

DAFTAR PUSTAKA

- Acharya, P., Chouhan, K., Weiskirchen, S., Weiskirchen, R., 2021. Cellular Mechanisms of Liver Fibrosis. *Front. Pharmacol.* 12: 1–28. doi:10.3389/fphar.2021.671640
- Akare, S., Martinez, J.D., 2005. Bile acid induces hydrophobicity-dependent membrane alterations. *Biochim. Biophys. Acta - Mol. Cell Biol. Lipids* 1735: 59–67. doi:10.1016/j.bbalip.2005.04.006
- Aleffi, S., Petrai, I., Bertolani, C., Parola, M., Colombatto, S., Novo, E., Vizzutti, F., Anania, F.A., Milani, S., Rombouts, K., Laffi, G., Pinzani, M., Marra, F., 2005. Upregulation of proinflammatory and proangiogenic cytokines by leptin in human hepatic stellate cells. *Hepatology* 42: 1339–1348. doi:10.1002/hep.20965
- An, S.Y., Jang, Y.J., Lim, H.J., Han, J., Lee, J., Lee, G., Park, J.Y., Park, S.Y., Kim, Ji Hyang, Do, B.R., Han, C., Park, H.K., Kim, O.H., Song, M.J., Kim, S.J., Kim, Jong Hoon, 2017. Milk Fat Globule-EGF Factor 8, Secreted by Mesenchymal Stem Cells, Protects Against Liver Fibrosis in Mice. *Gastroenterology* 152: 1174–1186. doi:10.1053/j.gastro.2016.12.003
- Andrade, W. de C., da Silva, L.F.F., Coelho, M.C. de M., Tannuri, A.C.A., Alves, V.A.F., Tannuri, U., 2012. Effects of the administration of pentoxifylline and prednisolone on the evolution of portal fibrogenesis secondary to biliary obstruction in growing animals: Immunohistochemical analysis of the expression of TGF- β and VEGF. *Clinics* 67: 1455–1461. doi:10.6061/clinics/2012(12)17
- Arjmand, A., Tsipouras, M.G., Tzallas, A.T., Forlano, R., Manousou, P., Giannakeas, N., 2020. Quantification of liver fibrosis-a comparative study. *Appl. Sci.* 10: 1–34. doi:10.3390/app10020447
- Aseem, S.O., Hylemon, P.B., Zhou, H., 2023. Bile Acids and Biliary Fibrosis. *Cells* 12: 1–19. doi:10.3390/cells12050792
- Aulbach, A.D., Amuzie, C.J., 2016. Biomarkers in Nonclinical Drug Development, Second Edi. ed, A Comprehensive Guide to Toxicology in Nonclinical Drug Development. Elsevier Inc. doi:10.1016/B978-0-12-803620-4.00017-7
- Bai, L., Li, D., Li, J., Luo, Z., Yu, S., Cao, S., Shen, L., Zuo, Z., Ma, X., 2016. Bioactive molecules derived from umbilical cord mesenchymal stem cells. *Acta Histochem.* doi:10.1016/j.acthis.2016.09.006
- Bartoszewska, S., Kochan, K., Piotrowski, A., Kamysz, W., Ochocka, R.J., Collawn, J.F., Bartoszewski, R., 2015. The hypoxia-inducible miR-429 regulates hypoxia-inducible factor-1 α expression in human endothelial cells through a negative feedback loop. *FASEB J.* doi:10.1096/fj.14-267054
- Bedossa, P., Poinard, T., 1996. An algorithm for the grading of activity in chronic hepatitis C. *Hepatology* 24: 289–293. doi:10.1002/hep.510240201
- Befani, C., Liakos, P., 2018. The role of hypoxia-inducible factor-2 alpha in angiogenesis. *J. Cell. Physiol.* 233: 9087–9098. doi:10.1002/jcp.26805
- Bocca, C., Novo, E., Miglietta, A., Parola, M., 2015. Angiogenesis and Fibrogenesis in Chronic Liver Diseases. *Cmgh* 1: 477–488. doi:10.1016/j.jcmgh.2015.06.011

