

## DAFTAR PUSTAKA

- Agarwal R.G., Sharma P., Nyati K.K. microRNAs in mycobacterial infection: modulation of host immune response and apoptotic pathways. *Immune Netw.* 2019;19(5):e30
- Ahmad S. (2011). Pathogenesis, immunology, and diagnosis of latent Mycobacterium tuberculosis infection. *Clinical & developmental immunology*, 2011, 814943.
- Aldaham, S., Foote, J. A., Chow, H. H., & Hakim, I. A. (2015). Smoking Status Effect on Inflammatory Markers in a Randomized Trial of Current and Former Heavy Smokers. *International journal of inflammation*, 2015, 439396.
- Alipoor, S. D., Adcock, I. M., Garssen, J., Mortaz, E., Varahram, M., MicroRNAsaeidi, M., & Velayati, A. (2016). The roles of microRNAs as potential biomarkers in lung diseases. *European Journal of Pharmacology*, 791, 395-404.
- Andersen, P., & Urdahl, K. B. (2015). TB vaccines; promoting rapid and durable protection in the lung. *Current opinion in immunology*, 35, 55.
- Arango Duque, G., & Descoteaux, A. (2014). Macrophage Cytokines: Involvement in Immunity and Infectious Diseases. *Frontiers in Immunology*, 5, 117833.
- Ari tania, Putu & Simamora, Dorta & Parmasari, Wahyuni & Rahmawati, Febtarini. (2014). KADAR INTERLEUKIN 6 (IL-6) SEBAGAI INDIKATOR PROGRESIVITAS PENYAKIT REUMATOID ARTHRITIS (RA). *Jurnal Ilmiah Kedokteran Wijaya Kusuma*. 3. 40.
- Bartel D. P. (2004). MicroRNAs: genomics, biogenesis, mechanism, and function. *Cell*, 116(2), 281–297.
- Barry, S.E.; Ellis, M.; Yang, Y.; Guan, G.; Wang, X.; Britton, W.J.; Saunders, B.M. (2018), Identification of a plasma microRNA profile in untreated pulmonary berculosis patients that is modulated by anti-mycobacterial therapy. *J. Infect.* 77, 341–348.



- Behrouzi, A.; Alimohammadi, M.; Nafari, A.H.; Yousefi, M.-H.; Riazi Rad, F.; Vaziri, F.; Siadat, S.D. (2019) The role of host microRNAs on *Mycobacterium tuberculosis*. *ExRNA*, 1, 40.
- Belver, L., Papavasiliou, F. N., & RamicroRNAo, A. R. (2011). MicroRNA control of lymphocyte differentiation and function. *Current Opinion in Immunology*, 23(3), 368-373.
- Bernstein, E., Caudy, A. A., Hammond, S. M., & Hannon, G. J. (2001). Role for a bidentate ribonuclease in the initiation step of RNA interference. *Nature*, 409(6818), 363-366.
- Bezman, N. A., Cedars, E., Steiner, D. F., Bleloch, R., Hesslein, D. G., & Lanier, L. L. (2010). Distinct requirements of microRNAs in NK cell activation, survival, and function. *Journal of immunology (Baltimore, Md. : 1950)*, 185(7), 3835–3846
- Bhavsar, A. P., Guttman, J. A., & Finlay, B. B. (2007). Manipulation of host-cell pathways by bacterial pathogens. *Nature*, 449(7164), 827–834.
- Brighenti, S., & Andersson, J. (2010). Induction and regulation of CD8+ cytolytic T cells in human tuberculosis and HIV infection. *Biochemical and Biophysical Research Communications*, 396(1), 50-57.
- Calin, G. A., & Croce, C. M. (2006). MicroRNA signatures in human cancers. *Nature Reviews Cancer*, 6(11), 857-866.
- Catalanotto, C., Cogoni, C., & Zardo, G. (2016). MicroRNA in Control of Gene Expression: An Overview of Nuclear Functions. *International journal of molecular sciences*, 17(10), 1712.
- Chakraborty, S., Zawieja, D. C., Davis, M. J., & Muthuchamy, M. (2019). MicroRNA signature of inflamed lymphatic endothelium and role of microRNA-9 in lymphangiogenesis and inflammation. *American Journal of Physiology-Cell Physiology*. <https://doi.org/C-00122-2015>
- Chen, X., Ba, Y., Ma, L., Cai, X., Yin, Y., Wang, K., Guo, J., Zhang, Y., Chen, J., Guo, X., Li, Q., Li, X., Wang, W., Zhang, Y., Wang, J., Jiang, X., Xiang, Y., Xu, C., Zheng, P., Zhang, J., ... Zhang, C. Y. (2008). Characterization of microRNAs in serum: a novel class of biomarkers for diagnosis of cancer and other diseases. *Cell research*, 18(10), 997–1006.



- Cooper, A. M., D, K., & Sher, A. (2011). Role of innate cytokines in mycobacterial infection. *Mucosal Immunology*,
- Crighton, D., Wilkinson, S., O'Prey, J., Syed, N., Smith, P., Harrison, P. R., Gasco, M., Garrone, O., Crook, T., & Ryan, K. M. (2006). DRAM, a p53-induced modulator of autophagy, is critical for apoptosis. *Cell*, 126(1), 121–134.
- Crighton, D., Wilkinson, S., & Ryan, K. M. (2007). DRAM links autophagy to p53 and programmed cell death. *Autophagy*, 3(1), 72–74.
- Choy, E., & Rose-John, S. (2017). Interleukin-6 as a Multifunctional Regulator: Inflammation, Immune Response, and Fibrosis. *Journal of Scleroderma and Related Disorders*.
- Correia, Carolina & Nalpas, Nicolas & McLaughlin, Kirsten & Browne, John & Gordon, Stephen & Machugh, David & Shaughnessy, Ronan. (2017). Circulating microRNAs as Potential Biomarkers of Infectious Disease. *Frontiers in Immunology*. 8. 10.3389/fimmu.2017.00118.
- Dai, R., & Ahmed, S. A. (2011). MicroRNA, a new paradigm for understanding immunoregulation, inflammation, and autoimmune diseases. *Translational research : the journal of laboratory and clinical medicine*, 157(4), 163–179.
- Darmo, K., Fadlila, R.N. and Aznawi, A., 2023. ANALISIS ANALISIS KADAR INTERLEUKIN 6 (IL-6) PADA PASIEN HEPATITIS B DI KLINIK UTAMA MATA JEC ORBITA MAKASSAR. *Jurnal Analis Kesehatan Kendari*, 5(2), pp.35-4
- Das, K., Garnica, O., & Dhandayuthapani, S. (2016). Modulation of Host microRNAs by Intracellular Bacterial Pathogens. *Frontiers in Cellular and Infection Microbiology*, 6, 204277.
- Denli, A. M., Tops, B. B., Plasterk, R. H., Ketting, R. F., & Hannon, G. J. (2004). Processing of primary microRNAs by the Microprocessor complex. *Nature*, 432(7014), 231–235.
- Dheda, K., Booth, H., Huggett, J. F., Johnson, M. A., Zumla, A., & Rook, G. A. (2005). Lung remodeling in pulmonary tuberculosis. *The Journal of infectious diseases*, 192(7), 1201–1209.



