American Journal of Botany and Bioengineering
https://biojournals.us/index.php/AJBP
ISSN: 2997-9331

The Structure of Bacteriological, Virological and Immunology Laboratories. Groups of Micro-Organisms. Simple Painting Techniques.

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Received: 2024 07, Oct
Accepted: 2024 08, Oct
Published: 2024 09, Nov

Abstract: This article contains the necessary information about the structure of bacteriological, virological and immunological laboratories, groups of microorganisms, and simple staining methods. You can learn about several types of microscopes for microbiological examinations (biological, fluorescent, electron) and special methods and devices for viewing in a microscope (space-contrast, darkfield).

Basic concepts. Serological laboratories, poliomyelitis, measles, bacteriological, brucellosis, anthrax, tularemia, tetanus, alcohol.

Enter. Principles of organizing bacteriological, virological and serological laboratories.

Bacteriological, virological and serological laboratories are organized in sanitary epidemiological stations (SES) and in large hospitals and medical institutes (for training with students). Bacteriological, virological and serological tests are carried out in these laboratories based on pathological materials taken from patients. In addition, bacteria carriers are examined in these laboratories, as well as water, air, soil, food products and various products and objects are also subjected to sanitary bacteriological examination. Bacteriological and serological laboratories within hospitals carry out examinations for the diagnosis of 3 and 4 groups of infectious diseases (intestinal, airborne, purulent infections). In addition, the quality of sterilization and disinfection is regularly checked when assessing the sanitary hygiene of the hospital.

The main part. Virological laboratories are organized within the SES of the republic, city, region and in the institute of virological scientific testing. In these laboratories, the causative agents of

diseases caused by viruses (influenza, poliomyelitis, measles, etc.), chlamydia (ornithosis, etc.) and rickettsiae (severe typhus, KU-fever, etc.) are diagnosed. When organizing and equipping virological laboratories, special boxes are provided for working with viruses, cell cultures, chicken embryos and laboratory animals, and the requirement of very strict aseptic conditions is taken into account. Bacteriological, virological and serological laboratories now have the following modern tools and equipment: biological and additional devices (illuminant, spatial-contrast) fluorescent, electronic microscopes, thermostat, anaerostat, sterilization equipment (autoclave, drying, sterilization cabinet) , water bath, ph-meters, devices for preparing distilled water (distiller), centrifuges, technical and analytical balances, filtering devices (Zeits filter, etc.), refrigerators, apparatus for making cotton-gauze plugs, a set of tools (bacteriological loops, spatulas , needles, tweezers, automatic micropipettes, etc.), laboratory equipment (test tubes, flasks, Petri dishes, vials, ampoules, Pasteur pipette and labeled pipettes), etc. Modern large laboratories have computer programs for identification (sorting) of bacteria. In addition, serological and virological laboratories have equipment for immunoenzyme, immunoblotting tests and PSR apparatus.

In the laboratory, a separate place is allocated for staining microscopic preparations. There is a solution of dyes, alcohol, acids, reagents, filter paper, etc. Each workplace is provided with gas or alcohol burners and glass containers with disinfectant solution. For daily work, it is necessary to have a sufficient amount of nutrient media, chemical reagents, diagnostic drugs and other necessary things in the laboratory.

Biological microscope. In the practice of microbiology, many microscopes are used (MBI-1, MBI-1, MBI-2, MBI-3, MBI-6, Biolam P-l, etc.). , movement and other signs, and designed to see microorganisms smaller than 0.2-0.3 μm in size. Biolam monocular or binocular microscopes are mostly used in bacteriological practice. The microscope consists of two optical and mechanical parts. The optical part includes the lenses under the microscope. They consist of lenses that magnify the object and correct optical defects. Lenses are divided into dry and immersion systems (immersio — coverage). Biolam microscopes have three dry and one immersion lens. Information about them is written on each lens.

1. x8,x 20,x40.x90 or x100:
2. number of characters;
3. number issued at the factory.

