

DAFTAR PUSTAKA

- Aghajani, A.N., Lerman, L.O. and Eirin, A. (2017). Mesenchymal Stem cell-derived Extracellular Vesicles for Kidney repair: Current Status and Looming Challenges. *Stem Cell Research & Therapy*, 8(1).
- Amin, S., Massoumi, H., Tewari, D., Roy, A., Chaudhuri, M., Jazayerli, C., Krishan, A., Singh, M., Soleimani, M., Karaca, E.E., Mirzaei, A., Guaiquil, V.H., Rosenblatt, M.I., Djalilian, A.R. and Jalilian, E. (2024). Cell Type-Specific Extracellular Vesicles and Their Impact on Health and Disease. *International Journal of Molecular Sciences*, 25(5), p.2730.
- Asanuma, K., Kim, K., Oh, J., Giardino, L., Chabanis, S., Faul, C., Reiser, J. and Mündel, P. (2005). Synaptopodin Regulates the actin-bundling Activity of α -actinin in an isoform-specific Manner. *Journal of Clinical Investigation*, 115(5), pp.1188–1198.
- Baranovskii, D.S., Klabukov, I.D., Arguchinskaya, N.V., Yakimova, A.O., Kisel, A.A., Yatsenko, E.M., Ivanov, S.A., Shegay, P.V. and Kaprin, A.D. (2022). Adverse Events, Side Effects and Complications in Mesenchymal Stromal cell-based Therapies. *Stem Cell Investigation*, 9(7), pp.7–7.
- Birtwistle, L., Chen, X.-M. and Pollock, C. (2021). Mesenchymal Stem Cell-Derived Extracellular Vesicles to the Rescue of Renal Injury. *International Journal of Molecular Sciences*, 22(12), p.6596
- Blaine, J. and Dylewski, J. (2020). Regulation of the Actin Cytoskeleton in Podocytes. *Cells*, 9(7), p.1700.
- Bochon, B., Kozubska, M., Surygała, G., Witkowska, A., Kuźniewicz, R., Grzeszczak, W. and Wystrychowski, G. (2019). Mesenchymal Stem Cells—Potential Applications in Kidney Diseases. *International Journal of Molecular Sciences*, 20(10), p.2462.

- Bruno, S., Deregibus, M.C. and Camussi, G. (2015). The Secretome of Mesenchymal Stromal cells: Role of Extracellular Vesicles in Immunomodulation. *Immunology Letters*, 168(2), pp.154–158.
- Bulger, R.E., Eknoyan, G., Purcell, D.J. and Dobyan, D.C. (1983). Endothelial characteristics of glomerular capillaries in normal, mercuric chloride-induced, and gentamicin-induced acute renal failure in the rat. *Journal of Clinical Investigation*, 72(1), pp.128–141.
- Bulger, R. and Hebert, S. (1988). Structural-functional relationships in the kidney. In R. Schrier and A. Gottschalk (eds.) *Diseases of the Kidney*, pp.3–63.
- Cahyawati, P.N. and Bagus, K.S. (2021). Subtotal Nephrectomy as a Model of Chronic Kidney Disease: A Systematic Review. *Indian Journal of Public Health Research & Development*, 12(3).
- Chagnac, A., Zingerman, B., Rozen-Zvi, B. and Herman-Edelstein, M. (2019). Consequences of Glomerular Hyperfiltration: The Role of Physical Forces in the Pathogenesis of Chronic Kidney Disease in Diabetes and Obesity. *Nephron*, 143(1), pp.1–5.
- Charan, J. and Kantharia, N. (2013). How to Calculate Sample Size in Animal Studies? *Journal of Pharmacology and Pharmacotherapeutics*, 4(4), p.303.
- Charles, C. and Ferris, A.H. (2020). Chronic Kidney Disease. *Primary Care: Clinics in Office Practice*, 47(4).
- Cheng, L., Zhang, K., Wu, S., Cui, M. and Xu, T. (2017). Focus on Mesenchymal Stem Cell-Derived Exosomes: Opportunities and Challenges in Cell-Free Therapy. *Stem Cells International*, 2017, pp.1–10.
- Choi, H., Choi, Y., Yim, H.Y., Mirzaaghasi, A., Yoo, J.-K. and Choi, C. (2021). Biodistribution of Exosomes and Engineering Strategies for Targeted

Delivery of Therapeutic Exosomes. *Tissue Engineering and Regenerative Medicine*, 18(4), pp.499–511.