K., SCHWANDER, S. K., ZHU, B., Van ZYL-SMIT, R. N., & ZHANG, Y. (2010). The immunology of tuberculosis: From bench to bedside. *respirology*, 15(3), 433-450.

- Dienz, O., & Rincon, M. (2009). The effects of IL-6 on CD4 T cell responses. *Clinical Immunology*, 130(1), 27-33.
- Dinarello, C. A. (2009). Immunological and Inflammatory Functions of the Interleukin-1 Family.
- Dutta, N. K., & Karakousis, P. C. (2014). Latent Tuberculosis Infection: Myths, Models, and Molecular Mechanisms. *Microbiology and Molecular Biology Reviews : MMBR*, 78(3), 343-371.
- Elizabeth, C., & Mauricio, A. (2016). Infection of J774A.1 with different *Mycobacterium* species induces differential immune and microRNA-related responses. *Microbiology and Immunology*, 60(5), 356-363.
- Esquela-Kerscher, A., & Slack, F. J. (2006). OncomicroRNAs - microRNAs with a role in cancer. *Nature reviews. Cancer*, 6(4), 259–269
- Fachri, M., Hatta, M., Abadi, S., Santoso, S. S., Wikanningtyas, T. A., Syarifuddin, A., Dwiyanti, R., & Noviyanti, R. A. (2018). Comparison of acid fast bacilli (AFB) smear for *Mycobacterium tuberculosis* on adult pulmonary tuberculosis (TB) patients with type 2 diabetes mellitus (DM) and without type 2 DM. *Respiratory medicine case reports*, 23, 158–162.
- Flynn, J. L., & Chan, J. (2001). Tuberculosis: Latency and Reactivation. *Infection and Immunity*, 69(7), 4195-4201.
- Flynn, J. L., & Chan, J. (2001). Immunology of tuberculosis. *Annual review of immunology*, 19, 93–129
- Frieden, T. R., Sterling, T. R., Munsiff, S. S., Watt, C. J., & Dye, C. (2003). Tuberculosis. *Lancet (London, England)*, 362(9387), 887–899.
- Franchi, L., Eigenbrod, T., Muñoz-Planillo, R., & Nuñez, G. (2009). The inflammasome: a caspase-1-activation platform that regulates immune responses and disease pathogenesis. *Nature immunology*, 10(3), 241–247.
- Fu, S. W., Chen, L., & Man, Y. G. (2011). microRNA Biomarkers in Breast Cancer Detection and Management. *Journal of Cancer*, 2, 116–122.



.A., Megerssa Y.C., Gudeta A.N., Akalu G.T., Debele M.T., Tulu K.D. Robert M.TB/RIF assay for diagnosis of pulmonary tuberculosis in sputum specimens in remote health care facility Clinical microbiology and vaccines. *CMC Microbiol*. 2015;15(1):1–6.

Greten, F.R., Arkan, M.C., Bollrath, J., Hsu, L.C., Goode, J., Miething, C., Göktuna, S.I., Neuenhahn, M., Fierer, J., Paxian, S. and Van Rooijen, N., 2007. NF- $\kappa$ B is a negative regulator of IL-1 $\beta$  secretion as revealed by genetic and pharmacological inhibition of IKK $\beta$ . *Cell*, 130(5), pp.918-931.

Gringhuis, S. I., Kaptein, T. M., Wevers, B. A., Theelen, B., van der Vlist, M., Boekhout, T., & Geijtenbeek, T. B. (2012). Dectin-1 is an extracellular pathogen sensor for the induction and processing of IL-1 $\beta$  via a noncanonical caspase-8 inflammasome. *Nature immunology*, 13(3), 246–254.

Gupta N., Singh G., Rana M. Histopathological yield in different types of bronchoscopic biopsies in proven cases of pulmonary tuberculosis. *Indian J. Pathol. Microbiol.* 2015;58(4):439–442.

Hackett, E.E., Charles-Messance, H., O'Leary, S.M., Gleeson, L.E., Muñoz-Wolf, N., Case, S., Wedderburn, A., Johnston, D.G., Williams, M.A., Smyth, A. and Ouimet, M., 2020. Mycobacterium tuberculosis limits host glycolysis and IL-1 $\beta$  by restriction of PFK-M via MicroRNA-21. *Cell Reports*, 30(1), pp.124-136.

Halim Danusantoso (penulis); Joko Suyono, Y. (editor). (2017). *Ilmu penyakit paru : buku saku / Dr. Halim Danusantoso, Sp. P. FCCP; editor, dr. Y. Joko Suyono*. Jakarta ;; ©2018 Penerbit Buku Kedokteran EGC: Penerbit Buku Kedokteran EGC

Henriksen, M., Johnsen, K. B., Andersen, H. H., Pilgaard, L., & Duroux, M. (2014). MicroRNA expression signatures determine prognosis and survival in glioblastoma multiforme--a systematic overview. *Molecular neurobiology*, 50(3), 896–913.

Hammond S. M. (2005). Dicing and slicing: the core machinery of the RNA interference pathway. *FEBS letters*, 579(26), 5822–5829.

Han, J., Lee, Y., Yeom, K. H., Kim, Y. K., Jin, H., & Kim, V. N. (2004). The Drosha-DGCR8 complex in primary microRNA processing. *Genes & development*, 18(24), 3016–3027.