In addition to these, immersion lenses have an index of 90 and an additional IO or MI (immersion lens or oil immersion) letter, and a black line is drawn on the bottom of the lens.

The direct (frontal) lens of the immersion lens has a short focal length (f = 1.5-3 mm). When viewed through a microscope, the lens is immersed in pre-dried oil. The refractive index of immersion oil (1.52) is close to the refractive index of glass. In this, the rays falling on the lens are fully preserved. Additional equipment for a biological microscope. These devices make it possible to fully use the full potential of the microscope, ease the working conditions, and somewhat expand the range of their application. The following devices are mainly used in microbiological laboratories:

1. Darkening cardioid and paraboloid condensers.
2. Space-contrast devices KF-1, KF-4 and other copies.
3. Eyepiece-micrometer and object-micrometers designed for measuring microscopic objects.
4. Colored, neutral and warm optical light filters, which are installed between the light source and the microscope and are used in microphotographs, special methods of microscopy.
5. MFN-1, MFN-3 and other replica microdevices used for taking pictures of microscopic objects.

Morphology and structure of bacteria

Bacteria are single-celled microorganisms. They have different shapes and a complex structure, which determines the diversity of their activity. There are four main types of bacteria: spherical, rod-shaped, coiled and filamentous. Spherical bacteria - cocci (derived from the Greek word coccus-don, gut). cocci differ from each other according to the level of division and the location of each cell in the smear.

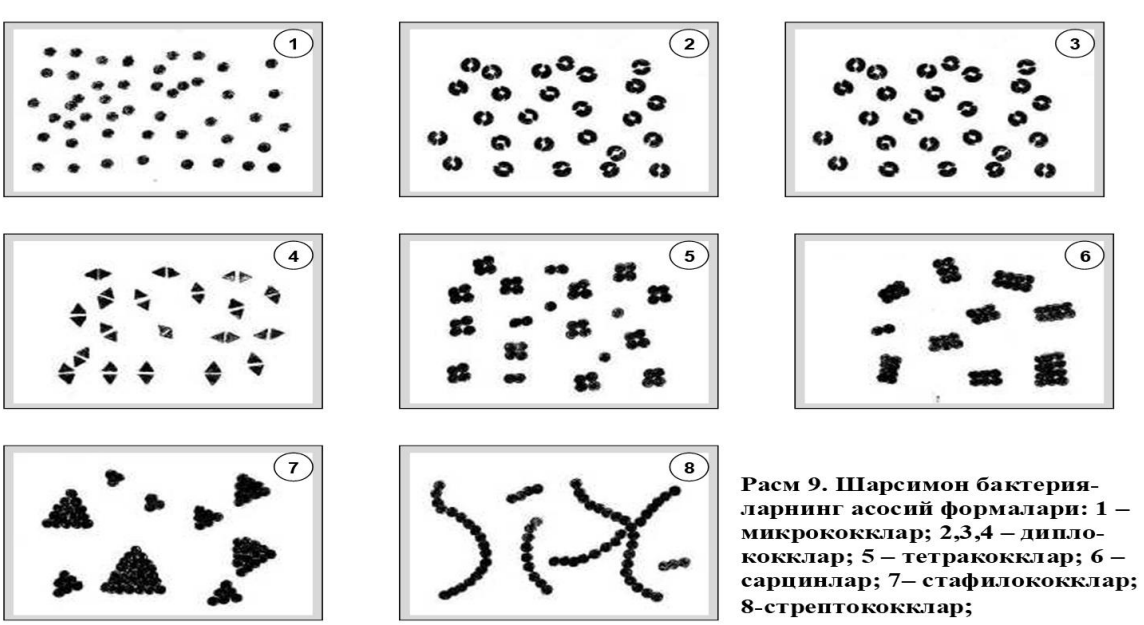
Individual cocci are called micrococci, saprophytic do not cause disease.