Dai, Y., Chen, A., Liu, R., Gu, L., Sharma, S., Cai, W., Salem, F., Salant, D.J., Pippin, J.W., Shankland, S.J., Moeller, M.J., Ghyselinck, N.B., Ding, X., Chuang, P.Y., Kyung Hwa Lee and John Cijiang He (2017). Retinoic acid improves nephrotoxic serum-induced glomerulonephritis through activation of podocyte retinoic acid receptor α . *Kidney International*, 92(6), pp.1444–1457.

Doyle, L. and Wang, M. (2019). Overview of Extracellular Vesicles, Their Origin, Composition, Purpose, and Methods for Exosome Isolation and Analysis. *Cells*, 8(7), p.727.

Durvasula, R., Petermann, A.T., Hiromura, K., Blonski, M., Pippin, J.W., Mundel, P., Pichler, R., Griffin, S., Couser, W.G. and Shankland, S.J. (2004). Activation of a Local Tissue Angiotensin System in Podocytes by Mechanical Strain. *Kidney International*, 65(1), pp.30–39.

Eddy AA. Progression in chronic kidney disease. *Adv Chronic Kidney Dis*. 2005;12(4):353–65

Elger, M. and Kriz, W. (2015). The renal glomerulus. 4th ed. Oxford Medicine Online, Oxford University Press, pp.436–450.

Fukuda, A., Sato, Y., Shibata, H., Fujimoto, S. and Wiggins, R.C. (2024). Urinary podocyte markers of disease activity, therapeutic efficacy, and long-term outcomes in acute and chronic kidney diseases. *Clinical and Experimental Nephrology*, 28(6), pp.496–504.

Gava, A.L., Freitas, F.P., Balarini, C.M., Vasquez, E.C. and Meyrelles, S.S. (2012). Effects of 5/6 Nephrectomy on Renal Function and Blood Pressure in mice. *PubMed*, 4(3), pp.167–173.

- Greka, A. and Mundel, P. (2012). Cell Biology and Pathology of Podocytes. *Annual Review of Physiology*, 74(1), pp.299–323.
- Heerspink, H.J.L., Kosiborod, M., Inzucchi, S.E. and Cherney, D.Z.I. (2018). Renoprotective Effects of sodium-glucose cotransporter-2 Inhibitors. *Kidney International*, 94(1), pp.26–39.
- Hill, M. (2020). Renal System Histology - Embryology. [online] Unsw.edu.au. Available at: https://embryology.med.unsw.edu.au/embryology/index.php/Renal_System_Histology.
- Hostetter, T.H., Olson, J.L., Rennke, H.G., Venkatachalam, M.A. and Brenner, B.M. (1981). Hyperfiltration in Remnant nephrons: a Potentially Adverse Response to Renal Ablation. *American Journal of Physiology-Renal Physiology*, 241(1), pp.F85–F93.
- Huang, J., Shi, L., Yang, Y., Zhao, F., Chen, R., Liao, W., Zhu, J., Yang, D., Wu, X. and Han, S. (2025). Mesenchymal cell-derived Exosomes and miR-29a-3p Mitigate Renal Fibrosis and Vascular Rarefaction after Renal Ischemia Reperfusion Injury. *Stem Cell Research & Therapy*, 16(1).
- Husain, S. (2024). Role of Podocyte in Kidney Disease. *Frontiers in Bioscience-Landmark*, 29(7), p.250.
- Inker, L.A. and Levey, A.S. (2014). Assessment of Glomerular Filtration Rate in Acute and Chronic Settings. *National Kidney Foundation Primer on Kidney Diseases*, pp.26–32.
- Jager, K.J., Kovesdy, C., Langham, R., Rosenberg, M., Jha, V. and Zoccali, C. (2019). A single number for advocacy and communication—worldwide more than 850 million individuals have kidney diseases. *Kidney International*, 96(5), pp.1048–1050.