- Bruning, U., Cerone, L., Neufeld, Z., Fitzpatrick, S.F., Cheong, A., Scholz, C.C., Simpson, D.A., Leonard, M.O., Tambuwala, M.M., Cummins, E.P., Taylor, C.T., 2011. MicroRNA-155 Promotes Resolution of Hypoxia-Inducible Factor 1 α Activity during Prolonged Hypoxia. *Mol. Cell. Biol.* 31: 4087–4096. doi:10.1128/mcb.01276-10
- Cavadas, M.A.S., Mesnieres, M., Crifo, B., Manresa, M.C., Selfridge, A.C., Scholz, C.C., Cummins, E.P., Cheong, A., Taylor, C.T., 2015. REST mediates resolution of HIF-dependent gene expression in prolonged hypoxia. *Sci. Rep.* 5: 1–12. doi:10.1038/srep17851
- Chamboredon, S., Ciaï, D., Desroches-Castan, A., Savid, P., Bono, F., Feige, J.J., Cherradi, N., 2011. Hypoxia-inducible factor-1 α mRNA: A new target for destabilization by tristetraprolin in endothelial cells. *Mol. Biol. Cell* 22: 3366–3378. doi:10.1091/mbc.E10-07-0617
- Chouaib, B., Haack-Sørensen, M., Chaubron, F., Cuisinier, F., Collart-Dutilleul, P.Y., 2023. Towards the Standardization of Mesenchymal Stem Cell Secretome-Derived Product Manufacturing for Tissue Regeneration. *Int. J. Mol. Sci.* 24. doi:10.3390/ijms241612594
- Chu, Q., Gu, X., Zheng, Q., Zhu, H., 2022. Regulatory mechanism of HIF-1 α and its role in liver diseases: a narrative review. *Ann. Transl. Med.* 10: 109–109. doi:10.21037/atm-21-4222
- Clark, A.R., Ohlmeyer, M., 2019. Protein phosphatase 2A as a therapeutic target in inflammation and neurodegeneration. *Pharmacol. Ther.* 201: 181–201. doi:10.1016/j.pharmthera.2019.05.016
- Costanzo, L.S., 2019. Board Review Series Physiology, Seventh. ed. Wolters Kluwer, Philadelphia.
- Creeden, J.F., Gordon, D.M., Stec, D.E., Hinds, T.D., 2021. Bilirubin as a metabolic hormone: The physiological relevance of low levels. *Am. J. Physiol. - Endocrinol. Metab.* 320: E191–E207. doi:10.1152/AJPENDO.00405.2020
- Cruz-Barrera, M., Flórez-Zapata, N., Lemus-Diaz, N., Medina, C., Galindo, C.C., González-Acero, L.X., Correa, L., Camacho, B., Gruber, J., Salguero, G., 2020. Integrated Analysis of Transcriptome and Secretome From Umbilical Cord Mesenchymal Stromal Cells Reveal New Mechanisms for the Modulation of Inflammation and Immune Activation. *Front. Immunol.* 11: 1–19. doi:10.3389/fimmu.2020.575488
- Díaz, R., Kim, J.W., Hui, J.J., Li, Z., Swain, G.P., Fong, K.S.K., Csiszar, K., Russo, P.A., Rand, E.B., Furth, E.E., Wells, R.G., 2008. Evidence for the epithelial to mesenchymal transition in biliary atresia fibrosis. *Hum. Pathol.* 39: 102–115. doi:10.1016/j.humpath.2007.05.021
- Driscoll, J., Patel, T., 2019. The mesenchymal stem cell secretome as an acellular regenerative therapy for liver disease. *J. Gastroenterol.* 54: 763–773. doi:10.1007/s00535-019-01599-1
- Elpek, G.Ö., 2015. Angiogenesis and liver fibrosis. *World J. Hepatol.* 7: 377–391. doi:10.4254/wjh.v7.i3.377
- Elsaied, N., Samy, A., Mosbah, E., Zaghloul, A., 2020. Induction of Surgical Obstructive Cholestasis in rats: morphological, biochemical and immunohistochemical changes. *Mansoura Vet. Med. J.* 21: 107–115.

