**Informații necesare pentru publicarea pe site-ul ministerului educaţiei a** **posturilor didactice şi de cercetare vacante scoase la concurs de USAMV Cluj-Napoca în**

**semestrul I, an universitar 2022-2023**

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| Universitatea | **RO** | Universitatea de Științe Agricole și Medicină Veterinară Cluj-Napoca |
| **EN** | University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca |
| Facultatea | **RO** | Medicină Veterinară |
| **EN** | Veterinary Medicine |
| Departament | **RO** | Producţii Animaliere şi Siguranţă Alimentară |
| **EN** | Animal Production and Food Safety |
| Poziţia în statul de funcţii | **RO** | II/B/1 |
| **EN** | II/B/1 |
| Funcţia | **RO** | Conferențiar |
| **EN** | Associate Professor |
| Disciplinele din planul de învăţământ | **RO** | 0417010111 Génétique 0417020107 Maladies héréditaire et génétique moléculaire0401010111 Genetică  |
| **EN** | 0417010111 Genetics0417020107 Hereditary diseases and molecular genetics0401010111 Genetics |
| Domeniul ştiinţific | **RO** | Medicină veterinară |
| **EN** | Veterinary Medicine |
| Descriere post | **RO** | Postul de **Conferențiar** poziţia **II/B/1** din Statul de functii al Departamenului Producţii Animaliere şi Siguranţă Alimentară, din cadrul Facultatii de Medicină Veterinară, Universitatea de Stiinte Agricole și Medicina Veterinara Cluj-Napoca, are în componenţă: **Genetique,** cu o medie de 5ore/săptămână, anul I Fr, sem. II, din care 2,5 ore curs /săptămâna si 2,5 ore lucrări practice /săptămâna, 4 grupe.**Genetique,** cu o medie de 2,5ore seminar /săptămână, anul I Fr, sem. II, 4 grupe.**Maladies héréditaire et génétique moléculaire**, cu o medie de 2,5ore curs /săptămână, anul II Fr, sem. I.**Genetică**, cu o medie de 1,5ore lucrari practice /săptămână, anul I Ro, sem. II, 3 grupe.**Genetică**, cu o medie de 1,5ore seminar /săptămână, anul I Ro, sem. II, 3 grupe. |
| **EN** | The university position of **Associate professor,** position **II/B/1** from de State of functions of Department II, Animal Production and Food Safety, of the Faculty of Veterinary Medicine, University of Agricultural Sciences and Veterinary Medicine,Cluj-Napoca, consists of :**Genetics,** with a weekly average of 5 h /week, with the Ist year Fr, second semester, of which 2.5 h lecture /week and 2.5 h practical /week, 4 groups.**Genetics,** with an average of 2.5 h seminar /week with the Ist year Fr, second semester, 4 groups.**Hereditary diseases and molecular genetics,** with an average of 2.5 h lecture /week, IInd year Fr, first semester.**Genetics,** with an average of 1.5 h of practical work /week, Ist year Ro, second semester, 3 groups.**Genetics,** with an average of 1.5 h seminar /week, Ist year Ro, second semester, 3 groups. |
