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DAFTAR PUSTAKA

Ahmad, S. (2011) 'Pathogenesis, immunology, and diagnosis of latent mycobacterium tuberculosis infection', *Clinical and Developmental Immunology*. doi: 10.1155/2011/814943.

Aljafari, A. S. *et al.* (2004) 'Diagnosis of tuberculous lymphadenitis by FNAC , microbiological methods and PCR : a comparative study', pp. 44–48.

Allen, D. C. (2000) *Histopathology Reporting*, *Histopathology Reporting*. doi: 10.1007/978-1-4471-3671-2.

Atzeni, F. and Sarzi-Puttini, P. (2013) 'Tumor Necrosis Factor', in Maloy, S. and Hughes, K. B. T.-B. E. of G. (Second E. (eds). San Diego: Academic Press, pp. 229–231. doi: https://doi.org/10.1016/B978-0-12-374984-0.01594-1.

Ben Ayed, H. *et al.* (2018) 'Extrapulmonary Tuberculosis: Update on the Epidemiology, Risk Factors and Prevention Strategies', *International Journal of Tropical Diseases*, 1(1), pp. 1–6. doi: 10.23937/ijtd-2017/1710006.

Azad, A. K., Rajaram, M. V. S. and Schlesinger, L. S. (2014) 'Exploitation of the Macrophage Mannose Receptor (CD206) in Infectious Disease Diagnostics and Therapeutics.', *Journal of cytology & molecular biology*, 1(1), pp. 1–5. doi: 10.13188/2325-4653.1000003.

Bae, K. M. *et al.* (2015) 'The relevance of biopsy in tuberculosis patients without human immunodeficiency virus infection', *Am J Trop Med Hyg*, 92(3), pp. 636–640. doi: 10.4269/ajtmh.14-0656.

Baena, A. and Porcelli, S. A. (2009) 'Evasion and subversion of antigen presentation by Mycobacterium tuberculosis', *Tissue Antigens*, 74(3), pp. 189–204. doi: 10.1111/j.1399-0039.2009.01301.x.

Barcelos, D., Franco, M. F. and Cardoso, S. (2008) 'EffEcts of tissue handling and processing steps on pcr for detection of Mycobacterium tuberculosis in formalin-fixed paraffin-embedded samples', *Rev. Inst. Med. trop. S. Paulo*, 50(6), pp. 321–326. doi: 10.1590/S0036-46652008000600002.

Barros, M. H. M. *et al.* (2013) 'Macrophage polarisation: An immunohistochemical approach for identifying M1 and M2 macrophages', *PLoS ONE*, 8(11), pp. 1–11. doi: 10.1371/journal.pone.0080908.

Bayazit, Y. A., Bayazit, N. and Namiduru, M. (2004) 'Mycobacterial Cervical Lymphadenitis', *ORL*, 66, pp. 275–280. doi: 10.1159/000081125.

UNIVERSITAS GADJAH MADA
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Beham, A. W. *et al.* (2011) 'A TNF-Regulated Recombinatorial Macrophage Immune Receptor Implicated in Granuloma Formation in Tuberculosis', *PLoS Pathogens*, 7(11), p. e1002375. doi: 10.1371/journal.ppat.1002375.

Boggaram, V. *et al.* (2013) 'Early Secreted Antigenic Target of 6 kDa (ESAT-6) Protein of Mycobacterium tuberculosis Induces Interleukin-8 (IL-8) Expression in Lung Epithelial Cells via Protein Kinase Signaling and Reactive Oxygen Species *', 288(35), pp. 25500–25511. doi: 10.1074/jbc.M112.448217.

Bozzano, F., Marras, F. and Maria, A. De (2014) 'Immunology of Tuberculosis', *Mediterranean Journal of Hematology and Infectious Diseases*, p. 2014027. doi: 10.4084/MJHID.2014.027.

Brehmer-andersson, E. (2006) *Dematopathology*. Berlin Heidelberg.

Brennan, P. (2003) 'Structure, function, and biogenesis of the cell wall of Mycobacterium tuberculosis', *Tuberculosis*, 83(1–3), pp. 91–97. doi: 10.1016/S1472-9792(02)00089-6.

Brodin, P. *et al.* (2004) 'ESAT-6 proteins : protective antigens and virulence factors ?', 12(11). doi: 10.1016/j.tim.2004.09.007.

Brodin, P. *et al.* (2005) 'Functional analysis of early secreted antigenic target-6, the dominant T-cell antigen of Mycobacterium tuberculosis, reveals key residues involved in secretion, complex formation, virulence, and immunogenicity', *Journal of Biological Chemistry*, 280(40), pp. 33953–33959. doi: 10.1074/jbc.M503515200.

Cavalcanti, Y. V. N. *et al.* (2012) 'Role of TNF-alpha, IFN-gamma, and IL-10 in the development of pulmonary tuberculosis', *Pulmonary Medicine*, 2012. doi: 10.1155/2012/745483.

Coash, M. *et al.* (2012) 'Granulomatous liver diseases : A review', *Journal of the Formosan Medical Association*, 111(1), pp. 3–13. doi: 10.1016/j.jfma.2011.11.023.

Cronan, M. R. *et al.* (2016) 'Macrophage Epithelial Reprogramming Underlies Mycobacterial Granuloma Formation and Promotes Infection', *Immunity*, 45(4), pp. 861–876. doi: 10.1016/j.immuni.2016.09.014.

Cronan, M. R. and Tobin, D. M. (2014) 'Fit for consumption: zebrafish as a model for tuberculosis.', *Disease models & mechanisms*, 7(7), pp. 777–84. doi: 10.1242/dmm.016089.