Harapan H.; Fitra, F.; Ichsan, I.; Mulyadi, M.; Miotto, P.; Hasan, N.A.; Calado, M.;

M. 2013 The roles of microRNAs on tuberculosis infection: Meaning or myth? *Tuberculosis* , 93, 596–605.



- Hatta, M., Sultan, A.R., Tandirogang, N. et al. Detection and identification of mycobacteria in sputum from suspected tuberculosis patients. *BMC Res Notes* 3, 72 (2010).
- Hatta, M., Ratnawati, Tanaka, M., Ito, J., Shirakawa, T., & Kawabata, M. (2010). NRAMP1/SLC11A1 gene polymorphisms and host susceptibility to *Mycobacterium tuberculosis* and *M. leprae* in South Sulawesi, Indonesia. *The Southeast Asian journal of tropical medicine and public health*, 41(2), 386–394.
- Hermayanti, D. (2012). Respons imun dan pemeriksaan serologi pada tuberkulosis. *Saintika Medika: Jurnal Ilmu Kesehatan dan Kedokteran Keluarga*,
- Hommel, U., Hurth, K., Rondeau, J.M., Vulpetti, A., Ostermeier, D., Boettcher, A., Brady, J.P., Hediger, M., Lehmann, S., Koch, E. and Blechschmidt, A., 2023. Discovery of a selective and biologically active low-molecular weight antagonist of human interleukin-1 $\beta$ . *Nature Communications*, 14(1), p.5497.
- Hunter, C. A., & Jones, S. A. (2015). IL-6 as a keystone cytokine in health and disease. *Nature immunology*, 16(5), 448–457.
- Irman Somantri, 1974-. (2008.). *Keperawatan medikal bedah : asuhan keperawatan pada pasien dengan gangguan sistem pernapasan / Irman Somantri*. Jakarta :: Salemba Medika.,
- Iqbal, I. K., Bajeli, S., Sahu, S., Bhat, S. A., & Kumar, A. (2021). Hydrogen sulfide-induced GAPDH sulfhydration disrupts the CCAR2-SIRT1 interaction to initiate autophagy. *Autophagy*, 17(11),
- Jee B. (2020). Understanding the early host immune response against *Mycobacterium tuberculosis*. *Central-European journal of immunology*, 45(1), 99–103.

Jin Kyung Kim, Hye-Mi Lee, Ki-Sun Park, Dong-Min Shin, Tae Sung Kim, Yi Sak Kim, Hyun-Woo Suh, Soo Yeon Kim, In Soo Kim, Jin-Man Kim, Ji-Woong Son, Kyung Mok Sohn, Sung Soo Jung, Chaeuk Chung, Sang-Bae Han, Chul-Su Yang & Eun-Kyeong Jo (2017) *MICRORNA144\** inhibits antimicrobial responses against *Mycobacterium tuberculosis* in human monocytes and macrophages by targeting the autophagy protein DRAM2. *Autophagy*, 13:2, 423-441



Joshi, L., Ponnana, M., Sivangala, R., Chelluri, L. K., Nallari, P., Penmetsa, S., Valluri, V., & Gaddam, S. (2015). Evaluation of TNF- $\alpha$ , IL-10 and IL-6 Cytokine Production and Their Correlation with Genotype Variants amongst Tuberculosis Patients and Their Household Contacts. *PLoS ONE*, 10(9).

Juffermans, N. P., Florquin, S., Camoglio, L., Verbon, A., Kolk, A. H., Speelman, P., van Deventer, S. J., & van Der Poll, T. (2000). Interleukin-1 signaling is essential for host defense during murine pulmonary tuberculosis. *The Journal of infectious diseases*, 182(3), 902–908.

Katrin D. Mayer-Barber, Daniel L. Barber, Kevin Shenderov, Sandra D. White, Mark S. Wilson, Allen Cheever, David Kugler, Sara Hieny, Patricia Caspar, Gabriel Núñez, Dirk Schlueter, Richard A. Flavell, Fayyaz S. Sutterwala, Alan Sher; Cutting Edge (2010) Caspase-1 Independent IL-1 $\beta$  Production Is Critical for Host Resistance to *Mycobacterium tuberculosis* and Does Not Require TLR Signaling In Vivo. *J Immunol* 1; 184 (7): 3326–3330.

Kemenkes Ri 2020, Pedoman Nasional Pelayanan Kedokteran Tatalaksana Tuberkulosis Kementerian Kesehatan RI 2020

Kerley-Hamilton, J. S., Pike, A. M., Hutchinson, J. A., Freemantle, S. J., & Spinella, M. J. (2007). The direct p53 target gene, FLJ11259/DRAM, is a member of a novel family of transmembrane proteins. *Biochimica et biophysica acta*, 1769(4), 209–219.

Kleinsteuber, K., Heesch, K., Schattling, S., Kohns, M., Sander-Jülich, C., Walzl, G., Hesseling, A., Mayatepek, E., Fleischer, B., Marx, F. M., & Jacobsen, M. (2013). Decreased Expression of microRNA-21, microRNA-26a, microRNA-29a, and microRNA-142-3p in CD4+ T Cells and Peripheral Blood from Tuberculosis Patients. *PLOS ONE*, 8(4), e61609.

Klionsky, D. J., Petroni, G., Amaravadi, R. K., Baehrecke, E. H., Ballabio, A., Boya, P., Bravo-San Pedro, J. M., Cadwell, K., Cecconi, F., Choi, A. M. K., Choi, M. E., Chu, C. T., Codogno, P., Colombo, M. I., Cuervo, A. M., Deretic, V., Dikic, I., Elazar, Z., Eskelinen, E. L., Fimia, G. M., ... Pietrocola, F. (2021). Autophagy in major human diseases. *The EMBO journal*, 40(19), e108863.

Kim, J. K., Lee, H. M., Park, K. S., Shin, D. M., Kim, T. S., Kim, Y. S., Suh, H. W., Kim, S. Y., Kim, I. S., Kim, J. M., Son, J. W., Sohn, K. M., Jung, S. S., Chung, C., Han, S. B., Yang, C. S., & Jo, E. K. (2017). MICRORNA144\* inhibits antimicrobial responses against *Mycobacterium tuberculosis* in



human monocytes and macrophages by targeting the autophagy protein DRAM2. *Autophagy*, 13(2), 423–441.

