

DAFTAR PUSTAKA

- Aguilar, A. A., Ho, M. C., Chang, E., Carlson, K. W., Natarajan, A., Marciano, T., Bomzon, Z., & Patel, C. B. (2021). Permeabilizing Cell Membranes with Electric Fields. *Cancers*, 13(9), 2283. <https://doi.org/10.3390/cancers13092283>
- Ahuja, C. S., Wilson, J. R., Nori, S., Kotter, M. R. N., Druschel, C., Curt, A., & Fehlings, M. G. (2017). Traumatic spinal cord injury. *Nature Reviews Disease Primers*, 3. <https://doi.org/10.1038/nrdp.2017.18>
- Akhlaghpasand, M., Tavanaei, R., Hosseinpour, M., Golmohammadi, M., Mohammadi, I., Jolfayi, A. G., Hosseinpour, M., Hajikarimloo, B., Yazdani, K. O., Zali, A., & Oraee-Yazdani, S. (2025). Neurological, functional, and quality of life outcomes following combined mesenchymal stem cell and Schwann cell therapy in spinal cord injury: a 9-year experience. *Stem Cell Research and Therapy*, 16(1). <https://doi.org/10.1186/s13287-025-04312-7>
- Albayar, A. A., Roche, A., Swiatkowski, P., Antar, S., Ouda, N., Emara, E., Smith, D. H., Ozturk, A. K., & Awad, B. I. (2019). Biomarkers in spinal cord injury: Prognostic insights and future potentials. *Frontiers in Neurology*, 10(JAN). <https://doi.org/10.3389/fneur.2019.00027>
- AlQasas, T., Galet, C., & Wibbenmeyer, L. (2021). Delayed Spinal Cord Injury From Electrical Burns: Two Cases. *Journal of Burn Care & Research*, 42(3), 560–563. <https://doi.org/10.1093/jbcr/iraa177>
- Anjum, A., Yazid, M. D., Fauzi Daud, M., Idris, J., Ng, A. M. H., Selvi Naicker, A., Ismail, O. H. R., Athi Kumar, R. K., & Lokanathan, Y. (2020). Spinal Cord Injury: Pathophysiology, Multimolecular Interactions, and Underlying Recovery Mechanisms. *International Journal of Molecular Sciences*, 21(20), 7533. <https://doi.org/10.3390/ijms21207533>

- Assunção-Silva, R. C., Pinho, A., Cibrão, J. R., Pereira, I. M., Monteiro, S., Silva, N. A., Campos, J., Rebelo, A. L., Schlosser, G., Pinto, L., Pandit, A., & Salgado, A. J. (2024a). Adipose tissue derived stem cell secretome induces motor and histological gains after complete spinal cord injury in *Xenopus laevis* and mice. *Journal of Tissue Engineering*, 15(6), 1–14. <https://doi.org/10.1177/20417314231203824>
- Bhurani, V., & Dalai, S. K. (2018). Therapeutic Potentials of IL-10 versus IL-12. In *Immunoregulatory Aspects of Immunotherapy*. InTech. <https://doi.org/10.5772/intechopen.76914>
- Bruno, S., Deregibus, M. C., & Camussi, G. (2015). The secretome of mesenchymal stromal cells: Role of extracellular vesicles in immunomodulation. *Immunology Letters*, 168(2), 154–158. <https://doi.org/10.1016/j.imlet.2015.06.007>
- Burmeister, A. R., & Marriott, I. (2018). The Interleukin-10 Family of Cytokines and Their Role in the CNS. *Frontiers in Cellular Neuroscience*, 12. <https://doi.org/10.3389/fncel.2018.00458>
- Calhelha, R. C., Haddad, H., Ribeiro, L., Heleno, S. A., Carocho, M., & Barros, L. (2023). Inflammation: What's There and What's New? *Applied Sciences*, 13(4), 2312. <https://doi.org/10.3390/app13042312>
- Cardwell, L. N., & Weaver, B. K. (2014). IL-10 Inhibits LPS-Induced Expression of miR-147 in Murine Macrophages. *Advances in Biological Chemistry*, 04(04), 261–273. <https://doi.org/10.4236/abc.2014.44032>
- Carlini, V., Noonan, D. M., Abdalalem, E., Goletti, D., Sansone, C., Calabrone, L., & Albin, A. (2023). The multifaceted nature of IL-10: regulation, role in immunological homeostasis and its relevance to cancer, COVID-19 and post-

