MINISTRY OF HEALTH OF UKRAINE
Kharkiv National Medical University

Department of Internal Medicine №2, Clinical Immunology and Allergology named after academician L.T. Malaya

Academic year 2021-2022

SYLLABUS OF THE EDUCATIONAL COMPONENT

"Molecular Allergology"
(назва освітнього компоненту)

Optional educational component

Форма здобуття освіти_____full-time_____
(очна; заочна; дистанційна)

22 Health care _____
(code and name of the field of knowledge)
Specialty _____222 Medicine _____
(code and name of the specialty)

Specialization (if available) _____medicine_____
Educational-professional program (educational-scientific program) __EPP_____

Second (master's) level of higher education
Course __5____

The syllabus of the educational component was approved at the meeting of the Department of Internal Medicine №2, Clinical Immunology and Allergology named after academician L.T. Malaya

Protocol dated
August 27, 2021 № 28

Head of the Department
_____ Professor Kravchun P.G.
(signature) (surname and initials)

Approved by the methodical commission of KhNMU on the problems of professional training of therapeutic profile

Protocol dated
August 31, 2021 № 1

Chairman
_____ Professor Kravchun P.G.
(signature) (surname and initials)

Kharkiv - 2021

Syllabus developers

Babadzhan Volodymyr Danylovych, Professor of the Department of Internal Medicine №2, Clinical Immunology and Allergology named after Academician LT Malaya, Kharkiv National Medical University, Doctor of Medical Sciences, Professor.

INFORMATION ABOUT TEACHERS TEACHING THE EDUCATIONAL COMPONENT

Surname, name, patronymic, position, academic title, scientific degree

Kravchun Pavlo Hryhorovych, Head of the Department of Internal Medicine № 2, Clinical Immunology and Allergology named after Academician LT Malaya, Kharkiv National Medical University, Doctor of Medical Sciences

Professional interests, link to the teacher 's profile (on the university website, department, in the Moodle system, etc. Theoretical and practical aspects of allergic diseases, molecular allergology.

Contact phone +380972600080

Corporate mail. kravchun@knu.edu.ua

Consultations are held daily from 15^{00} - 17^{00}, on Saturdays according to the schedule of the department and at the request of students and on the basis of the Department of Internal Medicine №2, Clinical Immunology and Allergology named after Academician LT Mala; are held by agreement with the lecturer in the Moodle or Zoom system

Location: Department of Internal Medicine №2, Clinical Immunology and Allergology named after Academician LT Malaya

Babajan Vladimir Danilovich, Professor of the Department of Internal Medicine №2, Clinical Immunology and Allergology named after Academician LT Small Kharkiv National Medical University, Doctor of Medical Sciences

Professional and interests, links to the teacher's profile (on the website of the university, department, in the Moodle system and more. Patomechanisms of allergy associated with IgE, molecular allergology, the main features of antigens and immune recognition of antigens, mechanisms of development, diagnosis and treatment of anaphylactic shock, urticaria, acute angioneurotic edema, allergic bronchial asthma, drug and food allergies; development of new methods of allergy diagnosis (ImmunoCAP, ISAC, ALEX) and therapy.

Contact phone +380675732338

Corporate mail of the teacher vd.babadzhan@knmu.edu.ua

Consultations are held daily from 15^{00} - 17^{00}, on Saturdays according to the schedule of the department and at the request of students at the Department of Internal Medicine №2, clinical immunology and allergology. Academician LT Small; online consultations are held in agreement with the teacher in the system Moodle or Zoom.

Location: Department of Internal Medicine №2, Clinical Immunology and Allergology named after Academician LT Malaya

Krapivko Svitlana Oleksandrivna, Associate Professor of the Department of Internal Medicine №2, Clinical Immunology and Allergology named after Academician LT Malaya Kharkiv National Medical University, Candidate of Medical Sciences.