D Foey, A. (2015) 'Macrophage Polarisation: A collaboration of Differentiation, Activation and Pre-Programming?', *Journal of Clinical & Cellular Immunology*, 06(01), pp. 1–15. doi: 10.4172/2155-9899.1000293.

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Dahlan, M. S. (2016) *Besar Sampel Dalam Penelitian Kedokteran dan Kesehatan*. Jakarta.

Daley, C. L. (2009) 'Nontuberculous Mycobacterial Infections', in *Bacterial Infections of Humans*, pp. 597–611. doi: 10.1007/978-0-387-09843-2_41.

Davis, J. M. *et al.* (2002) 'Real-time visualization of Mycobacterium-macrophage interactions leading to initiation of granuloma formation in zebrafish embryos', *Immunity*, 17(6), pp. 693–702. doi: 10.1016/S1074-7613(02)00475-2.

Denkinger, C. M. *et al.* (2014) 'Modeling the impact of novel diagnostic tests on pediatric and extrapulmonary tuberculosis', pp. 1–10. doi: 10.1186/1471-2334-14-477.

Dietrich, D. *et al.* (2013) 'Improved PCR Performance Using Template DNA from Formalin-Fixed and Paraffin-Embedded Tissues by Overcoming PCR Inhibition', 8(10), pp. 1–10. doi: 10.1371/journal.pone.0077771.

Dorhoi, A. and Kaufmann, S. H. E. (2015) 'Versatile myeloid cell subsets contribute to tuberculosis-associated inflammation', *European Journal of Immunology*, 45(8), pp. 2191–2202. doi: 10.1002/eji.201545493.

Dorhoi, A., Reece, S. T. and Kaufmann, S. H. E. (2011) 'For better or for worse: the immune response against Mycobacterium tuberculosis balances pathology and protection.', *Immunological reviews*, 240(1), pp. 235–51. doi: 10.1111/j.1600-065X.2010.00994.x.

Dutta, N. K. and Karakousis, P. C. (2014) 'Latent Tuberculosis Infection: Myths, Models, and Molecular Mechanisms', *Microbiology and Molecular Biology Reviews*, 78(3), pp. 343–371. doi: 10.1128/MMBR.00010-14.

Farshadzadeh, Z. *et al.* (2010) 'Cloning , expression and purification of early secretory antigenic target 6kDa protein (ESAT-6) of Mycobacterium tuberculosis', 3, pp. 53–60.

Fedchenko, N. and Reifenrath, J. (2014) 'Different approaches for interpretation and reporting of immunohistochemistry analysis results in the bone tissue - a review', *Diagnostic pathology*, 9(1), p. 221. doi: 10.1186/s13000-014-0221-9.

Feng, Y. *et al.* (2014) 'Platelets Direct Monocyte Differentiation Into Epithelioid-Like Multinucleated Giant Foam Cells With Suppressive Capacity Upon Mycobacterial Stimulation', 210. doi: 10.1093/infdis/jiu355.

Foote, J. R. *et al.* (2019) 'Variations in the phagosomal environment of human neutrophils and mononuclear phagocyte subsets', *Frontiers in Immunology*, 10(MAR), pp. 1–11. doi: 10.3389/fimmu.2019.00188.

Francis, R. J., Butler, R. E. and Stewart, G. R. (2014) 'Mycobacterium

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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tuberculosis ESAT-6 is a leukocidin causing Ca2+ influx, necrosis and neutrophil extracellular trap formation', *Cell Death and Disease*, 5(10), p. e1474. doi: 10.1038/cddis.2014.394.

Ganguly, N., Siddiqui, I. and Sharma, P. (2008) 'Role of M . tuberculosis RD-1 region encoded secretory proteins in protective response and virulence', *Tuberculosis*, 88(6), pp. 510–517. doi: 10.1016/j.tube.2008.05.002.

Gey van Pittius, N. C., Warren, R. M. and D. van Helden, P. (2002) 'Letter to the Editor ESAT-6 and CFP-10 : What Is the Diagnosis ?', *INFECTION AND IMMUNITY*, 70(11), pp. 6509–6511. doi: 10.1128/IAI.70.11.6509.

Goel, M. M., Budhwar, P. and Jain, A. (2012) 'Immunocytochemistry versus nucleic acid amplification in fine needle aspirates and tissues of extrapulmonary tuberculosis', *Journal of Cytology*, 29(3), pp. 157–164. doi: 10.4103/0970-9371.101151.

Gopinath, K. and Singh, S. (2010) *Non-tuberculous mycobacteria in TB-endemic countries: are we neglecting the danger?*, *Plos Neglected Tropical Diseases*. Available at: http://www.plosntds.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pntd.0000615&representation=PDF (Accessed: 15 January 2016).

Gordon, S. (2007) 'The macrophage: Past, present and future', *European Journal of Immunology*, 37(SUPPL. 1), pp. 9–17. doi: 10.1002/eji.200737638.

Gordon, S. and Martinez, F. O. (2010) 'Alternative activation of macrophages: Mechanism and functions', *Immunity*. Elsevier Inc., pp. 593–604. doi: 10.1016/j.immuni.2010.05.007.

Grange, J. (2009) 'The genus Mycobacterium and the Mycobacterium tuberculosis complex', in *Tuberculosis: A Comprehensive Clinical Reference*, pp. 44–59. doi: 10.1016/B978-1-4160-3988-4.00006-8.

Guirado, E. and Schlesinger, L. S. (2013) 'Modeling the Mycobacterium tuberculosis granuloma - the critical battlefield in host immunity and disease', *Frontiers in Immunology*, 41. Guirad(APR).

Guirado, E., Schlesinger, L. S. and Kaplan, G. (2013) 'Macrophages in tuberculosis: friend or foe.', *Seminars in immunopathology*, 35(5), pp. 563–83. doi: 10.1007/s00281-013-0388-2.