doi:10.35943/mvmj.2020.21.318

- Festing, M.F.W., Altman, D.G., 2002. Guidelines for the design and statistical analysis of experiments using laboratory animals. *ILAR J.* 43: 244–257. doi:10.1093/ilar.43.4.244
- Foglia, B., Novo, E., Protopapa, F., Maggiora, M., Bocca, C., Cannito, S., Parola, M., 2021. Hypoxia, hypoxia-inducible factors and liver fibrosis. *Cells* 10. doi:10.3390/cells10071764
- Garrido, M., Escobar, C., Zamora, C., Rejas, C., Varas, J., Párraga, M., Martín, S.S., Montedonico, S., 2017. Bile duct ligation in young rats: A revisited animal model for biliary atresia. *Eur. J. Histochem.* 61: 1–6. doi:10.4081/ejh.2017.2803
- Georgiev, P., Jochum, W., Heinrich, S., Jang, J.H., Nocito, A., Dahm, F., Clavien, P.A., 2008. Characterization of time-related changes after experimental bile duct ligation. *Br. J. Surg.* 95: 646–656. doi:10.1002/bjs.6050
- Gijbels, E., Pieters, A., De Muynck, K., Vinken, M., Devisscher, L., 2021. Rodent models of cholestatic liver disease: A practical guide for translational research. *Liver Int.* 41: 656–682. doi:10.1111/liv.14800
- Glaser, S.S., Gaudio, E., Miller, T., Alvaro, D., Alpini, G., 2009. Cholangiocyte proliferation and liver fibrosis. *Expert Rev. Mol. Med.* 11: 1–20. doi:10.1017/S1462399409000994
- González-González, A., García-Sánchez, D., Dotta, M., Rodríguez-Rey, J.C., Pérez-Campo, F.M., 2020. Mesenchymal stem cells secretome: The cornerstone of cell-free regenerative medicine. *World J. Stem Cells* 12: 1439–1690. doi:10.4252/wjsc.v12.i12.1529
- Gwam, C., Mohammed, N., Ma, X., 2021. Stem cell secretome, regeneration, and clinical translation: a narrative review. *Ann. Transl. Med.* 9: 70–70. doi:10.21037/atm-20-5030
- Hsieh, J.Y., Wang, H.W., Chang, S.J., Liao, K.H., Lee, I.H., Lin, W.S., Wu, C.H., Lin, W.Y., Cheng, S.M., 2013. Mesenchymal Stem Cells from Human Umbilical Cord Express Preferentially Secreted Factors Related to Neuroprotection, Neurogenesis, and Angiogenesis. *PLoS One* 8: 1–11. doi:10.1371/journal.pone.0072604
- Hsu, Y.C., Chiu, Y.T., Lee, C.Y., Wu, C.F., Huang, Y.T., 2006. Anti-fibrotic effects of tetrandrine on bile-duct ligated rats. *Can. J. Physiol. Pharmacol.* 84: 967–976. doi:10.1139/Y06-050
- Huang, X.J., Choi, Y.K., Im, H.S., Yarimaga, O., Yoon, E., Kim, H.S., 2006. Aspartate aminotransferase (AST/GOT) and alanine aminotransferase (ALT/GPT) detection techniques. *Sensors* 6: 756–782. doi:10.3390/s6070756
- Ionescu, C., Oprea, B., Ciobanu, G., Georgescu, M., Bică, R., Mateescu, G.O., Huseynova, F., Barragan-Montero, V., 2022. The Angiogenic Balance and Its Implications in Cancer and Cardiovascular Diseases: An Overview. *Med.* 58. doi:10.3390/medicina58070903
- Jaśkiewicz, M., Moszyńska, A., Króliczewski, J., Cabaj, A., Bartoszewska, S., Charzyńska, A., Gebert, M., Dąbrowski, M., Collawn, J.F., Bartoszewski, R., 2022. The transition from HIF-1 to HIF-2 during prolonged hypoxia results from reactivation of PHDs and HIF1A mRNA instability. *Cell. Mol. Biol. Lett.*

27. doi:10.1186/s11658-022-00408-7