Kim, T. S., Jin, Y. B., Kim, Y. S., Kim, S., Kim, J. K., Lee, H. M., Suh, H. W., Choe, J. H., Kim, Y. J., Koo, B. S., Kim, H. N., Jung, M., Lee, S. H., Kim, D. K., Chung, C., Son, J. W., Min, J. J., Kim, J. M., Deng, C. X., Kim, H. S., ... Jo, E. K. (2019). SIRT3 promotes antimycobacterial defenses by coordinating mitochondrial and autophagic functions. *Autophagy*, 15(8), 1356–1375.

Kishimoto, T., Hibi, M., Murakami, M., Narazaki, M., Saito, M., & Taga, T. The Molecular Biology of Interleukin 6 and its Receptor. 5-23.

Krishnan, N., Robertson, B. D., & Thwaites, G. (2013). Pathways of IL-1 $\beta$  secretion by macrophages infected with clinical Mycobacterium tuberculosis strains. *Tuberculosis (Edinburgh, Scotland)*, 93(5), 538–547

Kumarswamy, R., Volkmann, I., & Thum, T. (2011). Regulation and function of microRNA-21 in health and disease. *RNA Biology*, 8(5), 706-713.

Kumar R, Halder P, Sahu SK, Kumar M, Kumari M, Jana K, Ghosh Z, Sharma P, Kundu M, and Basu J (2012). Identification of a novel role of ESAT-6-dependent microRNA-155 induction during infection of macrophages with Mycobacterium tuberculosis. *Cell Microbiol* 14, 1620–1631.

Lam, A., Prabhu, R., Gross, C. M., Riesenbergs, L. A., Singh, V., & Aggarwal, S. (2017). Role of apoptosis and autophagy in tuberculosis. *American journal of physiology. Lung cellular and molecular physiology*, 313(2), L218–L229.

Laporan Program Penanggulangan Tuberkulosis Tahun 2022.— Jakarta :Kementerian Kesehatan RI. 2023

Latorre, I., Leidinger, P., Backes, C., Domínguez, J., de Souza-Galvão, M. L., Maldonado, J., et al. (2015). A novel whole-blood microRNA signature for a rapid diagnosis of pulmonary tuberculosis. *Eur. Respir. J.* 45, 1173–1176.

Lee, Y., Kim, M., Han, J., Yeom, K. H., Lee, S., Baek, S. H., & Kim, V. N. (2004). MicroRNA genes are transcribed by RNA polymerase II. *The EMBO journal*, 23(20), 4051–4060



; Chang, L.-Y.; Chang, C.-H.; Yan, B.-S.; Wang, J.-Y.; Lin, W.-H. Differed -1 Beta Response between Active TB and LTBI Cases by Ex Vivo stimulation of Human Monocyte-Derived Macrophage with TB-Specific antigen. *Dis. Markers*; 2019; 2019, 7869576

- Li, C., & Johnson, D. E. (2012). Bortezomib induces autophagy in head and neck squamous cell carcinoma cells via JNK activation. *Cancer letters*, 314(1), 102–107.
- Li, Q., Xie, Y., Cui, Z., Huang, H., Yang, C., Yuan, B., Shen, P., & Shi, C. (2021). Activation of hypoxia-inducible factor 1 (Hif-1) enhanced bactericidal effects of macrophages to Mycobacterium tuberculosis. *Tuberculosis (Edinburgh, Scotland)*, 126, 102044.
- Liu, G., Wan, Q., Li, J., Hu, X., Gu, X., & Xu, S. (2020). Silencing microRNA-125b-5p attenuates inflammatory response and apoptosis inhibition in mycobacterium tuberculosis-infected human macrophages by targeting DNA damage-regulated autophagy modulator 2 (DRAM2). *Cell cycle (Georgetown, Tex.)*, 19(22), 3182–3194.
- Liu, Y., Wang, X., Jiang, J., Cao, Z., Yang, B., & Cheng, X. (2011). Modulation of T cell cytokine production by microRNA-144\* with elevated expression in patients with pulmonary tuberculosis. *Molecular Immunology*, 48(9-10), 1084-1090.
- Lopez-Castejon, G., & Brough, D. (2011). Understanding the mechanism of IL-1 $\beta$  secretion. *Cytokine & Growth Factor Reviews*, 22(4).
- Lorin, S., Pierron, G., Ryan, K. M., Codogno, P., & Djavaheri-Mergny, M. (2010). Evidence for the interplay between JNK and p53-DRAM signalling pathways in the regulation of autophagy. *Autophagy*, 6(1), 153–154.
- Lu, Y. C., Yeh, W. C., & Ohashi, P. S. (2008). LPS/TLR4 signal transduction pathway. *Cytokine*, 42(2), 145–151.
- Lund, E., Güttinger, S., Calado, A., Dahlberg, J. E., & Kutay, U. (2004). Nuclear export of microRNA precursors. *Science (New York, N.Y.)*, 303(5654), 95–98.
- Luo, Y., & Zheng, S. G. (2016). Hall of Fame among Pro-inflammatory Cytokines: Interleukin-6 Gene and Its Transcriptional Regulation Mechanisms. *Frontiers in immunology*, 7, 604.

Lu TX, Hartner J, Lim EJ, Fabry V, Mingler MK, Cole ET, Orkin SH, Aronow BJ, and Rothenberg ME (2011). MicroRNA-21 limits in vivo immune response-mediated activation of the IL-12/IFN-gamma pathway, Th1 polarization, and the severity of delayed-type hypersensitivity. *J Immunol* 187, 3362–3373