Guo, S. *et al.* (2010) 'The CFP-10/ESAT-6 complex of Mycobacterium tuberculosis potentiates the activation of murine macrophages involvement of IFN-γ signaling', *Medical Microbiology and Immunology*, 199(2), pp. 129–137. doi: 10.1007/s00430-010-0146-1.

Handa, U., Mundi, I. and Mohan, S. (2012) 'Nodal tuberculosis revisited: a

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

review', *The Journal of Infection in Developing Countries*, 6(01), pp. 6–12. doi: 10.3855/jidc.2090.

Hastono, S. P. (2018) *Analisa Data Bidang Kesehatan*. 1st edn. Edited by S. P. Hastono. Jakarta: PT. Rajagrafindo Persada. Available at: https://www.academia.edu/13131341/SUTANTO_PRIYO_HASTONO_Analisis_Data_SUTANTO_PRIYO_HASTONO.

Heinmöller, E. *et al.* (2001) 'Pitfalls in diagnostic molecular pathology – significance of sampling error', *Virchows Archiv*, 439(4), pp. 504–511. doi: 10.1007/s004280100450.

Helming, L. and Gordon, S. (2008) 'The molecular basis of macrophage fusion', *Immunobiology*, 212, pp. 785–793. doi: 10.1016/j.imbio.2007.09.012.

Herrero, C. *et al.* (2003) 'Reprogramming of IL-10 Activity and Signaling by IFN-γ', *The Journal of Immunology*, pp. 5034–5041. doi: 10.4049/jimmunol.171.10.5034.

Hu, X., Chakravarty, S. and Ivashkiv, L. (2008) 'Regulation of IFN and TLR Signaling During Macrophage Activation by Opposing Feedforward and Feedback Inhibition Mechanisms', *Immunological reviews*, 226(1), pp. 41–56. doi: 10.1111/j.1600-065X.2008.00707.x.Regulation.

Hu, X. and Ivashkiv, L. B. (2009) 'Cross-regulation of Signaling and Immune Responses by IFN-γ and STAT1', *Immunity*, 31(4), pp. 539–550. doi: 10.1016/j.immuni.2009.09.002.Cross-regulation.

Huang, Z. *et al.* (2015) 'Mycobacterium tuberculosis-induced polarization of human macrophage orchestrates the formation and development of tuberculous granulomas in vitro', *PLoS ONE*, 10(6). doi: 10.1371/journal.pone.0129744.

Hutchins, A. P. *et al.* (2013) 'Distinct transcriptional regulatory modules underlie STAT3's cell type-independent and cell type-specific functions', *Nucleic Acids Research*, 41(4), pp. 2155–2170. doi: 10.1093/nar/gks1300.

Hutchins, A. P., Poulain, S. and Miranda-Saavedra, D. (2012) 'Genome-wide analysis of STAT3 binding in vivo predicts effectors of the anti-inflammatory response in macrophages', *Blood*, 119(13), pp. 110–119. doi: 10.1182/blood-2011-09-381483.

Irey, E. A. *et al.* (2019) 'JAK/STAT inhibition in macrophages promotes therapeutic resistance by inducing expression of protumorigenic factors', *Proceedings of the National Academy of Sciences of the United States of America*, 116(25), pp. 12442–12451. doi: 10.1073/pnas.1816410116.

Ivell, R., Teerds, K. and Hoffman, G. E. (2014) 'Proper application of antibodies for immunohistochemical detection: Antibody crimes and how to prevent them',

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Endocrinology, 155(3), pp. 676–687. doi: 10.1210/en.2013-1971.

Jablonski, K. A. *et al.* (2015) 'Novel markers to delineate murine M1 and M2 macrophages', *PLoS ONE*, 10(12), pp. 5–11. doi: 10.1371/journal.pone.0145342.

Jonge, M. I. De *et al.* (2007) 'ESAT-6 from Mycobacterium tuberculosis Dissociates from Its Putative Chaperone CFP-10 under Acidic Conditions and Exhibits Membrane-Lysing Activity □', 189(16), pp. 6028–6034. doi: 10.1128/JB.00469-07.

Junttila, I. S. (2018) 'Tuning the cytokine responses: An update on interleukin (IL)-4 and IL-13 receptor complexes', *Frontiers in Immunology*, 9(JUN). doi: 10.3389/fimmu.2018.00888.

Kambouchner, M. *et al.* (2011) 'Lymphatic and blood microvasculature organisation in pulmonary sarcoid granulomas', *European Respiratory Journal*, 37(4), pp. 835–840. doi: 10.1183/09031936.00086410.

Kamelia, T. (2015) 'Predictors of success factors of extra-pulmonary tuberculosis treatment using the DOTS strategy in Dr. Cipto Mangunkusumo Hospital, Jakarta', in *46th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease (The Union)*, pp. S148–S149. Available at: https://www.theunion.org/what-we-do/journals/ijtld/body/Abstract_Book_2015-Web.pdf.

Kang, P. B. *et al.* (2005) 'The human macrophage mannose receptor directs Mycobacterium tuberculosis lipoarabinomannan-mediated phagosome biogenesis.', *The Journal of experimental medicine*, 202(7), pp. 987–99. doi: 10.1084/jem.20051239.

Karimi, S. *et al.* (2014) 'Histopathological Findings in Immunohistological Staining of the Granulomatous Tissue Reaction Associated with Tuberculosis', 2014.

Kaur, D. *et al.* (2011) 'Biogenesis of the cell wall and other glycoconjugates of Mycobacterium tuberculosis', *Immunology*, 2164(09). doi: 10.1016/S0065-2164(09)69002-X.Biogenesis.