Professional interests, links to the teacher's profile (on the university website, department, in the Moodle system, etc. Allergen-specific diagnosis and allergen-specific immunotherapy of IgE-dependent allergy. Introduction of new methods of diagnosis and treatment of patients with anaphylactic shock, allergic bronchial allergy allergic rhinitis, urticaria, acute angioneurotic edema, drug and food allergies

Contact phone +380933083284

Corporate mail of the teacher so.krapivko@knmu.edu.ua

Consultations are held daily from 15^{00} - 17^{00}, on Saturdays according to the schedule education and demanding applicants based on Department of internal Medicine №2, clinical Immunology and Allergology named after LT Malaya, online consultations conducted by agreement with the teacher in system Moodle or Zoom.

Locations: Department of internal Medicine №2, clinical Immunology and Allergology academician LT Malaya Time for classes: Monday, Tuesday, Wednesday, Thursday, Friday (8^{00}-12^{15}/12^{25}-16^{45} according to the schedule).

INTRODUCTION

The syllabus of the discipline (abstract) “Molecular Allergology” is compiled in accordance with the educational-professional program (here in after - OPP) "222 Medicine" and the Standard of Higher Education of Ukraine (here in after - Standard), second (master's) level, field of knowledge 22 "Health" I ”, specialty“medicine”.

Description of the discipline(abstract) The elective course “Molecular Allergology” includes an idea of the structure of allergenic proteins responsible for sensitizing the body to certain allergens, their classification, the concept of one- and multicomponent half-quantitative and quantitative methods for determining their concentration in blood serum, which will successfully interpret test results, determine species-specific sensitivity and possible cross-reactivity , which will assess the risk of an allergic reaction to various allergens. Molecular diagnostics is an important tool for choosing the right treatment of the patient, according to the correctly calculated principles, schemes and terms of medical intervention. Such information helps physicians to individualize treatment, including making recommendations for reducing the effects of the target allergen, selecting appropriate allergens, and specific immunotherapy techniques or the need for dietary adjustments.

Studying the discipline will allow the doctor in most cases to quickly identify the causative allergen. Accurate identification of the causative allergen will allow the doctor to develop a means of preventing re-contact with the allergen, and if this is not possible to conduct allergen-specific immunotherapy with modern highly effective allergen components, which will significantly reduce the risk of disease (hay fever, allergic rhinitis, allergic bronchitis, allergic bronchitis allergies, anaphylaxis). The study of the discipline is needed by therapists, family doctors, otorhinolaryngologists, pulmonologists, allergists and others.

The course "Molecular Allergology" is designed to teach students 5 years of the second (master's) level of higher education.

Moodle page http://distance.knmu.edu.ua/course/view.php?id=1690

The subject of the discipline "Molecular Allergology" is to preserve the health of the population by conducting allergy methods for diagnosing sensitization to environmental allergens using skin prick- and scarification tests, one-component ImmunoCAP. and multicomponent ALEX, ISAC methods of diagnosis and appointment of allergen-specific immunotherapy (injection and sublingual) allergic diseases in patients.Міждисциплінарні зв’язки:

Prerequisites: pathological morphology, physiology and pathophysiology, microbiology, virology and immunology.

Postrequisites: promotes the study of clinical disciplines "Pediatrics with pediatric infectious diseases" - in particular the diagnosis of sensitization and specific immunotherapy with asthma allergens, prevention, diagnosis and treatment of food allergies, "Ophthalmology" - including prevention, diagnosis and diagnosis , venereology "- in particular the diagnosis and treatment of atopic dermatitis, determination of causative allergens," Otorhinolaryngology "- in particular the prevention, diagnosis and treatment of allergic rhino-sinusitis with allergen-specific immunotherapy with causative allergens," Emergency and emergency care "- in particular diagnosis treatment of anaphylactic shock.

1. PURPOSE AND TASKS OF THE COURSE

1.1. The purpose of studying the elective course "Molecular Allergology" is to deepen knowledge of modern methods of allergy diagnosis, the ability to identify causative allergens, to develop measures to prevent contact with them, methods of allergen-specific immunotherapy, emergency skills and other competencies in allergy. established on the basis of educational and professional program.

