

AL-FARABI KAZAKH NATIONAL UNIVERSITY

Faculty of Medicine and Healthcare, Higher School of Medicine

Department of Fundamental Medicine

PO2204 General pathology

The plan of lectures

Week	The title of lectures	Hours
1	<p>Cellular Responses to Stress and Toxic Insults I: Overview of cell injury Discipline of Pathology. Categories of cause of cell injury. Mechanism of cell injury. Reversible cell injury. Irreversible cell injury. Mechanisms of adaptation.</p> <p>Recommended literature:</p> <ol style="list-style-type: none">1. Review Article: Cellular and molecular mechanisms of muscle atrophy Paolo Bonaldo, Marco Sandri <i>Disease Models & Mechanisms</i> 2013 6: 25-39; doi: 10.1242/dmm.0103892. Review Article: Mechanisms and Strategies to Counter Muscle Atrophy Elisabeth Barton, Carl Morris <i>The Journals of Gerontology: Series A, Volume 58, Issue 10, October 2003, Pages M923–M926</i>, https://doi.org/10.1093/gerona/58.10.M9233. Review Article: Muscle Atrophy Induced by Mechanical Unloading: Mechanisms and Potential Countermeasures Yunfang Gao and all. <i>Front. Physiol.</i>, 20 March 2018 https://doi.org/10.3389/fphys.2018.002354. Brain Atrophy Is Associated with Disability Progression in Patients with MS followed in a Clinical Routine. E. Ghione, N. Bergsland, M.G. Dwyer, J. and R. Zivadinov <i>American Journal of Neuroradiology</i> November 2018, DOI:https://doi.org/10.3174/ajnr.A58765. Contribution of normal aging to brain atrophy in MS. Christina J. Azevedo, Steven Y. Cen. <i>Neurology Neuroimmunology Neuroinflammation</i> November 2019; 6 (6) DOI: https://doi.org/10.1212/NXI.00000000000006166. <i>Review Article:</i> Cell death: Apoptosis versus necrosis. <i>International Journal of Oncology</i> 21(1):165-70 · July 2002. DOI: 10.3892/ijo.21.1.1657. Fat necrosis in the Breast: A systematic review of clinical. <u>Narges Vasei, Azita Shishegar, Forouzan Ghalkhani.</u> <i>Lipids in Health and Disease</i> volume 18, Article number: 139 (2019)	5
2	<p>Cellular Responses to Stress and Toxic Insults II: Hyperplasia. Hypertrophy. Atrophy. Metaplasia. Intracellular accumulation, pathologic calcification - Hemosiderosis. Coal pigment aggregation.</p> <p>Recommended literature:</p>	5

	<ol style="list-style-type: none"> 1. An Overview of the Role of Lipofuscin in Age-Related Neurodegeneration Alexandra Moreno-García, Alejandra Kun, [...], and Miguel Calero. <i>Frontiers in Neuroscience</i>, 2018; 12: 464. 2. Specificity and Sensitivity of Hemosiderin-Laden Macrophages in Routine Bronchoalveolar Lavage in Children. Zeynep N. Salih, MD, Afreen Akhter, BA, and Javeed Akhter, MD. <i>Archives of Pathology & Laboratory Medicine</i>, Volume 130, Issue 11 (November 2006). 3. Iron homeostasis in the liver. Anderson ER, Shah YM. Iron homeostasis in the liver. <i>Compr Physiol</i>. 2013;3(1):315–330. doi:10.1002/cphy.c120016 4. The Involvement of Iron in Traumatic Brain Injury and Neurodegenerative Disease. Maria Daglas <i>Front. Neurosci.</i>, 20 December 2018 https://doi.org/10.3389/fnins.2018.00981 	
3	<p>Hemodynamic Disorders 1: Pathophysiologic categories of the oedema. Morphology of hyperaemia and congestion. Recommended literature:</p> <ol style="list-style-type: none"> 1. Local control of blood flow during active hyperaemia: what kinds of integration are important? Coral L. Murrant. <i>The Journal of Physiology</i> 593.21 (2015) pp 4699-4711 2. Interstitial fluid volume, plasma-volume and colloid osmotic-pressure in patients with nephrotic syndrome. P. Fauchald, H. Noddeland, J. Norseth. <i>Scand J Clin Lab Invest</i>, 44 (1984), pp. 661-667 	5
4	<p>Hemodynamic Disorders 2: Haemostasis and thrombosis. Embolism. Infarction. Shock Recommended literature:</p> <ol style="list-style-type: none"> 1. Acute pulmonary embolism: a concise review of diagnosis and management. <u>Hepburn-Brown M, Darvall J, Hammerschlag G.</u> <i>Intern Med J.</i> 2019 Jan;49(1):15-27. doi: 10.1111/imj.14145. 2. Thrombosis: a major contributor to global disease burden. Raskob GE, Angchaisuksiri P et al. <i>Arterioscler Thromb Vasc Biol.</i> 2014; 34: 2363-2371 3. The economic burden of incident venous thromboembolism in the United States: a review of estimated attributable healthcare costs. Grosse SD, Nelson RE, Nyarko KA, Richardson LC, Raskob GE. <i>Thromb Res.</i> 2016; 137: 3-10. 4. Epidemiology of venous thromboembolism. Heit JA. <i>Nat Rev Cardiol.</i> 2015; 12: 464-474 5. Epidemiology of cancer-associated venous thrombosis. Timp JF, Braekkan SK, Versteeg HH, Cannegieter SC <i>Blood.</i> 2013; 122: 1712-1723 6. Genetics of venous thrombosis: update in 2015. Morange P.E, Suchon P, Trégouët D.A <i>Thromb Haemost.</i> 2015; 114: 910-919 7. Silent pulmonary embolism in patients with deep venous thrombosis: a systematic review. Stein PD, Matta F, Musani MH, Diaczok B. <i>Am J Med.</i> 2010; 123: 426-431 	5
5	<p>Acute inflammation: Overview of inflammation. Stimuli of inflammation. Vascular changes. Cellular events: leukocyte recruitment and activation.</p>	5