Kim, M. J. *et al.* (2010) 'Caseation of human tuberculosis granulomas correlates with elevated host lipid metabolism', *EMBO Molecular Medicine*, 2(7), pp. 258–274. doi: 10.1002/emmm.201000079.

Kleinnijenhuis, J. *et al.* (2011) 'Innate Immune Recognition of *Mycobacterium tuberculosis*', *Clinical and Developmental Immunology*, 2011(February 2017), pp. 1–12. doi: 10.1155/2011/405310.

Lang, R. *et al.* (2002) 'Shaping Gene Expression in Activated and Resting Primary Macrophages by IL-10', *The Journal of Immunology*, 169(5), pp. 2253–

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

2263. doi: 10.4049/jimmunol.169.5.2253.

Lee, Y. J. *et al.* (2021) 'STAT6 Signaling Mediates PPARγ Activation and Resolution of Acute Sterile Inflammation in Mice', *Cells*. doi: 10.3390/cells10030501.

Lehman, D. (2015) 'Mycobacterium tuberculosis and Nontuberculous Mycobacteria', in Mahon, C. R., Lehman, D. C., and Manuselis, G. (eds) *Diagnostic Microbiology*. 5th edn. Maryland Heights, Missouri: Saunders Elsevier, pp. 563–588. Available at: www.elsevier.com.

Lenaerts, A., Barry, Clifton E and Dartois, V. (2015) 'Heterogeneity in tuberculosis pathology, microenvironments and therapeutic responses.', *Immunological reviews*, 264(1), pp. 288–307. doi: 10.1111/imr.12252.

Lenaerts, A., Barry, Clifton E. and Dartois, V. (2015) 'Heterogeneity in tuberculosis pathology, microenvironments and therapeutic responses', *Immunological Reviews*, 264(1), pp. 288–307. doi: 10.1111/imr.12252.

De Leon, J. *et al.* (2012) 'Mycobacterium tuberculosis ESAT-6 exhibits a unique membrane-interacting activity that is not found in its ortholog from non-pathogenic Mycobacterium smegmatis', *Journal of Biological Chemistry*, 287(53), pp. 44184–44191. doi: 10.1074/jbc.M112.420869.

Li, W. X. (2008) 'Canonical and non-canonical JAK-STAT signaling', *Trends in Cell Biology*, 18(11), pp. 545–551. doi: 10.1016/j.tcb.2008.08.008.

Lin, F. and Prichard, J. (2015) *Handbook of practical immunohistochemistry: Frequently asked questions*, *Handbook of Practical Immunohistochemistry: Frequently Asked Questions*. doi: 10.1007/978-1-4939-1578-1.

Lin, J. *et al.* (2020a) 'Early secreted antigenic target of 6-kDa of Mycobacterium tuberculosis induces transition of macrophages into epithelioid macrophages by downregulating iNOS / NO-mediated H3K27 trimethylation in macrophages', *Molecular Immunology*, 117, pp. 189–200. doi: 10.1016/j.molimm.2019.11.013.

Lin, J. *et al.* (2020b) 'Early secreted antigenic target of 6-kDa of Mycobacterium tuberculosis induces transition of macrophages into epithelioid macrophages by downregulating iNOS / NO-mediated H3K27 trimethylation in macrophages', *Molecular Immunology*, 117(November 2019), pp. 189–200. doi: 10.1016/j.molimm.2019.11.013.

Liu, Y. C. *et al.* (2014) 'Macrophage polarization in inflammatory diseases', *International Journal of Biological Sciences*, pp. 520–529. doi: 10.7150/ijbs.8879.

Lugo-Villarino, G. *et al.* (2012) 'Emerging trends in the formation and function of tuberculosis granulomas', *Frontiers in Immunology*, 3(JAN), pp. 1–9. doi: 10.3389/fimmu.2012.00405.

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Ma, J. *et al.* (2016) 'Early Secreted Antigenic Target of 6 kDa of Mycobacterium tuberculosis Stimulates Macrophage Chemoattractant Protein-1 Production by Macrophages and Its Regulation by p38 Mitogen-Activated Protein Kinases and Interleukin-4', *Scandinavian Journal of Immunology*, 84(1), pp. 39–48. doi: 10.1111/sji.12447.

Majlessi, L. *et al.* (2015) 'Release of mycobacterial antigens', *Immunological Reviews*, 264(1), pp. 25–45. doi: 10.1111/imr.12251.

Mantovani, A. *et al.* (2004) 'The chemokine system in diverse forms of macrophage activation and polarization', *Trends in Immunology*, pp. 677–686. doi: 10.1016/j.it.2004.09.015.

Marakalala, M. J. *et al.* (2016) 'Inflammatory signaling in human tuberculosis granulomas is spatially organized', *Nature Medicine*, 22(5), pp. 531–538. doi: 10.1038/nm.4073.

Marino, S. *et al.* (2015) 'Macrophage Polarization Drives Granuloma Outcome during Mycobacterium tuberculosis Infection', *Infection and Immunity*, 83(1), pp. 324–338. doi: 10.1128/IAI.02494-14.

Martinez, F. O. and Gordon, S. (2014) 'The M1 and M2 paradigm of macrophage activation: time for reassessment.', *F1000prime reports*, 6(March), p. 13. doi: 10.12703/P6-13.

Mattila, J. T. *et al.* (2013) 'Microenvironments in tuberculous granulomas are delineated by distinct populations of macrophage subsets and expression of nitric oxide synthase and arginase isoforms.', *Journal of immunology (Baltimore, Md. : 1950)*, 191(2), pp. 773–84. doi: 10.4049/jimmunol.1300113.

McClean, C. M. and Tobin, D. M. (2016) 'Macrophage form, function, and phenotype in mycobacterial infection: Lessons from tuberculosis and other diseases', *Pathogens and Disease*, pp. 1–15. doi: 10.1093/femspd/ftw068.