1.2. The main objectives of the discipline "Molecular Allergology" are to improve competencies in accordance with the general and professional competencies of the educational-professional training program at the second (master's) level of higher education in the field of

knowledge 22 Health 222 Medicine qualification the results of allergen-component studies, to determine the relationship between the clinical manifestations of allergies and the results of the study; 2) the ability to detect clinical and immunological signs of immune disorders in patients with acute, recurrent and chronic allergy, to establish a clinical diagnosis; 3) the ability to classify the symptoms and syndromes of allergies; 4) the ability to make a plan of examination of the patient, to analyze the obtained data of one- and multi-component research methods that can identify the causative allergen; 5) the ability to determine the presence of cross-sensitization; 6) the ability to apply knowledge in practical situations, to prescribe allergen-specific immunotherapy, to provide emergency care; 7) understanding of the subject area and professional activity, ability to adapt and act in a new situation, making an informed decision, ability to work in a team, act socially responsibly and consciously.

1.3. Competences and learning outcomes, the formation of which is facilitated by the discipline "Molecular Allergology":

In accordance with the requirements of the standard, the discipline provides the acquisition of the applicant's ***competencies*:**

- *integral:* Ability to solve complex specialized problems and practical problems during professional activity in the field of clinical immunology and allergology and in the educational process, which involves the application of theoretical principles and immunological methods of laboratory diagnosis to comprehensively assess the immune status of the body, detection of sensitization to different species allergen components in patients; to establish the diagnosis and degree of immunological allergological disorders, to control the prescribed immunomodulatory therapy.

- *general:* 1. Ability to conduct research at the appropriate level. 2. Ability to apply knowledge in practical situations. 3. Knowledge and understanding of the subject area and understanding of professional activity. 4. Ability to adapt and act in a new situation. 5. Ability to make an informed decision; work in a team; interpersonal skills. 6. Ability to communicate in the state language both orally and in writing; ability to communicate in a foreign language. 7. Skills in the use of information and communication technologies. 8. Definiteness and persistence in relation to the set tasks and responsibilities. 9. The ability to act socially responsibly and consciously. 10. The desire to preserve the environment.

- *special (professional, subject):* 1. Interpret the concept of "molecular allergology". 2. To draw conclusions about the presence of sensitization to environmental allergens (pollen and household) according to laboratory tests. 3. Conduct surveys and physical examinations of patients with hay fever, allergic bronchial asthma, food allergies, insect allergies. 4. To substantiate the use of skin prick tests to diagnose sensitization to allergens, to determine the indications and contraindications for their conduct. 5. To determine the etiological factors of sensitization to pollen and household allergens. 6. Explain the basics of allergological research methods (laboratory tests, skin tests, provocation tests, ImmunoCAP, ISAC, ALEX, etc.). 7. To make the plan of inspection of patients with suspicion of sensitization to pollen and household allergens, to substantiate application of the basic diagnostic methods applied in allergology, to define indications and contraindications for their carrying out, possible complications. 8. Prescribe allergen-specific immunotherapy using pollen and household allergens, evaluate its effectiveness. 9. Demonstrate the ability to market medical services.

1.3.2. The study of the discipline ensures the acquisition by students of the following **program learning outcomes (PLO):**

PLO 1 - acquisition of general and special fundamental and professionally-oriented knowledge, skills, abilities, competencies necessary to perform typical professional tasks related to its activities in the medical field in the relevant position.

PLO 2 - knowledge of psychophysiological features of man, human health, health support, disease prevention, human treatment, public health.

PLO 3 - the ability to apply the acquired knowledge, skills and understanding to solve typical problems of the doctor, the scope of which is provided by lists of syndromes and symptoms,

diseases, emergencies, laboratory and instrumental studies, medical manipulations.

PLO 4 - collection of patient information.

PLO 5 - evaluation of survey results, physical examination, laboratory and instrumental research data.

PLO 6 - establishing a preliminary clinical diagnosis of the disease.

PLO 7 - determination of the nature, principles of treatment of diseases.

PLO 8 - determination of the necessary diet, mode of work and rest in the treatment of diseases.

PLO 9 - determination of tactics of contingent contingent of persons subject to dispensary supervision.

PLO 10 - diagnosing emergencies, determining the tactics of emergency medical care.

PLO 11 - carrying out sanitary and hygienic and preventive measures.

PLO 15 - performance of medical manipulations.

PLO N 16 - assessment of the impact of the environment on the health of the population.

