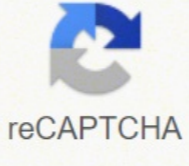




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Microbiology notes for medical students

Well done Dr Garner who wins the teaching award for his Microbiology teaching. He'd like to thank the medical students, FY1 and FY2s as well as Registrars and all those who voted for him... Apparently he has won 5 years in a row and Frimley Health have asked for others to beat him! These lectures and lecture notes are provided as part of teaching sessions, if you are attending these teaching sessions you will gain much more from the lectures if you DO NOT download the lectures or notes beforehand. The lectures are designed to be interactive, questioning and thought provoking, acquiring the answers beforehand WILL NOT enable you to get the most from the sessions. Lecture Notes Test Yourself Lecture Notes Test Yourself NB If you are a Medical student or Foundation doctor and would like to attend these teaching sessions but do not have a placement at Frimley Park Hospital, please contact us and we will see what we can do to allow you to attend. The sessions run throughout the year on a rolling basis. Medical Microbiology and Infection Lecture Notes is ideal for medical students, junior doctors, pharmacy students, junior pharmacists, nurses, and those training in the allied health professions. It presents a thorough introduction and overview of this core subject area, and has been fully revised and updated to include: * Chapters written by leading experts reflecting current research and teaching practice * New chapters covering Diagnosis of Infections and Epidemiology and Prevention & Management of Infections * Integrated full-colour illustrations and clinical images * A self-assessment section to test understanding Whether you need to develop your knowledge for clinical practice, or refresh that knowledge in the run up to examinations, Medical Microbiology and Infection Lecture Notes will help foster a systematic approach to the clinical situation for all medical students and hospital doctors. Preface v Contributors vii Basic microbiology 1 Basic bacteriology 3 Peter Lambert 2 Classification of bacteria 12 Peter Lambert 3 Staphylococci 16 Tom Elliott and Peter Lambert 4 Streptococci and enterococci 20 Anna Casey 5 Clostridia 26 Tony Worthington 6 Other Gram-positive bacteria 30 Anna Casey 7 Gram-negative cocci 36 Jonathan Sandoe 8 Enterobacteriaceae 40 Peter Lambert 9 Haemophilus and other fastidious Gram-negative bacteria 45 Jonathan Sandoe 10 Pseudomonas Legionella and other environmental Gram-negative bacilli 51 Peter Lambert 11 Campylobacter Helicobacter and Vibrio 54 Martin Skirrow Clodna McNulty and Tom Elliott 12 Treponema Borrelia and Leptospira 58 Susan O'Connell 13 Gram-negative anaerobic bacteria 62 Peter Lambert 14 Chlamydiaceae Rickettsia Coxiella Mycoplasmataceae and Anaplasmataceae 64 Jonathan Sandoe 15 Basic virology 6 Peter Mackie 16 Major virus groups 75 Peter Mackie 17 Basic mycology and classification of fungi 93 Elizabeth Johnson 18 Parasitology: protozoa 101 Peter Chiodini 19 Parasitology: helminths 112 Peter Chiodini Antimicrobial agents 20 Antibacterial agents 127 Peter Lambert 21 Antifungal agents 144 Elizabeth Johnson 22 Antiviral agents 147 Eleni Nastouli Infection 23 Diagnostic laboratory methods 157 Tony Worthington 24 Epidemiology and prevention of infection 167 Barry Cookson 25 Upper respiratory tract infections 177 Jonathan Sandoe 26 Lower respiratory tract infections 183 Shrutu Khurana 27 Tuberculosis and mycobacteria 189 Sumeet Singhania 28 Gastrointestinal infections 193 Tariq Iqbal 29 Liver and biliary tract infections 202 David Mutimer 30 Urinary tract infections 207 Chris Catchpole 31 Genital infections 210 Kaveh Manavi 32 Infections of the central nervous system 220 Erwin Brown 33 Bacteraemia and bloodstream infections 229 Tom Elliott 34 Device-related infections 233 Tom Elliott 35 Cardiovascular infections 238 Richard Watkin 36 Bone and joint infections 241 Jonathan Sandoe 37 Skin and soft-tissue infections 246 Supriya Narasimhan and Rabih Darouiche 38 Infections in the compromised host 257 Tom Elliott 39 Infections caused by antimicrobial-resistant bacteria 260 David Livermore 40 Perinatal and congenital infections 264 James Gray 41 Human immunodeficiency virus 271 Kaveh Manavi 42 Miscellaneous viral infections 