

DAFTAR PUSTAKA

- Abbaszadeh, H., Ghorbani, F., Derakhshani, M., Movassaghpour, A., & Yousefi, M. (2020). Human umbilical cord mesenchymal stem cell-derived extracellular vesicles: A novel therapeutic paradigm. *J Cell Physiol.*, 235(2) : 706–717.
- Adair, T.H. & Montani, J.P. (2010). Angiogenesis. In Granger D.N. & Granger J.P. (Eds.), *Colloquium series on integrated systems physiology: from molecule to function*, pp. 1-84. San Rafael: Morgan & Claypool Life Sciences.
- Ahn, S.H., Ahn, J.H., Ryu, D.R., Lee, J., Cho, M.S., & Choi, Y.H. (2017). Effect of Necrosis on the miRNA-mRNA Regulatory Network in CRT-MG Human Astrogloma Cells. *Cancer Res Treat.*, 50(2) : 382-397.
- Alarcón, C.R., Lee, H., Goodarzi, H., Halberg, N., & Tavazoie, S.F. (2015). N6-methyladenosine marks primary microRNAs for processing. *Nature.*, 519 : 482–485.
- Alles, J., Fehlmann, T., Fischer, U., Backes, C., Galata, V., Minet, M., *et al.* (2019) An estimate of the total number of true human miRNAs. *Nucleic Acids Res.*, 47 : 3353–3364.
- Anand, S., Majeti, B.K., Acevedo, L.M., Murphy, E.A., Mukthavaram, R., Schepke, L., *et al.* (2010). MicroRNA-132-mediated loss of p120RasGAP activates the endothelium to facilitate pathological angiogenesis. *Nat med.*, 16(8) : 909-914.
- Andersen, N.J., Boguslawski, E.A., Naidu, A.S., Szot, C., Bromberg-White, J.L., Kits, K., *et al.* (2016). Anthrax toxin receptor 1 is essential for arteriogenesis in a mouse model of hindlimb ischemia. *PLoS One*, 11(1) : e0146586.
- Arcondéguy, T., Lacazette, E., Millevoi, S., Prats, H., & Touriol, C. (2013). VEGF-A mRNA processing, stability and translation: a paradigm for intricate regulation of gene expression at the post-transcriptional level. *Nucleic Acids Res.*, 41(17) : 7997-8010.
- Aref, Z., de Vries, M.R., & Quax, P.H.A. (2019). Variations in surgical procedures for inducing hindlimb ischemia in mice and the impact of these variations on neovascularization assessment. *Int J Mol Sci.*, 20(15) : 3704.
- Arkeman, H., David (2006). Efek vitamin E terhadap sel goblet saluran nafas pada tikus akibat asap rokok. *Jurnal Kedokteran Trisakti (Universa Medicina)*, Vol.25, No.2, Apr.- Juni, 2006: hal. 61-66 none
- Arutyunyan, I., Elchaninov, A., Makarov, A., & Fatkhudinov, T. (2016). Umbilical cord as prospective source for mesenchymal stem cell-based therapy. *Stem Cells Int.*, 2016 : 6901286.

- Ashraf, J.V. & Al Haj Zen, A. (2021). Role of Vascular Smooth Muscle Cell Phenotype Switching in Arteriogenesis. *Int J Mol Sci.*, 22(19) : 10585.
- Bang, C., Batkai, S., Dangwal, S., Gupta, S.K., Foinquinos, A., Holzmann, A., *et al.* (2014). Cardiac fibroblast-derived microRNA passenger strand-enriched microRNA passenger strand-enriched exosomes mediate cardiomyocyte hypertrophy. *J Clin Invest.*, 124(5) : 2136–2146.
- Bala, S., Csak, T., Momen-Heravi, F., Lippai, D., Kodys, K., Catalano, D., *et al.* (2015) Biodistribution and function of extracellular miRNA-155 in mice. *Sci Rep.*, 5 : 10721.
- Bartkowiak, K., Bartkowiak, M., Jankowska, E., Anna, S., & Elzbieta, R. (2024). Expression of mRNA for molecules that regulate angiogenesis, endothelial cell survival, and vascular permeability is altered in endothelial cells isolated from db / db mouse hearts. *Histochemistry and Cell Biology*, 162(6), 523–539. <https://doi.org/10.1007/s00418-024-02327-4>
- Barwari, T., Joshi, A., & Mayr, M. (2016). MicroRNAs in Cardiovascular Disease. *J Am Coll Cardiol.*, 68(23) : 2577–2584.
- Baubeta, F.E., Andersson, M., Thuresson, M., Sigvant, B., Kragsterman, B., Johansson, S., *et al.* (2017). Amputation Rates, Mortality, and Pre-operative Comorbidities in Patients Revascularised for Intermittent Claudication or Critical Limb Ischaemia: A Population Based Study. *Eur J Vasc Endovasc Surg.*, 54(4) : 480–486.
- Beer, L., Mildner, M., & Ankersmit, H.J. (2017). Cell secretome based drug substances in regenerative medicine: When regulatory affairs meet basic science. *Ann Transl Med.*, 5(7) : 170.
- Benetatos, L., Hatzimichael, E., Londin, E., Vartholomatos, G., Loher, P., Rigoutsos, I., *et al.* (2013). The microRNAs within the DLK1-DIO3 genomic region: Involvement in disease pathogenesis. *Cell Mol Life Sci.*, 70(5) : 795–814.
- Biju, V. (2014). Chemical modifications and bioconjugate reactions of nanomaterials for sensing, imaging, drug delivery and therapy. *Chem Soc Rev.*, 43(3) : 744–764.
- Biscetti, F., Nardella, E., Rando, M.M., Cecchini, A.L., Gasbarrini, A., Massetti, M., *et al.* (2021). Outcomes of Lower Extremity Endovascular Revascularization: Potential Predictors and Prevention Strategies. *Int J Mol Sci.*, 22(4) : 2002.
- Bitounis, D., Ali-Boucetta, H., Hong, B. H., Min, D.H., & Kostarelos, K. (2013) Prospects and challenges of graphene in biomedical applications. *Adv Mater.*, 25(16) : 2258–2268.
- Bot, I., Velden, D.V., Bouwman, M., Kröner, M.J., Kuiper, J., Quax, P., & de Vries, M. R. (2020). Local Mast Cell Activation Promotes Neovascularization.

Cells., 9(3) : 701.

Brenes, R.A., Jadlowiec, C.C., Bear, M., Hashim, P., Protack, C.D., Lin, X., *et al.* Toward a mouse model of hindlimb ischemia to test therapeutic angiogenesis. *J Vasc Surg.*, 56(6) : 1669-1679.

Caicedo, D., Devesa, P., Arce, V.M., Requena, J., & Devesa, J. (2018) Chronic limb-threatening ischemia could benefit from growth hormone therapy for wound healing and limb salvage. *Ther Adv Cardiovasc Dis.*, 12(2) : 53–72.