PLO 17 - maintaining medical records, processing of state, social and medical information.

PLO 18 - the ability to assess the state of human health and provide its support taking into account the impact of the environment and other health factors.

PLO 20 - the ability to apply the acquired knowledge about the existing health care system to optimize their own professional activities and participate in solving practical problems of the industry.

PLO 21 - the formation of a specialist with appropriate personal qualities, who adheres to the code of ethics of the doctor.

1.3.3. The study of the discipline ensures the acquisition of education by students the following **social skills (Soft skills):** skills of critical thinking, problem solving, public speaking, business communication, teamwork, digital communication, organization of activities, which are also influenced by the level of leadership, knowledge of work ethics, discipline, sense of responsibility, compassion man.

2. VOLUME OF INFORMATION

<table>
<tr><td rowspan="2">Name of indicators</td><td rowspan="2">Area of knowledge, specialty, degree of education, OPP</td><td>Feature discipline</td></tr>
<tr><td>full-time education</td></tr>
<tr><td>Credits - 3</td><td>Area of knowledge
22 "Health Care"
(code name)</td><td>Regulatory</td></tr>
<tr><td rowspan="4">Total hours - 90</td><td rowspan="4">Specialty:
222 “Medicine”
(code and title)</td><td>Year of preparation:</td></tr>
<tr><td>5th</td></tr>
<tr><td>Semester</td></tr>
<tr><td>1 and 2nd</td></tr>
<tr><td rowspan="5">Hours for full-time study:
classroom - 20
independent work student - 70</td><td rowspan="5">Educational degree:
Master of
OPP
222 Medicine</td><td>Practical classes</td></tr>
<tr><td>20 hours.</td></tr>
<tr><td>Independent work</td></tr>
<tr><td>70 hours</td></tr>
<tr><td>Type of control:
credit</td></tr>
</table>

Note: 1 ECTS credit - 30 hours.

2.1 Description of the discipline

2.1.2 Practical classes

№ o/n	Title of the topic	Number of hours	Methods of teaching	Forms of control
1.	Allergen components. Classification. PR-10 proteins. The concept of homologous proteins.	3	Narrative-explanation, demonstration, presentation, video, modeling of processes and situations, case method, use of immunograms, results of multicomponent methods of allergy diagnosis.	*Current control:* abstract. *Final control:* credit.
2.	Characteristics of profiles, lipid transporter proteins (LTP), polcalcin, proteins of the Ole e 1 family.	2		
3.	Growth protein (Beta-expansin), Pectate lyase, Defensin-like protein of cereal and grass pollen.	2		
4.	Strage proteins, tropomyosins, proteins of the Neiman Peak family, type C2, lipocalins, serum albumin, uteroglobin, parvalbumin, superoxide dismutase, cross-reactive carbohydrate determinant.	3		
5.	Skin tests (prik and scarification, patch tests). Enzyme-linked immunosorbent assay, immunoblotting and one-component methods for the determination of specific IgE to allergen components. Molecular diagnosis of allergens of plant origin (pollen of trees, herbaceous plants, weeds). Food allergens of plant origin, domestic fur animals, livestock.	3		
6.	Determination of sensitization to allergen components using multicomponent methods based on microarrays.	2		
7.	Allergens of food of animal origin, seafood, meat, molds and yeasts, house dust mites, insects and parasites, membranes of membranous insects. Clinical manifestations of food allergy. Clinical manifestations of insect allergy. Emergency care for anaphylaxis caused by food allergies and insect allergies.	2		
8.	Methods of specific immunotherapy of patients with hay fever and allergic bronchial asthma with allergen extracts, allergoids. Features of specific immunotherapy for seasonal and perennial allergic rhinitis. Clinical manifestations of side effects, complications, methods of their prevention.	3		
9.	Credit			
	Total hours of practical classes	20		