| Atribuţiile/activităţile aferente | **RO** | Activitate didactică cu studenții (susţinerea de cursuri, lucrări practice, la disciplinele prevăzute în post, precum şi participări la examene, la seminarii din cadrul departamentului, prezentări), consultaţii cu studenţii şi coordonarea lucrărilor de licenţă, activitate de cercetare, participare la manifestări ştiinţifice, participare la activităţile administrative, de învăţământ, servicii specifice şi de cercetare ale colectivului. |
| **EN** | Teaching activities with the students (lecturing, labs and activities at the disciplines included in the job description, as well as examinations, case presentation), consultations with the students, coordinating graduation thesis, research activity, publishing, participation in scientific events, participation in administrative activities, specific activity, research activities. |
| Tematica probelor de concurs şi bibliografia | **RO** | **Génétique - curs*** Organisation cellulaire du matériel génétique: Cellules procaryotes et eucaryotes. Les composant de la cellule eucaryote avec un rôle génétique. Le cycle cellulaire et sa régulation. La mitose. Le rôle de la mitose. Les types the mitoses. La méiose. Les rôles de la mitose. La gamétogenèse.
* La chromatine nucléaire: Les états fonctionnels de la chromatine; Composition chimique de la chromatine; L’organisation et la structure de la chromatine.
* Les chromosomes: La formation de chromosomes; La morphologie des chromosomes en métaphase; La morphologie de chromosomiques spécialisées; Les marquage des chromosomes métaphasiques.
* Cytogénétique: Les concepts et les objectifs de la cytogénétique; Le caryotype des principales espèces d'animaux domestiques; Anomalies du caryotype – anomalies de nombre et anomalies de structure de chromosomes.
* Organisation moléculaire de matériel génétique: La structure de l'ADN (primaire, secondaire et tertiaire); Le types d’ADN; Dénaturation et renaturation de l'ADN. La structure de l'ARN (primaire, secondaire, tertiaire); Les types d'ARN (messager, de transfert et ribosomaux).
* L'expression des gènes: La notion de gène; La structure du gène chez les procaryotes et eucaryotes; Les fonctions et l’'expression du matériel génétique: la réplication d’ADN, la transcription de l'ADN et la biosynthèse des protéines.
* Les lois de Mendel: La terminologie utilisée dans la génétique mendélienne; Les lois de Mendel: le croisements monohybrides, le croisement dihybrides et le croisement-test.
* Les exceptions aux lois de Mendel: Les interactions alléliques: dominance incomplète, gènes codominants, superdominance et les gènes létale. Les interactions nealléliques: gènes épistatiques, gènes complémentaires, les gènes pléiotropique et les gènes polymerique.
* Le phénomène de linkage et crossing-over: La liaison génétique ou le linkage; La liaison des gènes aux positions «cis» et «trans »; Le crossing-over: les types de crossing-over et l’importance du crossing-over.
* Le déterminisme génétique du sexe et l’hérédité liée au sexe: L'importance de la reproduction sexuée; Les systèmes chromosomiques et génique de détermination du sexe; Le phénomène du sexe-linkage; Hérédité limitée au sexe et hérédité influencée par le sexe.