Caminade, A.M. & Turrin, C.O. (2014). Dendrimers for drug delivery. *Journal of materials chemistry. B*, 2(26) : 4055–4066.

Cao, W.J., Rosenblat, J.D., Roth, N.C., Kuliszewski, M.A., Matkar, P.N., Rudenko, D., *et al.* (2015). Therapeutic Angiogenesis by Ultrasound-Mediated MicroRNA-126-3p Delivery. *Arterioscler Thromb Vasc Biol.*, 35(11) : 2401–2411.

Caporali, A., Meloni, M., Völlenkle, C., Bonci, D., Sala-Newby, G. B., Addis, R., *et al.* (2011). Deregulation of microRNA-503 contributes to diabetes mellitus-induced impairment of endothelial function and reparative angiogenesis after Limb Ischemia. *Circulation.*, 123(3) : 282–291.

Carmeliet, P., Ferreira, V., Breier, G., Pollefeyt, S., Kieckens, L., Gertsenstein, M., *et al.* (1996). Abnormal blood vessel development and lethality in embryos lacking a single VEGF allele. *Nature.*, 380(6573) : 435–439.

Carmeliet, P., & Jain, R. K. (2011). Molecular mechanisms and clinical applications of angiogenesis. *Nature*, 473(7347), 298–307. <https://doi.org/doi:10.1038/nature10144>

Cavallari, C, Ranghino, A., Tapparo, M., Cedrino, M., Figliolini, F., Grange, C., *et al.* (2017). Serum-derived extracellular vesicles (EVs) impact on vascular remodeling and prevent muscle damage in acute hindlimb ischemia. *Sci Rep.*, 7(1) : 8180.

Chamorro-Jorganes, A., Lee, M.Y., Araldi, E., Landskroner-Eiger, S., Fernández-Fuertes, M., Sahraei, M., *et al.* (2016). VEGF-Induced Expression of miR-17-92 Cluster in Endothelial Cells Is Mediated by ERK/ELK1 Activation and Regulates Angiogenesis. *Circ Res.*, 118(1) : 38–47.

Chen, J., Li, P., Zhang, T., Xu, Z., Huang, X., Wang, R., & Du, L. (2022). Review on Strategies and Technologies for Exosome Isolation and Purification. *Frontiers in Bioengineering and Biotechnology*, 9(January), 1–18. <https://doi.org/10.3389/fbioe.2021.811971>

Chen, L., Liu, C., Sun, D., Wang, T., Zhao, L., Chen, W., *et al.* (2018). MicroRNA-133a impairs perfusion recovery after hindlimb ischemia in diabetic mice. *Biosci Rep.*, 38(4).

Chien, S. (2007). Mechanotransduction and endothelial cell homeostasis: The

- wisdom of the cell. *Am J Physiol Heart Circ Physiol.*, 292(3) : 1209– 1224.
- Ciccozzi, M., Menga, R., Ricci, G., Vitali, M. A., Angeletti, S., Sirignano, A., & Tambone, V. (2016). Critical review of sham surgery clinical trials: Confounding factors analysis. *Ann Med Surg (Lond).*, 12: 21–26.
- Concepcion, C.P., Bonetti, C., & Ventura, A. (2012). The microRNA-17-92 family of microRNA clusters in development and disease. *Cancer J.*, 18(3) : 262–267.
- Conte, M.S., Bradbury, A.W., Kolh, P., White, J.V., Dick, F., Fitridge, R., *et al.* (2019). Global Vascular Guidelines on the Management of Chronic Limb-Threatening Ischemia. *Eur J Vasc Endovasc Surg.*, 58(1S), S1–S109.e33.
- Dalpke, A.H. & Helm, M. (2012). RNA mediated Toll-like receptor stimulation in health and disease. *RNA Biol.*, 9(6) : 828–842.
- Davies, M.G. (2012). Critical limb ischemia: epidemiology. *Methodist DeBakey Cardiovasc J.*, 8(4) : 10–14.
- Deindl, E. & Quax, P.H.A. (2020). Arteriogenesis and Therapeutic Angiogenesis in Its Multiple Aspects. *Cells.*, 9(6).
- 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.
- Desjarlais, M., Dussault, S., Dhahri, W., Mathieu, R., & Rivard, A. (2017). MicroRNA-150 modulates ischemia-induced neovascularization in atherosclerotic conditions. *Arterioscler Thromb Vasc Biol.*, 37(5) : 900–908.
- Dhahri, W., Dussault, S., Haddad, P., Turgeon, J., Tremblay, S., Rolland, K., *et al.* (2017). Reduced expression of let-7f activates TGF- β /ALK5 pathway and leads to impaired ischaemia-induced neovascularization after cigarette smoke exposure. *J Cell Mol Med.*, 21(9) : 2211-2222.
- Dhaliwal, G. & Mukherjee, D. (2007). Peripheral arterial disease: Epidemiology, natural history, diagnosis and treatment. *Int J Angiol.*, 16(2) : 36–44.
- Dilsiz, N. (2020). Role of exosomes and exosomal microRNAs in cancer. *Future sci OA.*, 6(4).
- Dilsiz, N. (2024). A comprehensive review on recent advances in exosome isolation and characterization: Toward clinical applications. *Translational Oncology*, 50(May), 102121. <https://doi.org/10.1016/j.tranon.2024.102121>
- Dinh, P.C., Paudel, D., Brochu, H., Popowski, K.D., Gracieux, M.C., Cores, J., *et al.* (2020). Inhalation of lung spheroid cell secretome and exosomes promotes lung repair in pulmonary fibrosis. *Nat Commun.*, 11(1) : 1064.
- Dragneva, G., Korpisalo, P., & Ylä-Herttuala, S. (2013). Promoting blood vessel growth in ischemic diseases: Challenges in translating preclinical potential

into clinical success. *Dis Model Mech.*, 6(2) : 312–322.

Dunn, L.L., Kong, S.M.Y., Tumanov, S., Chen, W., Cantley, J., Ayer, A., *et al.* (2021). HMOX1 (heme oxygenase-1) protects against ischemia-mediated injury via stabilization of HIF-1 α (hypoxia-inducible factor-1 α). *Arterioscler Thromb Vasc Biol.*, 41(1) : 317–330.

Eastel, J.M., Lam, K.W., Lee, N.L., Lok, W.Y., Tsang, A., Pei, X.M., *et al.* (2019). Application of NanoString technologies in companion diagnostic development. *Expert Rev Mol Diagn.*, 19(7) : 591–598.

Emanuelli, C., Shearn, A.I., Angelini, G.D., & Sahoo, S. (2015). Exosomes and exosomal miRNAs in cardiovascular protection and repair. *Vascul Pharmacol*, 71 : 24–30.

Fasanaro, P., D'Alessandra, Y., Di Stefano, V., Melchionna, R., Romani, S., Pompilio, G., *et al.* (2008). MicroRNA-210 modulates endothelial cell response to hypoxia and inhibits the receptor tyrosine kinase ligand Ephrin-A3. *J Biol Chem.*, 283(23) : 15878–15883.