2.2.3. Individual work

№ o/n	Title of the topic	Number of hours	Methods of teaching	Form of control
1	Characteristics of PR-10 proteins, profillins, LTP proteins, polcalcin and Ole e 1 proteins. Characteristics of growth proteins, pectate lyase and defense-like proteins.	10	virtual consultation	*Current control:* oral examination (individual and frontal); written survey; test control; individual tasks; presentation; abstract; report *Final control:* credit
2	Storage proteins. Tropomyosins, proteins of the NPC2 family, lipocalins, serum albumin, serum albumin, uteroglobin, parvalbumin, superoxide dismutase, cross-reactive carbohydrate determinant. Methods for diagnosing sensitization to allergens of plant origin (tree pollen, herbaceous plants, weeds). Molecular diagnosis of sensitization to food allergens of plant origin, allergens of domestic fur animals, livestock.	20		
3	Skin tests (prick-, scarification and patch tests). Multicomponent methods for determination of specific IgE to allergen components (ISAC, ALEX). Specific immunodiagnostics of patients with hay fever and allergic bronchial asthma. Diagnosis of sensitization to food of animal origin. Allergens of mold and house dust mites, insects.	20		
4	Specific immunotherapy of patients with hay fever and allergic bronchial asthma. Clinical manifestations of food allergy. Specific immunotherapy for seasonal and year-round sensitization. Methods of administration of allergens and allergen components. Dosage of allergens. Clinical manifestations of insect allergy. Emergency care for anaphylaxis caused by food allergies and insect allergies. Preparation for the Credit.	20		
	Total hours of independent work of the applicant	70		

3. EVALUATION CRITERIA

3.1. Evaluation of educational success of students is carried out on the basis of the current "Instructions for evaluating the educational activities of students of KhNMU"

Evaluation	Criteria
"Excellent"	The applicant shows special creative abilities, is able to acquire knowledge independently ability to make decisions in unusual situations, argues convincingly answers independently discovering their talents and inclinations

"very good"	getter speaks volume of material studied, applying it in practice, free to solve exercises and problems in common situations, self-corrects mistakes, the number of which is insignificant
"Good"	The applicant is able to compare, summarize, systematize information under the guidance of a teacher; as a whole to apply it independently in practice; control their own activities; to correct mistakes, among which there are significant ones, to choose arguments to confirm the opinions
"Satisfactory"	The applicant reproduces a significant part of the theoretical material, shows knowledge and understanding of the main provisions; with the help of a teacher can analyze teaching material bugs include a significant amount of material
"enough"	Applicant has educational material at a level higher than the original, much of it reflects on the reproductive level
"unsatisfactory" with the possibility of re-assembly semester control	getter has material at the individual pieces that make up a small part of the training material
"unsatisfactory" with a mandatory re-study test credit	getter material has a basic level of recognition and reproduction of certain facts, items, objects of
particular criteria for assessing practical skills in the disciplines	
"Excellent"	The applicant meets a high (creative) level of competence: the student shows special creative abilities, without errors demonstrates the implementation of practical skills and has systematic theoretical knowledge (knows the method of practical skills, indications and contraindications, possible complications, and n.) and has the ability to make decisions in unusual situations.
"Good"	The applicant demonstrates the implementation of practical skills, admitting some inaccuracies, which he corrects quickly, has theoretical knowledge (knows the method of practical skills, indications and contraindications, possible complications, etc.)
"Satisfactory"	The applicant demonstrates the implementation of practical skills, allowing some errors that can be corrected by correcting them by the teacher, has satisfactory theoretical knowledge (knows the basic principles of methods of practical skills, indications and contraindications, possible complications, etc.).
"Unsatisfactory"	The applicant can not independently demonstrate practical skills (performs them, making gross errors), does not have a sufficient level of theoretical knowledge (does not know the methods of practical skills, indications and contraindications, possible complications, etc.).

3.2. Control questions and questions to the credit:

Topic №1. Allergen components. Classification. PR-10 proteins. The concept of homologous proteins.

Mechanisms of allergenicity of allergens.

Allergen components. Use of allergen components in the clinic.

Families of allergens. Classification of allergen components as families of proteins based on their functions and structure.

Proteins PR-10 (pathogenesis-related protein) of tree pollen: birch, hazel, alder, beech, oak and hornbeam.
PR-10 proteins in food: strawberries, apple, apricot, cherry, peach, pear, raspberry, golden kiwi, celery, carrots, peanuts, soy, hazelnuts, chestnuts, tomatoes.
The concept of homologous proteins.