- COVID conditions. *Frontiers in Immunology*, 14.
<https://doi.org/10.3389/fimmu.2023.1161067>
- Catala, M. (2021). Overview of Secondary Neurulation. *Journal of Korean Neurosurgical Society*, 64(3), 346–358.
<https://doi.org/10.3340/jkns.2020.0362>
- Chen, L., Deng, H., Cui, H., Fang, J., Zuo, Z., Deng, J., Li, Y., Wang, X., & Zhao, L. (2018). Inflammatory responses and inflammation-associated diseases in organs. *Oncotarget*, 9(6), 7204–7218.
<https://doi.org/10.18632/oncotarget.23208>
- Chen, S., Saeed, A. F. U. H., Liu, Q., Jiang, Q., Xu, H., Xiao, G. G., Rao, L., & Duo, Y. (2023). Macrophages in immunoregulation and therapeutics. *Signal Transduction and Targeted Therapy*, 8(1), 207.
<https://doi.org/10.1038/s41392-023-01452-1>
- Cho, T. A. (2015). Spinal Cord Functional Anatomy. *Continuum*, 21(1), 13–35.
<https://doi.org/10.1212/01.CON.0000461082.25876.4a>
- Choi, D. B., Nam, G., Groh, D. M., Syed, S., Fridley, J. S., & Gokaslan, Z. L. (2019). Spinal Cord Anatomy. In K. I. Arnautović & Z. L. Gokaslan (Eds.), *Spinal Cord Tumors* (1st ed., pp. 43–53). Springer International Publishing.
https://doi.org/10.1007/978-3-319-99438-3_3
- Ciatawi, K., & Tiffany. (2022). Patofisiologi Spinal Cord Injury. *Cermin Dunia Kedokteran*, 49(9), 493–498. <https://doi.org/10.55175/cdk.v49i9.294>
- Cofano, F., Boido, M., Monticelli, M., Zenga, F., Ducati, A., Vercelli, A., & Garbossa, D. (2019). Mesenchymal stem cells for spinal cord injury: Current options limitations, and future of cell therapy. In *International Journal of Molecular Sciences* (Vol. 20, Issue 11). MDPI AG.
<https://doi.org/10.3390/ijms20112698>

- Conaway, E. A., de Oliveira, D. C., McInnis, C. M., Snapper, S. B., & Horwitz, B. H. (2017). Inhibition of Inflammatory Gene Transcription by IL-10 Is Associated with Rapid Suppression of Lipopolysaccharide-Induced Enhancer Activation. *The Journal of Immunology*, 198(7), 2906–2915. <https://doi.org/10.4049/jimmunol.1601781>
- Cox, L. S., Alvarez-Martinez, M., Wu, X., Gabryšová, L., Luisier, R., Briscoe, J., Luscombe, N. M., & O’Garra, A. (2023). Blimp-1 and c-Maf regulate Il10 and negatively regulate common and unique proinflammatory gene networks in IL-12 plus IL-27-driven T helper-1 cells. *Wellcome Open Research*, 8, 403. <https://doi.org/10.12688/wellcomeopenres.19680.2>
- Dause, T. J., Denninger, J. K., Smith, B. M., & Kirby, E. D. (2022). The neural stem cell secretome across neurodevelopment. *Experimental Neurology*, 355, 114142. <https://doi.org/10.1016/j.expneurol.2022.114142>
- Diaz, E., & Morales, H. (2016). Spinal Cord Anatomy and Clinical Syndromes. *Seminars in Ultrasound, CT and MRI*, 37(5), 360–371. <https://doi.org/10.1053/j.sult.2016.05.002>
- Ding, Z., Greenberg, Z. F., Serafim, M. F., Ali, S., Jamieson, J. C., Traktuev, D. O., March, K., & He, M. (2024). Understanding molecular characteristics of extracellular vesicles derived from different types of mesenchymal stem cells for therapeutic translation. *Extracellular Vesicle*, 3, 100034. <https://doi.org/10.1016/j.vesic.2024.100034>
- Donato, L., Scimone, C., Alibrandi, S., Scalinci, S. Z., Mordà, D., Rinaldi, C., D’Angelo, R., & Sidoti, A. (2023). Human retinal secretome: A cross-link between mesenchymal and retinal cells. *World Journal of Stem Cells*, 15(7), 665–686. <https://doi.org/10.4252/wjsc.v15.i7.665>