Ferrara, N., Carver-Moore, K., Chen, H., Dowd, M., Lu, L., O'shea, K.S., *et al.* (1996). Heterozygous embryonic lethality induced by targeted inactivation of the VEGF gene. *Nature.*, 380(6573) : 439–442.

Firnhaber, J.M. & Powell, C.S. (2019). Lower Extremity Peripheral Artery Disease: Diagnosis and Treatment. *Am Fam Physician.*, 99(6) : 362–369.

Fowkes, F.G.R., Rudan, D., Rudan, I., Aboyans, V., Denenberg, J.O., McDermott, M.M., *et al.* (2013). Comparison of global estimates of prevalence and risk factors for peripheral artery disease in 2000 and 2010: a systematic review and analysis. *Lancet*, 382(9901) : 1329–1340.

Gadde, S. & Rayner, K.J. (2016). Nanomedicine meets microRNA current advances in RNA-based nanotherapies for atherosclerosis. *Arterioscler Thromb Vasc Biol.*, 36(9) : e73–e79.

Gámez-Valero, A., Monguió-Tortajada, M., Carreras-Planella, L., la Franquesa, M., Beyer, K., & Borràs, F.E. (2016). Size-Exclusion Chromatography-based isolation minimally alters Extracellular Vesicles' characteristics compared to precipitating agents. *Sci Rep.*, 6 : 33641.

Geiger, A., Walker, A., & Nissen, E. (2015). Human fibrocyte-derived exosomes accelerate wound healing in genetically diabetic mice. *Biochem Biophys Res Commun.*, 467(2) : 303–309.

Goukassian, D.A., Qin, G., Dolan, C., Murayama, T., Silver, M., Curry, C., *et al.* (2007). Tumor necrosis factor-alpha receptor p75 is required in ischemia-induced neovascularization. *Circulation.*, 115 (6) : 752-62.

Goumans, M.J. & Ten Dijke, P. (2018). TGF- β Signaling in Control of

- Cardiovascular Function. *Cold Spring Harb Perspect Biol.*, 10(2) : a022210.
- Grundmann, S., Hans, F.P., Kinniry, S., Heinke, J., Helbing, T., Bluhm, F., *et al.* (2011). MicroRNA-100 regulates neovascularization by suppression of mammalian target of rapamycin in endothelial and vascular smooth muscle cells. *Circulation.*, 123(9) : 999–1009.
- Guan, Y., Cai, B., Wu, X., Peng, S., Gan, L., Huang, D., *et al.* (2017). MicroRNA-352 regulates collateral vessel growth induced by elevated fluid shear stress in the rat hindlimb. *Sci Rep.*, 7(1).
- Gurunathan S., Kang M.H., Jeyaraj M., Qasim M., & Kim J.H. (2019). Review of the Isolation, Characterization, Biological Function, and Multivarious Therapeutic Approaches of Exosomes. *Cells.*, 8(4) : 307.
- Gurung, S., Perocheau, D., Touramanidou, L., & Baruteau, J. (2021). The exosome journey: from biogenesis to uptake and intracellular signalling. *Cell Commun Signal.*, 19(1) : 47.
- 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 Dev.*, 18(24) : 3016–3027.
- Harhour, K., Kebir, A., Guillet, B., Foucault-Bertaud, A., Voytenko, S., Piercecchi-Marti, M.D., *et al.* (2010). Soluble CD146 displays angiogenic properties and promotes neovascularization in experimental hind-limb ischemia. *Blood*, 115 (18) : 3843–3851.
- Heuslein, J.L., Gorick, C.M., & Price, R.J. (2019). Epigenetic regulators of the revascularization response to chronic arterial occlusion. *Cardiovasc Res.*, 115(4) : 701-712.
- Heuslein, J., McDonnell, S.P., Song, J., Annex, B.H., & Price, R.J. (2018). MicroRNA-146a regulates perfusion recovery in response to arterial occlusion via arteriogenesis. *Front Bioeng and Biotechnol.*, 6.
- Hellingman, A.A., Bastiaansen, A.J.N.M., De Vries, M.R., Seghers, L., Lijkwan, M.A., Löwik, C.W., *et al.* (2010). Variations in surgical procedures for hindlimb ischaemia mouse models result in differences in collateral formation. *Eur J Vasc Endovasc Surg.*, 40(6) : 796-803.
- Hiatt, W.R., Fowkes, F.G., Heizer, G., Berger, J.S., Baumgartner, I., Held, P., *et al.* (2017). Ticagrelor versus Clopidogrel in Symptomatic Peripheral Artery Disease. *N Engl J Med.*, 376(1) : 32–40.
- Hong, L.Z., Zhou, L., Zou, R., Khoo, C.M., Chew, A., Chin, C.L. *et al.* (2021). Systematic evaluation of multiple qPCR platforms, NanoString and miRNA-Seq for microRNA biomarker discovery in human biofluids. *Sci rep.*, 11(1) : 4435.

- Hu, H., Jiang, C., Li, R., & Zhao, J. (2019). Comparison of endothelial cell- and endothelial progenitor cell-derived exosomes in promoting vascular endothelial cell repair. *Int J Clin Exp Pathol.*, 12(7) : 2793–2800.
- Huang, J.H., Yin, X.M., Xu, Y., Xu, C.C., Lin, X., Ye, F.B., *et al.* (2017). Systemic Administration of Exosomes Released from Mesenchymal Stromal Cells Attenuates Apoptosis, Inflammation, and Promotes Angiogenesis after Spinal Cord Injury in Rats. *J Neurotrauma.*, 34(24) : 3388–3396.
- Hutchings, G., Kruszyna, Ł., Nawrocki, M. J., Strauss, E., Bryl, R., Spaczyńska, J., *et al.* (2021). Molecular mechanisms associated with ROS-dependent angiogenesis in lower extremity artery disease. *Antioxidants (Basel)*, 10(5) : 735.
- Icli, B., Wu, W., Ozdemir, D., Li, H., Cheng, H. S., Haemmig, S., *et al.* (2019). MicroRNA-615-5p regulates angiogenesis and tissue repair by targeting Akt/eNOS (protein kinase B/endothelial nitric oxide synthase) signaling in endothelial cells. *Arterioscler Thromb Vasc Biol.*, 39(7) : 1458–1474.
- Ismail, M. T., Tandryanta, C. F., Paramaputra, Y. E. G., Priantama, N., Gustinova, M., Hariadi, *et al.* (2024). Hindlimb Ischemia Model Established Using 24-hour Double Ligation. (*In Press*).
- Iyer, S. R., & Annex, B. H. (2017). Therapeutic angiogenesis for peripheral artery disease: Lessons learned in translational science. *JACC Basic Transl Sci.*, 2(5) : 503–512.
- Jain, R. K. (2005). Normalization of tumor vasculature: An emerging concept in antiangiogenic therapy. *Science*, 307(5706) : 58–62.
- Janssen, H. L., Reesink, H. W., Lawitz, E. J., Zeuzem, S., Rodriguez-Torres, M., Patel, K., *et al.* (2013). Treatment of HCV infection by targeting microRNA. *N Engl J Med.*, 368(18) : 1685–1694.
- Jiang, Y., Xie, H., Tu, W., Fang, H., Ji, C., Yan, T., *et al.* (2018). Exosomes secreted by HUVECs attenuate hypoxia/reoxygenation-induced apoptosis in neural cells by suppressing miR-21-3p. *Am J Transl Res.*, 10(11) : 3529–3541.
- Jin, M. L., Zou, Z. H., Tao, T., Li, J., Xu, J., Luo, K. J., *et al.* (2020). Effect of the recombinant adenovirus-mediated HIF-1 alpha on the expression of VEGF in the hypoxic brain microvascular endothelial cells of rats. *Neuropsychiatr Dis Treat.*, 16 : 397–406.
- Joshkon, A., Heim, X., Dubrou, C., Bachelier, R., Traboulsi, W., Stalin, J., *et al.* (2020). Role of CD146 (MCAM) in physiological and pathological angiogenesis-Contribution of new antibodies for therapy. *Biomedicines*, 8(12) : 633.
- Jonas, S., & Izaurralde, E. (2015). Towards a molecular understanding of microRNA-mediated gene silencing. *Nat Rev Genet.*, 16(7) : 421–433.

