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Daftar Pustaka

Ali, A., Abdel-Hafiz,H., Suhail,M.., Al-Mars,A., Zakaria,M.K., Fatima,K., Ahmad,S., Azhar,A., Chaudary,A., and Qadri,I., 2014. Hepatitis B virus, HBx mutants and their role in hepatocellular carcinoma. *World J Gastroenterol*, 20(30): 10238–10248. Available at: http://dx.doi.org/10.3748/wjg.v20.i30.10238.

Amr, K.S., Ezzat,W.A., Elhosary Y.A., Hegazy,A.E., Fahim,H.H., and Kamel,R.R., 2016. The potential role of miRNAs 21 and 199-a in early diagnosis of hepatocellular carcinoma. *Gene*, 575(1): 66–70. Available at: http://dx.doi.org/10.1016/j.gene.2015.08.038.

Arzumanyan, A., Reis, H.M. and Feitelson, M. A, 2013. Pathogenic mechanisms in HBV- and HCV-associated hepatocellular carcinoma. *Nat Rev Cancer*, 13(2): 123–135. Available at: http://www.ncbi.nlm.nih.gov/pubmed/23344543%5Cnhttp://www.nature.com/nrc/journal/v13/n2/pdf/nrc3449.pdf.

Bandopadhyay, M., Banerjee, A., Sarkar, N., Panigrahi, R., Datta, S., Pal, A., Singh, S.P., Biswas, A., Chakrabarti, S., and Chakravarty, R.,2014. Tumor suppressor micro RNA miR-145 and onco micro RNAs miR-21 and miR-222 expressions are differentially modulated by Hepatitis B virus X protein in malignant hepatocytes. *BMC Cancer*, 14(1): 721. Available at: http://bmccancer.biomedcentral.com/articles/10.1186/1471-2407-14-721.

Bao, L., Yan, Y., Xu, C., Ji, W., Shen, S., Xu, G., Zeng, Y., Sun, B., Qian, H., Chen, L., Wu, M., Su, C., and Chen, J., 2013. MicroRNA-21 suppresses PTEN and hSulf-1 expression and promotes hepatocellular carcinoma progression through AKT / ERK pathways. *Cancer Lett*, 337(2): 226–236. Available at: http://dx.doi.org/10.1016/j.canlet.2013.05.007.

Beech, R.D., Leffert, J.J., Lin, A., Hong, K.A., Hansen, J., Umlauf, S., Mane,S., Zhao, H., and Sinha, R.., 2014. Stress-related alcohol consumption in heavy drinkers correlates with expression of miR-10a, miR-21, and components of the TAR-RNA-binding protein-associated complex. *Alcohol: Clin.Exp.Res.*, 38(11): 2743–2753. Available at:http://dx.doi.org/10.1111/acer.12549.

Bihrer, V. Waidmann, O., Friedrich-Rust, M., Forestier, N., Susser, S., Haupenthal, J., Welker, M., Shi, Y., Peveling-Oberhag, J., Polta, A., von Wagner, M., Radeke, H.H., Sarrazin, C., Trojan, J., Zeuzem, S., Kronenberger, B., and Piiper, A., 2011. Serum microRNA-21 as marker for necroinflammation in hepatitis C patients with and without hepatocellular carcinoma. *PLoS ONE*, 6(10):1–7. Available at: http://dx.doi.org/10.1371/journal.pone.0026971.

UNIVERSITAS GADJAH MADA
PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA SEBAGAI PENANDA DIAGNOSIS NON INVASIF KARSINOMA HEPATOSELULER
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Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Bruix, J. and Sherman, M., 2011. Management of hepatocellular carcinoma: An update. *Hepatolo*, 53(3), 1020–1022. Available at: http://dx.doi.org/10.1002/hep.24199.

Caruso, S., Calderaro, J., Letouze, E., Nault, J.C., Couchy, G., Boulai, A., Luciani, A., Zafrani, E.S., Bioulac-Sage, P., Seror, O., Imbeaud, S., and Zucman-Rossi, J., 2017. Germline and somatic DICER1 mutations in familial and sporadic liver tumors. *J Hepatol*, 66(4): 734–742. Available at: http://dx.doi.org/10.1016/j.jhep.2016.12.010.