- Jun, J.H., Kim, J.Y., Choi, J.H., Lim, J.Y., Kim, K., Kim, G.J., 2020. Exosomes from Placenta-Derived Mesenchymal Stem Cells Are Involved in Liver Regeneration in Hepatic Failure Induced by Bile Duct Ligation. *Stem Cells Int.* 2020. doi:10.1155/2020/5485738
- Kakhar Umar, A., 2023. Stem Cell's Secretome Delivery Systems. *Adv. Pharm. Bull.* 13: 244–258. doi:10.34172/apb.2023.027
- Kantari-Mimoun, C., Castells, M., Klose, R., Meinecke, A.K., Lemberger, U.J., Rautou, P.E., Pinot-Roussel, H., Badoual, C., Schrödter, K., Österreicher, C.H., Fandrey, J., Stockmann, C., 2015. Resolution of liver fibrosis requires myeloid cell-driven sinusoidal angiogenesis, *Hepatology.* doi:10.1002/hep.27635
- Kehl, D., Generali, M., Mallone, A., Heller, M., Uldry, A.C., Cheng, P., Gantenbein, B., Hoerstrup, S.P., Weber, B., 2019. Proteomic analysis of human mesenchymal stromal cell secretomes: a systematic comparison of the angiogenic potential. *npj Regen. Med.* 4. doi:10.1038/s41536-019-0070-y
- Kroker, A.J., Bruning, J.B., 2015. Review of the structural and dynamic mechanisms of PPAR γ partial agonism. *PPAR Res.* 2015. doi:10.1155/2015/816856
- Li, H., 2021. Angiogenesis in the progression from liver fibrosis to cirrhosis and hepatocellular carcinoma. *Expert Rev. Gastroenterol. Hepatol.* 15: 217–233. doi:10.1080/17474124.2021.1842732
- Li, X., Yao, Q.Y., Liu, H.C., Jin, Q.W., Xu, B.L., Zhang, S.C., Tu, C.T., 2017. Placental growth factor silencing ameliorates liver fibrosis and angiogenesis and inhibits activation of hepatic stellate cells in a murine model of chronic liver disease. *J. Cell. Mol. Med.* 21: 2370–2385. doi:10.1111/jcmm.13158
- Li, X., Zhang, Q., Wang, Z., Zhuang, Q., Zhao, M., 2022. Immune and Metabolic Alterations in Liver Fibrosis: A Disruption of Oxygen Homeostasis? *Front. Mol. Biosci.* 8: 1–13. doi:10.3389/fmolb.2021.802251
- Li, Y.J., Wu, X.F., Wang, D.D., Li, P., Liang, H., Hu, X.Y., Gan, J.Q., Sun, Y.Z., Li, J.H., Li, J., Shu, X., Song, A.L., Yang, C.Y., Yang, Z.Y., Yu, W.F., Yang, L.Q., Wang, X.B., Belguise, K., Xia, Z.Y., Yi, B., 2023. Serum Soluble Vascular Endothelial Growth Factor Receptor 1 as a Potential Biomarker of Hepatopulmonary Syndrome. *J. Clin. Transl. Hepatol.* 11: 1150–1160. doi:10.14218/JCTH.2022.00421
- Lin, Y., Dong, M.Q., Liu, Z.M., Xu, M., Huang, Z.H., Liu, H.J., Gao, Y., Zhou, W.J., 2022. A strategy of vascular-targeted therapy for liver fibrosis. *Hepatology* 76: 660–675. doi:10.1002/hep.32299
- Liu, H. liang, Lv, J., Zhao, Z. min, Xiong, A. ming, Tan, Y., Glenn, J.S., Tao, Y. yan, Weng, H. lei, Liu, C. hai, 2019. Fuzhenghuayu Decoction ameliorates hepatic fibrosis by attenuating experimental sinusoidal capillarization and liver angiogenesis. *Sci. Rep.* 9: 1–11. doi:10.1038/s41598-019-54663-4
- Livak, K.J., Schmittgen, T.D., 2001. Analysis of relative gene expression data using real-time quantitative PCR and the 2- $\Delta\Delta$ CT method. *Methods* 25: 402–408. doi:10.1006/meth.2001.1262
- M.E., G., G.J., G., 2002. Bile acid-mediated hepatocyte apoptosis and cholestatic

- liver disease. *Dig. Liver Dis.* 34: 387–392.