- Jurgielewicz, B. J., Yao, Y., & Stice, S. L. (2020). Kinetics and specificity of HEK293T extracellular vesicle uptake using imaging flow cytometry. *Nanoscale Res Lett.*, 15(1) : 170.
- Kalluri, R., & LeBleu, V. S. (2020). The biology, function, and biomedical applications of exosomes. *Science*, 367(6478) : eaau6977.
- Kang, M., Jordan, V., Blenkiron, C., & Chamley, L. W. (2021). Biodistribution of extracellular vesicles following administration into animals: A systematic review. *J Extracell Vesicles.*, 10(8) : e12085.
- Keller, S., Ridinger, J., Rupp, A. K., Janssen, J. W., & Altevogt, P. (2011). Body fluid derived exosomes as a novel template for clinical diagnostics. *J Transl Med.*, 9 : 86.
- Khalid, N., & Azimpouran, M. (2023). Necrosis. In StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from <https://www.ncbi.nlm.nih.gov/books/NBK557627/>
- Kinlay, S. (2016). Management of chronic limb ischemia. *Circ Cardiovasc Interv.*, 9(2).
- Kir, D., Schnettler, E., Modi, S., & Ramakrishnan, S. (2018). Regulation of angiogenesis by microRNAs in cardiovascular diseases. *Angiogenesis*, 21(4) : 699–710.
- Kocherova, I., Bryja, A., Mozdziak, P., Angelova Volponi, A., Dyszkiewicz-Konwińska, M., Piotrowska-Kempisty, H., *et al.* (2019). Human umbilical vein endothelial cells (HUVECs) co-culture with osteogenic cells: From molecular communication to engineering prevascularised bone grafts. *J Clin Med.*, 8(10) : 1602.
- Kokkat, T. J., Patel, M. S., McGarvey, D., LiVolsi, V. A., & Baloch, Z. W. (2013). Archived formalin-fixed paraffin-embedded (FFPE) blocks: A valuable underexploited resource for extraction of DNA, RNA, and protein. *Biopreserv Biobank.*, 11(2) : 101–106.
- Kogata, N., Arai, Y., Pearson, J. T., Hashimoto, K., Hidaka, K., Koyama, T., *et al.* (2006). Cardiac ischemia activates vascular endothelial cadherin promoter in both preexisting vascular cells and bone marrow cells involved in neovascularization. *Circ Res.*, 98(7) : 897–904.
- Konoshenko, M. Y., Lekchnov, E. A., Vlassov, A. V., & Laktionov, P. P. (2018). Isolation of extracellular vesicles: General methodologies and latest trends. *Biomed Res Int.*, 2018 : 8545347.
- Kwok, Z. H., Wang, C., & Jin, Y. (2021). Extracellular vesicle transportation and uptake by recipient cells: A critical process to regulate human diseases. *Processes (Basel).*, 9(2) : 273.

- Lähteenvuo, J., & Rosenzweig, A. (2012). Effects of aging on angiogenesis. *Circ Res.*, 110(9) : 1252–1264.
- Lai, C. P., Mardini, O., Ericsson, M., Prabhakar, S., Maguire, C., Chen, J. W., *et al.* (2014). Dynamic biodistribution of extracellular vesicles in vivo using a multimodal imaging reporter. *ACS Nano*, 8(1) : 483–494.
- Lai, C. P., Kim, E. Y., Badr, C. E., Weissleder, R., Mempel, T. R., Tannous, B. A., *et al.* (2015). Visualization and tracking of tumour extracellular vesicle delivery and RNA translation using multiplexed reporters. *Nat Commun.*, 6 : 7029.
- Lanahan, A., Zhang, X., Fantin, A., Zhuang, Z., Rivera-Molina, F., Speichinger, K., *et al.* (2013). The neuropilin 1 cytoplasmic domain is required for VEGF-A-dependent arteriogenesis. *Dev Cell.*, 25(2) : 156–168.
- Lanahan, A. A., Lech, D., Dubrac, A., Zhang, J., Zhuang, Z. W., Eichmann, A., *et al.* (2014). PTP1b is a physiologic regulator of vascular endothelial growth factor signaling in endothelial cells. *Circulation*, 130(11) : 902–909.
- Lasch, M., Caballero Martinez, A., Kumaraswami, K., Ishikawa-Ankerhold, H., Meister, S., & Deindl, E. (2020). Contribution of the potassium channels KV1.3 and KCa3.1 to smooth muscle cell proliferation in growing collateral arteries. *Cells*, 9(4) : 913.
- Lee, S., Paoletti, C., Campisi, M., Osaki, T., Adriani, G., Kamm, R. D., *et al.* (2019). MicroRNA delivery through nanoparticles. *J Control Release.*, 313 : 80–95.
- Lei, Z., van Mil, A., Brandt, M. M., Grundmann, S., Hofer, I., Smits, M., *et al.* (2015). MicroRNA-132/212 family enhances arteriogenesis after hindlimb ischaemia through modulation of the Ras-MAPK pathway. *J Cell Mol Med.*, 19(8) : 1994–2005.
- Lejay, A., Wu, W. W., Kuntz, S. H., & Feinberg, M. W. (2024). What Is the Best Experimental Model for Developing Novel Therapeutics in Peripheral Artery Disease? *Arteriosclerosis, Thrombosis, and Vascular Biology*, 44(11), 2264–2270. <https://doi.org/10.1161/ATVBAHA.124.321163>
- Le Noble, F., & Kupatt, C. (2022). Interdependence of angiogenesis and arteriogenesis in development and disease. *Int J Mol Sci.*, 23(7) : 3879.
- Li, X., Xie, X., Lian, W., Shi, R., Han, S., Zhang, H., *et al.* (2018). Exosomes from adipose-derived stem cells overexpressing Nrf2 accelerate cutaneous wound healing by promoting vascularization in a diabetic foot ulcer rat model. *Exp Mol Med.*, 50(4) : 1–14.
- Li, Z. H., Li, L., Kang, L. P., & Wang, Y. (2018). MicroRNA-92a promotes tumor growth and suppresses immune function through activation of MAPK/ERK signaling pathway by inhibiting PTEN in mice bearing U14 cervical cancer. *Cancer Medicine*, 7(7), 3118–3131. <https://doi.org/10.1002/cam4.1329>