Chen, C., Zhao, K., Masci, P.P., Lakhani, S.R., Antonsson, A., Simpson, P.T., and Vitetta, L., 2015. TGF β isoforms and receptors mRNA expression in breast tumours : prognostic value and clinical implications. *BMC Cancer 3*(12): 1–12. Available at: http://dx.doi.org/10.1186/s12885-015-1993-3.

Cheng, L., Sharples, R.A., Scicluna, B.J., and Hill, A.F., 2014. Exosomes provide a protective and enriched source of miRNA for biomarker profiling compared to intracellular and cell-free blood. *J Extracell Ves*, 3(1):1-8.Available at: http://dx.doi.org/10.3402/jev.v3.23743.

Dufour, J.F., Greten, T.F. Raymond, E., Roskams, T., De, T., Ducreux, M., Mazzaferro, V., and Governing, E., 2012. Clinical Practice Guidelines EASL – EORTC Clinical Practice Guidelines : Management of hepatocellular carcinoma European Organisation for Research and Treatment of Cancer. *J Hepatol*, 56(4): 908–943. Available at: http://dx.doi.org/10.1016/j.jhep.2011.12.001.

El-Halawany, M.S. Ismail, H.M., Zeeneldin, A.A., Elfiky, A., Tantawy, M., Kobaisi, Mohamed H. Hamed, I., and Abdel Wahab, A.H.A.., 2015. Investigating the pretreatment miRNA expression patterns of advanced hepatocellular carcinoma patients in association with response to TACE treatment. *BioMed Res.Int.*, 2015: 1-12. Available at: http://dx.doi.org/10.1155/2015/649750.

El-Serag, H.B., 2013. Epidemiology of Viral Hepatitis and Hepatocellular Carcinoma. *Gastroenterol*, 142(6): 1264–1273. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4141529/pdf/nihms617002.pdf.

Gao, Y., Feng, B., Han, S., Zhang, K., Chen, J., Li, C., Wang, R., and Chen, L., 2016. The Roles of MicroRNA-141 in Human Cancers: From Diagnosis to Treatment. *Cell Physiol Biochem*, (305): 427–448. Avaiable at http://dx.doi.org/10.1159/000438641.

Garzon, R., Fabbri, M., Cimmino, A., Calin, G.A., and Croce, C.M., 2006.

UNIVERSITAS GADJAH MADA
PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA SEBAGAI PENANDA DIAGNOSIS NON INVASIF KARSINOMA HEPATOSELULER
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Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

MicroRNA expression and function in cancer. *Trends Mol Med*, 12(12): 580–587. Avaiable at http://dx.doi.org/ 10.1016/j.molmed.2006.10.006.

Garzon, R., Calin, G.A. and Croce, C.M., 2009. MicroRNAs in cancer. *Ann Rev Med*, 60 (1):167–179. Available at http://dx.doi.org/ 10.1146/annurev.pathol.4.110807.092222.

Giannelli, G., Villa, E. and Lahn, M., 2016. Transforming Growth Factor-β as a Therapeutic Target in Hepatocellular Carcinoma. *Cancer Res*, 74(7): 1890–1894. Available at: http://cat.inist.fr/?aModele=afficheN&cpsidt=28446783.

Goh, G.B.-B., Chang, P.-E. and Tan, C.-K., 2015. Changing epidemiology of hepatocellular carcinoma in Asia. *Best Pract Res Clin Gastroenterol*, 29(6): 919–928. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1521691815001201 [Accessed July 10, 2017].

Guo, L., Zhang, Y., Zhang, L., Huang, F., Li, J., and Wang, S., 2016. MicroRNAs, TGF-beta signaling, and the inflammatory microenvironment in cancer. *Tumor Biol*, 37(1): 115–125. Avaiable at http://dx.doi.org/ 10.1007/s13277-015-4374-2.