- Mariotti, V., Fiorotto, R., Cadamuro, M., Fabris, L., Strazzabosco, M., 2021. New insights on the role of vascular endothelial growth factor in biliary pathophysiology. *JHEP Reports* 3: 100251. doi:10.1016/j.jhepr.2021.100251
- Mariotti, V., Strazzabosco, M., Fabris, L., Calvisi, D.F., 2018. Animal models of biliary injury and altered bile acid metabolism. *Biochim. Biophys. Acta - Mol. Basis Dis.* 1864: 1254–1261. doi:10.1016/j.bbadis.2017.06.027
- Martínez-Uña, M., López-Mancheño, Y., Diéguez, C., Fernández-Rojo, M.A., Novelle, M.G., 2020. Unraveling the role of leptin in liver function and its relationship with liver diseases. *Int. J. Mol. Sci.* 21: 1–33. doi:10.3390/ijms21249368
- McHugh, M.L., 2012. Interrater reliability: The kappa statistic. *Biochem. Medica* 22: 276–282. doi:10.11613/bm.2012.031
- Mejias, M., Balvey, A., Fernandez, M., 2020. Crosstalk Between Angiogenesis and Fibrogenesis in Liver Disease. *Curr. Tissue Microenviron. Reports* 1: 121–129. doi:10.1007/s43152-020-00013-w
- Melincovici, C.S., Boşca, A.B., Şuşman, S., Mărginean, M., Mişu, C., Istrate, M., Moldovan, I.M., Roman, A.L., Mişu, C.M., 2018. Vascular endothelial growth factor (VEGF) – key factor in normal and pathological angiogenesis. *Rom. J. Morphol. Embryol.* 59: 455–467.
- Mescher, A.L., 2013. Junqueira’s Basic Histology Text and Atlas, Thirteenth. ed. Mc Graw Hill Education.
- Moriles, K.E., Zubair, M., Azer, S.A., Hospital, I., Network, H., 2024. Alanine Aminotransferase (ALT) Test, Last Updat. ed. StatPearls.
- Mücke, M.M., El Bali, N., Schwarzkopf, K.M., Uschner, F.E., Kraus, N., Eberle, L., Mücke, V.T., Bein, J., Beyer, S., Wild, P.J., Schierwagen, R., Klein, S., Zeuzem, S., Welsch, C., Trebicka, J., Brieger, A., 2024. The Role of Hypoxia-Inducible Factor 1 Alpha in Acute-on-Chronic Liver Failure. *Int. J. Mol. Sci.* 25: 1–13. doi:10.3390/ijms25031542
- Noronha, C., Mizukami, A., Orellana, M.D., Oliveira, M.C., Covas, D.T., Swiech, K., Malmegrim, K.C.R., 2021. Hypoxia priming improves in vitro angiogenic properties of umbilical cord derived-mesenchymal stromal cells expanded in stirred-tank bioreactor. *Biochem. Eng. J.* 168. doi:10.1016/j.bej.2021.107949
- Omar, J.M., Hai, Y., Jin, S., 2022. Hypoxia-induced factor and its role in liver fibrosis. *PeerJ* 10: 1–31. doi:10.7717/peerj.14299
- Oswari, H., Rahayatri, T.H., Soedibyo, S., 2020. Pediatric living donor liver transplant in indonesia’s national referral hospital. *Transplantation* 104: 1305–1307. doi:10.1097/TP.0000000000003154
- Ozaki, M., 2020. Cellular and molecular mechanisms of liver regeneration: Proliferation, growth, death and protection of hepatocytes. *Semin. Cell Dev. Biol.* 100: 62–73. doi:10.1016/j.semcdb.2019.10.007
- Pal, N., Joy, P.S., Sergi, C.M., 2022. Biliary Atresia Animal Models: Is the Needle in a Haystack? *Int. J. Mol. Sci.* 23: 1–16. doi:10.3390/ijms23147838