- Liguori, I., Russo, G., Curcio, F., Bulli, G., Aran, L., Della-Morte, D., *et al.* (2018). Oxidative stress, aging, and diseases. *Clin Interv Aging.*, 13 : 757–772.
- Litvak, J., Siderides, L. E., & Vineberg, A. M. (1957). The experimental production of coronary artery insufficiency and occlusion. *Am Heart J.*, 53(4) : 505–518.
- Liu, W., Feng, Y., Wang, X., Ding, J., Li, H., Guan, H., *et al.* (2022). Human umbilical vein endothelial cells-derived exosomes enhance cardiac function after acute myocardial infarction by activating the PI3K/AKT signaling pathway. *Bioengineered.*, 13(4) : 8850–8865.
- Lowe, R., Shirley, N., Bleackley, M., Dolan, S., & Shafee, T. (2017). Transcriptomics technologies. *PLoS computational biology*, 13(5): e1005457.
- Lukomska, B., Stanaszek, L., Zuba-Surma, E., Legosz, P., Sarzynska, S., & Drela, K. (2019). Challenges and Controversies in Human Mesenchymal Stem Cell Therapy. *Stem Cell Int.*, 2019 : 9628536.
- Martello, A., Mellis, D., Meloni, M., Howarth, A., Ebner, D., Caporali, A., *et al.* (2018). Phenotypic miRNA Screen Identifies miR-26b to Promote the Growth and Survival of Endothelial Cells. *Mol Ther Nucleic Acids.*, 13 : 29–43.
- Mathiyalagan, P., Liang, Y., Kim, D., Misener, S., Thorne, T., Kamide, C. E., *et al.* (2017). Angiogenic Mechanisms of Human CD34+ Stem Cell Exosomes in the Repair of Ischemic Hindlimb. *Circ Res.*, 120(9) : 1466–1476.
- Mathiyalagan, P., & Sahoo, S. (2017). Exosomes-based gene therapy for MicroRNA delivery. *Methods Mol Biol.*, 1521 : 139–152.
- Meng, S., Cao, J. T., Zhang, B., Zhou, Q., Shen, C. X., & Wang, C. Q. (2012). Downregulation of microRNA-126 in endothelial progenitor cells from diabetes patients, impairs their functional properties, via target gene Spred-1. *J Mol Cell Cardiol.*, 53(1) : 64–72.
- Moccia, F., Negri, S., Shekha, M., Faris, P., & Guerra, G. (2019). Endothelial Ca²⁺ Signaling, Angiogenesis and Vasculogenesis: Just What It Takes to Make a Blood Vessel. *Int J Mol Sci.*, 20(16) : 3962.
- Mor, F., Quintana, F. J., & Cohen, I. R. (2004). Angiogenesis-inflammation cross-talk: Vascular endothelial growth factor is secreted by activated T cells and induces Th1 polarization. *J Immunol.*, 172(7) : 4618–4623.
- Moraes, F., Paye, J., Mac Gabhann, F., Zhuang, Z. W., Zhang, J., Lanahan, A. A., *et al.* (2013). Endothelial cell-dependent regulation of arteriogenesis. *Circ Res.*, 113(9) : 1076–1086.
- Mullany, L. E., Wolff, R. K., & Slattery, M. L. (2015). Effectiveness and Usability of Bioinformatics Tools to Analyze Pathways Associated with miRNA Expression. *Cancer Inform.*, 14 : 121–130.

- Munagala, R., Aqil, F., Jeyabalan, J., & Gupta, R. C. (2016). Bovine milk-derived exosomes for drug delivery. *Cancer Lett.*, 371(1) : 48–61.
- Musumeci, G., Castorina, A., Magro, G., Cardile, V., Castorina, S., & Ribatti, D. (2015). Enhanced expression of CD31/platelet endothelial cell adhesion molecule 1 (PECAM1) correlates with hypoxia inducible factor-1 alpha (HIF-1 α) in human glioblastoma multiforme. *Exp Cell Res.*, 339(2) : 407–416.
- Nakano-Doi, A., Sakuma, R., Matsuyama, T., & Nakagomi, T. (2018). Ischemic stroke activates the VE-cadherin promoter and increases VE-cadherin expression in adult mice. *Histol Histopathol.*, 33(5) : 507–521.
- Nan, W., He, Y., Wang, S., & Zhang, Y. (2023). *Molecular mechanism of VE-cadherin in regulating endothelial cell behaviour during angiogenesis.* August, 1–12. <https://doi.org/10.3389/fphys.2023.1234104>
- Nehler, M. R., Duval, S., Diao, L., Annex, B. H., Hiatt, W. R., Rogers, K., *et al.* (2014). Epidemiology of peripheral arterial disease and critical limb ischemia in an insured national population. *J Vasc Surg.*, 60(3) : 686–695.
- Nossent, A. Y., Bastiaansen, A. J., Peters, E. A., de Vries, M. R., Aref, Z., Welten, S. M., *et al.* (2017). CCR7-CCL19/CCL21 axis is essential for effective arteriogenesis in a murine model of hindlimb ischemia. *J Am Heart Assoc.*, 6(3) : e005281.
- O'Brien, J., Hayder, H., Zayed, Y., & Peng, C. (2018). Overview of microRNA biogenesis, mechanisms of actions, and circulation. *Front Endocrinol (Lausanne)*, 9 : 402.
- Pankratz, F., Bemtgen, X., Zeiser, R., Leonhardt, F., Kreuzaler, S., Hilgendorf, I., *et al.* (2015). MicroRNA-155 exerts cell-specific antiangiogenic but proarteriogenic effects during adaptive neovascularization. *Circulation*, 131(18) : 1575–1589.
- Parolini, I., Federici, C., Raggi, C., Lugini, L., Palleschi, S., De Milito, A., *et al.* (2009). Microenvironmental pH is a key factor for exosome traffic in tumor cells. *J Biol Chem.*, 284(49) : 34211–34222.
- Patel, G. K., Khan, M. A., Zubair, H., Srivastava, S. K., Khushman, M., Singh, S., & Singh, A. P. (2019). Comparative analysis of exosome isolation methods using culture supernatant for optimum yield, purity and downstream applications. *Scientific Reports*, 9(1), 1–10. <https://doi.org/10.1038/s41598-019-41800-2>
- Pérez-Cremades, D., Cheng, H. S., & Feinberg, M. W. (2020). Noncoding RNAs in critical limb ischemia. *Arterioscler Thromb Vasc Biol.*, 40 : 523–533.
- 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. *Pharmaceuticals (Basel, Switzerland)*, 13(2), 31.