- Doyle, L., & Wang, M. (2019). Overview of Extracellular Vesicles, Their Origin, Composition, Purpose, and Methods for Exosome Isolation and Analysis. *Cells*, 8(7), 727. <https://doi.org/10.3390/cells8070727>
- Dzhokic, G., Jovchevska, J., & Dika, A. (2018). Electrical Injuries: Etiology, Pathophysiology and Mechanism of Injury. *Macedonian Journal of Medical Sciences*, 1(2), 54–58. <https://doi.org/10.3889/MJMS.1857-5773.2008.0019>
- Elfiah, U., & Yulianita Suryani, D. (2019). A CASE REPORT: RISK OF ELECTRIC INJURY ON DELAYED INITIAL TREATMENT. *Jurnal Rekonstruksi & Estetik*, 4(2). <https://doi.org/10.20473/jre.v4i1>
- Elorza Ridaura, I., Sorrentino, S., & Moroni, L. (2021). Parallels between the Developing Vascular and Neural Systems: Signaling Pathways and Future Perspectives for Regenerative Medicine. *Advanced Science*, 8(23). <https://doi.org/10.1002/advs.202101837>
- Feher, J. (2017). Body Fluid Compartments. In *Quantitative Human Physiology* (pp. 689–697). Elsevier. <https://doi.org/10.1016/B978-0-12-800883-6.00068-9>
- Ferreira, J. R., Teixeira, G. Q., Santos, S. G., Barbosa, M. A., Almeida-Porada, G., & Gonçalves, R. M. (2018). Mesenchymal Stromal Cell Secretome: Influencing Therapeutic Potential by Cellular Pre-conditioning. *Frontiers in Immunology*, 9. <https://doi.org/10.3389/fimmu.2018.02837>
- Field, M. J., Harris, D. C., & Pollock, C. A. (2010). BODY FLUIDS, NEPHRON FUNCTION AND DIURETICS. In *The Renal System* (pp. 15–31). Elsevier. <https://doi.org/10.1016/B978-0-7020-3371-1.00002-6>
- Gangidi, S., Govande, M., Mccollum, K., & Lee, R. C. (2024). Electrical shock injuries : an analysis of voltage , frequency , and contact mode

determinants. *Front. Disaster Emerg. Med*, 2(3).

<https://doi.org/10.3389/femer.2024.1477987>

Gao, L., Wang, L., Su, B., Wang, P., Ye, J., & Shen, H. (2013). The vascular supply to the spinal cord and its relationship to anterior spine surgical approaches. *The Spine Journal*, 13(8), 966–973.

<https://doi.org/10.1016/j.spinee.2013.03.017>

Gaur, R., Mittal, N., Joshi, M., & Dubey, K. (2016). A Rare Study of Electric Shock Associated Spinal Injuries: Prognosis and Outcome. *IJCMR*, 3(8), 2450–2453.

Grasso, G., Cusimano, L., Noto, M., Maugeri, R., & Iacopino, D. G. (2025). Current and emergent therapies targeting spinal cord injury. *Brain and Spine*, 5, 104243. <https://doi.org/10.1016/j.bas.2025.104243>

Guan, F., Wang, R., Yi, Z., Luo, P., Liu, W., Xie, Y., Liu, Z., Xia, Z., Zhang, H., & Cheng, Q. (2025). Tissue macrophages: origin, heterogeneity, biological functions, diseases and therapeutic targets. *Signal Transduction and Targeted Therapy*, 10(1), 93. <https://doi.org/10.1038/s41392-025-02124-y>

Hahn, R. G. (2024). Sequential recruitment of body fluid spaces for increasing volumes of crystalloid fluid. *Frontiers in Physiology*, 15. <https://doi.org/10.3389/fphys.2024.1439035>

Harrington, D. T. (2016). Complicated Burn Resuscitation. *Critical Care Clinics*, 32(4), 577–586. <https://doi.org/10.1016/j.ccc.2016.06.005>

Hellenbrand, D. J., Reichl, K. A., Travis, B. J., Filipp, M. E., Khalil, A. S., Pulito, D. J., Gavigan, A. V., Maginot, E. R., Arnold, M. T., Adler, A. G., Murphy, W. L., & Hanna, A. S. (2019). Sustained interleukin-10 delivery reduces inflammation and improves motor function after spinal cord injury. *Journal*

of Neuroinflammation, 16(1), 1–19. <https://doi.org/10.1186/s12974-019-1479-3>

Hermes, T. de A., Jarry, V. de M., Reis, F., & Minatel, E. (2023). Anatomy and Imaging of the Spinal Cord: An Overview. *Seminars in Ultrasound, CT and MRI*, 44(5), 400–407. <https://doi.org/10.1053/j.sult.2023.03.011>

Ip, W. K. E., Hoshi, N., Shouval, D. S., Snapper, S., & Medzhitov, R. (2017). Anti-inflammatory effect of IL-10 mediated by metabolic reprogramming of macrophages. *Science*, 356(6337), 513–519. <https://doi.org/10.1126/science.aal3535>