- Park, S., Kim, J.W., Kim, J.H., Lim, C.W., Kim, B., 2015. Differential roles of angiogenesis in the induction of fibrogenesis and the resolution of fibrosis in liver. *Biol. Pharm. Bull.* 38: 980–985. doi:10.1248/bpb.b15-00325

- Pérez-Gutiérrez, L., Ferrara, N., 2023. Biology and therapeutic targeting of vascular endothelial growth factor A. *Nat. Rev. Mol. Cell Biol.* 24: 816–834. doi:10.1038/s41580-023-00631-w
- Petersen, C., 2017. Biliary atresia: unity in diversity. *Pediatr. Surg. Int.* 33: 1255–1261. doi:10.1007/s00383-017-4156-6
- Pinheiro, D., Dias, I., Freire, T., Thole, A.A., Stumbo, A.C., Cortez, E.A.C., de Carvalho, L., de Carvalho, S.N., 2021. Effects of mesenchymal stem cells conditioned medium treatment in mice with cholestatic liver fibrosis. *Life Sci.* 281. doi:10.1016/j.lfs.2021.119768
- Pokrovskaya, L.A., Zubareva, E. V., Nadezhdin, S. V., Lysenko, A.S., Litovkina, T.L., 2020. Biological activity of mesenchymal stem cells secretome as a basis for cell-free therapeutic approach. *Res. Results Pharmacol.* 6: 57–68. doi:10.3897/RRPHARMACOLOGY.6.49413
- Ravan, A.P., Goudarzi, F., Rafieemehr, H., Bahmani, M., Rad, F., Jafari, M., Mahmoodi, M., 2021. Human umbilical cord-mesenchymal stem cells conditioned medium attenuates CCl4 induced chronic liver fibrosis. *Toxin Rev.* 40: 238–249. doi:10.1080/15569543.2019.1590849
- Rhijn, M.R., Mensah, F.K.F., Korevaar, S.S., Leijts, M.J., Osch, G.J.V.M. Van, Ijzermans, J.N.M., Betjes, M.G.H., Baan, C.C., Weimar, W., Hoogduijn, M.J., 2013. Effects of hypoxia on the immunomodulatory properties of adipose tissue-derived mesenchymal stem cells. *Front. Immunol.* 4: 1–8. doi:10.3389/fimmu.2013.00203
- Rosmorduc, O., Wendum, D., Corpechot, C., Galy, B., Sebbagh, N., Raleigh, J., Housset, C., Poupon, R., 1999. Hepatocellular hypoxia-induced vascular endothelial growth factor expression and angiogenesis in experimental biliary cirrhosis. *Am. J. Pathol.* 155: 1065–1073. doi:10.1016/S0002-9440(10)65209-1
- Rosignol, F., Vaché, C., Clottes, E., 2002. Natural antisense transcripts of hypoxia-inducible factor 1alpha are detected in different normal and tumour human tissues. *Gene* 299: 135–140. doi:10.1016/S0378-1119(02)01049-1
- Sanchez-Valle, A., Kassira, N., Varela, V.C., Radu, S.C., Paidas, C., Kirby, R.S., 2017. Biliary Atresia: Epidemiology, Genetics, Clinical Update, and Public Health Perspective. *Adv. Pediatr.* 64: 285–305. doi:10.1016/j.yapd.2017.03.012
- Schreiber, R.A., Harpavat, S., Hulscher, J.B.F., Wildhaber, B.E., 2022. Biliary Atresia in 2021: Epidemiology, Screening and Public Policy. *J. Clin. Med.* 11. doi:10.3390/jcm11040999
- Serocki, M., Bartoszewska, S., Janaszak-Jasiecka, A., Ochocka, R.J., Collawn, J.F., Bartoszewski, R., 2018. miRNAs regulate the HIF switch during hypoxia: a novel therapeutic target. *Angiogenesis* 21: 183–202. doi:10.1007/s10456-018-9600-2
- Setyoboedi, B., 2020. Atresia Bilier: Ilmu Dasar Hingga Studi Translasi. Airlangga University Press, Surabaya.