McNally, A. K. and Anderson, J. M. (1995) 'Interleukin-4 induces foreign body giant cells from human monocytes/macrophages: Differential lymphokine regulation of macrophage fusion leads to morphological variants of multinucleated giant cells', *American Journal of Pathology*, 147(5), pp. 1487–1499.

Mehta, Promod K. *et al.* (2012) 'Diagnosis of extrapulmonary tuberculosis by PCR', *FEMS Immunology and Medical Microbiology*, 66(1), pp. 20–36. doi: 10.1111/j.1574-695X.2012.00987.x.

Mehta, Promod K *et al.* (2012) *Diagnosis of extrapulmonary tuberculosis by PCR*. Available at: http://femsim.oxfordjournals.org/content/femsim/66/1/20.full.pdf (Accessed: 15 January 2016).

POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Morris, R., Kershaw, N. J. and Babon, J. J. (2018) 'The molecular details of cytokine signaling via the JAK/STAT pathway', *Protein Science*, 27(12), pp. 1984–2009. doi: 10.1002/pro.3519.

Mortaz, E. *et al.* (2014) 'Immunopathology of sarcoidosis', *Iranian Journal of Allergy, Asthma and Immunology*, 13(5), pp. 300–306.

Mortaz, E. *et al.* (2016) 'Common features of tuberculosis and sarcoidosis', *International Journal of Mycobacteriology*, 5, pp. S240–S241. doi: 10.1016/j.ijmyco.2016.09.031.

Mosser, D. M. and Edwards, J. P. (2008) 'Exploring the full spectrum of macrophage activation', *Nature Reviews Immunology*, 8(12), pp. 958–969. doi: 10.1038/nri2448.Exploring.

Mukhopadhyay, S. *et al.* (2013) 'Pulmonary necrotizing granulomas of unknown cause clinical and pathologic analysis of 131 patients with completely resected nodules', *Chest*, 144(3), pp. 813–824. doi: 10.1378/chest.12-2113.

Mulyani, H. and Asri, A. (2009) *Gambaran Limfadenitis Tuberkulosis Pada Anak yang Didiagnosis dengan FNAB di Bagian Patologi Anatomi FK UNAND-RSUP DR.M. Djamil, Padang*. Padang, Indonesia.

Mustafa, T. *et al.* (2006) 'Immunohistochemistry using a Mycobacterium tuberculosis complex specific antibody for improved diagnosis of tuberculous lymphadenitis', *Modern Pathology*, pp. 1606–1614. doi: 10.1038/modpathol.3800697.

Mustafa, T. *et al.* (2014) 'Differential in vivo expression of mycobacterial antigens in Mycobacterium tuberculosis infected lungs and lymph node tissues.', *BMC infectious diseases*, 14(1), p. 535. doi: 10.1186/1471-2334-14-535.

Natoli, G. and Monticelli, S. (2014) 'Macrophage Activation: Glancing into Diversity', *Immunity*, 40(2), pp. 175–177. doi: 10.1016/j.immuni.2014.01.004.

Neyrolles, O. (2014) 'Mycobacteria and the greasy macrophage: Getting fat and frustrated', *Infection and Immunity*, 82(2), pp. 472–475. doi: 10.1128/IAI.01512-13.

Orell, S. R. and Sterrett, G. F. (2012) *Orell & Sterrett's Fine Needle Aspiration Cytology*. fifth edit. Edited by M. Houston and S. Nash. Sydney: Elsevier Ltd.

Orme, I. M. and Basaraba, R. J. (2014) 'The formation of the granuloma in tuberculosis infection', *Seminars in Immunology*, 26(6), pp. 601–609. doi: 10.1016/j.smim.2014.09.009.

Owen, K. L., Brockwell, N. K. and Parker, B. S. (2019) 'JAK-STAT signaling a double edged sword of Immune Regulation and Cancer Progression', *Cancers*,

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

11(2002), pp. 1–26. doi: 10.3390/cancers11122002.

Pagan, A. J. and Ramakrishnan, L. (2015) 'Immunity and immunopathology in the tuberculous granuloma', *Cold Spring Harbor Perspectives in Medicine*, 5(9), pp. 1–20. doi: 10.1101/cshperspect.a018499.

Pai, M. and Schito, M. (2015) 'Tuberculosis diagnostics in 2015: Landscape, priorities, needs, and prospects', *Journal of Infectious Diseases*, 211(Suppl 2), pp. S21–S28. doi: 10.1093/infdis/jiu803.

Palomino, J. C., Leao, S. C. and Ritacco, V. (2007) *Tuberculosis 2007: From basic science to patient care*. First Edit, *WWW. Tuberculosis Textbook.com*. First Edit. Edited by J. C. Palomino, S. C. Leao, and V. Ritacco. TuberculosisTextbook.com. Available at: www.TuberculosisTextbook.com.

Parasa, V. R. *et al.* (2014) 'Modeling Mycobacterium tuberculosis early granuloma formation in experimental human lung tissue.', *Disease models & mechanisms*, 7(2), pp. 281–8. doi: 10.1242/dmm.013854.

Peto, H. M. *et al.* (2009) 'Epidemiology of Extrapulmonary Tuberculosis in the United States, 1993–2006', *Clinical Infectious Diseases*, 49(9), pp. 1350–1357. doi: 10.1086/605559.

Peyron, P. *et al.* (2008) 'Foamy Macrophages from Tuberculous Patients' Granulomas Constitute a Nutrient-Rich Reservoir for M. tuberculosis Persistence', *PLoS Pathogens*. Edited by W. Bishai, 4(11), p. e1000204. doi: 10.1371/journal.ppat.1000204.