**Génétique – lucrari practice si seminarii*** Introduction à la génétique. Notion de sécurité dans laboratoire de génétique.
* Les structures cellulaires avec le rôle génétique. Étapes du cycle cellulaire. La division cellulaire mitotique et méiotique. Problèmes.
* Éléments de cytogénétique: La technique de l’obtention de préparations mitotiques ; La morphologie des chromosomes en métaphase ; Le caryotype et l’idiogramme; La coloration particulière des chromosomes: bandes "G " et "C". Problèmes.
* Démonstration et l'interprétation des lois de l'hérédité. Le concept de gène, le génotype et le phénotype.
* Le croisement test dans monohybridation. L’arbre généalogique ou le pedigree. Problèmes.
* Les croisements dihybrides. Problèmes.
* Les interactions géniques: Les interactions alléliques. Les interactions nealléliques. Problèmes.
* Le phénomène du linkage et des crossing-over. Problèmes.
* Le déterminisme génétique du sexe. L’hérédité du sexe. Le phénomène du sexe-linkage. Problèmes. Étude de cas: la transmission de l'hémophilie dans la famille de la reine Victoria.
* Le déterminisme génétique de groupe sanguin dans le systèmes ABO, D, MN. Problèmes.

**Maladies héréditaire et génétique moléculaire - curs**Maladies héréditaires* Introduction dans la pathologie médicale héréditaire: Définition, le but et l'importance d’hérédopathologie vétérinaire; Différences entre les maladies génétique et maladies héréditaire; Classification de maladies héréditaires des animaux.
* Généralités concernant la génétique médicale pathologique: Les stades de développement du zygote et le développement embryonnaire; L'évolution des structures embryonnaires contrôlées par les gènes et la finalité de leurs actions; Malformations génétiques congénitale; L'influence des facteurs environnementaux dans le déterminisme des maladies génétiques; Les troubles de mécanismes du développement pathologique.
* Malformations du système nerveux et du crâne. Prophilaxie.
* Malformations oro-maxillo-faciale: Malformations du maxillaire. Malformations du bec. Malformations héréditaires de dents. Prophilaxie.
* Malformation des yeux. Malformation des oreilles. Malformation des cornes. Prophilaxie.
* Malformations du système cardio-vasculaire. Malformations de la colonne vertébrale et de la queue. Malformation des os et du cartilage en général. Prophilaxie.
* Malformations musculosquelettiques. Malformations de la peau et de la production de la peau. Malformations du système digestif. Hernies congénitales. Prophilaxie.

Génétique moléculaire* Notion introductive dans la génétique moléculaire. Définition et domaines d'application de la génétique moléculaire.
* Modification "in vivo" des informations génétiques dans les microorganismes: transformation génétique des bactéries; plasmides et conjugaison bactérienne; conjugaison bactérienne; transduction génétique.
* La technologie de l'ADN recombinante: Les étapes d'obtention des molécules d'ADN recombinantes; L'isolement et la purification des acides nucléique;
* La technologie PCR et les polymérases thermostables; Les types de PCR; Les applications pratiques de la technologie de l'ADN recombinante; Vecteurs de clonage.
* L‘obtention et la cultivation des plantes génétiquement modifiées (GM): L'obtention de plantes transgéniques; La cultivation, la commercialisation et le rôle des plantes transgéniques. Avantages/inconvénients de la production de plantes transgéniques.
* Les micro-organismes génétiquement modifiés: L’obtention et le rôle des micro-organismes transgéniques. Les animaux transgéniques: L’obtention et le rôle des animaux transgéniques; Les domaines d'application de la transgenèse animale; Considérations éthiques.
* Le clonage des animaux: Le tipes de clonage; Avantages, risques et des questions sur la transgénèse; Le rôle et les applications des cellules souches. Considérations éthiques.

**Genetică – lucrari practice si seminarii*** Noţiuni introductive de genetică. Noţiuni de protecţia muncii în laboratorul de genetică.
* Structuri celulare cu rol genetic. Stadiile ciclului celular. Diviziunea celulară mitotică şi meiotică. Probleme.
* Elemente de citogenetică: Tehnica obţinerii preparatelor mitotice; Morfologia cromozomilor metafazici; Alcătuirea cariotipului şi a idiogramei; Tehnica de colorare specială a cromozomilor: benzile “G” şi “C”. Probleme
* Demonstrarea şi interpretarea legilor eredităţii. Noţiunea de genă, genotip şi fenotip
* Încrucişarea analizatoare sau testcrossul în monohibridare. Analiza pedigree-ului. Probleme
* Analiza genetică în dihibridare. Probleme
* Interacţiuni genice. Interacţiuni dintre gene alele. Interacţiuni între gene nealele. Probleme
* Fenomenele de linkage şi de crossing-over. Probleme
* Determinismul genetic al sexelor. Ereditatea sexului. Fenomenul de sex-linkage. Probleme. Studiu de caz: transmiterea hemofiliei in familia reginei Victoria.
* Determinismul genetic al grupelor sanguine în sistemele ABO, D, MN). Probleme