- Pritchard, C., Cheng, H., & Tewari, M. (2012). MicroRNA profiling: approaches and considerations. *Nat Rev Genet.*, 13, 358–369.
- Qu, M. J., Pan, J. J., Shi, X. J., Zhang, Z. J., Tang, Y. H., & Yang, G. Y. (2018). MicroRNA-126 is a prospective target for vascular disease. *Neuroimmunology and Neuroinflammation*, 5 (4) : 10.
- Rahimi, N. (2012). The ubiquitin-proteasome system meets angiogenesis. *Mol Cancer Ther.*, 11(3) : 538–548.
- Ranganath, S. H., Levy, O., Inamdar, M. S., & Karp, J. M. (2012). Harnessing the mesenchymal stem cell secretome for the treatment of cardiovascular disease. *Cell Stem Cell*, 10(3) : 244–258.
- Reinecke, H., Unrath, M., Freisinger, E., Bunzemeier, H., Meyborg, M., Lüders, F., *et al.* (2015). Peripheral arterial disease and critical limb ischaemia: Still poor outcomes and lack of guideline adherence. *Eur Heart J.*, 36(15) : 932–938.
- Reis, P. P., Waldron, L., Goswami, R. S., Xu, W., Xuan, Y., Perez-Ordóñez, B., *et al.* (2011). mRNA transcript quantification in archival samples using multiplexed, color-coded probes. *BMC Biotechnol.*, 11 : 46.
- Reiss, A. B., Ahmed, S., Johnson, M., Saeedullah, U., & De Leon, J. (2023). Exosomes in Cardiovascular Disease: From Mechanism to Therapeutic Target. *Metabolites*, 13(4) : 479.
- Ricard, N., Zhang, J., Zhuang, Z. W., & Simons, M. (2019). Isoform-Specific Roles of ERK1 and ERK2 in Arteriogenesis. *Cells*, 9(1) : 38.
- Riley, M. K., & Vermerris, W. (2017). Recent advances in nanomaterials for gene delivery—A review. *Nanomaterials*, 7(94).
- Rissanen, T. T., Vajanto, I., Kettunen, M. I., Niemi, M., Alhava, E., & Kauppinen, R. A. (2002). *Expression of Vascular Endothelial Growth Factor and Vascular Endothelial Growth Factor Receptor-2 (KDR / Flk-1) in Ischemic Skeletal Muscle and Its Regeneration*. 160(4), 1393–1403.
- Rody, E., Zwaig, J., Derish, I., Khan, K., Kachurina, N., Gendron, N., Giannetti, N., Schwertani, A., & Cecere, R. (2024). Evaluating the Reparative Potential of Secretome from Patient-Derived Induced Pluripotent Stem Cells during Ischemia–Reperfusion Injury in Human Cardiomyocytes. *International Journal of Molecular Sciences*, 25(19), 1–19. <https://doi.org/10.3390/ijms251910279>
- Ru, Y., Kechris, K. J., Tabakoff, B., Hoffman, P., Radcliffe, R. A., Bowler, R., *et al.* (2014). The multiMiR R package and database: integration of microRNA-target interactions along with their disease and drug associations. *Nucleic Acids Res.*, 42(17) : e133.

- Sahoo, S., Klychko, E., Thorne, T., Misener, S., Schultz, K. M., Millay, M., *et al.* (2011). Exosomes from human CD34(+) stem cells mediate their proangiogenic paracrine activity. *Circ Res.*, 109(7) : 724–728.
- Sahu, A., Sagar, R., Sarkar, S., & Sagar, S. (2016). Psychological effects of amputation: A review of studies from India. *Ind Psychiatry J.*, 25(1) : 4.
- Sancho-Albero, M., Navascués, N., Mendoza, G., Sebastián, V., Arruebo, M., Martín-Duque, P., *et al.* (2019). Exosome origin determines cell targeting and the transfer of therapeutic nanoparticles towards target cells. *J Nanobiotechnology.*, 17(1) : 16.
- Sandoval, D. L. (2019). Chronic Limb-threatening Ischemia: The Time has Come for a Multidisciplinary Approach. *J Vasc Endovasc Therapy*, 4(1).
- Scholz, D., Cai, W. J., & Schaper, W. (2001). Arteriogenesis, a new concept of vascular adaptation in occlusive disease. *Angiogenesis*, 4(4) : 247–257.
- Setianto, B.Y., Ismail, M.T., At Thobari, J., , Hariawan, H., Anggrahini, D.W., Hartopo, A.B., Damarkusuma, A., Ramadhan, A., Julianto, I., Soekotjo, O., Santosa, E.M, Sunarto, R., Haryana, S.M. 2024. *Exosomes Derived from Human Umbilical Vein Endothelial Cells Promote Proliferation and Migration of Endothelial Cells In Vitro*. Unpublished data.
- Shi, L., Fisslthaler, B., Zippel, N., Frömel, T., Hu, J., Elgheznawy, A., *et al.* (2013). MicroRNA-223 antagonizes angiogenesis by targeting $\beta 1$ integrin and preventing growth factor signaling in endothelial cells. *Circ Res*, 113(12) : 1320–1330.
- Shih, S., Robinson, G. S., Perruzzi, C. A., Calvo, A., Desai, K., Green, J. E., Ali, I. U., Smith, L. E. H., & Senger, D. R. (2002). *Molecular Profiling of Angiogenesis Markers*. 161(1), 35–41.
- Shireman, P. K. (2007). The chemokine system in arteriogenesis and hindlimb ischemia. *J Vasc Surg.*, 45 (Suppl A) : A48-56.
- Sicard, G.A. (2018). In Sidawy, A. N., & Perler, B. A. (Eds) *Rutherford's Vascular Surgery and Endovascular Therapy*, 9th ed, pp. 1611-1612. PA: Elsevier, Philadelphia.
- Sidhom, K., Obi, P. O., & Saleem, A. (2020). A Review of Exosomal Isolation Methods: Is Size Exclusion Chromatography the Best Option? *Int J Mol Sci.*, 21(18) : 64-66.
- Simon, F., Oberhuber, A., & Floros, N. (2018). Pathophysiology of chronic limb ischemia. *Gefasschirurgie*, 23(Suppl 1) : 13–18.