	<p>Leukocyte-induced tissue injury. Morphologic patterns of acute inflammation – Serous inflammation, Purulent inflammation. Fibrinous inflammation.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. Inflammatory responses and inflammation-associated diseases in organs Linlin Chen, Huidan Deng, and Ling Zhao. <i>Oncotarget</i>. 2018 Jan 23; 9(6): 7204–7218. 2. Serousinflammation. W. H. WASHBURN, M.D. <i>JAMA</i>. 1898; XXX(20):1159-1161. doi:10.1001/jama.1898.72440720023001g 3. Resolution of Inflammation: What Controls Its Onset? Michelle A. Sugimoto, Lirlândia P. Sousa, and Mauro M. Teixeira. <i>Front Immunol</i>. 2016; 7: 160. 4. Acute fibrinous and organizing pneumonia: two case reports and literature review Jingjing Lu, Qi Yin & Qiang Li. <i>BMC Pulmonary Medicine</i> volume 19, 141 (2019) 5. Clinical and microbiological characteristics of purulent and non-purulent cellulitis in hospitalized Taiwanese adults in the era of community-associated methicillin-resistant <i>Staphylococcus aureus</i>. Chun-Yuan Lee, Hung-Chin Tsai, and Yao-Shen Chen. <i>BMC Infect Dis</i>. 2015; 15: 311. 6. Modern exudate management: a review of wound treatments 7. Bacterial Brain Abscess Kevin Patel, MD and David B. Clifford, MD <i>Neurohospitalist</i>. 2014 Oct; 4(4): 196–204. doi: 10.1177/1941874414540684 8. A current review of brain abscess Duke S. Samson, Kemp Clark, M.D. <i>The American Journal of Medicine</i>, February 1973 Volume 54, Issue 2, Pages 201–210 DOI: https://doi.org/10.1016/0002-9343(73)90224-6 9. The Evolving Nature of Hepatic Abscess: A Review Marianna G. Mavilia, Marco Molina, and George Y. Wu. <i>J Clin Transl Hepatol</i>. 2016 Jun 28; 4(2): 158–168. doi: 10.14218/JCTH.2016.00004 10. Lung abscess-etiology, diagnostic and treatment options Ivan Kuhajda, Konstantinos Zarogoulidis, and Danijela Kuhajda. <i>Ann Transl Med</i>. 2015 Aug; 3(13): 183. doi: 10.3978/j.issn.2305-5839.2015.07.08 	
6	<p>Chronic inflammation 1: Systemic effect of inflammation. Morphologic patterns of Chronic inflammation. Chronic pancreatitis. Chronic myocarditis. Chronic bronchitis. Chronic hepatitis. Chronic nephritis. Chronic pneumonia.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. Activation of Resolution Pathways to Prevent and Fight Chronic Inflammation: Lessons From Asthma and Inflammatory Bowel Disease. <i>Front. Immunol.</i>, 23 July 2019 https://doi.org/10.3389/fimmu.2019.01699 2. Chronic diseases, inflammation, and spices: how are they linked? Ajaikumar B. Kunnumakkara, Bethsebie L. Sailo, Kishore Banik, <i>Journal of Translational Medicine</i> volume 16, Article number: 14 (2018) 3. From Pathogenesis, Clinical Manifestation, and Diagnosis to Treatment: An Overview on Autoimmune Pancreatitis Ou Cai and Shiyun Tan <i>Gastroenterology Research and Practice</i> 2017 https://doi.org/10.1155/2017/3246459 	5
7	<p>Chronic inflammation 2: Cystic fibrosis. Pulmonary silicosis. Crohn disease. Rhinoscleroma. Anthracosis.</p> <p>Recommended literature:</p>	5