Diplococci are cocci that are found in pairs in smears. Diplococci include causative agents of various human diseases (pneumococci, gonococci, meningococci).

Streptococci are cocci that do not separate from each other after division. Most of these representatives are pathogenic for humans.

Staphylococcus (located like a grape rind). If the division does not go according to a certain order, then the cocci will stay together and form bunches similar to grape skins. There are pathogenic species for humans.

Tetracocci (cocci arranged in four-by-fours) are arranged in four cocci when divided in two perpendicular planes. Not pathogenic for humans.



Расм 9. Шарсимон бактерия-ларнинг асосий формалари: 1 – микрококклар; 2,3,4 – дипло-кокклар; 5 – тетракокклар; 6 – сарцинлар; 7– стафилококклар; 8-стрептококклар;

Research results. Acquisition of material for inspection. To prepare the drug, the material to be tested is taken from a test tube, flask or Petri dish through a bacteriological loop or sterile pipette. In some cases, preparation needles are also used for this purpose. A test tube with bacterial culture is taken in the left hand, and a bacteriological tube is taken in the right hand. Kuvuzlok is heated in the flame of a burner until it becomes red. The cotton plug is removed from the test tube by squeezing it into the palm of the right hand's IV and V fingers, and the edges of the test tube mouth are slightly heated in a flame. The tube is slowly introduced into the test tube, cooled by touching the inner wall, and then the material is taken out slowly. After that, the edges of the test tube are heated again and closed with a cork. After the drug is prepared, the tube must be heated (sterilized) in the flame of a burner. Liquid material can be taken from a test tube or flask by means of a pipette, in which the pipette is held in the right hand and the opening of the pipette is closed with the second finger.

Stages of preparation of the coating:

1. Preparation of ointment.
2. Drying
3. Making fixation (hardening).
4. Painting
5. View under a microscope.

Work order. To prepare a smear, the object glass is degreased (in an alcohol burner), a microbial culture is taken with a swab (if the microbial culture has grown, with a sterile saline solution), a smear is made on the object glass. The spread should be like a thin 10 soum coin. Individual bacterial cells can be seen only when the material is distributed in this way. If the material to be tested is in a liquid medium, then it is dripped directly onto the glass of the object with a dropper and a smear is made.

Summary. Drying - smears are dried in air or in a stream of warm air over a burner flame.

Fixing - to solidify the smear, the glass of the object (with the smear facing up) is passed through the torch flame 3 times slowly (for 3 seconds). In some cases, blood smears, organ and tissue smears, and smears prepared from microorganism cultures are placed in 5-20 minutes of methyl or ethyl alcohol, Nikiforov's mixture, distilled alcohol, or other fixing liquids and fixed. Microorganisms die by firmly attaching to the glass surface during fixation and are not washed away during further processing.

The purpose of fixation is that during fixation, microorganisms are killed by firmly adhering to the surface of the glass, they are neutralized and are not washed away during further processing, and the dead bacteria are well stained. Fixation errors. If the glass of the object is heated more than indicated above, the structure of the cells will change dramatically. There are 2 types of simple and complex methods used in the painting of the paint. In the simple method, only one dye is used, while in complex dyeing, several dyes may be used. The fixed smear is stained with a single dye, such as an aqueous solution of fuchsin (1-2 min) or a solution of methylene blue (3-5 min), then washed with water, dried, and examined under a microscope seen in the immersion system.