- Song, W., Liang, Q., Cai, M., & Tian, Z. (2020). HIF-1 α -induced up-regulation of microRNA-126 contributes to the effectiveness of exercise training on myocardial angiogenesis in myocardial infarction rats. *J Cell Mol Med.*, 24(22), 12970–12979.
- Sorrentino, T. A., Duong, P., Bouchareychas, L., Chen, M., Chung, A., Schaller, M. S., *et al.* (2020). Circulating exosomes from patients with peripheral artery disease influence vascular cell migration and contain distinct microRNA cargo. *JVS Vasc Sci.*, 1 : 28–41.
- Spinetti, G., Fortunato, O., Caporali, A., Shantikumar, S., Marchetti, M., Meloni, M., *et al.* (2013). MicroRNA-15a and MicroRNA-16 impair human circulating proangiogenic cell functions and are increased in the proangiogenic cells and serum of patients with critical limb ischemia. *Circ Res.*, 113 : 335–346.
- Stranska, R., Gysbrechts, L., Wouters, J., Vermeersch, P., Bloch, K., Dierickx, D., *et al.* (2018). Comparison of membrane affinity-based method with size-exclusion chromatography for isolation of exosome-like vesicles from human plasma. *J Transl Med.*, 16(1) : 1.
- Sumano, L. H., Ocampo, C. L., & Gutierrez, O. L. (2007). Intravenous and intramuscular pharmacokinetics of a single-daily dose of disodium-fosfomycin in cattle, administered for 3 days. *J Vet Pharmacoll Ther.*, 30(1) : 49–54.
- Sun, L. L., Li, W. D., Lei, F. R., & Li, X. Q. (2018). The regulatory role of microRNAs in angiogenesis-related diseases. *J Cell Mol Med.*, 22(10) : 4568–4587.
- Tachibana, C. (2015). Transcriptomics today: Microarrays, RNA-seq, and more. *Science*, 349 : 544-546.
- Thaxton, C. S., Rink, J. S., Naha, P. C., & Cormode, D. P. (2016). Lipoproteins and lipoprotein mimetics for imaging and drug delivery. *Adv Drug Deliv Rev.*, 106 : 116–131.
- Theofilis, P., Vogiatzi, G., Oikonomou, E., Gazouli, M., Siasos, G., Katifelis, H., *et al.* (2021). The Effect of MicroRNA-126 Mimic Administration on Vascular Perfusion Recovery in an Animal Model of Hindlimb Ischemia. *Front Mol Biosci.*, 8 : 724465.
- Thomas P. D. (2017). The Gene Ontology and the Meaning of Biological Function. *Methods Mol Biol.*, 1446: 15–24.
- Thongboonkerd, V. (2020). Roles for Exosome in Various Kidney Diseases and Disorders. *Front Pharmacol.*, 10 : 1655.
- Tiwari, A., Mukherjee, B., & Dixit, M. (2018). MicroRNA Key to Angiogenesis Regulation: MiRNA Biology and Therapy. *Curr Cancer Drug Targets*, 18(3)

: 266–277.

- Trigo, C. M., Rodrigues, J. S., Camões, S. P., Solá, S., & Miranda, J. P. (2024). Mesenchymal stem cell secretome for regenerative medicine : Where do we stand? *Journal of Advanced Research*, xxx. <https://doi.org/10.1016/j.jare.2024.05.004>
- Tripathi, A., Goswami, K., & Sanan-Mishra, N. (2015). Role of bioinformatics in establishing microRNAs as modulators of abiotic stress responses: the new revolution. *Front Physiol.*, 6 : 286.
- Troidl, K., Hammerschick, T., Albarran-Juarez, J., Jung, G., Schierling, W., Tonack, *et al.* (2020). Shear Stress-Induced miR-143-3p in Collateral Arteries Contributes to Outward Vessel Growth by Targeting Collagen V- α 2. *Arterioscler Thromb Vasc Biol.*, 40(5) : e126–e137.
- Troidl, K., Schubert, C., Vlacil, A. K., Chennupati, R., Koch, S., Schütt, J., *et al.* (2020). The Lipopeptide MALP-2 Promotes Collateral Growth. *Cells*, 9(4) : 997.
- Tsang, H. F., Xue, V. W., Koh, S. P., Chiu, Y. M., Ng, L. P., & Wong, S. C. (2017). NanoString, a novel digital color-coded barcode technology: current and future applications in molecular diagnostics. *Expert Rev Mol Diagn.*, 17(1) : 95–103.
- Tsatralis, T., Ridiandries, A., Robertson, S., Vanags, L. Z., Lam, Y. T., Tan, J. T., *et al.* (2016). Reconstituted high-density lipoproteins promote wound repair and blood flow recovery in response to ischemia in aged mice. *Lipids Health Dis.*, 15(1) : 150.
- Valadi, H., Ekström, K., Bossios, A., Sjöstrand, M., Lee, J. J., & Lötvall, J. O. (2007). Exosome-mediated transfer of mRNAs and microRNAs is a novel mechanism of genetic exchange between cells. *Nat Cell Biol.*, 9(6) : 654–659.
- Vandamme, T. F. (2014). Use of rodents as models of human diseases. *J Pharm Bioallied Sci.*, 6(1) : 2–9.
- Van der Kwast, R. V., Quax, P. H. A., & Nossent, A. Y. (2019). An Emerging Role for isomiRs and the microRNA Epitranscriptome in Neovascularization. *Cells*, 9(1) : 61.
- Van Reijen, N. S., Hensing, T., Santema, T., Ubbink, D. T., & Koelemay, M. (2021). Outcomes of Conservative Treatment in Patients with Chronic Limb-threatening Ischaemia: A Systematic Review and Meta-Analysis. *Eur J Vasc Endovasc Surg.*, 62(2) : 214–224.
- Van Rooij, E., & Olson, E. N. (2012). MicroRNA therapeutics for cardiovascular disease: opportunities and obstacles. *Nat Rev Drug Discov.*, 11(11) : 860–872.
- Van Royen, N., Piek, J. J., Buschmann, I., Hofer, I., Voskuil, M., & Schaper, W.