- Jefferson, J.A. and Shankland, S.J. (2014). The Pathogenesis of Focal Segmental Glomerulosclerosis. *Advances in Chronic Kidney Disease*, 21(5), pp.408–416.
- Jones, N., Blasutig, I.M., Eremina, V., Ruston, J., Bladt, F., Li, H., Huang, H., Larose, L., Shawn, L., Takano, T., Quaggin, S.E. and Pawson, T. (2006d). Nck Adaptor Proteins Link Nephrin to the Actin Cytoskeleton of Kidney Podocytes. *Nature*, 440(7085), pp.818–823.
- KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR HK.01.07/MENKES/1634/2023 tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana Penyakit Ginjal Kronik.
- Kopp, J.B., Anders, H.-J., Susztak, K., Podestà, M.A., Remuzzi, G., Hildebrandt, F. and Romagnani, P. (2020). Podocytopathies. *Nature Reviews Disease Primers*, 6(1), pp.1–24.
- Kriz, W. and Lemley, K.V. (2016). Mechanical challenges to the glomerular filtration barrier: adaptations and pathway to sclerosis. *Pediatric Nephrology*, 32(3), pp.405–417.
- Kuritzky, L., Toto, R. and Buren, P.V. (2011). Identification and Management of Albuminuria in the Primary Care Setting. *The Journal of Clinical Hypertension*, 13(6), pp.438–449.
- Kwon, S.K., Kim, S.J. and Kim, H.Y. (2016). Urine Synaptopodin Excretion Is an Important Marker of Glomerular Disease Progression. *The Korean Journal of Internal Medicine*, 31(5), pp.938–943.
- Larsson, L. and Maunsbach, A.B. (1980). The ultrastructural development of the glomerular filtration barrier in the rat kidney: A morphometric analysis. *Journal of Ultrastructure Research*, 72(3), pp.392–406.

- Lener, T., Gimona, M., Aigner, L., Börger, V., Buzas, E., Camussi, G., Chaput, N., Chatterjee, D., Court, F.A., del Portillo, H.A., O’Driscoll, L., Fais, S., Falcon-Perez, J.M., Felderhoff-Mueser, U., Fraile, L., Gho, Y.S., Görgens, A., Gupta, R.C., Hendrix, A. and Hermann, D.M. (2015). Applying Extracellular Vesicles Based Therapeutics in Clinical Trials – an ISEV Position Paper. *Journal of Extracellular Vesicles*, 4(1).
- Levy, O., Kuai, R., Siren, E.M.J., Bhare, D., Milton, Y., Nissar, N., Biasio, M.D., Heinelt, M., Reeve, B., Abdi, R., Alturki, M., Fallatah, M., Almalik, A., Alhasan, A.H., Shah, K. and Karp, J.M. (2020). Shattering Barriers toward Clinically Meaningful MSC Therapies. *Science Advances*, 6(30), p.eaba6884.
- Li, C. and Szeto, C.-C. (2024). Urinary podocyte markers in diabetic kidney disease. *Kidney research and clinical practice*, 43(274-286).
- Li, P.K.-T., Garcia-Garcia, G., Lui, S.-F., Andreoli, S., Fung, W.W.-S., Hradsky, A., Kumaraswami, L., Liakopoulos, V., Rakhimova, Z., Saadi, G., Strani, L., Ulasi, I. and Kalantar-Zadeh, K. (2020). Kidney health for everyone everywhere – from prevention to detection and equitable access to care. *Brazilian Journal of Medical and Biological Research*, 53(3).
- Liu, B., Ding, F., Hu, D., Zhou, Y., Long, C., Shen, L., Zhang, Y., Zhang, D. and Wei, G. (2018). Human Umbilical Cord Mesenchymal Stem Cell Conditioned Medium Attenuates Renal Fibrosis by Reducing Inflammation and epithelial-to-mesenchymal Transition via the TLR4/NF- κ B Signaling Pathway in Vivo and in Vitro. *Stem Cell Research & Therapy*, 9(1).
- Lu, C.C., Wang, G.-H., Lu, J., Chen, P.-P., Zhang, Y., Hu, Z.B. and Ma, K.L. (2019). Role of Podocyte Injury in Glomerulosclerosis. *Renal Fibrosis: Mechanisms and Therapies*, 1165, pp.195–232.