Gurtner, A., Falcone, E., Garibaldi, F., and Piaggio, G., 2016. Dysregulation of microRNA biogenesis in cancer: the impact of mutant p53 on Drosha complex activity. *J Exp.Clin.Cancer Res*, 35(1): 45. Available at: http://jeccr.biomedcentral.com/articles/10.1186/s13046-016-0319-x.

Heldin, C.H., Landstrom, M. and Moustakas, A., 2009. Mechanism of TGF-beta signaling to growth arrest, apoptosis, and epithelial-mesenchymal transition. *Current Op Cell Biol*, 21(2): Avaiable at http://dx.doi.org/ 166–176. 10.1016/j.ceb.2009.01.021.

Hu, L., Ye, H., Huang, G., Luo, F., Liu, Y., Liu, Y., Yang, X., Shen, J., Liu, Q., and Zhang, J., 2016. Long noncoding RNA GAS5 suppresses the migration and invasion of hepatocellular carcinoma cells via miR-21. *Tumor Biol*, 37(2): 2691–2702. 1 Avaiable at http://dx.doi.org/0.1007/s13277-015-4111-x.

Karakatsanis, A., Papaconstantinou, I., Gazouli, M., Lyberopoulou, A., Polymeneas, G., and Voros, D., 2013. Expression of microRNAs, miR-21, miR-31, miR-122, miR-145, miR-146a, miR-200c, miR-221, miR-222, and miR-223 in patients with hepatocellular carcinoma or intrahepatic cholangiocarcinoma and its prognostic significance. *Mol Carcinogen*, 52(4): 297–303. Avaiable at http://dx.doi.org/10.1002/mc.21864.

Kroh, E.M., Parkin, R.K., Mitchell, P.S., and Tewari, M.,2010. Analysis of

UNIVERSITAS GADJAH MADA
PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA SEBAGAI PENANDA DIAGNOSIS NON INVASIF KARSINOMA HEPATOSELULER
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Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

circulating microRNA biomarkers in plasma and serum using quantitative reverse transcription-PCR (qRT-PCR). *Methods*, 50(4): 298–301. Available at: http://dx.doi.org/10.1016/j.ymeth.2010.01.032.

Kudo, M., Izumi, N., Kokudo, N., Matsui, O., Sakamoto, M., Nakashima, O., Kojiro, M., and Makuuchi, M., 2011. Management of hepatocellular carcinoma in Japan: Consensus-based clinical practice guidelines proposed by the Japan society of hepatology (JSH) 2010 updated version. *Digestive Dis*, 29(3): 339–364. Available at: http://dx.doi.org/10.1159/000345885.

Li, Q., Zhang, D., Wang, Y., Sun, P., Hou, Xi., Larner, J., Xiong, W., and Mi, J., 2013. MiR-21/Smad 7 signaling determines TGF- b 1-induced CAF formation. *Scientific Rep*, 3(2038): 1-9. Available at: http://dx.doi.org/10.1038/srep02038.

Liu, M., Liu, J., Wang, L., Wu, H., Zhou, C., Zhu, H., Xu, N., and Xie, Y., 2014. Association of serum microRNA expression in hepatocellular carcinomas treated with transarterial chemoembolization and patient survival. *PLoS ONE*, 9(10): 1–8. Available at: http://dx.doi.org/10.1371/journal.pone.0109347.

Mamiya, T., Yamazaki, K., Masugi, Y., Mori, T., Effendi, K., Du, W., Hibi, T., Tanabe, M., Ueda, M., Takayama, T., and Sakamoto, M., 2010. Reduced transforming growth factor-beta receptor II expression in hepatocellular carcinoma correlates with intrahepatic metastasis. *Lab Invest* 90(9): 1339–45. Available at: http://www.ncbi.nlm.nih.gov/pubmed/20531292.

Mazzanti, R., Arena, U., and Tassi, R., 2016. Hepatocellular carcinoma: Where are we? *World J Exp Med*, 6(1): 21–37. Available at: http://dx.doi.org/ 10.5493/wjem.v6.i1.21.

