS AND METHODS:

Lecture(W1;U1;K1;):Lecture – with multimedial presentation

Practical classes(W1;U1;K1;):Laboratory exercises – molecular examinations, analysis of results, discussion

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

Lecture (Evaluation of the work and cooperation in the group) - Passing without grade -

Classes (Evaluation of the work and cooperation in the group) - Passing without grade -

Practical classes (Evaluation of the work and cooperation in the group) - Grade based on the results of analyzes carried out on laboratory classes. -

BASIC LITERATURE:

1. Mc Lenan A., Turner P., B. tes A., White M, *Krótkie wykłady. Biologia molekularna*, Wyd. PWN, R. 2021
2. Allison L.A., *Podstawy biologii molekularnej*, Wyd. Wydawnictwa Uniwersytetu Warszawskiego, R. 2011
3. Bal J., *Biologia molekularna w medycynie. Elementy genetyki klinicznej*, Wyd. PWN, R. 2011
4. Lewandowska-Ronnegren A., *Techniki laboratoryjne w biologii molekularnej*, Wyd. MedPharm, R. 2021
5. Bates A.D., McLennan A.G., White M.R.H. Turner P.C., *Biologia molekularna. Krótkie wykłady*, Wyd. PWN, R. 2012
6. Solnica B., *Diagnostyka laboratoryjna*, Wyd. PZWL, R. 2019

SUPPLEMENTARY LITERATURE:

1. Pecorino L., *Biologia molekularna nowotworów w praktyce klinicznej*, Wyd. Edra Urban Partner, R. 2018
2. Craig N.L., Green R., Greider C., Storz G., Wolberger S., *Molecular Biology: Principles of Genom Functione Function*, Wyd. Oxford Uniwersiyy Press, R. 2021