Jin, Y., Song, Y., Lin, J., Liu, T., Li, G., Lai, B., Gu, Y., Chen, G., & Xing, L. (2023). Role of inflammation in neurological damage and regeneration following spinal cord injury and its therapeutic implications. *Burns & Trauma*, 11. <https://doi.org/10.1093/burnst/tkac054>

Kaka, G. R., & Modarresi, F. (2025). Conditioned medium derived from mesenchymal stem cells and spinal cord injury: A review of the current therapeutic capacities. *IBRO Neuroscience Reports*, 18(February), 293–299. <https://doi.org/10.1016/j.ibneur.2025.02.004>

Kim, H. M., Ko, Y.-A., Kim, J. S., Lim, S. H., & Hong, B. Y. (2014). Neurological Complication After Low-Voltage Electric Injury: A Case Report. *Annals of Rehabilitation Medicine*, 38(2), 277. <https://doi.org/10.5535/arm.2014.38.2.277>

Kwak, T. J., Hossen, I., Bashir, R., Chang, W.-J., & Lee, C. H. (2019). Localized Dielectric Loss Heating in Dielectrophoresis Devices. *Scientific Reports*, 9(1), 18977. <https://doi.org/10.1038/s41598-019-55031-y>

Lee, R. C., & Dougherty, W. (2013). Electrical injury: mechanisms, manifestations, and therapy. *IEEE Transactions on Dielectrics and*

Electrical Insulation, 10(5), 810–819.

<https://doi.org/10.1109/TDEI.2003.1237330>

Levental, I., & Lyman, E. (2023). Regulation of membrane protein structure and function by their lipid nano-environment. *Nature Reviews Molecular Cell Biology*, 24(2), 107–122. <https://doi.org/10.1038/s41580-022-00524-4>

Li, J., Wang, P., Zhou, T., Jiang, W., Wu, H., Zhang, S., Deng, L., & Wang, H. (2023). Neuroprotective effects of interleukin 10 in spinal cord injury. *Frontiers in Molecular Neuroscience*, 16. <https://doi.org/10.3389/fnmol.2023.1214294>

Li, Y., Luo, W., Meng, C., Shi, K., Gu, R., & Cui, S. (2024). Exosomes as promising bioactive materials in the treatment of spinal cord injury. *Stem Cell Research & Therapy*, 15(1), 335. <https://doi.org/10.1186/s13287-024-03952-5>

Liu, K.-P., Ma, W., Li, C.-Y., & Li, L.-Y. (2022). Neurotrophic factors combined with stem cells in the treatment of sciatic nerve injury in rats: a meta-analysis. *Bioscience Reports*, 42(1). <https://doi.org/10.1042/BSR20211399>

Lu, Y., Shang, Z., Zhang, W., Pang, M., Hu, X., Dai, Y., Shen, R., Wu, Y., Liu, C., Luo, T., Wang, X., Liu, B., Zhang, L., & Rong, L. (2024). Global incidence and characteristics of spinal cord injury since 2000–2021: a systematic review and meta-analysis. *BMC Medicine*, 22(1), 1–13. <https://doi.org/10.1186/s12916-024-03514-9>

Lv, Z.-C., Cao, X.-Y., Guo, Y.-X., Zhang, X.-D., Ding, J., Geng, J., Feng, K., & Niu, H. (2019). MiR-137-5p alleviates inflammation by upregulating IL-10R1 expression in rats with spinal cord injury. *European Review for Medical and Pharmacological Sciences*, 23(11), 4551–4557. https://doi.org/10.26355/eurrev_201906_18030