- Shan, L., Wang, F., Zhai, D., Meng, X., Liu, J., Lv, X., 2023. Matrix metalloproteinases induce extracellular matrix degradation through various pathways to alleviate hepatic fibrosis. *Biomed. Pharmacother.* 161: 114472.

doi:10.1016/j.biopha.2023.114472

- Shen, W.J., Chen, G., Wang, M., Zheng, S., 2019. Liver fibrosis in biliary atresia. *World J. Pediatr.* 15: 117–123. doi:10.1007/s12519-018-0203-1
- Shier, D., Butler, J., Lewis, R., 2016. Hole'S Human Anatomy & Physiology, Fourteenth. ed. Mc Graw Hill Education.
- Sidharta, V.M., Herningtyas, E.H., Lagonda, C.A., Fauza, D., Kusnadi, Y., Susilowati, R., Partadiredja, G., 2018. High VEGF level is produced by human umbilical cord- mesenchymal stem cells (hUC-MSCs) in amino acid-rich medium and under hypoxia condition. *Indones. Biomed. J.* 10: 222–230. doi:10.18585/inabj.v10i3.457
- Silina, M. V., Dzhaliilova, D.S., Makarova, O. V., 2023. Role of MicroRNAs in Regulation of Cellular Response to Hypoxia. *Biochem.* 88: 741–757. doi:10.1134/S0006297923060032
- Slawski, J., Jaśkiewicz, M., Barton, A., Koziół, S., Collawn, J.F., Bartoszewski, R., 2024. Regulation of the HIF switch in human endothelial and cancer cells. *Eur. J. Cell Biol.* 103. doi:10.1016/j.ejcb.2024.151386
- Stroka, D.M., Burkhardt, T., Desbaillets, I., Wenger, R.H., Neil, D.A.H., Bauer, C., Gassmann, M., Candinas, D., 2001. HIF-1 is expressed in normoxic tissue and displays an organ-specific regulation under systemic hypoxia. *FASEB J.* 15: 2445–2453. doi:10.1096/fj.01-0125com
- Sugiura, R., Ohnishi, S., Ohara, M., Ishikawa, M., Miyamoto, S., Onishi, R., Yamamoto, K., Kawakubo, K., Kuwatani, M., Sakamoto, N., 2018. Effects of human amnion-derived mesenchymal stem cells and conditioned medium in rats with sclerosing cholangitis. *Am. J. Transl. Res.* 10: 2102–2114.
- Tag, C.G., Sauer-Lehnen, S., Weiskirchen, S., Borkham-Kamphorst, E., Tolba, R.H., Tacke, F., Weiskirchen, R., 2015. Bile duct ligation in mice: Induction of inflammatory liver injury and fibrosis by obstructive cholestasis. *J. Vis. Exp.* 1–11. doi:10.3791/52438
- Tanaka, A., Tsuneyama, K., Mikami, M., Uegaki, S., Aiso, M., Takikawa, H., 2007. Gene expression profiling in whole liver of bile duct ligated rats: VEGF-A expression is up-regulated in hepatocytes adjacent to the portal tracts. *J. Gastroenterol. Hepatol.* 22: 1993–2000. doi:10.1111/j.1440-1746.2006.04629.x
- Taylor, C.T., Scholz, C.C., 2022. The effect of HIF on metabolism and immunity. *Nat. Rev. Nephrol.* 18: 573–587. doi:10.1038/s41581-022-00587-8
- Teng, L., Maqsood, M., Zhu, M., Zhou, Y., Kang, M., Zhou, J., Chen, J., 2022. Exosomes Derived from Human Umbilical Cord Mesenchymal Stem Cells Accelerate Diabetic Wound Healing via Promoting M2 Macrophage Polarization, Angiogenesis, and Collagen Deposition. *Int. J. Mol. Sci.* 23. doi:10.3390/ijms231810421
- Vij, M., Rela, M., 2020. Biliary atresia: Pathology, etiology and pathogenesis. *Futur. Sci. OA* 6. doi:10.2144/fsoa-2019-0153
- Walczak, R., Tontonoz, P., 2002. PPARadigms and PPARadoxes: Expanding roles for PPAR γ in the control of lipid metabolism. *J. Lipid Res.* 43: 177–186. doi:10.1016/s0022-2275(20)30159-0
- Widyatmoko, A., Alif, I., Irawan, R.C.S., Handoyo, F.E., Sidiq, H.A., 2023. The

- Effect of Hypoxia on the Soluble Molecules of Human Umbilical Cord-derived Mesenchymal Stem Cells (UC-MSCs). *Int. J. Cell Biomed. Sci.* 1:(3): 102–108.