**Bibliografie:**1. PUSTA D.L., PASTIU A.I., 2019. Genetique-Travaux Pratique, Ed. Risoprint, Cluj-Napoca.
2. PUSTA D.L., 2013. Genetică fundamentală animală, ed. a II-a, Ed. Risoprint, Cluj-Napoca.
3. GRIFFITHS A.J.F, WESSLER S.R., CARROLL S.B., DOEBLEY J., 2013. L’introduction à l’analyse génétique. 6e édition. De Boeck Supérieur, Bruxelles.
4. PIERCE B.A., 2012. L'essentiel de la génétique. 1er édition. De Boeck Supérieur, Bruxelles.
5. HARTL D.L., FREIFELDER D., SNYDER L.A., 1988. Basic Genetics. Jones and Bartlett Publishers.
6. HARTL D.L., JONES E.W., 2003. Génétique - Les grands principes, 3eme édition, Dunod, Paris.
7. CIUPERCESCU D.D., 1982. Lucrări practice de genetică şi eredopatologie, ed. a II-a, Tipo Agronomia, Cluj-Napoca.
8. CIUPERCESCU D.D., 1986. Curs de genetică şi eredopatologie, ed. a II-a, Tipo Agronomia, Cluj-Napoca.
9. CÎRLAN V.M., 1996. Genetica şi eredopatologie – curs, Editura Universităţii Agronomice “Ion Ionescu de la Brad, Iaşi.
10. BONCA GH., 2009. Elemente de genetică medical patologică a animalelor, Ed. Eurostampa, Timişoara.
11. DORDEA M., COMAN N., CRĂCIUNAŞ C., ANDRAŞ C., 2003. Genetică generală şi moleculară – abordare practică, Presa Universitară Clujeană.
12. LUCHETTA P., 2013. Biologie moleculaire en 30 fiches. 2e edition. Dunod, Paris.
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| **EN** | **Genetics – lecture*** Cell organisation of the genetic material: Prokaryotic and eukaryotic cells; Eukaryotic cell components with genetic role. Cell cycle and the cell cycle regulation. Mitosis. The role of mitosis. Types of mitotic division. Meiosis. The roles of meiosis. Gametogenesis.
* Nuclear chromatin: Functional stages of the chromatin; Chemical composition; Organisation and the structure of the chromatin.
* Chromosomes: Forming of the chromosomes; Morphology of the metaphasical chromosomes; Morphology of the specialised chromosomes; Chromosomes banding.
* Cytogenetics: The concepts and the objectives of the cytogenetics; The karyotype to the main species of domestic animals; The karyotype abnormalities - anomalies in the number and structure of chromosomes.
* Molecular organisation of the genetic material: DNA structure (primary, secondary and tertiary); Types of DNA; Denaturation and renaturation of DNA. RNA structure (primary, secondary, tertiary); Types of RNA (messenger, transfer and ribosomal).
* Genes expression: Gene notion; Gene structure in prokaryotes and eukaryotes; Functions and the expression of the genetic material: DNA replication, DNA transcription, protein biosynthesis
* Mendelian Laws: Terminology used in the mendelian genetic, Mendelian Laws, Mono- hybrid cross, dihybrid cross and the test-cross.
* Exception from the mendelian laws: Allelic interactions: incomplete dominance, codominance, supradominance and lethal genes. Nonallelic interactions: complementary genes, epistatic genes, additive genes and pleiotropy.
* The linkage and the crossing over phenomenon: Genes linkage; Genes linkage in “cis” or “trans” position. Crossing over: the types of crossing over, crossing over importance.
* The genetic determinism of the sexes and the sex linkage: The importance of the sexual reproduction. Mechanism of sex determination. Sex-linkage phenomenon. Heredity limited by sex or influenced by sex.

**Genetics – practical / seminar*** Introductive notions of genetics. Work safety rules in the genetics laboratory.
* Cell structures with genetic role. The cell cycle. Mitosis and meiosis. Problems.
* Elements of Cytogenetics: The technique of obtaining mitotic slides; The morphology of mitotic chromosomes; The karyotype and the karyograme; “G” and “C” bands; Problems.
* Demonstration and interpretation of Mendelian laws; The notion of gene, genotype and phenotype.
* Test-cross in monohybrid cross; Pedigree analyse. Problems.
* Genetic analyze in dihybrid cross. Problems
* Genic interactions: Interactions between allelic genes; Interactions between non-allelic genes; Problems
* Linkage and the crossing-over phenomena. Problems
* Genetic sex determinism: Sex heredity; Sex-linkage phenomenon. Heredity limited by sex or influenced by sex. Application of the sex linkage. Case study: The inheritance of hemophilia in Queen’s Victoria family.
* Genetic determinism of the blood groups in the system ABO MN and D. Problems.