- Lv, Y., Guo, S., Li, X. G., Chi, J. Y., Qu, Y. Q., & Zhong, H. L. (2016). Sputum and serum microRNA-144 levels in patients with tuberculosis before and after treatment. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases*, 43, 68–73.
- Lyadova, I. V., Tsiganov, E. N., Kapina, M. A., Shepelkova, G. S., Sosunov, V. V., Radaeva, T. V., Majorov, K. B., Shmitova, N. S., Ganusov, V. V., De Boer, R. J., Racine, R., & Winslow, G. M. In Mice, Tuberculosis Progression Is Associated with Intensive Inflammatory Response and the Accumulation of Gr-1dim Cells in the Lungs. *PLOS ONE*, 5(5), e10469.
- Lyu, L.; Zhang, X.; Li, C.; Yang, T.; Wang, J.; Pan, L.; Jia, H.; Li, Z.; Sun, Q.; Yue, L.; et al. 2019 Small RNA profiles of serum exosomes derived from individuals with latent and active tuberculosis. *Front. Microbiol.*, 10, 1174.
- Maudet, C., Mano, M., & Eulalio, A. (2014). MicroRNAs in the interaction between host and bacterial pathogens. *FEBS letters*, 588(22), 4140–4147.
- Maertzdorf, J., Ota, M., Repsilber, D., Mollenkopf, H. J., Weiner, J., Hill, P. C., & Kaufmann, S. H. (2011). Functional correlations of pathogenesis-driven gene expression signatures in tuberculosis. *PLoS one*, 6(10), e26938.
- Mbandi, S. K., Thompson, E., Mendelsohn, S. C., Suliman, S., Chegou, N. N., Malherbe, S. T., Darboe, F., Erasmus, M., Hanekom, W. A., Bilek, N., Fisher, M., Kaufmann, S. H., Winter, J., Murphy, M., Wood, R., Morrow, C., Van Rhijn, I., Moody, B., Murray, M., . . . Scriba, T. J. (2020). RISK6, a 6-gene transcriptomic signature of TB disease risk, diagnosis and treatment response. *Scientific Reports*, 10(1), 1-21.
- Mendell, J. T., & Olson, E. N. (2012). MicroRNAs in stress signaling and human disease. *Cell*, 148(6), 1172–1187.
- Mishra, B. B., Rathinam, V. A., Martens, G. W., Martinot, A. J., Kornfeld, H., Fitzgerald, K. A., & Sasse, C. M. (2013). Nitric oxide controls the immunopathology of tuberculosis by inhibiting NLRP3 inflammasome-dependent processing of IL-1 $\beta$ . *Nature immunology*, 14(1), 52–60. h
- Mortaz, Esmaeil & Varahram, Mohammad & Farnia, Parissa & Bahadori, Mehdi & Masjedi, Mohammad. (2012). New Aspects in Immunopathology of Mycobacterium tuberculosis. ISRN Immunology. 2012. 0.5402/2012/963879.



- Mortaz E., Masjedi M.R., Abedini A., Matroodi S., Kiani A., Soroush D., et al. Common features of tuberculosis and sarcoidosis. *Int. J. Mycobacteriol.* 2016;5(Suppl 1):S240–s241.
- Mostoufi-Afshar, S., Tabatabaei, M., & Ghahramani Seno, M. M. (2018). *Mycobacterium avium* subsp. *paratuberculosis* induces differential cytosine methylation at microRNA-21 transcription start site region. *Iranian journal of veterinary research*, 19(4), 262–269.
- Muñoz, L., Stagg, H. R., & Abubakar, I. (2015). Diagnosis and Management of Latent Tuberculosis Infection. *Cold Spring Harbor Perspectives in Medicine*, 5(11).
- Nasci, V.L., Chuppa, S., Griswold, L., Goodreau, K.A., Dash, R.K. and Kriegel, A.J., 2019. miR-21-5p regulates mitochondrial respiration and lipid content in H9C2 cells. *American Journal of Physiology-Heart and Circulatory Physiology*, 316(3), pp.H710-H721.
- Najafi-Shoushtari, S. H., Kristo, F., Li, Y., Shioda, T., Cohen, D. E., Gerszten, R. E., & Näär, A. M. (2010). MicroRNA-33 and the SREBP host genes cooperate to control cholesterol homeostasis. *Science (New York, N.Y.)*, 328(5985), 1566–1569.
- Nagabhushanam, V., Solache, A., Ting, L. M., Escaron, C. J., Zhang, J. Y., & Ernst, J. D. (2003). Innate inhibition of adaptive immunity: *Mycobacterium tuberculosis*-induced IL-6 inhibits macrophage responses to IFN-gamma. *Journal of immunology (Baltimore, Md. : 1950)*, 171(9), 4750–4757.
- Ndzi, Elvis & Nkenfou, Céline & Pefura, Eric & Mekue mouafo, Chapdeleine linda & Guiedem, Elise & Nguefeu, Carine & Ngoufack, Marie Nicole & Elong, Elise & Yatchou, Laeticia & Ndjolo, Alexis & Kuiate, Jules-Roger. (2019). Tuberculosis diagnosis: algorithm that May discriminate latent from active tuberculosis. *Heliyon*. 5. e02559. 10.1016/j.heliyon.2019.e02559.
- Nicod L. P. (2007). Immunology of tuberculosis. *Swiss medical weekly*, 137(25-26), 357–362.

Niederweis, M., Danilchanka, O., Huff, J., Hoffmann, C., & Engelhardt, H. (2010). Mycobacterial outer membranes: in search of proteins. *Trends in microbiology*, 18(3), 109–116.

V., Luo, X.Y., Wang, G.Z., Li, Y., Pan, M.X., Yang, R.Q., Ling, X.G.,uang, S., Ma, X.X., Jin, S.Y. and Wang, D., 2017. MicroRNA-21 mediates



angiotensin II-induced liver fibrosis by activating NLRP3 inflammasome/IL-1 $\beta$  axis via targeting Smad7 and Spry1. *Antioxidants & redox signaling*, 27(1), pp.1-20.

Novikov, A., Cardone, M., Thompson, R., Shenderov, K., Kirschman, K. D., Mayer-Barber, K. D., Myers, T. G., Rabin, R. L., Trinchieri, G., Sher, A., & Feng, C. G. (2011). Mycobacterium tuberculosis triggers host type I IFN signaling to regulate IL-1 $\beta$  production in human macrophages. *Journal of immunology (Baltimore, Md. : 1950)*, 187(5), 2540–2547.

O'Brien, J., Hayder, H., Zayed, Y., & Peng, C. (2018). Overview of MicroRNA Biogenesis, Mechanisms of Actions, and Circulation. *Frontiers in endocrinology*, 9, 402

O'Prey, J., Skommer, J., Wilkinson, S & Ryan, KM 2009, 'Analysis of DRAM-related proteins reveals evolutionarily conserved and divergent roles in the control of autophagy', *Cell Cycle*, vol. 8, no. 14, pp. 2260-5.