277 John Cheesbrough Self-assessment Self-assessment questions 285 Answers to self-assessment questions 300 General subject index 309 Organism index 317 Tom Elliott is Consultant Medical Microbiologist at The Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK Anna Casey is Clinical Research Scientist in the Department of Clinical Microbiology at The Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK Peter Lambert is Professor of Microbiology in the School of Life and Health Sciences at Aston University, Birmingham, UK Jonathan Sandoe is Consultant Microbiologist and Honorary Senior Lecturer in the Department of Microbiology at Leeds Teaching Hospitals NHS Trust and University of Leeds, Leeds, UK T. Elliott, The Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK, A. Casey, The Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK, P. Lambert, Aston University, Birmingham, UK, J. Sandoe, Leeds Teaching Hospitals NHS Trust and University of Leeds, Leeds, UK Hey MBBS colleagues! Here in this thread I am sharing lecture notes in eBook format (PDF) for the subject - Microbiology for MBBS and other medical courses students. The attached eBook of Pathology contains self-prepared notes that will help you understand the concepts & theories and help you score well in your examinations. Details about the attached file: Total pages: 104 | File size: 4.22 MB Main topics covered in these Microbiology PDF notes eBook: CULTURE AND STERILISATION BACTERIAL GENETICS BACTERIOLOGY YAW AND PINTA VIROLOGY, MYCOLOGY, PROTOZOA, HELMINTHS The PDF version of the MICROBIOLOGY PDF eBook notes is attached for free and easy download at the bottom of this thread. Thank you and wish you happy and fruitful studying! Last edited by a moderator: Jun 1, 2019 You must log in or register to reply here. 1. Introduction to Medical Microbiology and Immunology Prof M.I.N. Matee Head Department of Microbiology and Immunology, MUHAS 2. Introduction to Medical Microbiology and Immunology Prof M.I.N. Matee Head Department of Microbiology and Immunology, MUHAS 3. What is Microbiology? Microbes , or microorganisms are minute living things that are usually unable to be viewed with the naked eye. What are some examples of microbes? Bacteria, fungi, protozoa, algae, viruses are examples! Some are pathogenic 4. Course objectives To provide the student with the basic knowledge of micro-organisms in general To study the main characteristics of bacteria of medical importance To teach aseptic techniques To provide an understanding of antimicrobial agents 5. Objectives To teach the basic immunological principles Immunological methods for the study immunological disorders 6. Coverage of subject General issues Bacteriology Mycology Virology immunology 7. Method of examination Theory (60%) Practical (40%) 8. Type of teaching Theoretical lectures Practical sessions 9. Students requirement for the course Timetable Literature – books, etc etc Practical manual Laboratory coat Attendance and active participation Seek advice timely 10. Staff Prof M Matee- Head of Dept Prof S Maselle Prof Mhali Prof E Lyamuya Prof W Urassa Dr D Mwakagile Dr S Aboud 11. Chapter 1 The Microbial World and You History of Microbiology The first microbes were observed in 1673. In 1665, Robert Hooke (Englishman) reported that living things were composed of little boxes or cells. 12. Chapter 1 The Microbial World and You History of Microbiology 1673-1723, Antoni van Leeuwenhoek (Dutch) described live microorganisms that he observed in teeth scrapings, rain water, and peppercorn infusions. 13. Chapter 1 The Microbial World and You History of Microbiology Many believed spontaneous generation : life can arise from non-living matter In 1668, the Italian physician Francesco Redi performed an experiment to disprove spontaneous generation. Can you think of an experiment that could disprove spontaneous generation? 14. Chapter 1 The Microbial World and You History of Microbiology Redi filled six jars with decaying meat. From where did the maggots come? What was the purpose of the sealed jars? Spontaneous generation or biogenesis? Maggots appeared 3 open jars No maggots 3 jars covered with fine net Results Conditions 15. Jar-1 Left open Maggots developed Flies were observed laying eggs on the meat in the open jar Jar-2 Covered with netting Maggots appeared on the netting Flies were observed laying eggs on the netting Jar-3 Sealed No maggots developed 16. Chapter 1 The Microbial World and You History of Microbiology Rudolf Virchow (German) presented biogenesis : living cells can arise only from preexisting cells. 