Topic № 2. Characteristics of profiles, lipid transporter proteins (LTP), polcalcin, proteins of the family Ole e 1. Profilins (Profilin) from pollen: birch, alder, hazel, hornbeam, beech, oak, thyme, wormwood, ragweed, plantain, olive, ash, cypress, snowdrop, date palm. Profilin (Profilin) from plant products: apples, peaches, pears, melons, green kiwi, carrots, celery, oranges, soybeans, peanuts, hazelnuts, tomatoes, pineapples, mustard, sunflower seeds, figs.
Lipid-carrying proteins (LTP) from plant foods: apples, peaches, cherries, grapes, oranges, tomatoes, hazelnuts, walnuts, peanuts, lettuce, corn, wheat. Lipid-carrying proteins (LTP) from occupational allergens: natural rubber latex, asparagus. Lipid-carrying proteins (LTP) from pollen: plantain, ragweed, wormwood, olive tree, sycamore.
Polcalcin (Calcium-binding protein) from various sources of pollen: rye combed fragrant spikelet. of cultivated oat swine, team food, distichlis, reed fescue, barley, cylindrical emperors, perennial weeds, sowing rice, timothy, meadow bluegrass, wheat, sorghum, sugar cane, beetroot, sorrel, sporobolus oak, ragweed, wormwood, canola, marie, cryptomeria, cypress, cedar, ash, olive, lilac, tobacco, postinitsa.
Proteins of the Ole e 1 family (Ole e 1-Family protein) from tree pollen - common ash, privet, lilac, olive, and from herbs - thyme, plantain, lanceolate, white marie, brine.

Topic № 3. Growth protein (Beta-expansin), pectate lyase (Defate lyase), defensin-like proteins (Defensin-like protein) of pollen of cereals and grasses.
Growth protein (Beta-expansin) contained in the pollen of meadow thyme, swine, buckwheat, weeds, Aleppo sorghum.
Pectate lyase, contained in the pollen of trees - cypress, cryptomeria, cypress and cypress evergreen, juniper, juniper and weeds - ragweed, wormwood. Cross-reactivity between proteins of the pectate lyases family from grass and weed pollen sources.
Defensin-like protein found in the pollen of ragweed, wormwood, and sunflower weeds.

Topic № 4. Plant stock proteins, tropomyosins, proteins of the Neiman Peak family, type C2, lipocalins, serum albumin, uteroglobin, parvalbumin, superoxide dismutase, cross-reactive carbohydrate determinant.
Storage protein contained in sesame seeds, mustard seeds, sunflower seeds, buckwheat, poppy, hazelnuts, almonds, cashews, pistachios, walnuts, pecans, Brazil nuts, pine nuts, coconuts, peanuts.
Tropomyosin (Tropomyosin), found in crustaceans and mollusks: shrimp, northern shrimp, giant tiger shrimp, white-legged shrimp, common shrimp, lobster, European green crab. Cross-reactivity among allergenic tropomyosins from several sources.
Proteins of the Niemann Peak family, type C2 (NPC2), contained in the hairy house mite, American house dust mite, European house dust mite, Blomia tropicalis mite. Clinically significant cross-reactivity of tick allergens.
Animal lipocalin (Lipocalin) found in cows, dogs, guinea pigs, Syrian hamsters, horses, cats, rabbits, mice, and rats. Cross-reactivity between proteins of the Lipocalin family.
Serum albumin (Serum albumin), found in cow's meat and milk, dog, lead, horse, cat, chicken, pig. Cross-reactivity between proteins of the serum albumin family.
Uteroglobin contained in the cat.
Parvalbumin, found in Peruvian sardine herring, carp, anchovies, cod, hake, pollock, whitefish, mackerel, swordfish, tuna, megrim, European salt, American loach, rainbow trout . Cross-

reactivity between parvalbumin proteins.
Superoxide-Dismutase, found in Aspergillus fumigatus and Malassezia sympodialis.
Cross-reactive carbohydrate determinant (CCD).