Pahari, S., Negi, S., Aqdas, M., Arnett, E., Schlesinger, L. S., & Agrewala, J. N. (2020). Induction of autophagy through CLEC4E in combination with TLR4: an innovative strategy to restrict the survival of *Mycobacterium tuberculosis*. *Autophagy*, 16(6), 1021–1043.

Pai, M., Gokhale, K., Joshi, R., Dogra, S., Kalantri, S., Mendiratta, D. K., Narang, P., Daley, C. L., Granich, R. M., Mazurek, G. H., Reingold, A. L., Riley, L. W., & Colford, J. M., Jr (2005). Mycobacterium tuberculosis infection in health care workers in rural India: comparison of a whole-blood interferon gamma assay with tuberculin skin testing. *JAMA*, 293(22), 2746–2755.

Park, S. M., Kim, K., Lee, E. J., Kim, B. K., Lee, T. J., Seo, T., Jang, I. S., Lee, S. H., Kim, S., Lee, J. H., & Park, J. (2009). Reduced expression of DRAM2/TMEM77 in tumor cells interferes with cell death. *Biochemical and biophysical research communications*, 390(4), 1340–1344.

Patnaik, B., Patnaik, N., Mittal, S., Mohan, A., Agrawal, A., Guleria, R., & Madan, K. (2022). Micro RNAs as potential biomarkers in tuberculosis: A systematic review. *Non-coding RNA Research*, 7(1), 16-26. <https://doi.org/10.1016/j.ncrna.2021.12.005>



M. P., & Provost, P. (2009). Protein components of the microRNA pathway and human diseases. *Methods in molecular biology (Clifton, N.J.)*, 487, 369–385. [https://doi.org/10.1007/978-1-60327-547-7\\_18](https://doi.org/10.1007/978-1-60327-547-7_18)

Pierce, S., Geanes, E. S., & Bradley, T. (2020). Targeting Natural Killer Cells for Improved Immunity and Control of the Adaptive Immune Response. *Frontiers in Cellular and Infection Microbiology*, 10, 531041.

Philips, J.A.; Ernst, J.D. 2012 Tuberculosis pathogenesis and immunity. *Annu. Rev. Pathol.*, 7, 353–384.

Qi, Y.; Cui, L.; Ge, Y.; Shi, Z.; Zhao, K.; Guo, X.; Yang, D.; Yu, H.; Cui, L.; Shan, Y.; et al. 2012, Altered serum microRNAs as biomarkers for the early diagnosis of pulmonary tuberculosis infection. *BMC Infect. Dis.* 12, 384.

Ratti, M., Lampis, A., Ghidini, M., Salati, M., MicroRNACHEV, M. B., Valeri, N., & Hahne, J. C. (2020). MicroRNAs (microRNAs) and Long Non-Coding RNAs (lncRNAs) as New Tools for Cancer Therapy: First Steps from Bench to Bedside. *Targeted Oncology*, 15(3), 261-278.

Ren, K., & Torres, R. (2009). Role of interleukin-1beta during pain and inflammation. *Brain research reviews*, 60(1), 57–64.

Ridker, P. M., MacFadyen, J. G., Thuren, T., Everett, B. M., Libby, P., Glynn, R. J., & CANTOS Trial Group (2017). Effect of interleukin-1 $\beta$  inhibition with canakinumab on incident lung cancer in patients with atherosclerosis: exploratory results from a randomised, double-blind, placebo-controlled trial. *Lancet (London, England)*, 390(10105), 1833–1842.

Romagnoli, A.; Petruccioli, E.; Palucci, I.; Camassa, S.; Carata, E.; Petrone, L.; Mariano, S.; Sali, M.; Dini, L.; Girardi, E. et al. Clinical isolates of the modern *Mycobacterium tuberculosis* lineage 4 evade host defense in human macrophages through eluding IL-1beta-induced autophagy. *Cell Death Dis.*; 2018; 9, 624

Rothchild A.C., Sissons J.R., Shafiani S., Plaisier C., Min D., Mai D., et al. MicroRNA-155-regulated molecular network orchestrates cell fate in the innate and adaptive immune response to *Mycobacterium tuberculosis*. *Proc. Natl. Acad. Sci. U. S. A.* 2016;113(41):E6172–e6181.

Ruiz-Tagle, C.; Naves, R.; Balcells, M.E. 2020, Unraveling the role of microRNAs in *Mycobacterium tuberculosis* infection and disease: Advances and pitfalls. *Infect. Immun.* 88, e00649-19.



- Sabir, N., Hussain, T., Shah, S. Z., Peramo, A., Zhao, D., & Zhou, X. (2018). MicroRNAs in Tuberculosis: New Avenues for Diagnosis and Host-Directed Therapy. *Frontiers in Microbiology*, 9, 347770.
- Sangokoya, C., Telen, M.J. and Chi, J.T., 2010. microRNA miR-144 modulates oxidative stress tolerance and associates with anemia severity in sickle cell disease. *Blood, The Journal of the American Society of Hematology*, 116(20), pp.4338-4348.
- Saliminejad K., Khorram Khorshid H.R., Soleymani Fard S., Ghaffari S.H. An overview of microRNAs: biology, functions, therapeutics, and analysis methods. *J. Cell. Physiol.* 2019;234(5):5451–5465.
- Saunders, B. M., Frank, A. A., Orme, I. M., & Cooper, A. M. (2000). Interleukin-6 induces early gamma interferon production in the infected lung but is not required for generation of specific immunity to *Mycobacterium tuberculosis* infection. *Infection and immunity*, 68(6), 3322–3326. <https://doi.org/10.1128/IAI.68.6.3322-3326.2000>
- Schett G. (2018). Physiological effects of modulating the interleukin-6 axis. *Rheumatology (Oxford, England)*, 57(suppl\_2), ii43–ii50.
- Seyedhosseini F S , Mohammadi S, Zare Ebrahimabad M , Khodabakhshi B , Abbasi A , et al. Interleukin-6, Interleukin-17 and Transforming Growth Factor-Beta are Overexpressed in Newly Diagnosed Tuberculosis Patients; Potent Biomarkers of Mycobacterial Infection. *Arch Clin Infect Dis*. 2019;14(4):e68417.
- Sheedy F. J. (2015). Turning 21: Induction of microRNA-21 as a Key Switch in the Inflammatory Response. *Frontiers in immunology*, 6, 19.
- Sigal, G. B., Segal, M. R., Mathew, A., Jarlsberg, L., Wang, M., Barbero, S., Small, N., Haynesworth, K., Davis, J. L., Weiner, M., Whitworth, W. C., Jacobs, J., Schorey, J., Lewinsohn, D. M., & Nahid, P. (2017). Biomarkers of Tuberculosis Severity and Treatment Effect: A Directed Screen of 70 Host Markers in a Randomized Clinical Trial. *EBioMedicine*, 25, 112–121.
- Simmons, J. D., Stein, C. M., Seshadri, C., Campo, M., Alter, G., Fortune, S., Schurr, E., Wallis, R. S., Churchyard, G., Mayanja-Kizza, H., Boom, W. H., Hawn, T. R. (2018). Immunological mechanisms of human resistance to persistent *Mycobacterium tuberculosis* infection. *Nature reviews. Immunology*, 18(9), 575.