- (2001). Stimulation of arteriogenesis; a new concept for the treatment of arterial occlusive disease. *Cardiovasc Res.*, 49(3) : 543–553.
- Van Weel, V., Deckers, M. M., Grimbergen, J. M., Van Leuven, K. J., Lardenoye, J. W., Schlingemann, R. O., *et al.* (2004). Vascular endothelial growth factor overexpression in ischemic skeletal muscle enhances myoglobin expression in vivo. *Circ Res.*, 95(1) : 58–66.
- Van Weel, V., Seghers, L., De Vries, M. R., Kuiper, E. J., Schlingemann, R. O., Bajema, I. M., *et al.* (2007). Expression of vascular endothelial growth factor, stromal cell-derived factor-1, and CXCR4 in human limb muscle with acute and chronic ischemia. *Arterioscler Thromb Vasc Biol.*, 27(6) : 1426–1432.
- Van Weel, V., Van Tongeren, R. B., Van Hinsbergh, V. W. M., Van Bockel, J. H., & Quax, P. H. A. (2008). Vascular Growth in Ischemic Limbs: A Review of Mechanisms and Possible Therapeutic Stimulation. *Ann Vasc Surg.*, 22(4) : 582–597.
- Vanchinathan V, Mirzamani N, Kantipudi R, Schwartz EJ, Sundram UN. The vascular marker CD31 also highlights histiocytes and histiocyte-like cells within cutaneous tumors. *Am J Clin Pathol.* 2015 Feb;143(2):177-85; quiz 305. doi: 10.1309/AJCPRHM8CZH5EMFD. Erratum in: *Am J Clin Pathol.* 2015 Jun;143(6):911. doi: 10.1309/AJCP7RDKX2OXOZCY. Mizramani, Neda [corrected to Mirzamani, Neda]. PMID: 25596243.
- Veldman-Jones, M. H., Brant, R., Rooney, C., Geh, C., Emery, H., Harbron, C. G., *et al.* (2015). Evaluating Robustness and Sensitivity of the NanoString Technologies nCounter Platform to Enable Multiplexed Gene Expression Analysis of Clinical Samples. *Cancer Res.*, 75(13) : 2587–2593.
- Verwer, M. C., Wijnand, J. G. J., Teraa, M., Verhaar, M. C., & Borst, G. J. (2021). Long Term Survival and Limb Salvage in Patients With Non-Revascularisable Chronic Limb-threatening Ischaemia. *Eur J Vasc Endovasc Surg.*, 62(2) : 225–232.
- Vestweber, D. (2008). VE-cadherin: the major endothelial adhesion molecule controlling cellular junctions and blood vessel formation. *Arterioscler Thromb Vasc Biol.*, 23(2) : 223–232.
- Vitalis, A., Lip, G. Y., Kay, M., Vohra, R. K., & Shantsila, A. (2017). Ethnic differences in the prevalence of peripheral arterial disease: a systematic review and meta-analysis. *Expert Rev Cardiovasc Ther.*, 15(4) : 327–338.
- Vizoso, F. J., Eiro, N., Cid, S., Schneider, J., & Perez-fernandez, R. (2017). *Mesenchymal Stem Cell Secretome: Toward Cell-Free Therapeutic Strategies in Regenerative Medicine.* <https://doi.org/10.3390/ijms18091852>
- Welten, S. M., Bastiaansen, A. J., De Jong, R. C., De Vries, M. R., Peters, E. A., Boonstra, M. C., *et al.* (2014). Inhibition of 14q32 MicroRNAs miR-329, miR-487b, miR-494, and miR-495 increases neovascularization and blood

- flow recovery after ischemia. *Circ Res.*, 115(8) : 696–708.
- Welten, S. M., Goossens, E. A., Quax, P. H., & Nossent, A. Y. (2016). The multifactorial nature of microRNAs in vascular remodelling. *Cardiovasc Res.*, 110(1) : 6–22.
- Wiklander, O. P., Nordin, J. Z., O'Loughlin, A., Gustafsson, Y., Corso, G., Mäger, I., *et al.* (2015). Extracellular vesicle in vivo biodistribution is determined by cell source, route of administration and targeting. *J Extracell Vesicles.*, 4 : 26316.
- Xu, L., Zhou, J., Liu, J., Liu, Y., Wang, L., Jiang, R., *et al.* (2017). Different Angiogenic Potentials of Mesenchymal Stem Cells Derived from Umbilical Artery, Umbilical Vein, and Wharton's Jelly. *Stem Cells Int.*, 2017 : 3175748.
- Yakubovich, E. I., Polischouk, A. G., & Evtushenko, V. I. (2022). Principles and Problems of Exosome Isolation from Biological Fluids. *Biochemistry (Moscow) Supplement Series A: Membrane and Cell Biology*, 16(2), 115–126. <https://doi.org/10.1134/S1990747822030096>
- Yang, Y., Liu, Y., Li, Y., Chen, Z., Xiong, Y., Zhou, T., *et al.* (2020). MicroRNA-15b Targets VEGF and Inhibits Angiogenesis in Proliferative Diabetic Retinopathy. *J Clin Endocrinol Metab.*, 105(11) : 3404–3415.
- Zampetaki, A., & Mayr, M. (2012). MicroRNAs in vascular and metabolic disease. *Circ Res.*, 110(3) : 508–522.
- Zhang, J., Day, I. N., & Byrne, C. D. (2002). A novel medium throughput quantitative competitive PCR technology to simultaneously measure mRNA levels from multiple genes. *Nucleic Acids Res.*, 30(5) : e20.
- Zhang, H., Kolb, F. A., Jaskiewicz, L., Westhof, E., & Filipowicz, W. (2004). Single processing center models for human Dicer and bacterial RNase III. *Cell*, 118(1) : 57–68.
- Zhang, Y. Z., Liu, F., Song, C. G., Cao, X. L., Zhang, Y. F., Wu, H. N., *et al.* (2018). Exosomes derived from human umbilical vein endothelial cells promote neural stem cell expansion while maintaining their stemness in culture. *Biochem Biophys Res Commun.*, 495(1), 892–898.
- Zhang, Y., Liu, Y., Liu, H., & Tang, W. H. (2019). Exosomes: Biogenesis, biologic function and clinical potential. *Cell and Bioscience*, 9(1) : 9.
- Zhang, Y., Zhang, Y., Chopp, M., Zhang, Z. G., Mahmood, A., & Xiong, Y. (2020). Mesenchymal Stem Cell-Derived Exosomes Improve Functional Recovery in Rats After Traumatic Brain Injury: A Dose-Response and Therapeutic Window Study. *Neurorehabil Neural Repair.*, 34(7) : 616–626.
- Zhao, Y., Sun, X., Cao, W., Ma, J., Sun, L., Qian, H., *et al.* (2015). Exosomes Derived from Human Umbilical Cord Mesenchymal Stem Cells Relieve Acute Myocardial Ischemic Injury. *Stem Cells Int.*, 2015 : 761643.

- Zhong, Y., & Luo, L. (2021). Exosomes from Human Umbilical Vein Endothelial Cells Ameliorate Ischemic Injuries by Suppressing the RNA Component of Mitochondrial RNA-processing Endoribonuclease via the Induction of miR-206/miR-1-3p Levels. *Neuroscience*, 476 : 34–44.
- Zhu, L. P., Zhou, J. P., Zhang, J. X., Wang, J. Y., Wang, Z. Y., Pan, M., *et al.* (2017). MiR-15b-5p regulates collateral artery formation by targeting AKT3 (Protein Kinase B-3). *Arterioscler Thromb Vasc Biol.*, 37(5) : 957–968.
- Ziello, J. E., Jovin, I. S., & Huang, Y. (2007). Hypoxia-Inducible Factor (HIF)-1 regulatory pathway and its potential for therapeutic intervention in malignancy and ischemia. *Yale J Biol Med.*, 80(2) : 51-60.