II nd year - DMD 5 year course

Topic 1. Fungi causing lesions in the oral cavity and as etiological factors of diseases

1.*Candida albicans* (Robin, 1853) Berkhout, 1923:
- culture on liquid and solid Sabouraud medium - growth description
- culture on Christensen urea agar- description
- culture on arbutin medium- description
- microculture, fixed preparation, Giemsa-stained, magnification 100x, 400x or 600x - figure
- microcultures in Nickerson's medium and rise extract agar - execution and description

2. Candida krusei (Castellani, 1910) Berkhout 1923
- culture on liquid and solid Sabouraud medium - growth description
- microculture, ethanol fixed slide, cotton blue stained, magnification100x, 400x or 600x - figure

3. Candida parapsilosis (Ashford, 1928), Langeron et Talce, 1959
- culture on liquid and solid Sabouraud medium - growth description
- microculture, ethanol fixed slide, cotton blue stained, magnification100x, 400x or 600x - figure

4. Candida tropicalis (Castellani,1910) Berkhout, 1923
- culture on liquid and solid Sabouraud medium - growth description
- microculture, ethanol fixed slide, cotton blue stained, magnification100x, 400x or 600x - figure

5. Geotrichum candidum Link, 1809
- culture on solid and liquid Sabouraud medium - description of growth
- microculture, ethanol fixed slide, Giemsa stained, magnification 100x, 400x or 600x - figure

6. *Rhodotorula rubra* (Demme, 1889) Lodder, 1934
culture on liquid and solid Sabouraud medium - growth description
- microculture, ethanol fixed slide, cotton blue stained, magnification100x, 400x or 600x - figure

7. Cryptococcus neoformans (Sanfelice, 1895), Yuillemin, 1901
- culture on liquid and solid Sabouraud medium- description of growth
- culture on medium with arbutin - description of growth
- culture on Christensen's medium - description of growth
- smear of cerebrospinal fluid in India ink, magnification 1000x – figure

8. *Mucor racemosus* Fresenius, 1850
- culture on solid and liquid Sabouraud medium - description of growth
- microculture, ethanol fixed slide, Giemsa stained, magnification 100x, 400x or 600x - figure

9. *Rhizopus nigricans* Ehrenberg, 1818
- culture on solid and liquid Sabouraud medium - description of growth
- microculture, ethanol fixed slide, Giemsa stained, magnification 100x, 400x or 600x - figure

10. *Aspergillus fumigatus* Fresenius, 1850
- aspergilloma, PAS stained microscopic slide, magnification 600x - description
- lung radiograph of patients with aspergilloma - slide presentation

- aspergilloma of maxillary sinus, PAS stained microscopic slide, magnification 400x or 600x - figure

11. *Penicillium sp.*
- culture on liquid and solid Sabouraud medium - description of growth
- microculture fixed in ethanol, stained by fuchsin, magnification 100x, 400x or 600x – figure

12. *Trichosporon cutaneum* (de Beurmann, Gougerot et Vaucher, 1909) Ota, 1926
- culture on liquid and solid Sabouraud medium - description of growth
- microculture fixed in ethanol, stained by fuchsin, magnification 100x, 400x or 600x – figure

13. Inoculation of the contents of mouth on liquid Sabouraud and Simić's medium - execution and description.

Knowledge required before attending labolatory:
- fungal classification, structure and replication (Muray et al. chapter 5)
- pathogenesis of fungal diseases (Muray et al. chapter 68)
  * primary pathogens/mycoses
  * opportunistic pathogens/mycoses

Recommended literature:
1. Syllabus
2. Murray P.R., Rosenthal K.S., Pfaller M.A.: Medical Microbiology. MOSBY Elsevier, Sixth Edition 2009
3. Virella G., Microbiology and Infectious Diseases. NMS, 3rd ed.,
Williams and Wilkins, The Science of Review, ISBN 0683062352

II nd year - DMD 5 year course

Topic 2: Protozoa causing lesions in the oral cavity and protoza for which the oral cavity is the route of entry. Protozoa as etiological factors of diseases

1. *Trichomonas tenax* (Muller, 1773) Dobell, 1939
   - culture in Simić's medium - direct microscopic slide, magnification 100x,400x or 600x - figure

2. *Trichomonas vaginalis* Donnć, 1836
- culture - fixed in methanol, stained by Giemsa stain, magnification l000x - figure