Topic № 5. Leather tests (pre-tests and scarification tests). Enzyme-linked immunosorbent assay, immunoblotting and one-component methods for the determination of specific IgE to allergen components. Molecular diagnosis of allergens of plant origin (pollen of trees, herbaceous plants, weeds). Food allergens of plant origin, domestic fur animals, livestock.

Leather tests (pre-tests and scarification tests).

Types of allergens for PAC tests.
Methods of patch tests in the diagnosis of allergies.
One-component methods for determining specific IgE to allergen components.
Allergens and cross-reactivity.
Mapping of IgE epitopes of allergens using immunological methods based on microarrays.
Molecular diagnosis of allergens of plant origin (pollen of trees, herbaceous plants, weeds).
Allergens of food products of plant origin (fruits and vegetables), nuts and seeds, legumes, cereals.
Latex. Allergens of domestic furry animals, cattle. Allergens and cross-reactivity.

Topic № 6. Determination of sensitization to allergen components using multicomponent methods based on microarrays.

Determination of sensitization to allergen components using multicomponent methods based on microarrays.

Topic № 7. Allergens of food of animal origin, seafood, meat, molds and yeasts, house dust mites, insects and parasites, poisons of membranous insects. Clinical manifestations of food allergy. Clinical manifestations of insect allergy. Emergency care for anaphylaxis caused by food allergies and insect allergies.

Food allergens of animal origin.
Seafood allergens (shellfish) - shrimp and shellfish.
Meat allergens. Allergens of molds and yeasts.
Allergens of house dust mites and barn mites.
Allergens of insects and parasites.
Allergens poison the membranous insects.
Allergens and cross-reactivity.
Clinical manifestations of insect allergy.
Emergency care for anaphylaxis caused by food allergies and insect allergies.

Topic № 8. Methods of specific immunotherapy of patients with hay fever and allergic bronchial asthma with allergen extracts, allergoids. Features of specific immunotherapy for seasonal and perennial allergic rhinitis. Clinical manifestations of side effects, complications, methods of their prevention.

Specific immunotherapy of patients with pollinosis and allergic bronchial asthma with allergen extracts, native and recombinant allergen components, allergoids.
Methods of appointment, schemes of use, contraindications, side effects.
Features of specific immunotherapy for seasonal and perennial allergic rhinitis, allergic bronchial asthma, depending on the flowering season of trees, herbs, weeds.
Age restrictions of SIT, terms of cessation of reception of antihistamines, glucocorticoids, their local and parenteral appointment.
Subcutaneous and sublingual methods of allergen administration.
Seasonal and year-round schemes of allergen administration.

Dosage of allergens.
Indications and contraindications for specific immunotherapy.
Prevention and treatment of complications during specific immunotherapy.

3.3. Individual tasks

Preparation of a review of scientific literature or conducting scientific research (optional):

- Significance and methods of immunogram using flow cytometry
- Immuno-neuro-endocrine regulation of body functions.
- Apoptosis as a regulation of the immune response.
- Immunology of mucous membranes.
- Immunopathogenesis and immunotherapy of sepsis.
- Herpes virus infection: immunopathogenesis, immunotherapy.
- Epstein-Barr virus infection: immunopathogenesis, immunotherapy.
- Methods for diagnosing allergies: ELISA determination of total IgE, specific IgE.
- Methods for diagnosing allergies: ImmunoCAP study.
- Methods for diagnosing allergies: a multicomponent ISAC study.
- Methods for diagnosing allergies: a multi-component study of ALEX2.
- Pollinosis. Allergen-specific immunotherapy: principles of appointment. Indications and contraindications, the development of complications.
- Drug allergy.

Types of individual tasks:

1. Curation of a patient with allergic pathology.
2. Report of the patient's medical history in a practical lesson.
3. Report of the abstract or presentation in a practical lesson.
4. Writing abstracts, articles.
5. Participation in competitions and student conferences.

3.6. Rules for appealing the assessment If the student does not agree with the assessment, he informs the teacher. The teacher should ask additional questions to clarify the level of knowledge of the student and inform him about the results of the additional survey. If the applicant does not agree with the assessment, his survey is conducted collectively by two teachers, who are appointed by the head of the department. The survey commission may include a teacher who conducted practical classes in the group. If necessary, the head of the department joins the commission. After an additional survey, the commission notifies the student of the final grade received.