- Mathieson, P.W. (2012). The Podocyte Cytoskeleton in Health and in Disease. *Clinical Kidney Journal*, 5(6), pp.498–501.
- McBride, J.M. (2016). Embryology, Anatomy, and Histology of the Kidney. The Kidney, pp.1–18.
- Mebarki, M., Abadie, C., Larghero, J. and Cras, A. (2021). Human Umbilical cord-derived Mesenchymal stem/stromal cells: a Promising Candidate for the Development of Advanced Therapy Medicinal Products. *Stem Cell Research & Therapy*, 12(1).
- Meng, J., Gao, X., Liu, X., Zheng, W., Wang, Y., Wang, Y., Sun, Z., Yin, X. and Zhou, X. (2024). Effects of xenogeneic transplantation of umbilical cord-derived mesenchymal stem cells combined with irbesartan on renal podocyte damage in diabetic rats. *Stem Cell Research & Therapy*, 15(1).
- Meng, X., Paterson, D.J.N. and Lan, H.Y. (2016). TGF- β : the Master Regulator of Fibrosis. *Nature Reviews Nephrology*, 12(6), pp.325–338.
- Menteri Kesehatan RI. (2023). KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR HK.01.07/MENKES/1634/2023
- Mohammadipoor, A., Antebi, B., Batchinsky, A.I. and Cancio, L.C. (2018). Therapeutic Potential of Products Derived from Mesenchymal stem/stromal Cells in Pulmonary Disease. *Respiratory Research*, 19(1).
- Nagamura, I.T., & He, H., 2014. Umbilical cord-derived mesenchymal stem cells: Their advantages and potential clinical utility. *World Journal of Stem Cells* 6(2):195-202.
- Nawaz, M., Fatima, F., Vallabhaneni, K.C., Penfornis, P., Valadi, H., Ekström, K., Kholia, S., Whitt, J.D., Fernandes, J.D., Pochampally, R., Squire, J.A. and Camussi, G. (2016). Extracellular Vesicles: Evolving Factors in Stem Cell Biology. *Stem Cells International*, 2016(1), pp.1–17.