- Lyu, M.-H., Bian, C., Dou, Y.-P., Gao, K., Xu, J.-J., & Ma, P. (2024). Effects of interleukin-10 treated macrophages on bone marrow mesenchymal stem cells *via* signal transducer and activator of transcription 3 pathway. *World Journal of Stem Cells*, 16(5), 560–574. <https://doi.org/10.4252/wjsc.v16.i5.560>
- M. Kanduser. (2009). *Electrotechnologies for Extraction from Food Plants and Biomaterials*. Springer New York. <https://doi.org/10.1007/978-0-387-79374-0>
- Ma, S. F., Chen, Y. J., Zhang, J. X., Shen, L., Wang, R., Zhou, J. S., Hu, J. G., & Lü, H. Z. (2015). Adoptive transfer of M2 macrophages promotes locomotor recovery in adult rats after spinal cord injury. *Brain, Behavior, and Immunity*, 45, 157–170. <https://doi.org/10.1016/j.bbi.2014.11.007>
- Mataliotakis, G. I., & Tsirikos, A. I. (2016). Spinal cord trauma: pathophysiology, classification of spinal cord injury syndromes, treatment principles and controversies. *Orthopaedics and Trauma*, 30(5), 440–449. <https://doi.org/10.1016/j.mporth.2016.07.006>
- Mensah, E. O., Chalif, J. I., Johnston, B. R., Chalif, E., Parker, T., Izzy, S., He, Z., Saigal, R., Fehlings, M. G., & Lu, Y. (2025). Traumatic spinal cord injury: a review of the current state of art and future directions – what do we know and where are we going? *North American Spine Society Journal*, 22(February), 100601. <https://doi.org/10.1016/j.xnsj.2025.100601>
- Miller, M. A., & Zachary, J. F. (2017). Mechanisms and Morphology of Cellular Injury, Adaptation, and Death. In *Pathologic Basis of Veterinary Disease* (pp. 2-43.e19). Elsevier. <https://doi.org/10.1016/B978-0-323-35775-3.00001-1>
- Mishra, B., Bachu, M., Wingert, C., Yuan, R., Chaudhary, V., Brauner, C., Bell, R., & Ivashkiv, L. B. (2024). *IL-10 Targets IRFs to Suppress IFN and*

Inflammatory Response Genes by Epigenetic Mechanisms.
<https://doi.org/10.1101/2024.11.07.622491>

Moeinabadi-Bidgoli, K., Babajani, A., Yazdanpanah, G., Farhadhosseinabadi, B., Jamshidi, E., Bahrami, S., & Niknejad, H. (2021). Translational insights into stem cell preconditioning: From molecular mechanisms to preclinical applications. *Biomedicine & Pharmacotherapy*, 142, 112026. <https://doi.org/10.1016/j.biopha.2021.112026>

Moghaddam, A., Child, C., Bruckner, T., Gerner, H. J., Daniel, V., & Biglari, B. (2015). Posttraumatic inflammation as a key to neuroregeneration after traumatic spinal cord injury. *International Journal of Molecular Sciences*, 16(4), 7900–7916. <https://doi.org/10.3390/ijms16047900>

Monteiro, S., Salgado, A. J., & Silva, N. A. (2018). Immunomodulation as a neuroprotective strategy after spinal cord injury. *Neural Regeneration Research*, 13(3), 423–424. <https://doi.org/10.4103/1673-5374.228722>

Moudi, B., Heidari, Z., & Mahmoudzadeh-Sagheb, H. (2016). Impact of host gene polymorphisms on susceptibility to chronic hepatitis B virus infection. *Infection, Genetics and Evolution*, 44, 94–105. <https://doi.org/https://doi.org/10.1016/j.meegid.2016.06.043>

Mukhamedshina, Y. O., Akhmetzyanova, E. R., Martynova, E. V., Khaiboullina, S. F., Galieva, L. R., & Rizvanov, A. A. (2017). Systemic and local cytokine profile following spinal cord injury in rats: A multiplex analysis. *Frontiers in Neurology*, 8(OCT), 1–7. <https://doi.org/10.3389/fneur.2017.00581>

Múzes, G., & Sipos, F. (2022). Mesenchymal Stem Cell-Derived Secretome: A Potential Therapeutic Option for Autoimmune and Immune-Mediated Inflammatory Diseases. *Cells*, 11(15). <https://doi.org/10.3390/cells11152300>

- Neumann, C., Scheffold, A., & Rutz, S. (2019). Functions and regulation of T cell-derived interleukin-10. *Seminars in Immunology*, 44, 101344. <https://doi.org/10.1016/j.smim.2019.101344>
- Nguyen, H. D., Aljamaei, H. M., & Stadnyk, A. W. (2021). The Production and Function of Endogenous Interleukin-10 in Intestinal Epithelial Cells and Gut Homeostasis. *Cellular and Molecular Gastroenterology and Hepatology*, 12(4), 1343–1352. <https://doi.org/10.1016/j.jcmgh.2021.07.005>
- Ouyang, W., & O'Garra, A. (2019). IL-10 Family Cytokines IL-10 and IL-22: from Basic Science to Clinical Translation. *Immunity*, 50(4), 871–891. <https://doi.org/10.1016/j.immuni.2019.03.020>
- Pajer, K., Bellák, T., & Nógrádi, A. (2021). Stem cell secretome for spinal cord repair: is it more than just a random baseline set of factors? *Cells*, 10(11), 3214.
- Patilas, C., Varsamos, I., Galanis, A., Vavourakis, M., Zachariou, D., Marougkianis, V., Kolovos, I., Tsalimas, G., Karampinas, P., Kaspiris, A., Vlamis, J., & Pneumaticos, S. (2024). The Role of Interleukin-10 in the Pathogenesis and Treatment of a Spinal Cord Injury. *Diagnostics*, 14(2). <https://doi.org/10.3390/diagnostics14020151>
- Pereira, L., Font-Nieves, M., Van den Haute, C., Baekelandt, V., Planas, A. M., & Pozas, E. (2015). IL-10 regulates adult neurogenesis by modulating ERK and STAT3 activity. *Frontiers in Cellular Neuroscience*, 9. <https://doi.org/10.3389/fncel.2015.00057>
- Pinho, A. G., Cibrão, J. R., Silva, N. A., Monteiro, S., & Salgado, A. J. (2020). Cell Secretome: Basic Insights and Therapeutic Opportunities for CNS Disorders. In *Pharmaceuticals* (Vol. 13, Issue 2). <https://doi.org/10.3390/ph13020031>