- Sinigaglia, A., Peta, E., Riccetti, S., Venkateswaran, S., Manganelli, R., & Barzon, L. (2020). Tuberculosis-Associated MicroRNAs: From Pathogenesis to Disease Biomarkers. *Cells*, 9(10), 2160.
- Seyedhosseini FS, Mohammadi S, Ebrahimabad MZ, Khodabakhshi B, Abbasi A, Yazdani Y. Interleukin-6, interleukin-17 and transforming growth factor-beta are overexpressed in newly diagnosed tuberculosis patients; potent biomarkers of mycobacterial infection. *Arch Clin Infect Dis*. 2019;
- Sinigaglia, A., Peta, E., Riccetti, S., Venkateswaran, S., Manganelli, R., & Barzon, L. (2020). Tuberculosis-Associated MicroRNAs: From Pathogenesis to Disease Biomarkers. *Cells*, 9(10).
- Sodenkamp, J., Behrends, J., Förster, I., Müller, W., Ehlers, S., & Hölscher, C. (2011). gp130 on macrophages/granulocytes modulates inflammation during experimental tuberculosis. *European journal of cell biology*, 90(6-7),
- Somantri, I. (2008). *Keperawatan medikal bedah: Asuhan keperawatan pada pasien dengan gangguan sistem pernapasan*. Salemba Medika/2008.
- Spinelli, S. V., Diaz, A., D'Attilio, L., Marchesini, M. M., Bogue, C., Bay, M. L., & Bottasso, O. A. (2013). Altered microRNA expression levels in mononuclear cells of patients with pulmonary and pleural tuberculosis and their relation with components of the immune response. *Molecular immunology*, 53(3), 265–269.
- Squadrato, M. L., Etzrodt, M., De Palma, M., & Pittet, M. J. (2013). MicroRNA-mediated control of macrophages and its implications for cancer. *Trends in Immunology*, 34(7), 350-359. <https://doi.org/10.1016/j.it.2013.02.003>
- Steiner, D. F., Thomas, M. F., Hu, J. K., Yang, Z., Babiarz, J. E., Allen, C. D., Matloubian, M., Blelloch, R., & Ansel, K. M. (2011). MicroRNA-29 regulates T-box transcription factors and interferon- $\gamma$  production in helper T cells. *Immunity*, 35(2), 169–181.
- Takeuchi, O., & Akira, S. (2010). Pattern recognition receptors and inflammation. *Cell*, 140(6), 805–820. <https://doi.org/10.1016/j.cell.2010.01.022>
- Tanaka, T., Narazaki, M., & Kishimoto, T. (2014). IL-6 in inflammation, immunity, and disease. *Cold Spring Harbor perspectives in biology*, 6(10), a016295.
- Toshio & Narazaki, Masashi & Kishimoto, Tadamitsu. (2017). Interleukin -6) Immunotherapy. *Cold Spring Harbor Perspectives in Biology*.



Tang Y., Yin L., Tang S., Zhang H., Lan J. Application of molecular, microbiological, and immunological tests for the diagnosis of bone and joint tuberculosis. *J. Clin. Lab. Anal.* 2018;32(2):1–7.

Tanner LB, Goglia AG, Wei MH, Sehgal T, Parsons LR, Park JO, White E, Toettcher JE, and Rabinowitz JD (2018). Four Key Steps Control Glycolytic Flux in Mammalian Cells. *Cell Syst* 7, 49–62 e48.

Tasneen, R., Mortensen, D. S., Converse, P. J., Urbanowski, M. E., Upton, A., Fotouhi, N., Nuermberger, E., & Hawryluk, N. (2021). Dual mTORC1/mTORC2 Inhibition as a Host-Directed Therapeutic Target in Pathologically Distinct Mouse Models of Tuberculosis. *Antimicrobial agents and chemotherapy*, 65(7), e0025321

TeKippe, E. M., Allen, I. C., Hulseberg, P. D., Sullivan, J. T., McCann, J. R., Sandor, M., Braunstein, M., & Ting, Y. (2010) Granuloma Formation and Host Defense in Chronic *Mycobacterium tuberculosis* Infection Requires PYCARD/ASC but Not NLRP3 or Caspase-1.

Tri Ariguntar Wikaningtyas, Mohammadi Hatta, Muhammad Nasrum Massi, Indah Pratiwi, Muhammad Fachri, Slamet Sudi Santoso, AmicroRNA Syarifuddin, Ressy Dwiyanti and Rizki Amelia Noviyanti. 2018. Diagnosis of a Spectrum of Pulmonary Tuberculosis at Islam Hospital Sukapura, Jakarta, Indonesia: A Retrospective Study of 317 Cases. *Journal of Medocal Scoences*, 18: 143-148

Tribolet, L., Kerr, E., Cowled, C., Bean, A. G., Stewart, C. R., Dearnley, M., & Farr, R. J. (2020). MicroRNA Biomarkers for Infectious Diseases: From Basic Research to Biosensing. *Frontiers in Microbiology*, 11, 540221.

Uchida, A., Seki, N., Mizuno, K., Misono, S., Yamada, Y., Kikkawa, N., Sanada, H., Kumamoto, T., Suetsugu, T., & Inoue, H. (2019). Involvement of dual-strand of the microRNA-144 duplex and their targets in the pathogenesis of lung squamous cell carcinoma. *Cancer science*, 110(1), 420–432.

van Crevel, R., Ottenhoff, T. H., & van der Meer, J. W. (2002). Innate immunity to *Mycobacterium tuberculosis*. *Clinical microbiology reviews*, 15(2), 294–309.