	<ol style="list-style-type: none"> 1. Resolution of chronic inflammatory disease: universal and tissue-specific concepts Georg Schett, Markus F. Neurath Nature Communications volume 9, Article number: 3261 (2018) 2. Histopathologic review of granulomatous inflammation Kabeer K. Shah, Bobbi S. Pritt, Mariam P. Alexander Journal of Clinical Tuberculosis and Other Mycobacterial Diseases 7 (2017) 1–12 3. Contents lists available at ScienceDirect journal homepage: www.elsevier.com/locate/jctube Kabeer K. Shah Journal of Clinical Tuberculosis and Other Mycobacterial Diseases Volume 7, May 2017, Pages 1-12 https://doi.org/10.1016/j.jctube.2017.02.001 4. Granulomatous inflammation--a review. G T Williams and W J Williams J Clin Pathol. 1983 Jul; 36(7): 723–733. doi: 10.1136/jcp.36.7.723 5. A clinicopathological classification of granulomatous disorders D Geraint James. BMJ 6. Granulomatous Lung Disease: An Approach to the Differential Diagnosis Sanjay Mukhopadhyay, MD and Anthony A. Gal, MD Archives of Pathology & Laboratory Medicine Volume 134, Issue 5 (May 2010) 7. Differential diagnosis of granulomatous lung disease: clues and pitfalls Shinichiro Ohshimo, Josune Guzman, Ulrich Costabel, Francesco Bonella European Respiratory Review 2017 26: 170012; DOI: 10.1183/16000617.0012-2017 	
8	<p>Tissue Renewal, Regeneration, and Repair I: Regeneration. Proliferative capacities of tissue. Granulation tissue. Recommended literature</p> <ol style="list-style-type: none"> 1. Wound healing - A literature review Ana Cristina de Oliveira Gonzalez An Bras Dermatol. 2016 Sep-Oct; 91(5): 614–620. doi: 10.1590/abd1806-4841.20164741 2. Granulation tissue formation and remodeling Lari Häkkinen, Hannu Larjava, Leeni Koivisto https://doi.org/10.1111/etp.12008 3. Skin Acute Wound Healing: A Comprehensive Review Luis Cañedo-Dorantes International Journal of Inflammation 2019 https://doi.org/10.1155/2019/3706315 4. Regeneration of injured skeletal muscle after the injury Tero AH Järvinen, Markku Järvinen, and Hannu Kalimo Muscles Ligaments Tendons J. 2013 Oct-Dec; 3(4): 337–345. 	5
9	<p>Tissue Renewal, Regeneration, and Repair 2: Sclerosis, Fibrosis, Cirrhosis. Scar formation. Pancreosclerosis. Pneumosklerosis. Nephroscltrosis. Cardiosclerosis Recommended literature:</p> <ol style="list-style-type: none"> 1. Skeletal muscle regeneration is modulated by inflammation WenjunYangPingHu Journal of Orthopaedic Translation Volume 13, April 2018, Pages 25-32 https://doi.org/10.1016/j.jot.2018.01.002 2. Foreign Body Granuloma After Cranial Surgery: A Systematic Review of Reported Cases. Akhaddar A1, Turgut AT2, Turgut M3. World Neurosurg. 2018 Dec;120:457-475. doi: 10.1016/j.wneu.2018.09.143. 3. The Living Scar – Cardiac Fibroblasts and the Injured Heart. Eva A Rog-Zielinska, Russell A Norris, Peter Kohl, and Roger Markwald Trends Mol Med. 2016 Feb; 22(2): 99–114. doi: 10.1016/j.molmed.2015.12.006 	5