4. DISCIPLINE POLICY

In order to achieve the goals of training and successfully complete the course, it is necessary to: join the work from the first day; attend lectures regularly; read the material in advance, before its consideration in a practical lesson; not to be late and not to miss classes; come to the department dressed in a medical gown, have changeable shoes, have a phonendoscope, notebook, pen; perform all necessary tasks and work every day; be able to work with a partner or in a group; ask for help and get it when you need it.

Academic mobility, interchangeability of credit credits (volume of 1 credit 30 hours) is provided. Students can discuss different tasks, but their performance is strictly individual. It is not allowed to write off, use various software, tips, use a mobile phone, tablet or other electronic gadgets during the lesson. Students are not allowed to be late for practical classes. Omissions of practical classes are worked out hour by hour to the teacher of group or the next teacher. Admission and consultations are held daily from 15^{00} - 17^{00}, on Saturdays in accordance with the "Regulations on the procedure for students to study" from 07.12.2015 № 415.

Students with special needs must meet with the teacher or warn him before classes, at the request student this can be done by the group leader. If you have any questions, please contact the teacher.

5. ACADEMIC INTEGRITY

Observance of academic integrity by students *provides*:
-independent performance of educational tasks, tasks of current and final control of learning outcomes (for persons with special educational needs this requirement is applied taking into account their individual needs and opportunities);
-references to sources of information in the case of the use of ideas, statements, information;
-compliance with copyright law;
-providing reliable information about the results of their own educational (scientific, creative) activities.
Violation of academic integrity is considered to be:
1) academic plagiarism - publication (in part or in full) of scientific results obtained by others as the results of their own research, and / or reproduction of published texts by other authors without indication of authorship; a form of academic plagiarism is self-plagiarism, which consists in reproducing one's own previously published texts without reference to the source of information;
2) fabrication - falsification of research results, references, or any other data related to the educational process;
3) deception - providing knowingly false information about their own educational activities or the organization of the educational process;
4) writeoff -- the use without external permission of external sources of information during the evaluation of learning outcomes;
5) bribery - the provision (receipt) of a participant in the educational process or a proposal to provide (receive) funds, property or services of a tangible or intangible nature in order to obtain illegal benefits in the educational process.
For *violation of academic integrity, students* may be held liable for such academic liability.

5. Recommended reading:

Basic

1. Essentials of clinical immunology / Ed.: Helen Chapel, Mansel Haeney, Siraj Misbah, Neil Snowden. – Sixth edition.- Wiley Blackwell.- 2014.- 377 p.
2. Molecular Allergology. User's Guide/ Ed.: Matricardi P.M., Kleine-Tebbe J., Jürgen H.H., Valenta R., Ollert M. // EAACE, 2016.-402p.
3. Oxford Handbook of Clinical Immunology and Allergy / Third edition / Edded by Gavin PS - Oxford University Press, 2015 - 659 p.

Auxiliary

4. Component-Cross-reactivity-Map-150903_ru
5. Lectures of the head of the department MD Professor Kravchun PG, MD Professor Babadzhan VD, 2020 - 2021 year.
6. Recommendations for the use of molecular diagnostics in the diagnosis of allergic diseases / Valenta R., Tonutti E., Bizzaro N. al all // Eur Ann Allergy Clin Immunol.- Vol 50, No. 2, 52-59, 2018.
7. USMLE STEP 1Lecture Notes, 2016 / Immunology and Microbiology / Tiffany L. Alley, Kim Moscatello- NY-Kaplan, Inc., 2016 - 519 p.

6. Information resources

1. Page in Moodle http://distance.knmu.edu.ua/course/view.php?id=1690
2. Ukrainian Library Association www.ula.org.ua
3. http://repo.knmu.edu.ua/
4. http://dspace.meduniv.lviv.ua/

5. https://studfiles.net/mgmu/2741/ Allergology and Immunology National Guide R.M. Haitov 2014.pdf
6. www.allergen.org
7. www.allergyeducation-ma.com
8. www.allergyeducation-ma.com