Sburg, I. C., du Toit, L., Walzl, G., du Plessis, N., & Loxton, A. G. (2018). Decreased neutrophil-associated microRNA and increased B-cell associated microRNA expression during tuberculosis. *Gene*, 655, 35–41.

- Verma, P., Pandey, R. K., Prajapati, P., & Prajapati, V. K. (2016). Circulating MicroRNAs: Potential and Emerging Biomarkers for Diagnosis of Human Infectious Diseases. *Frontiers in Microbiology*, 7, 190570.
- Walter, K., Hölscher, C., Tschopp, J., & Ehlers, S. (2010). NALP3 is not necessary for early protection against experimental tuberculosis. *Immunobiology*, 215(9-10), 804-811.
- Wong, C. C., Baum, J., Silvestro, A., Beste, M. T., Bharani-Dharan, B., Xu, S., Wang, Y. A., Wang, X., Prescott, M. F., Krajkovich, L., Dugan, M., Ridker, P. M., Martin, A. M., & Svensson, E. C. (2020). Inhibition of IL1 $\beta$  by Canakinumab May Be Effective against Diverse Molecular Subtypes of Lung Cancer: An Exploratory Analysis of the CANTOS Trial. *Cancer research*, 80(24), 5597–5605.
- Wang, C., Yang, S., Sun, G., Tang, X., Lu, S., Neyrolles, O., & Gao, Q. (2011). Comparative microRNA Expression Profiles in Individuals with Latent and Active Tuberculosis. *PLoS ONE*, 6(10).
- Wang, J. X., Gao, J., Ding, S. L., Wang, K., Jiao, J. Q., Wang, Y., Sun, T., Zhou, L. Y., Long, B., Zhang, X. J., Li, Q., Liu, J. P., Feng, C., Liu, J., Gong, Y., Zhou, Z., & Li, P. F. (2015). Oxidative Modification of microRNA-184 Enables It to Target Bcl-xL and Bcl-w. *Molecular cell*, 59(1), 50–61.
- Wang, L., Xiong, Y., Fu, B., Guo, D., Zaky, M. Y., Lin, X., & Wu, H. (2022). MicroRNAs as immune regulators and biomarkers in tuberculosis. *Frontiers in Immunology*, 13.
- Wang, Q., Liu, S., Tang, Y., Liu, Q., & Yao, Y. (2014). MPT64 Protein from Mycobacterium tuberculosis Inhibits Apoptosis of Macrophages through NF- $\kappa$ B-microRNA21-Bcl-2 Pathway. *PLOS ONE*, 9(7), e100949.
- WHO Global tuberculosis report 2023 ISBN 978-92-4-008385-1 (electronic version) ISBN 978-92-4-008386-8 (print version)
- Wudu, M., Ren, H., Hui, L. et al (2019).. *DRAM2* acts as an oncogene in non-small cell lung cancer and suppresses the expression of p53. *J Exp Clin Cancer Res* 38, 72



Lee, S., Huang, K., Lee, T., Hsu, P. W., and Weng, J. T. (2014). Systematic expression profiling analysis identifies specific MicroRNA-gene interactions

that may differentiate between active and latent tuberculosis infection.  
*Biomed Res. Int.* 2014:895179

- Wu, Z., Lu, H., Sheng, J. and Li, L., 2012. Inductive microRNA-21 impairs anti-mycobacterial responses by targeting IL-12 and Bcl-2. *FEBS letters*, 586(16), pp.2459-2467.
- Yang T., Ge B. microRNAs in immune responses to *Mycobacterium tuberculosis* infection. *Cancer Lett.* 2018;431:22–30. 2018/05/29.
- Yi, R., Qin, Y., Macara, I. G., & Cullen, B. R. (2003). Exportin-5 mediates the nuclear export of pre-microRNAs and short hairpin RNAs. *Genes & development*, 17(24), 3011–3016.
- Yi, Z., Fu, Y., Ji, R., Li, R., & Guan, Z. Altered microRNA Signatures in Sputum of Patients with Active Pulmonary Tuberculosis. *PLOS ONE*, 7(8), e43184.
- Yuan, Q., Chen, H., Yang, Y., Fu, Y., & Yi, Z. (2020). microRNA-18a promotes Mycobacterial survival in macrophages via inhibiting autophagy by down-regulation of ATM. *Journal of cellular and molecular medicine*, 24(2), 2004–2012.
- Yudhawati R, Sakina S, Fitriah M (2022). Interleukin-1 $\beta$  and Interleukin-10 Profiles and Ratio in Serum of COVID-19 Patients and Correlation with COVID-19 Severity: A Time Series Study. *Int J Gen Med*, 15:8043-8054
- Zhang, C., Wang, Y., Shi, G., Han, W., Zhao, H., Zhang, H., & Xi, X. (2016). Determinants of multidrug-resistant tuberculosis in Henan province in China: a case control study. *BMC public health*, 16, 42.
- Zhai, W., Wu, F., Zhang, Y., Fu, Y., & Liu, Z. (2019). The Immune Escape Mechanisms of *Mycobacterium Tuberculosis*. *International Journal of Molecular Sciences*, 20(2), 340.
- Zhao, Z., Hao, J., Li, X., Chen, Y., & Qi, X. (2019). MicroRNA-21-5p regulates mycobacterial survival and inflammatory responses by targeting Bcl-2 and TLR4 in *Mycobacterium tuberculosis*-infected macrophages. *FEBS letters*, 593(12), 1326–1335.



, Li, Y., Ni, J., Jiang, P., & Bao, Z. (2020). Role and mechanism of microRNA-144-5p in LPS-induced macrophages. *Experimental and therapeutic medicine*, 19(1), 241–247.  
<https://doi.org/10.3892/etm.2019.8218>

Zhou,M.;Yu,G.;Yang,X.;Zhu,C.;Zhang,Z.;Zhan,X. 2016, Circulating microRNAs as biomarkers for the early diagnosis of childhood tuberculosis infection. *Mol. Med. Rep.* 13, 4620–4626

Zhu, H., Hu, S., Li, Y., Sun, Y., Xiong, X., Hu, X., Chen, J., & Qiu, S. (2022). Interleukins and Ischemic Stroke. *Frontiers in Immunology*, 13, 828447.



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