- Nguyen, Q.T., Dinh, N.T.H., Hang, N.T., Van Mao, C., Do, X.-H., Le, D.S., Dao, H.-N., Giang, T.N., Forsyth, N., Hoang, V.T. and Thanh, L.N. (2025). Safety Evaluation of Extracellular Vesicles Derived from Hypoxia Primed Mesenchymal Stem Cells of Umbilical Cord and Adipose Tissue. *Scientific Reports*, 15(1).
- Pagels, A.A., Söderquist, B.K. and Heiwe, S. (2015). DIFFERENCES IN ILLNESS REPRESENTATIONS IN PATIENTS WITH CHRONIC KIDNEY DISEASE. *Journal of Renal Care*, 41(3), pp.146–155.
- Pavenstädt, H., Kriz, W. and Kretzler, M. (2003). Cell Biology of the Glomerular Podocyte. *Physiological Reviews*, 83(1), pp.253–307.
- Peired, A., Angelotti, M.L., Ronconi, E., la Marca, G., Mazzinghi, B., Sisti, A., Lombardi, D., Giocaliere, E., Della Bona, M., Villanelli, F., Parente, E., Ballerini, L., Sagrinati, C., Wanner, N., Huber, T.B., Liapis, H., Lazzeri, E., Lasagni, L. and Romagnani, P. (2013). Proteinuria Impairs Podocyte Regeneration by Sequestering Retinoic Acid. *Journal of the American Society of Nephrology*, 24(11), pp.1756–1768.
- Perico, L., Conti, S., Benigni, A. and Remuzzi, G. (2016). Podocyte–actin Dynamics in Health and Disease. *Nature Reviews Nephrology*, 12(11), pp.692–710.
- Quaglia, M., Merlotti, G., Colombatto, A., Bruno, S., Stasi, A., Franzin, R., Castellano, G., Grossini, E., Fanelli, V. and Cantaluppi, V. (2022). Stem Cell-Derived Extracellular Vesicles as Potential Therapeutic Approach for Acute Kidney Injury. *Frontiers in Immunology*, 13.
- Ranghino, A., Bruno, S., Bussolati, B., Moggio, A., Dimuccio, V., Tapparo, M., Biancone, L., Gontero, P., Frea, B. and Camussi, G. (2017). The effects of glomerular and tubular renal progenitors and derived extracellular vesicles

on recovery from acute kidney injury. *Stem Cell Research & Therapy*, 8(1).

Reidy, K. and Kaskel, F.J. (2007). Pathophysiology of Focal Segmental Glomerulosclerosis. *Pediatric Nephrology (Berlin, Germany)*, 22(3), pp.350–354.

Ren, J. and Dai, C. (2019). Pathophysiology of Chronic Kidney Disease. *Chronic Kidney Disease*, pp.13–32.

Rodríguez, F.D.E., Fernández, G.L.E., Samia, M.J.A., Barrera, B.S.A., Caplan, A.I. and Barrera, S.H.A. (2021). Mesenchymal Stem Cells Current Clinical Applications: a Systematic Review. *Archives of Medical Research*, 52(1).

Romoli, S., Maria Lucia Angelotti, Antonelli, G., Santhosh Kumar Vr, Mulay, S.R., Desai, J., Lidia Anguiano Gómez, Thomasova, D., Eulberg, D., Klussmann, S., Maria Elena Melica, Conte, C., Lombardi, D., Lasagni, L., Anders, H.-J. and Romagnani, P. (2018). CXCL12 blockade preferentially regenerates lost podocytes in cortical nephrons by targeting an intrinsic podocyte-progenitor feedback mechanism. *Kidney Int*, 94(6), pp.1111–1126.

Ruiz-Ortega, M., Rupérez, M., Esteban, V., Rodríguez-Vita, J., Sánchez-López, E., Carvajal, G. and Egido, J. (2006). Angiotensin II: a Key Factor in the Inflammatory and Fibrotic Response in Kidney Diseases. *Nephrology Dialysis Transplantation*, 21(1), pp.16–20.

Shi, Y., Xie, J., Yang, M., Ma, J. and Ren, H. (2019). Transplantation of umbilical cord mesenchymal stem cells into mice with focal segmental glomerulosclerosis delayed disease manifestation. *Annals of Translational Medicine*, 7(16), pp.383–383.