	4. Characterization of Electrical Activity in Post-myocardial Infarction Scar Tissue in Rat Hearts Using Multiphoton Microscopy. <i>Front. Physiol.</i> , October 2018 https://doi.org/10.3389/fphys.2018.01454	
10	<p>General Pathology of Infectious diseases: Mechanism of Viral Injury. Mechanism of Bacterial Injury. Meningococcal infections. Tuberculosis, Syphilis, Actinomycosis. Echinococcosis, Trichinellosis.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. Prachi B Tripathi, Anjali D Amarapurkar Morphological spectrum of gastrointestinal tuberculosis <i>Tropical Gastroenterology</i> DOI: http://dx.doi.org/ 2. Mihai Raul Popescu, Iancu Emil Pleşea, Marian Olaru Morphological aspects in tuberculosis of oral cavity – our experience and a review of the literature attempt. <i>Rom J Morphol Embryol</i> 2015, 56(3):967–987 3. Mann, K. J. Lung Lesions in Skeletal Tuberculosis. Review of 500 Cases. <i>Lancet</i> 1946 pp.744-9 ref.14 4. Ameeta E. Singh and Barbara Romanowski. Syphilis: Review with Emphasis on Clinical, Epidemiologic, and Some Biologic Features <i>Clin Microbiol Rev.</i> 1999 Apr; 12(2): 187–209. 5. Rebecca E. LaFond, Sheila A. Lukehart Biological Basis for Syphilis. <i>Clinical Microbiology Reviews.</i> DOI: 10.1128/CMR.19.1.29-49.2006 6. João Carlos Regazzi Avelleira; Giuliana Bottino. Syphilis: diagnosis, treatment and control. <i>An Bras Dermatol.</i> 2006;81(2):111-26. 7. Rebecca E. LaFond, Sheila A. Lukehart Biological Basis for Syphilis. <i>Clinical Microbiology Reviews.</i> DOI: 10.1128/CMR.19.1.29-49.2006 8. João Carlos Regazzi Avelleira; Giuliana Bottino. Syphilis: diagnosis, treatment and control. <i>An Bras Dermatol.</i> 2006;81(2):111-26. 9. Suk Hee Heo and all Imaging of Actinomycosis in Various Organs: A Comprehensive Review. <i>Radiographics</i> 34(1):19-33 · January 2014 DOI: 10.1148/rg.341135077 10. Alessandra Siracusano, Antonella Teggi, and Elena Ortona. Human Cystic Echinococcosis: Old Problems and New Perspectives. <i>Interdisciplinary Perspectives on Infectious Diseases</i>, 2009, https://doi.org/10.1155/2009/474368 11. Greg D. Appleyard, Alvin A. Gajadhar A Review of Trichinellosis in People and Wildlife in Canada <i>Canadian Journal of Public Health.</i> July 2000, Volume 91, Issue 4, pp 293–297. 	5 5
11	<p>Environmental and Nutritional Diseases: Air Pollution, Effect of Tobacco, Effect of Alcohol, Obesity.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. The Effects of Air Pollution on the Brain: a Review of Studies Interfacing Environmental Epidemiology and Neuroimaging. Paula de Prado Bert, Elisabet Mae Henderson Mercader, Jesus Pujol, Jordi Sunyer and Marion Mortamais. <i>Curr Environ Health Rep.</i> 2018; 5(3): 351–364. doi: 10.1007/s40572-018-0209-9 2. Air pollutants and early origins of respiratory diseases. Dasom Kim, Zi Chen, Lin-Fu Zhou, and Shou-Xiong Huang. <i>Chronic Dis Transl Med.</i> 2018 Jun; 4(2): 75–94. doi: 10.1016/j.cdtm.2018.03.003. 	5