References

1. Tuyg’unovna, S. S. (2023). USEFUL PROPERTIES OF THE MEDICINAL PRODUCT AND USE IN MEDICINE. *Gospodarka i Innowacje.*, *40*, 179-181.
2. Tuyg’unovna, S. S. (2023). CHEMICAL COMPOSITION OF MEDICINAL PLANTS AND CLASSIFICATION. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *3*(11), 33-35.
3. Shukurova, S. (2023). DORIVOR ACHCHIQ BODOM URUG’INING SHIFOBAXSHLIGI, DORI TAYYORLASH USULLARI. *Центральноазиатский журнал образования и инноваций*, *2*(10 Part 3), 116-120.
4. Tuyg’unovna, S. S. (2023). DORIVOR NA’MATAKNING FOYDALI XUSUSIYATLARI VA TIBBIYOTDA QO’LLANILISHI. *TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI*, *3*(9), 11-13.
5. Shukurova, S. (2023). DORIVOR O’SIMLIKLARNING KIMYOVIY TARKIBI VA TASNIFI. *Центральноазиатский журнал образования и инноваций*, *2*(11), 5-10.
6. Shukurova, S. (2023). KIYIKO’T VA YALPIZDAN FOYDALANISH USULLARI. *Центральноазиатский журнал образования и инноваций*, *2*(12), 171-177.
7. Shukurova, S. (2024). TARKIBIDA GLIKOZIDLAR BO’LGAN DORIVOR O’SIMLIKLAR. *Центральноазиатский журнал образования и инноваций*, *3*(1), 217-222.

8. Tuygunovna, S. S. (2023). Ways to Use Mint and Peppermint. *EUROPEAN JOURNAL OF BUSINESS STARTUPS AND OPEN SOCIETY*, *3*(12), 20-23.
9. Tuygunovna, S. S. (2023). Medicinal Plants Containing Glycosides. *EUROPEAN JOURNAL OF BUSINESS STARTUPS AND OPEN SOCIETY*, *3*(12), 24-27.
10. Tuyg'unovna, S. S. (2024). DORIVOR O'SIMLIKLAR XOMASHYOSINI ISHLATISHGA TAYYORLASH. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *38*(7), 123-132.
11. Tuyg'unovna, S. S. (2024). TARKIBIDA LIPIDLAR BO'LGAN DORIVOR O'SIMLIKLAR. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *38*(7), 133-140.
12. Tuyg'unovna, S. S. (2024). TARKIBIDA VITAMINLAR BO'LGAN DORIVOR O'SIMLIKLAR. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *38*(7), 141-147.
13. Tuyg'unovna, S. S. (2024). ABOUT USEFUL MEDICINAL PLANTS RICH IN LIPIDS USED IN MEDICINE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *39*(3), 235-241.
14. Tuyg'unovna, S. S. (2024). THE PROCESS OF PACKAGING MEDICINAL PLANTS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *39*(3), 248-256.
15. Tuyg'unovna, S. S. (2024). MEDICINAL PLANTS THAT ARE WIDELY USED IN NATURE, RICH IN VITAMINS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *39*(3), 242-247.
16. Tuyg'unovna, S. S. (2024). TARKIBIDA EFIR MOYLAR BO'LGAN DORIVOR O'SIMLIKLAR. *TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI*, *4*(3), 164-167.
17. Tuyg'unovna, S. S. (2024). MEDICINAL PLANTS CONTAINING ESSENTIAL OILS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *41*(4), 62-69.
18. Tuyg'unovna, S. S. (2024). TARKIBIDA ALKALOIDLAR BO'LGAN DORIVOR O'SIMLIKLAR. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *41*(4), 70-77.
19. Tuyg'unovna, S. S. (2024). CULTIVATION OF MEDICINAL PLANTS AND FORMS OF PREPARATION. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *4*(5), 71-75.
20. Tuyg'unovna, S. S. (2024). SYSTEMATIC ANALYSIS OF MEDICINAL PLANTS. *Лучшие интеллектуальные исследования*, *19*(5), 159-164.
21. Tuyg'unovna, S. S. (2024). Dorivor O'simliklarning Sistematik Tahlili. *Ta'lim Va Rivojlanish Tahlili Onlayn Ilmiy Jurnali*, *4*(4), 180-184.
22. Tuyg'unovna, S. S. (2024). Bakteriyalar Genetikasi. Bakteriyalarda Genetik Almashinuv Mikroorganizmlarning O 'Zgaruvchanligi. *Masters*, *2*(5), 183-192.