17. Chapter 1 The Microbial World and You History of Microbiology So now there are two hypotheses: The hypothesis that living organisms arise from nonliving matter is called spontaneous generation . According to spontaneous generation, a “vital force” Forms life. The Alternative hypothesis, that the living organisms arise from preexisting life, is called biogenesis . 18. Chapter 1 The Microbial World and You History of Microbiology 1861: Louis Pasteur demonstrated that microorganisms are present in the air. Spontaneous generation or biogenesis? No microbial growth Nutrient broth placed in flask, heated, then sealed Microbial growth Nutrient broth placed in flask, heated, not sealed Results Conditions 19. Chapter 1 The Microbial World and You History of Microbiology The Golden Age of Microbiology 1857-1914 Beginning with Pasteur's work, discoveries included the relationship between microbes and disease, immunity, and antimicrobial drugs 20. Chapter 1 The Microbial World and You History of Microbiology Pasteur showed that microbes are responsible for fermentation . Fermentation is the conversion of sugar to alcohol to make beer and wine. Microbial growth is also responsible for spoilage of food. Bacteria that use alcohol and produce acetic acid spoil wine by turning it to vinegar (acetic acid). 21. Chapter 1 The Microbial World and You History of Microbiology Pasteur demonstrated that these spoilage bacteria could be killed by heat that was not hot enough to evaporate the alcohol in wine. This application of a high heat for a short time is called pasteurization . 22. Chapter 1 The Microbial World and You History of Microbiology The Germ Theory of Disease 1835: Agostino Bassi showed a silkworm disease was caused by a fungus. 1865: Pasteur believed that another silkworm disease was caused by a protozoan. 1840s: Ignaz Semmelweis advocated handwashing to prevent transmission of puerperal fever from one OB patient to another. 23. Chapter 1 The Microbial World and You History of Microbiology The Germ Theory of Disease 1860s: Joseph Lister used a chemical disinfectant to prevent surgical wound infections after looking at Pasteur's work showing microbes are in the air, can spoil food, and cause animal diseases. 24. Chapter 1 The Microbial World and You History of Microbiology The Germ Theory of Disease 1876: Robert Koch provided proof that a bacterium causes anthrax and provided the experimental steps. Koch's postulates, used to prove that a specific microbe causes a specific disease. Koch was a physician and Pasteur's young rival 25. Chapter 1 The Microbial World and You History of Microbiology A young milkmaid informed the physician Edward Jenner that she could not get smallpox because she had already been sick from cowpox. 1796: Edward Jenner inoculated a person with cowpox virus. The person was then protected from smallpox. Called vaccination from vacca for cow The protection is called immunity 26. Chapter 1 The Microbial World and You History of Microbiology Chemotherapy – treatment with chemicals Chemotherapeutic agents used to treat infectious disease can be synthetic drugs or antibiotics. Antibiotics are chemicals produced by bacteria and fungi that inhibit or kill other microbes. Quinine from tree bark was long used to treat malaria. 27. Chapter 1 The Microbial World and You History of Microbiology Chemotherapy – treatment with chemicals 1910: Paul Ehrlich developed a synthetic arsenic drug, salvarsan, to treat syphilis. 1930s: Sulfonamides were synthesized. 28. Chapter 1 The Microbial World and You History of Microbiology 1928: Alexander Fleming discovered the first antibiotic. He observed that Penicillium fungus made an antibiotic, penicillin, that killed S. aureus . 1940s: Penicillin was tested clinically and mass produced. 29. Angelina Hesse Development of Agar Used to Grow Microorganisms. 30. Although the microscope was invented in the 1600's, it took 200 years for scientists to discover its use in isolating and identifying specific microbes for a particular disease. 33. Thank you

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