12	<p>Diseases of the Immune System: Morphologic patterns of immune disorders: Rheumatic heart disease. Systemic lupus erythematosus. Rheumatoid arthritis. Multiple sclerosis.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. Diagnostic Testing and Interpretation of Tests for Autoimmunity Christine Castro, D.O. and Mark Gourley, M.D. J Allergy Clin Immunol. 2010 Feb; 125(2 Suppl 2): S238–S247. doi: 10.1016/j.jaci.2009.09.041 2. Rheumatoid arthritis: Disease or syndrome? Jessica A Stanich, John D Carter, Judith Whittum-Hudson, and Alan P Hudson. Open Access Rheumatol. 2009; 1: 179–192. doi: 10.2147/oarr.s7680 3. Inflammatory lesions in the bone marrow of rheumatoid arthritis patients: a morphological perspective Serena Bugatti, Antonio Manzo, Roberto Caporali, Carlomaurizio Montecucco Arthritis Research & Therapy volume 14, Article number: 229 (2012) 4. Nailfold Capillaroscopy in Rheumatic Diseases: Which Parameters Should Be Evaluated? Mahnaz Etehad Tavakol, Alimohammad Fatemi, Abdolamir Karbalaie, Zahra Emrani, and Björn-Erik Erlandsson. BioMed Research International https://doi.org/10.1155/2015/974530 	5
13	<p>Neoplasia. Components of a tumor. Benign neoplasm. Malignant neoplasm. Anaplasia. Dysplasia. Carcinoma in situ. Metastasis. Tumors of epithelial origin.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. The Role of Large-Format Histopathology in Assessing Subgross Morphological Prognostic Parameters: A Single Institution Report of 1000 Consecutive Breast Cancer Cases Tibor Tot. International Journal of Breast Cancer, 2012 https://doi.org/10.1155/2012/395415 2. Micropapillary urothelial carcinoma: Clinico-pathologic review Aleksandr M.Perepletchikov Anil V.Parwani. Pathology - Research and Practice. Volume 205, Issue 12, 15 December 2009, Pages 807-810. https://doi.org/10.1016/j.prp.2009.07.016 3. W. Glenn McCluggage Morphological subtypes of ovarian carcinoma: a review with emphasis on new developments and pathogenesis. Pathology, Volume 43, Issue 5, August 2011, Pages 420-43 https://doi.org/10.1097/PAT.0b013e328348a6e7 4. Recommended Articles for Discussion: 5. Eble JN, Young RH Carcinoma of the urinary bladder: a review of its diverse morphology. Seminars in Diagnostic Pathology, 30 Apr 1997, 14(2):98-108 PMID: 9179971 6. Enoch M. Sanders Jr., Virginia A. LiVolsi, James Brierley, Jennifer Shin, Gregory W. Randolph An evidence-based review of poorly differentiated thyroid cancer World Journal of Surgery May 2007, Volume 31, Issue 5, pp 934–945 7. Jae Hoon Lim Cholangiocarcinoma: Morphologic Classification According To Growth Pattern And Imaging Findings American Journal of Roentgenology 2003, Volume 181, Issue 3 8. McCormick D1, Mentzel T, Beham A, Fletcher CD Dedifferentiated liposarcoma. Clinicopathologic analysis of 32 cases suggesting a better prognostic subgroup among pleomorphic sarcomas. The American Journal of Surgical Pathology, 30 Nov 1994, 18(12):1213-1223 DOI: 10.1097/00000478-199412000-00004 	5

	<p>9. Gastrointestinal Stromal Tumors: Review on Morphology, Molecular Pathology, Prognosis, and Differential Diagnosis Markku Miettinen, MD and Jerzy Lasota, MD Archives of Pathology & Laboratory Medicine Volume 130, Issue 10 (October 2006)</p> <p>10. Carolina Reyes, Yevgeniy Karamurzin, Norma Frizzell. Uterine smooth muscle tumors with features suggesting fumarate hydratase aberration: detailed morphologic analysis and correlation with S-(2-succino)-cysteine immunohistochemistry. Modern Pathology volume 27, pages1020–1027(2014)</p>	
14	<p>Soft tissue tumours (fibrous, fatty, bone, synovial tumours). Benign and malignant tumors of connective tissue and derivatives. Hemangioma, angiosarcoma: Lymphangioma, lymphangiosarcoma. Synovial sarcoma. Mesothelioma. Meningioma, invasive meningioma. Leiomyoma, leiomyosarcoma. Rhabdomyoma, rhabdomyosarcoma.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. Estella Matutes Aaron Polliack Morphological and Immunophenotypic Features of Chronic Lymphocytic Leukemia https://doi.org/10.1046/j.1468-0734.2000.00002.x 2. David P.Steensma^aAyalewTefferi^aChin-YangLi^b Splenic histopathological patterns in chronic myelomonocytic leukemia with clinical correlations: reinforcement of the heterogeneity of the syndrome. <u>Leukemia Research</u> Volume 27, Issue 9, September 2003, Pages 775-782 https://doi.org/10.1016/S0145-2126(03)00006-7 	5
15	<p>Leukaemia. Lymphomas Acute leukemia. Chronic leukemia. Lymphoid neoplasm. Myeloid neoplasm.</p> <p>Recommended literature:</p> <ol style="list-style-type: none"> 1. Estella Matutes Aaron Polliack Morphological and Immunophenotypic Features of Chronic Lymphocytic Leukemia https://doi.org/10.1046/j.1468-0734.2000.00002.x 2. David P.SteensmaaAyalewTefferiaChin-YangLib Splenic histopathological patterns in chronic myelomonocytic leukemia with clinical correlations: reinforcement of the heterogeneity of the syndrome. <u>Leukemia Research</u> Volume 27, Issue 9, September 2003, Pages 775-782 https://doi.org/10.1016/S0145-2126(03)00006-7 	5
	Total	75