- Qu, J., & Zhang, H. (2017). Roles of Mesenchymal Stem Cells in Spinal Cord Injury. *Stem Cells International*, 2017, 1–12.
<https://doi.org/10.1155/2017/5251313>
- Rakoczy, K., Kisielewska, M., Sędzik, M., Jonderko, L., Celińska, J., Sauer, N., Szlasa, W., Saczko, J., Novickij, V., & Kulbacka, J. (2022). Electroporation in Clinical Applications—The Potential of Gene Electrotransfer and Electrochemotherapy. *Applied Sciences*, 12(21), 10821.
<https://doi.org/10.3390/app122110821>
- Reid, B., & Zhao, M. (2014). The Electrical Response to Injury: Molecular Mechanisms and Wound Healing. *Advances in Wound Care*, 3(2), 184–201.
<https://doi.org/10.1089/wound.2013.0442>
- Reyes, C., & Mokalled, M. H. (2024). Astrocyte-Neuron Interactions in Spinal Cord Injury. *Adv Neurobiol*, 213–231. https://doi.org/10.1007/978-3-031-64839-7_9
- Roberts, S. B., & Tsirikos, A. I. (2024). Spinal cord injury: pathophysiology and principles of management. *Orthopaedics and Trauma*, 38(5), 264–272.
<https://doi.org/10.1016/j.mporth.2024.07.002>
- Ruberte, J., Navarro, M., Carretero, A., König, H. E., & Puellas, L. (2017). Nervous System. In *Morphological Mouse Phenotyping* (pp. 377–474). Elsevier. <https://doi.org/10.1016/B978-0-12-812972-2.50013-1>
- Ryan, T. A. J., & Zanoni, I. (2024). Interleukin-10 suppresses lipid metabolism-mediated intestinal inflammation. *Life Metabolism*, 3(3).
<https://doi.org/10.1093/lifemeta/loae011>
- Sadiq, I. Z., Abubakar, F. S., Katsayal, B. S., Ibrahim, B., Adamu, A., Usman, M. A., Aliyu, M., Suleiman, M. A., & Muhammad, A. (2025). Stem cells in regenerative medicine: Unlocking therapeutic potential through stem cell

therapy, 3D bioprinting, gene editing, and drug discovery. *Biomedical Engineering Advances*, 9, 100172.

<https://doi.org/10.1016/j.bea.2025.100172>

Samiminemati, A., Aprile, D., Siniscalco, D., & Di Bernardo, G. (2024). Methods to Investigate the Secretome of Senescent Cells. *Methods and Protocols*, 7(4), 1–16. <https://doi.org/10.3390/mps7040052>

Saraiva, M., Vieira, P., & O'Garra, A. (2020a). Biology and therapeutic potential of interleukin-10. *Journal of Experimental Medicine*, 217(1). <https://doi.org/10.1084/jem.20190418>

Saraiva, M., Vieira, P., & O'Garra, A. (2020b). Biology and therapeutic potential of interleukin-10. *Journal of Experimental Medicine*, 217(1), 1–19. https://doi.org/10.1084/jem_20190418

Schaefer, N. R., Yaxley, J. P., O'Donohue, P., Lisec, C., & Jeyarajan, E. (2015). Electrical burn causing a unique pattern of neurological injury. *Plastic and Reconstructive Surgery - Global Open*, 3(4), 1–3. <https://doi.org/10.1097/GOX.0000000000000344>

Semita, I. N., Utomo, D. N., & Suroto, H. (2023). The role of stem cell secretome on spinal cord injury regeneration: a systematic review and meta-analysis. *Bali Medical Journal*, 12(2), 1507–1513. <https://doi.org/10.15562/bmj.v12i2.4131>