Pieters, J. (2008) 'Mycobacterium tuberculosis and the Macrophage: Maintaining a Balance', *Cell Host and Microbe*, 3(6), pp. 399–407. doi: 10.1016/j.chom.2008.05.006.

Piñeros, A. R. *et al.* (2017) 'M2 macrophages or IL-33 treatment attenuate ongoing Mycobacterium tuberculosis infection', *Scientific Reports*, 7(January), p. 41240. doi: 10.1038/srep41240.

Platanitis, E. and Decker, T. (2018) 'Regulatory networks involving STATs, IRFs, and NFκB in inflammation', *Frontiers in Immunology*, 9(NOV), pp. 1–16. doi: 10.3389/fimmu.2018.02542.

Pollett, S. *et al.* (2016) 'Epidemiology, diagnosis and management of extra-pulmonary tuberculosis in a low-prevalence country: A four year retrospective study in an Australian Tertiary Infectious Diseases Unit', *PLoS ONE*, 11(3), pp. 1–15. doi: 10.1371/journal.pone.0149372.

Popescu, M. R. *et al.* (2014) 'Lymph node tuberculosis – an attempt of clinico-morphological study and review of the literature', *Romanian Journal of Morphology and Embryology*, 55(2), pp. 553–567.

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Porro, C., Cianciulli, A. and Panaro, M. A. (2020) 'The regulatory role of IL-10 in neurodegenerative diseases', *Biomolecules*, 10(7), pp. 1–15. doi: 10.3390/biom10071017.

Prapanna, P. *et al.* (2014) 'Immunocytochemical detection of mycobacterial antigen in extrapulmonary tuberculosis', *Diagnostic Cytopathology*, 42(5), pp. 391–395. doi: 10.1002/dc.23049.

Puissegur, M. *et al.* (2007) 'Mycobacterial Lipomannan Induces Granuloma Macrophage Fusion via a TLR2-Dependent, ADAM9- and β 1 Integrin-Mediated Pathway', *The Journal of Immunology*, 178(5), pp. 3161–3169. doi: 10.4049/jimmunol.178.5.3161.

Purbaningsih, W. *et al.* (2018) 'High ESAT-6 expression in granuloma necrosis type of tuberculous lymphadenitis', *Global Medical and Health Communication*, 6(2), pp. 143–147. doi: https://doi.org/10.29313/gmhc.v6i2.3987.

Purohit, M. and Mustafa, T. (2015) 'Laboratory Diagnosis of Extra-pulmonary Tuberculosis (EPTB) in Resource- constrained Setting : State of the Art , Challenges and the Need'. doi: 10.7860/JCDR/2015/12422.5792.

Purohit, M. R. *et al.* (2007) 'Immunohistochemical diagnosis of abdominal and lymph node tuberculosis by detecting Mycobacterium tuberculosis complex specific antigen MPT64', 9, pp. 1–9. doi: 10.1186/1746-1596-2-36.

Pym, A. S. *et al.* (2002) 'Loss of RD1 contributed to the attenuation of the live tuberculosis vaccines Mycobacterium bovis BCG and Mycobacterium microti', 46, pp. 709–717.

Qiagen (2012) *QIAamp® DNA FFPE Tissue Handbook*.

Raghavan, S. *et al.* (2008) 'Secreted transcription factor controls Mycobacterium tuberculosis virulence', *Nature*, 454(7205), pp. 717–721. doi: 10.1038/nature07219.Secreted.

Ragonnet, R. *et al.* (2019) 'Profiling Mycobacterium tuberculosis transmission and the resulting disease burden in the five highest tuberculosis burden countries', *BMC Medicine*, 17(1), pp. 1–12. doi: 10.1186/s12916-019-1452-0.

Rahman, S. *et al.* (2009) 'Compartmentalization of Immune Responses in Human Tuberculosis', *The American journal of pathology*, 174(6), pp. 2211–2224. doi: 10.2353/ajpath.2009.080941.

Rajaram, M. V. S. *et al.* (2010) 'Mycobacterium tuberculosis Activates Human Macrophage Peroxisome Proliferator-Activated Receptor γ Linking Mannose Receptor Recognition to Regulation of Immune Responses', *The Journal of Immunology*, 185(2), pp. 929–942. doi: 10.4049/jimmunol.1000866.

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Ramakrishnan, L. (2012) 'Revisiting the role of the granuloma in tuberculosis', *Nature Reviews Immunology*, 12(5), pp. 352–366. doi: 10.1038/nri3211.

Ramana, C. V. *et al.* (2000) 'Complex roles of Stat1 in regulating gene expression', *Oncogene*, 19(21), pp. 2619–2627. doi: 10.1038/sj.onc.1203525.

Rc, A., Kb, S. and Sayami, G. (2013) 'Granulomatous inflammation : A histopathological study', *Journal of Pathology of Nepal*, 3, pp. 464–468.

Refai, A. *et al.* (2018) 'Mycobacterium tuberculosis virulent factor ESAT-6 drives macrophage differentiation toward the pro-inflammatory M1 phenotype and subsequently switches it to the anti-inflammatory M2 phenotype', *Frontiers in Cellular and Infection Microbiology*, 8(SEP), pp. 1–14. doi: 10.3389/fcimb.2018.00327.

RL, M. P. C. (2001) *Limfadenitis Mikobakterium Atipik pada Penderita yang Secara Histopatologis Tersangka Limfadenitis Tuberkulosa Leher : Perbedaan Hasil Uji Tuberkulin, Gambaran Radiologis Paru, Resistensi terhadap Tuberkulostatika dengan Limfadenitis Tuberkulosa*. Jakarta: Badan Litbang Kesehatan.