3. *Giardia lamblia* Stiies, 1915
   - trophozoite – fixed slide, Giemsa stained, magnification 100x,400x or 600x - figure
   - cyst - fixed slide, hematoxylin stained, magnification 1000x - figure

4. *Trypanosoma brucei gambiense* Dutton,1992
- trypomastigote- fixed microscopic slide, Giemsa-stained, magnification 100x, 400x or 600x- figure

5. *Trypanosoma cruzi* Chagas, 1909
   - microscopic slide from mouse blood, fixed in *70°/o* ethanol, Giemsa stained, magnification 400x or 600x, 1000x - figure

6. *Leishmania tropica* (Wright,1903) Luhe,1906
   - amastigota form - smear from skin ulceration, microscopic slide, fixed in 70% ethanol, Giemsa-stained, magnification 400x or 600x - figure
   - promastigota form - culture, microscopic slide, fixed, Giemsa-stained, magnification 400x or 600x - figure

7. *Entamoeba gingivalis* (Gros, 1849)Brumpt, 1913
   - culture in Pavlova's medium - direct microscopic slide, magnification 100x,400x or 600x - figure

8. *Entamoeba histolytica* Schaudinn, 1903
   - trophozoite- fixed slide, trichrome stained, magnification 1000x - figure
   - cyst - fixed slide, trichrome stained, magnification 1000x - figure

9. *Acanthamoeba castellani* Neff, 1926
   - microscopic slide fixed in ethanol, stained by trichromic method, magnification 400x or 600x, l000x - figure

10. *Naegleria fowleri* Carter, 1970
   - microscopic slide fixed in ethanol, stained by trichromic method, magnification 400x or 600x, l000x - figure

11. *Plasmodium vivax* Grassi et Feletti, 1890
   - thin blood smear - fixed microscopic slide, Giemsa-stained, magnification 1000x - demonstration

12. *Plasmodium falciparum* (Welch, 1897) Schaudinn,1902

- thick blood smear - fixed microscopic slide, Giemsa-stained, magnification 1000x-figure

13. *Cryptosporidium parvum* Tyzzer, 1907
    - oocysts - fixed, ZiehI-Neelsen stained slide, magnification 1000x (immersion oil) – figure

14. *Toxoplasma gondii* Nicolle et Manceux, 1908:
    - microscopic slide from white mouse ascites, fixed in methanol, Giemsa stained, magnification 1000x - figurę

15. Microscopic examination of the oral cavity contents which was made during the previous lab. Practical
    - on liquid Sabouraud and Simić's medium - direct microscopic slide made using a pipette, magnification 100x -description

Knowledge required before attending labolatory:

- parasites and their environments
- parasites and host interactions
- the most important sources of infection of men
- protozoa of medical importance
- species mentioned in program
  * epidemiology
  * morphology
  * clinical syndromes

Recommended literature:

1. Syllabus
2. Chomicz L., Foundation of Medical Parasitology. Compendium for Medical Students, Medical University of Warsaw 2003
3. Buczek A., Parasitology for medical students, KOLIBER Lublin 2007
4. Murray P.R., Rosenthal K.S., Pfaller M.A.: Medical Microbiology. MOSBY Elsevier, Sixth Edition 2009
5. Peters W., Pasvol G., Tropical Medicine and Parasitology, 5th ed., Mosby 2002, ISBN 0723431914

II nd year - DMD 5 year course

Topic 3: Oral cavity as the route of entry for helminths

1. *Fasciola hepatica* Linneus, 1758
   - adult worm - microscopic slide, fixed in Bouin's liquid, alum-carmine stained, magnification 25x - figure
   - eggs - microscopic slide, fixed with 70% ethanol, unstained, magnification 100x, 400x or 600x - figure
   - metacercariae - microscopic slide, fixed with 70% ethanol, unstained, magnification 100x, 400x or 600x - figure
   - *Galba truncatula* L. (intermediate host) - macroscopic preparation - demonstration

2. *Paragonimus westermani* (Kerbert, 1878) Braun, 189
   - eggs –slide

3. *Diphyllobothrium latum* Linneus, 1758
   - scolex - slide — demonstration
   - strobila - macroscopic preparation, fixed with 4% formalin - figure
   - proglottid - microscopic slide, fixed in Bouin's liquid, magnification 25x - figure
   - eggs - microscopic slide, fixed with 70% ethanol, unstained, magnification 100x, 400x or 600x - figure