**Hereditary diseases and molecular genetics – lecture**Hereditary diseases* Introduction to hereditary medical pathology: Definition, object and importance of veterinary hereditary pathology; The difference between genetic diseases and hereditary diseases; Classification of genetic diseases in animals.
* General information on pathological medical genetics: Stages of zygote development and embryonic development; The evolution of embryonic structures controlled by genes and the finality of their actions; Congenital genetic malformations; The influence of environmental factors in the determinism of genetic diseases; Disorders of pathological development mechanisms.
* Malformations of brain and skull. Prophylaxis.
* Facial and buccal malformations: Malformations of the jaw. Malformations of the beak; Hereditary malformations of the teeth. Prophylaxis.
* Malformations of the eyes, ears and horns. Prophylaxis.
* Malformations of the cardio-vasculary system. Malformations of the spinal cord. Malformations of the bones and cartilages, in general. Prophylaxis.
* Malformations of the locomotory system. Malformations of the muscles. Malformations of the skin and cutaneous productions. Malformations of the digestive tract. Congenital hernia. Prophylaxis.

Molecular genetics* Introductory notes in molecular genetics: Definition and fields of application of molecular genetics.
* "In vivo" modification of genetic information in microorganisms: genetic transformation of bacteria; plasmids and bacterial conjugation; bacterial conjugation; gene transduction.
* DNA recombinant technology: The stages of obtaining recombinant DNA molecules; Isolation and purification of nucleic acids; PCR technology and thermostable polymerases; Types of PCR; Practical applications of recombinant DNA technology; Cloning vectors.
* Obtaining of the modified genetical plants (transgenic): Obtaining of transgenic plants; Cultivation and commercialization of the transgenic plants; Advantages/disadvantages of the production of transgenic plants.
* Transgenic microorganisms: Obtaining and the role of transgenic microorganisms. Transgenic animals:
* Obtaining and the role of the transgenic animals; Applicability fields of animal transgenesis; Ethical considerations.
* Cloning in animals: Types of cloning; Advantages, risks and questions regarding the transgenesis; The role and the applications of the stem cells; Ethical considerations.

**Genetics – practical / seminar*** Introductive notions of genetics. Work safety rules in the genetics laboratory.
* Cell structures with genetic role. The cell cycle. Mitosis and meiosis. Problems.
* Elements of Cytogenetics: The technique of obtaining mitotic slides; The morphology of mitotic chromosomes; The karyotype and the karyograme; “G” and “C” bands; Problems.
* Demonstration and interpretation of Mendelian laws; The notion of gene, genotype and phenotype.
* Test-cross in monohybrid cross; Pedigree analyse. Problems.
* Genetic analyze in dihybrid cross. Problems
* Genic interactions: Interactions between allelic genes; Interactions between non-allelic genes; Problems
* Linkage and the crossing-over phenomena. Problems
* Genetic sex determinism: Sex heredity; Sex-linkage phenomenon. Heredity limited by sex or influenced by sex. Application of the sex linkage. Case study: The inheritance of hemophilia in Queen’s Victoria family.
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**Notă:** Informaţiile de mai sus sunt solicitate conform prevederilor *Regulamentului privind ocuparea posturilor didactice şi de cercetare* (RU 37), cap. II, art. 2.2(2)

Informaţiile privind **data, ora, locul susţinerii prelegerii**, respectiv **componenţa comisiilor de concurs** şi a **comisiilor de contestaţii** vor fi comunicate prorectoratului didactic după publicarea în Monitorul Oficial a posturilor didactice şi de cercetare vacante.

 Director de Departament,

 Prof. Dr. Adrian Maximilian MACRI

Data completării formularului: 31.10.2022 