Rosen, Y. (no date) *Atlas of Granulomatous Diseases, granuloma.homestead.com*. Available at: http://granuloma.homestead.com/ (Accessed: 1 January 2017).

Roszer, T. (2015) 'Understanding the Mysterious M2 Macrophage through Activation Markers and Effector Mechanisms', *Mediators*, 2015, pp. 16–18. doi: 10.1155/2015/816460.

Russell, D. G. *et al.* (2009) 'Foamy macrophages and the progression of the human TB granuloma', *Nature immunology*, 10(9), pp. 943–948. doi: 10.1038/ni.1781.Foamy.

Sakai, H. *et al.* (2012) 'The CD40-CD40L axis and IFN-γ play critical roles in Langhans giant cell formation', *International Immunology*, 24(1), pp. 5–15. doi: 10.1093/intimm/dxr088.

Sakamoto, K. (2012) 'The Pathology of Mycobacterium tuberculosis Infection', 49(3), pp. 423–439. doi: 10.1177/0300985811429313.

Sarma, U. *et al.* (2018) 'Regulation of distinct STAT3 dynamics in pro (IFNγ) and anti (IL-10) inflammatory pathways and in their cross-talk: Insights from a data-driven model', *bioRxiv*. doi: 10.1101/425868.

Satoh, J. I. and Tabunoki, H. (2013) 'A comprehensive profile of ChIP-Seq-based STAT1 target genes suggests the complexity of STAT1-mediated gene regulatory mechanisms', *Gene Regulation and Systems Biology*, 2013(7), pp. 41–56. doi: 10.4137/GRSB.S11433.

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Saunders, B. M. and Britton, W. J. (2007) 'Life and death in the granuloma: Immunopathology of tuberculosis', *Immunology and Cell Biology*, pp. 103–111. doi: 10.1038/sj.icb.7100027.

Schlesinger, L. S. *et al.* (1996) 'Differences in mannose receptor-mediated uptake of lipoarabinomannan from virulent and attenuated strains of Mycobacterium tuberculosis by human macrophages.', *Journal of immunology (Baltimore, Md. : 1950)*, 157(10), pp. 4568–4575.

Schroder, K., Sweet, M. J. and Hume, D. A. (2006) 'Signal integration between IFNγ and TLR signalling pathways in macrophages', *Immunobiology*, 211(6–8), pp. 511–524. doi: 10.1016/j.imbio.2006.05.007.

Shah, K. K., Pritt, B. S. and Alexander, M. P. (2017) 'Histopathologic review of granulomatous inflammation', *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*. Elsevier Ltd, pp. 1–12. doi: 10.1016/j.jctube.2017.02.001.

Shahzad, M. I. *et al.* (2013) 'Cloning, expression and genetic immunization studies of Mycobacterium tuberculosis Gene esat6', *Pakistan J. Zool., vol 45(3) pp. 749-757, 2013*, 45(3), pp. 749–757.

Shea, J. J. O. and Murray, P. J. (2008) 'Cytokine signaling modules in inflammatory responses', *Immunity*, 28(4), pp. 477–487. doi: 10.1016/j.immuni.2008.03.002.Cytokine.

Sheaff, M. T. and Singh, N. (2013) 'Soft Tissue and Bone and Joint Cytology', in *Cytopathology: An Introduction*. London: Springer, pp. 1–478. doi: 10.1007/978-1-4471-2419-1.

Singh, V. *et al.* (2015) 'M. tuberculosis secretory protein ESAT-6 induces metabolic flux perturbations to drive foamy macrophage differentiation', *Scientific Reports*, 5(February), pp. 1–12. doi: 10.1038/srep12906.

Spits, H. and Cupedo, T. (2012) 'Innate lymphoid cells: Emerging insights in development, lineage relationships, and function', *Annual Review of Immunology*, 30, pp. 647–675. doi: 10.1146/annurev-immunol-020711-075053.

Sreejit, G. *et al.* (2014) 'The ESAT-6 Protein of Mycobacterium tuberculosis Interacts with Beta-2-Microglobulin (b 2M) Affecting Antigen Presentation Function of Macrophage', 10(10). doi: 10.1371/journal.ppat.1004446.

Stamm, C. E., Collins, A. C. and Shiloh, M. U. (2015) 'Sensing of Mycobacterium tuberculosis and consequences to both host and bacillus', *Immunological Reviews*, 264(1), pp. 204–219. doi: 10.1111/imr.12263.

Stark, G. R. (2007) 'How cells respond to interferons revisited: From early history to current complexity', *Cytokine and Growth Factor Reviews*, 18(5–6), pp. 419–

POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206
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423. doi: 10.1016/j.cytogfr.2007.06.013.

Stout, R. D. and Suttles, J. (2004) 'Functional plasticity of macrophages: reversible adaptation to changing microenvironments.', *Journal of leukocyte biology*, 76(3), pp. 509–13. doi: 10.1189/jlb.0504272.

Sugama, Y. and Kitamura, S. (1994) 'Epithelioid cell granuloma', *Ryōikibetsu shōkōgun shirīzu*, (4), pp. 303–305. doi: 10.4103/ijdpdd.ijdpdd.

Sumi, S. and Radhakrishnan, V. V (2009) 'Evaluation of immunohistochemistry with a panel of antibodies against recombinant mycobacterial antigens for the diagnosis of tuberculous lymphadenitis', *International Journal of Medicine and Medical Sciences Vol 1.(5) pp. 215-219, May, 2009 Available online http://www.academicjournals.org/ijmms 2009 Academic Journals Full*, 1(5), pp. 215–219.

Tadesse, M. *et al.* (2014) 'Concentration of lymph node aspirate improves the sensitivity of acid fast smear microscopy for the diagnosis of tuberculous lymphadenitis in Jimma, southwest Ethiopia', *PLoS ONE*, 9(9), pp. 1–6. doi: 10.1371/journal.pone.0106726.