4. *Taenia saginata* (Goze, 1782) Weinland, 1858
   - strobila - macroscopic preparation, fixed with 4% formalin - figure
   - proglottid - microscopic slide, fixed in Bouin's liquid, alum-carmine stained, magnification 25x - figure
   - eggs - microscopic slide, fixed with 4% formalin, unstained, magnification 100x, 400x or 600x - figure
   - *cysticercus bovis* - macroscopic preparation, fixed with 4% formalin – demonstration

5. *Taenia solium* Linneus, 1758
   - scolex - slide - demonstration
   - proglottid - microscopic slide, fixed in Bouin's liquid, alum-carmine stained, magnification 25x – figure

6. *Echinococcus granulosus* Batsch, 1786:
   - mature individual - microscopic slide, fixed in Bouin's liquid, alum-carmine-stained, magnification 25x, 100x - demonstration
   - protoscolex - microscopic slide, fixed in 70% ethanol, unstained, magnification 100x, 400x or 600x – figure

7. *Ancylostoma duodenale* (Dubini, 1843) Creplin, 1845
   - adult worm (male, female) - macroscopic preparation fixed in 4% formalin, stained by aluminous carmine - demonstration
   - adult worm in the intestinal tract of the definitive host - microscopic slide fixed in 70% ethanol, stained by hematoxylin and eosine, magnification 100x, 600x - figure
8. *Enterobius vermicularis* (Linnaeus, 1758) Leach, 1853
   - adult worm (female) - microscopic slide fixed in 70% ethanol, unstained, magnification 25x - demonstration
   - inflammation of the vermiform appendix in the course of enterobiosis—microscopic preparation fixed in 70% ethanol, stained by aluminous carmine, magnification 100x - figure
   - eggs - microscopic preparation fixed in 70% ethanol, unstained, magnification 100x, 400x or 600x - figure
   - Hall method (NIM) and Graham method to detect *E. vermicularis* eggs

9. *Ascaris lumbricoides* Linnaeus, 1853
   - adult worm (male, female) - macroscopic preparation, fixed in 4% formalin - demonstration
   - invasive and non-invasive eggs - microscopic direct slides from suspension lixed in 4% formalin, magnification 100x, 400x or 600x – figure of 3 forms of embryo
   - larva inside the lung of guinea pig - microscopic slide, fixed and stained by PAS method, magnification 100x, 400x or 600x - figure

10. *Anisakis marina* Linnaeus, *1767*
   -slide

11. *Trichinella spiralis* (Owen, 1835) Raillet, 1895:
   - larva in a human striated muscle specimen - microscopic slide, fixed in Bouin's fluid, hematoxylin and eosin staining, magnification 400x or 600x -demonstration
   - larva in a rat's striated muscle specimen - trichinoscopy method - magnification 100x - preparation and figure

12. *Trichuris trichiura* (Linnaeus, l 77l)Schrank, 1788
   - adult worm (male, female) - macroscopic preparations fixed in 70% ethanol, unstained, magnification 25x - figure
   - eggs - microscopic preparation fixed in 70% ethanol, unstained, magnification 100x, 400x or 600x - figure

Knowledge required before attending labolatory:
- parasites - their environments and host interactions
- the lung flukes
- cestodes and nematodes of medical importance
- species mentioned in program
  * epidemiology
  * morphology
  * clinical syndromes

Recommended literature:
1. Syllabus
2. Chomicz L., Foundation of Medical Parasitology. Compendium for Medical Students, Medical University of Warsaw 2003
3. Buczek A., Parasitology for medical students, KOLIBER Lublin 2007
4. Murray P.R., Rosenthal K.S., Pfaller M.A.: Medical Microbiology. MOSBY Elsevier, Sixth Edition 2009
5. Peters W., Pasvol G., Tropical Medicine and Parasitology, 5th ed., Mosby 2002, ISBN 0723431914

II nd year - DMD 5 year course

Topic 4: Parasites and fungi of the skin ontocenosis. Selected arthropods as factors of diseases

Parasites and fungi of the skin ontocenosis.