- Wu, H., Chen, C., Ziani, S., Nelson, L.J., Ávila, M.A., Nevzorova, Y.A., Cubero, F.J., 2021. Fibrotic events in the progression of cholestatic liver disease. *Cells*. doi:10.3390/cells10051107
- Wu, K., Huang, R., Wu, H., Liu, Y., Yang, C., Cao, S., Hou, X., Chen, B., Dai, J., Wu, C., 2016. Collagen-binding vascular endothelial growth factor attenuates CC14-induced liver fibrosis in mice. *Mol. Med. Rep.* 14: 4680–4686. doi:10.3892/mmr.2016.5826
- Wu, S.T., Wang, X.X., Xing, W.B., Li, F.Y., Liang, M., Li, K.S., He, Y., Wang, J.M., 2023. An update on animal models of liver fibrosis. *Front. Med.* doi:10.3389/fmed.2023.1160053
- Xia, J., Minamino, S., Kuwabara, K., Arai, S., 2019. Stem cell secretome as a new booster for regenerative medicine. *Biosci. Trends* 13: 299–307. doi:10.5582/bst.2019.01226
- Xie, C., Ma, B., Wang, N., Wan, L., 2017. Comparison of serological assessments in the diagnosis of liver fibrosis in bile duct ligation mice. *Exp. Biol. Med.* 242: 1398–1404. doi:10.1177/1535370217718179
- Yang, G., Fan, X., Liu, Yingchun, Jie, P., Mazhar, M., Liu, Yong, 2023. Immunomodulatory Mechanisms and Therapeutic Potential of Mesenchymal Stem Cells. *Stem Cell Rev. Reports* 19: 1214–1231. doi:https://doi.org/10.1007/s12015-023-10539-9
- Yang, L., Kwon, J., Popov, Y., Gajdos, G.B., Ordog, T., Brekken, R.A., Mukhopadhyay, D., Schuppan, D., Bi, Y., Simonetto, D., Shah, V.H., 2014. Vascular Endothelial Growth Fctor Promotes Fibrosis Resolution and Repair in Mice. *Gastroenterology* 146: 1339–1350. doi:10.1053/j.gastro.2014.01.061.Vascular
- Yao, X., Wang, J., Zhu, J., Rong, X., 2020. The anti-fibrotic effect of human fetal skin-derived stem cell secretome on the liver fibrosis. *Stem Cell Res. Ther.* 11: 1–10. doi:10.1186/s13287-020-01891-5
- Yin, F., Wang, W.Y., Jiang, W.H., 2019. Human umbilical cord mesenchymal stem cells ameliorate liver fibrosis in vitro and in vivo: From biological characteristics to therapeutic mechanisms. *World J. Stem Cells* 11: 548–564. doi:10.4252/wjsc.v11.i8.548
- York, M.J., 2016. Clinical Pathology, Second Edi. ed, A Comprehensive Guide to Toxicology in Nonclinical Drug Development. Elsevier Inc. doi:10.1016/B978-0-12-803620-4.00014-1
- Zhang, D., Zhang, Y., Sun, B., 2022. The Molecular Mechanisms of Liver Fibrosis and Its Potential Therapy in Application. *Int. J. Mol. Sci.* 23. doi:10.3390/ijms232012572
- Zhao, Y.Z., Liu, X.L., Shen, G.M., Ma, Y.N., Zhang, F.L., Chen, M.T., Zhao, H.L., Yu, J., Zhang, J.W., 2014. Hypoxia induces peroxisome proliferator-activated receptor γ expression via HIF-1-dependent mechanisms in HepG2 cell line. *Arch. Biochem. Biophys.* 543: 40–47. doi:10.1016/j.abb.2013.12.010