- Srivastava, T., Garola, R.E., Whiting, J.M. and Alon, U.S. (2001). Synaptopodin expression in idiopathic nephrotic syndrome of childhood. *Kidney International*, 59(1), pp.118–125.
- Steffes, M.W., Barbosa, J., Basgen, J.M., Sutherland, D.E., Najarian, J.S. and Mauer, S.M. (1983). Quantitative glomerular morphology of the normal human kidney. *PubMed*, 49(1), pp.82–6.
- Stevens, P.E., Ahmed, S.B., Juan Jesus Carrero, Foster, B., Francis, A., Hall, R.K., Herrington, W.G., Hill, G., Inker, L.A., Rümeyza Kazancıoğlu, Lamb, E., Lin, P., Madero, M., McIntyre, N., Morrow, K., Roberts, G., Dharshana Sabanayagam, Schaeffner, E., Shlipak, M. and Shroff, R. (2024). KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney International*, 105(4), pp.117–314.
- Tan, Z., Zhong, X., Li, C., Zhang, W., Yan, Y., Liao, Y., Wen, D., Diao, H., Wang, L. and Shen, C. (2019). An optimized 5/6 nephrectomy mouse model based on unilateral kidney ligation and its application in renal fibrosis research. *Renal Failure*, 41(1), pp.555–566.
- Tkach, M. and Théry, C. (2016). Communication by Extracellular Vesicles: Where We Are and Where We Need to Go. *Cell*, 164(6), pp.1226–1232.
- Trohatou, O. and Roubelakis, M.G. (2017). Mesenchymal Stem/Stromal Cells in Regenerative Medicine: Past, Present, and Future. *Cellular Reprogramming*, 19(4), pp.217–224.
- Urushihara, M. and Kagami, S. (2016). Role of the Intrarenal Renin–angiotensin System in the Progression of Renal Disease. *Pediatric Nephrology*, 32(9), pp.1471–1479.
- Wang, X., Chen, J., Xu, J., Xie, J., Harris, D. and Zheng, G. (2021). The Role of Macrophages in Kidney Fibrosis. *Frontiers in Physiology*, 12(7).

- Watson, N., Divers, R., Kedar, R., Mehindru, A., Mehindru, A., Borlongan, M.C. and Borlongan, C.V. (2015). Discarded Wharton Jelly of the Human Umbilical cord: a Viable Source for Mesenchymal Stromal Cells. *Cytotherapy*, 17(1), pp.18–24.
- Webster, A.C., Nagler, E.V., Morton, R.L. and Masson, P. (2017). Chronic kidney disease. *The Lancet*, 389(10075), pp.1238–1252.
- Wiklander, O.P.B., Nordin, J.Z., O’Loughlin, A., Gustafsson, Y., Corso, G., Mäger, I., Vader, P., Lee, Y., Sork, H., Seow, Y., Heldring, N., Alvarez-Erviti, L., Smith, C.E., Le Blanc, K., Macchiarini, P., Jungebluth, P., Wood, M.J.A. and Andaloussi, S.E. (2015). Extracellular Vesicle in Vivo Biodistribution Is Determined by Cell source, Route of Administration and Targeting. *Journal of Extracellular Vesicles*, 4(1), p.26316.
- Wong, G., Turner, R.M., Chapman, J.R., Howell, M., Lim, W.H., Webster, A.C. and Craig, J.C. (2013). Time on Dialysis and Cancer Risk After Kidney Transplantation. *Transplantation Journal*, 95(1), pp.114–121.
- Wu, J., Zheng, C., Wang, X., Yun, S., Zhao, Y., Liu, L., Lu, Y., Ye, Y., Zhu, X., Zhang, C., Shi, S. and Liu, Z. (2015). MicroRNA-30 Family Members Regulate calcium/calcineurin Signaling in Podocytes. *Journal of Clinical Investigation*, 125(11), pp.4091–4106.
- Wyld, M., Morton, R.L., Hayen, A., Howard, K. and Webster, A.C. (2012). A Systematic Review and Meta-Analysis of Utility-Based Quality of Life in Chronic Kidney Disease Treatments. *PLoS Medicine*, 9(9), p.e1001307.
- Yang, J. and He, W. (2020). *Chronic Kidney Disease*. Singapore: Springer Singapore
- Zeng, L. and Szeto, C. (2021). Urinary podocyte markers in kidney diseases. *Clinica Chimica Acta*, 523, pp.315–324.

Zhou, C., Zhang, B., Yang, Y., Jiang, Q., Li, T., Gong, J., Tang, H. and Zhang, Q. (2023). Stem cell-derived exosomes: Emerging Therapeutic Opportunities for Wound Healing. *Stem Cell Research & Therapy*, 14(1).