1. *Loa loa* (Cobbold, 1864) Castellani et Chalmers, 1913:
   - microfilariae in peripheral blood smear- fixed microscopic slide, Giemsa-stained, magnification 100x - demonstration

2. *Mansonella sp.*
   - microfilariae in peripheral blood smear- fixed microscopic slide, Giemsa-stained, magnification 100x- demonstration

3. *Sarcoptes scabiei* Linnaeus, 1758
   - imago - photograph - demonstration

4. *Scopulariopsis brevicaulis* Besnier,1907
   - culture on liquid and solid Sabouraud's medium - growth description
   -microculture, slide fixed, stained with fuchsin, magnification 100x, 400x or 600x - figure

5. *Epidemophyton floccosum* (Harz,1870) Lagneron and Milochevitch, 1930
   - culture on liquid and solid Sabouraud medium — growth description
   - microculture, slide fixed, stained with fuchsin, magnification 100x, 400x or 600x -figure

6. *Trichophyton rubrum* Sabouraud, 1911
   - culture on liquid and solid Sabouraud medium - growth description
- microculture, slide fixed, stained with fuchsin, magnification 100x, 400x or 600x –figure

7. *Trichophyton mentagrophytes* Blanchard,1896
   - culture on liquid and solid Sabouraud medium - growth description
   - microculture, slide fixed, stained with fuchsin, magnification 100x, 400x or 600x -figure
   - hair perforation test - demonstration

8. *Microsporum canis* Rodin,1902
   - culture on liquid and solid Sabouraud medium - growth description
- microculture, slide fixed, stained with fuchsin, magnification 100x, 400x or 600x –figure

9. Demonstrarion of the dermatophytes on Mycoline.

Selected arthropods as factors of diseases

1. *1xodes ricinus* Linnaeus, 1758
   - imago - fixed microscopic slide, magnification 25x, 100x – figure of hypostom
   - a tick after blood meal - microscopic slide – demonstration
   - seeds of *Ricinus communis* - demonstration

2. *Pediculus humanus* Linnaeus, 1758
   - imago - microscopic slide, magnification 100x – demonstration
   - eggs - microscopic slide, magnification 100x - figure

3. *Anopheles maculipennis* Meigen, 1818
   - imago — microscopic slide, magnification 100x,- demonstration
   - larva - microscopic slide, magnification 100x - demonstration
   - mouthparts - microscopic slide, magnification 100x - figure

4. *Culex pipiens* Linnaeus, 1758
   - imago — microscopic slide, magnification 100x - demonstration
   - pupa - microscopic slide, magnification 100x – demonstration
   - larva - microscopic slide, magnification 100x - demonstration
   - mouthparts - microscopic slide, magnification 100x - figure

5. *Musca domestica* Linnaeus, 1761
   - imago - macroscopic preparation- demonstration
   - pupa - macroscopic preparation - demonstration
   - larva - microscopic slide, magnification 100x - demonstration
   - eggs - microscopic slide, magnification 100x – demonstration

6. *Pulex irritans* Linnaeus, 1758
   - imago - microscopic slide, magnification 25x - figure

Knowledge required before attending labolatory:

- arthropodes of medical importance
- species mentioned in program
  * epidemiology
  * morphology
  * clinical syndromes

Recommended literature:

1. Syllabus
4. Murray P.R., Rosenthal K.S., Pfaller M.A.: Medical Microbiology. MOSBY Elsevier, Sixth Edition 2009
2. Chomicz L., Foundation of Medical Parasitology. Compendium for Medical Students, Medical University of Warsaw 2003
3. Buczek A., Parasitology for medical students, KOLIBER Lublin 2007
5. Peters W., Pasvol G., Tropical Medicine and Parasitology, 5th ed., Mosby 2002, ISBN 0723431914

II nd year - DMD 5 year course

Topic 5: Antifungal and antiparasitic drugs used for treatment oral cavity diseases

I.

1. Testing of parasite susceptibility:
   - chart of the effect curve of metronidazole to *Trichomonas vaginalis* population;
   - CL_{50} calculation.

2. Testing of fungi susceptibility:
   a. the agar diffusion method - calculation of MIC on the base of nystatin effect curve on *Candida albicans* growth;
   b. the dilution method - determination of nystatin MIC for *Aspergillus niger* growth on liquid Sabouraud medium;
   c. ATB Fungus test (bio Merieux, France) - demonstration;
   d. FUNGITEST (BIO-Rad, France) - demonstration;
   e. discs method (DHN PAN, Poland) - demonstration;
f. E-test (AB Biodisc, Sweden) - description of the method

II.

1. Sample cases of mycoses and parasitoses

Knowledge required before attending laboratory:
- antifungal agents (Muray et al. chapter 70)
- rules of treatment of mycoses
- treatment of parasitic infections

Recommended literature:
1. Syllabus
2. Buczek A., Parasitology for medical students, KOLIBER Lublin 2007
3. Murray P.R., Rosenthal K.S., Pfaller M.A.: Medical Microbiology. MOSBY Elsevier, Sixth Edition 2009