Semita, I. N., Utomo, D. N., Suroto, H., & Sudiana, I. K. (2023). The Role of Human Neural Stem Cell Secretomes on the Repair of Spinal Cord Injury Post-laminectomy in *Rattus norvegicus* Through the Analysis of Basso–Beattie–Bresnahan Score Locomotors, Interleukin-10, Matrix Metalloproteinase 9, and Transforming Growth Factor- β . *Asian Spine Journal*, 17(2), 231–239. <https://doi.org/10.31616/ASJ.2022.0152>

- Sengul, G., & Watson, C. (2012). Spinal Cord. In *The Human Nervous System* (pp. 186–232). Elsevier. <https://doi.org/10.1016/B978-0-12-374236-0.10006-9>
- Sharma, A., Feng, L., Muresanu, D. F., Huang, H., Menon, P. K., Sahib, S., Ryan Tian, Z., Lafuente, J. V., Buzoianu, A. D., Nozari, A., Wiklund, L., & Sharma, H. S. (2021). Topical application of CNTF, GDNF and BDNF in combination attenuates blood-spinal cord barrier permeability, edema formation, hemeoxygenase-2 upregulation, and cord pathology. In H. S. Sharma & A. B. T.-P. in B. R. Sharma (Eds.), *Brain Protection Strategies and Nanomedicine* (Vol. 266, pp. 357–376). Elsevier. <https://doi.org/https://doi.org/10.1016/bs.pbr.2021.06.013>
- Song, N., Scholtemeijer, M., & Shah, K. (2020). Mesenchymal Stem Cell Immunomodulation: Mechanisms and Therapeutic Potential. *Trends in Pharmacological Sciences*, 41(9), 653–664. <https://doi.org/10.1016/j.tips.2020.06.009>
- Soria-Zavala, K., García-Sánchez, J., & Rodríguez-Barrera, R. (2021). Mesenchymal Stem Cells for Clinical Use after Spinal Cord Injury. In *Paraplegia*. IntechOpen. <https://doi.org/10.5772/intechopen.91839>
- Stewart, M. P., Langer, R., & Jensen, K. F. (2018). Intracellular Delivery by Membrane Disruption: Mechanisms, Strategies, and Concepts. *Chemical Reviews*, 118(16), 7409–7531. <https://doi.org/10.1021/acs.chemrev.7b00678>
- Strizova, Z., Benesova, I., Bartolini, R., Novysedlak, R., Cecrdlova, E., Foley, L. K., & Striz, I. (2023). M1/M2 macrophages and their overlaps - myth or reality? *Clinical Science*, 137(15), 1067–1093. <https://doi.org/10.1042/CS20220531>

- Sulek, A. (2024). Secretome – the role of extracellular vesicles in the pathogenesis and therapy of neurodegenerative diseases. *Postępy Psychiatrii i Neurologii*, 33(3), 147–162. <https://doi.org/10.5114/ppn.2024.144686>
- Sumarwoto, T., Suroto, H., Mahyudin, F., Utomo, D. N., Romaniyanto, Tinduh, D., Notobroto, H. B., Sigit Prakoeswa, C. R., Rantam, F. A., & Rhatomy, S. (2021). Role of adipose mesenchymal stem cells and secretome in peripheral nerve regeneration. *Annals of Medicine & Surgery*, 67. <https://doi.org/10.1016/j.amsu.2021.102482>
- Suryawan, I. G. R., Pikir, B. S., Rantam, F. A., Ratri, A. K., & Nugraha, R. A. (2024). Hypoxic Preconditioning Promotes Survival of Human Adipose Derived Mesenchymal Stem Cell. *F1000Research*, 10, 843. <https://doi.org/10.12688/f1000research.55351.4>
- Takakura, Y., Hanayama, R., Akiyoshi, K., Futaki, S., Hida, K., Ichiki, T., Ishii-Watabe, A., Kuroda, M., Maki, K., Miura, Y., Okada, Y., Seo, N., Takeuchi, T., Yamaguchi, T., & Yoshioka, Y. (2024). Quality and Safety Considerations for Therapeutic Products Based on Extracellular Vesicles. *Pharmaceutical Research*, 41(8), 1573–1594. <https://doi.org/10.1007/s11095-024-03757-4>
- Teissie, J. (2014). Electroporation of the Cell Membrane. In *Methods in molecular biology (Clifton, N.J.)* (pp. 25–46). https://doi.org/10.1007/978-1-4614-9632-8_2
- Teixeira, F. G., Carvalho, M. M., Sousa, N., & Salgado, A. J. (2013). Mesenchymal stem cells secretome: a new paradigm for central nervous system regeneration? *Cellular and Molecular Life Sciences*, 70(20), 3871–3882. <https://doi.org/10.1007/s00018-013-1290-8>