Tang, Y. W. *et al.* (1998) 'Histologic parameters predictive of mycobacterial infection', *American Journal of Clinical Pathology*, 109(3), pp. 331–334. doi: 10.1093/ajcp/109.3.331.

Timmermans, W. M. C. *et al.* (2016) 'Immunopathogenesis of granulomas in chronic autoinflammatory diseases', *Clinical & Translational Immunology*, 5(12), p. e118. doi: 10.1038/cti.2016.75.

Tripathi, P. B. and Amarapurkar, A. D. (2009) 'Morphological spectrum of gastrointestinal tuberculosis', *Trop Gastroenterol.*, 30(1), pp. 35–9. Available at: https://pubmed.ncbi.nlm.nih.gov/19624086/.

Tugal, D., Liao, X. and Jain, M. K. (2013) 'Transcriptional control of macrophage polarization', *Arteriosclerosis, Thrombosis, and Vascular Biology*, 33(6), pp. 1135–1144. doi: 10.1161/ATVBAHA.113.301453.

Turner, O. C., Basaraba, R. J. and Orme, I. M. (2003) 'Immunopathogenesis of Pulmonary Granulomas in the Guinea Pig after Infection with Mycobacterium tuberculosis', 71(2), pp. 864–871. doi: 10.1128/IAI.71.2.864.

Volkman, H. E. *et al.* (2004) 'Tuberculous granuloma formation is enhanced by a Mycobacterium virulence determinant', *PLoS Biology*, 2(11), pp. 1946–56. doi: 10.1371/journal.pbio.0020367.

Volkman, H. E. *et al.* (2010) 'Tuberculous Granuloma Induction via Interaction of a Bacterial Secreted Protein with Host Epithelium', *Science*, 327(5964), pp. 466–469. doi: 10.1126/science.1179663.

UNIVERSITAS GADJAH MADA
POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Wang, X. *et al.* (2009) 'ESAT-6 Inhibits Production of IFN-γ by Mycobacterium tuberculosis- Responsive Human T Cells', *The Journal of Immunology*, 182(6), pp. 3668–3677. doi: 10.4049/jimmunol.0803579.

Welin, A. *et al.* (2011) 'Human macrophages infected with a high burden of ESAT-6-expressing M. tuberculosis undergo caspase-1- and cathepsin B-independent necrosis', *PLoS ONE*, 6(5), pp. 1–11. doi: 10.1371/journal.pone.0020302.

Welin, A. (2011) *Survival strategies of Mycobacterium tuberculosis inside the human macrophage*.

WHO (2014) 'Tuberculosis profile (Ghana)', p. 2016. Available at: https://extranet.who.int/sree/Reports?op=Replet&name=/WHO_HQ_Reports/G2/PROD/EXT/TBCountryProfile&ISO2=GH&outtype=pdf.

WHO (2015) *WHO Global Tuberculosis Report 2015, Annual Reports*. Geneva. doi: 10.1017/CBO9781107415324.004.

WHO (2019) *Global Tuberculosis Report 2019*. Geneva. Available at: http://apps.who.int/iris.

Wilfinger, W. and Mackey, K. (2015) 'METHODS FOR ISOLATION OF RNA AND/OR DNA FROM FORMALIN-FIXED PARAFFIN-EMBEDDED TISSUE SAMPLES', *Molecular Research Center Technical Bulletin 11*. Available at: https://www.mrcgene.com/.

Williams, G. T. and Williams, W. J. (1983) 'Granulomatous inflammation - a review', *J Clin Pathol*, 36, pp. 723–733. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC498378/pdf/jclinpath00512-0001.pdf.

Yadav D, R. (2018) 'Epithelioid cell granuloma', *Indian J Dermatopathol and Diagn Dermatol*, (5), pp. 7–18. doi: 10.4103/ijdpdd.ijdpdd.

Yanagishita, T. *et al.* (2007) 'Construction of novel in vitro epithelioid cell granuloma model from mouse macrophage cell line', pp. 399–403. doi: 10.1007/s00403-007-0778-1.

Yang, C. T. *et al.* (2012) 'Neutrophils exert protection in the early tuberculous granuloma by oxidative killing of mycobacteria phagocytosed from infected macrophages', *Cell Host and Microbe*, 12(3), pp. 301–312. doi: 10.1016/j.chom.2012.07.009.

Ye, Z. *et al.* (2015) 'Granulomas as the most useful histopathological feature in distinguishing between Crohn's disease and intestinal tuberculosis in endoscopic biopsy specimens', *Medicine (United States)*, 94(49), pp. 1–9. doi: 10.1097/MD.0000000000002157.

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Yin, X. *et al.* (2013) 'Commercial MPT64-based tests for rapid identification of Mycobacterium tuberculosis complex: A meta-analysis', *Journal of Infection*, 67(5), pp. 369–377. doi: 10.1016/j.jinf.2013.06.009.

Yu, X. and Xie, J. (2012) 'Roles and underlying mechanisms of ESAT-6 in the context of Mycobacterium tuberculosis-host interaction from a systems biology perspective', *Cellular Signalling*. Elsevier Inc., pp. 1841–1846. doi: 10.1016/j.cellsig.2012.05.014.

Zumla, A. and Schaaf, H. S. (2009) *Tuberculosis a comprehensive clinical reference*. 1st edn. Edited by A. Zumla and H. S. Schaaf. Elsevier.

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GADJAH MADA

POLARISASI MAKROFAG M1 DAN M2 PADA GRANULOMA TUBERKULOSIS EKSTRA PARU: Kajian Ekspresi ESAT-6, CD206 dan pSTAT1
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