- Tran, C., & Damaser, M. S. (2015). Stem cells as drug delivery methods: Application of stem cell secretome for regeneration. *Advanced Drug Delivery Reviews*, 82–83, 1–11. <https://doi.org/10.1016/j.addr.2014.10.007>
- Tsintou, M., Dalamagkas, K., & Seifalian, A. (2015). Advances in regenerative therapies for spinal cord injury: a biomaterials approach. *Neural Regeneration Research*, 10(5), 726. <https://doi.org/10.4103/1673-5374.156966>
- Wan, R., Shi, X., Liu, J., & Wang, Y. (2021). Research progress in the treatment of spinal cord injury with mesenchymal stem cell secretome. *Chinese Journal of Tissue Engineering Research*, 25(7), 1088.
- Wang, J., Wu, Q., Wang, X., Liu, H., Chen, M., Xu, L., Zhang, Z., Li, K., Li, W., & Zhong, J. (2024). Targeting Macrophage Phenotypes and Metabolism as Novel Therapeutic Approaches in Atherosclerosis and Related Cardiovascular Diseases. *Current Atherosclerosis Reports*, 26(10), 573–588. <https://doi.org/10.1007/s11883-024-01229-z>
- Wang, T. Y., Park, C., Zhang, H., Rahimpour, S., Murphy, K. R., Goodwin, C. R., Karikari, I. O., Than, K. D., Shaffrey, C. I., Foster, N., & Abd-El-Barr, M. M. (2021). Management of Acute Traumatic Spinal Cord Injury: A Review of the Literature. *Frontiers in Surgery*, 8(December). <https://doi.org/10.3389/fsurg.2021.698736>
- Wang, Y., Xiong, J., Ouyang, K., Ling, M., Luo, J., Sun, J., Xi, Q., Chen, T., & Zhang, Y. (2025). Extracellular vesicles: From large-scale production and engineering to clinical applications. *Journal of Tissue Engineering*, 16. <https://doi.org/10.1177/20417314251319474>
- Wirz, M., & van Hedel, H. J. A. (2018). Balance, gait, and falls in spinal cord injury. In B. L. Day & S. R. B. T.-H. of C. N. Lord (Eds.), *Balance, Gait*,

and Falls (Vol. 159, pp. 367–384). Elsevier.
<https://doi.org/https://doi.org/10.1016/B978-0-444-63916-5.00024-0>

Yang, J., Lee, J. Y., Kim, K. H., & Wang, K. C. (2021). Disorders of secondary neurulation: Mainly focused on pathoembryogenesis. In *Journal of Korean Neurosurgical Society* (Vol. 64, Issue 3, pp. 386–405). Korean Neurosurgical Society. <https://doi.org/10.3340/jkns.2021.0023>

Yao, C., Cao, X., & Yu, B. (2021). Revascularization After Traumatic Spinal Cord Injury. *Frontiers in Physiology*, 12.
<https://doi.org/10.3389/fphys.2021.631500>

Yiannopoulou, K. G., Papagiannis, G. I., Triantafyllou, A. I., Koulouvaris, P., Anastasiou, A. I., Kontoangelos, K., & Anastasiou, I. P. (2021). Neurological and neurourological complications of electrical injuries. *Neurologia i Neurochirurgia Polska*, 55(1), 12–23.
<https://doi.org/10.5603/JNNS.A2020.0076>

Zakrzewski, W., Dobrzyński, M., Szymonowicz, M., & Rybak, Z. (2019). Stem cells: past, present, and future. *Stem Cell Research & Therapy*, 10(1), 68.
<https://doi.org/10.1186/s13287-019-1165-5>

Zhang, Y., Al Mamun, A., Yuan, Y., Lu, Q., Xiong, J., Yang, S., Wu, C., Wu, Y., & Wang, J. (2021). Acute spinal cord injury: Pathophysiology and pharmacological intervention (Review). *Molecular Medicine Reports*, 23(6), 417. <https://doi.org/10.3892/mmr.2021.12056>

Zhirkova, E. A., Spiridonova, T. G., Sachkov, A. V., & Svetlov, K. V. (2020). Electrical Injury (a Literature Review). *Russian Sklifosovsky Journal “Emergency Medical Care,”* 8(4), 443–450. <https://doi.org/10.23934/2223-9022-2019-8-4-443-450>