Mittal, S. and El-Serag, H.B., 2013. Epidemiology of HCC: Consider the Population. *J Clin Gastroenterol*, 47(0): 1–10. Available at: http://dx.doi.org/ 10.1097/MCG.0b013e3182872f29.Epidemiology.

Mizuguchi, T., Collod-Beroud, G., Akiyama, T., Abifadel, M., Harada, N., Morisaki, T., Allard, D., Varret, M., Claustres, M., Morisaki, H., Ihara, M., Kinoshita, A., Yoshiura, K., Junien, C., Kajii, T., Jondeau, G., Ohta, T., Kishino, T., Furukawa, Y., Nakamura, Y., Niikawa, N., Boileau, C., and Matsumoto, N., 2004. Heterozygous TGFBR2 mutations in Marfan syndrome. *Nat Genet*, 36(8): 855–860. Available at: http://www.nature.com/doifinder/10.1038/ng1392.

Najafi, Z., Sharifi, M. and Javadi, G., 2015. Degradation of miR-21 induces apoptosis and inhibits cell proliferation in human hepatocellular carcinoma. *Cancer Gene Ther*, 22(3) 530–535. Available at:

UNIVERSITAS GADJAH MADA
PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA SEBAGAI PENANDA DIAGNOSIS NON INVASIF KARSINOMA HEPATOSELULER
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Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

http://www.nature.com/doifinder/10.1038/cgt.2015.51.

Neuzillet, C., Tijeras-Raballand, A., Cohen, R., Cros, J., Faivre, S., Raymond, E.,and De Gramont, A., 2015. Targeting the TGF?? pathway for cancer therapy. *Pharmacol Ther*, 147: 22–31. Available at: http://dx.doi.org/10.1016/j.pharmthera.2014.11.001.

Omata, M., Lesmana, L.A., Tateishi, R., Lin, P.,C.,S.,and Yoshida, H., 2010. Asian Pacific Association for the Study of the Liver consensus recommendations on hepatocellular carcinoma. *Hepatol Int*, 4: 439–474. Available at: http://dx.doi.org/10.1007/s12072-010-9165-7.

Sanyal, A.J., Yoon, S.K. and Lencioni, R., 2010. The etiology of hepatocellular carcinoma and consequences for treatment. *Oncologist*, 15 (4): 14–22. Available at: http://dx.doi.org/10.1634/theoncologist.2010-S4-14.

Schulz, W.A., 2005. *Molecular Biology of Human Cancers*, Available at: http://books.google.com/books?hl=en&lr=&id=bCpd1_KziPYC&oi=fnd&pg=PP1&dq=Quantitative+Finance+for+Physicists+An+Introduction&ots=I7Zu9NAf7i&sig=Md-xt1HH3y7UKgve66Ueu_uuSNg.

Schütte, K. Bornschein, J., Kahl, S., and Seidensticker, R.., 2012. Delayed Diagnosis of HCC with Chronic Alcoholic Liver Disease.*Liver Cancer*,1: 257–266. Available at: http://dx.doi.org/ 10.1159/000343840.

Sheedy, F.J., 2015. Turning 21 : induction of miR-21 as a key switch in the inflammatory response. *Front Immunol*, 6(1), 1–9. Available at: http://dx.doi.org/10.3389/fimmu.2015.00019.

Shen, J., Stass, S.A. and Jiang, F., 2013. MicroRNAs as potential biomarkers in human solid tumors. *Cancer Lett*, 329(2): 125–136. Available at: http://dx.doi.org/10.1016/j.canlet.2012.11.001.

Sherman, M., Ch, B., 2010. Hepatocellular Carcinoma : Epidemiology , Surveillance , and Diagnosis. *Semin Liver Dis*, 30(1): 3–16. Available at http://dx.doi.org/10.1055/s-0030-1247128.

Song, J., Ahn, C., Chun, C., and Jin, E., 2014. A long non-coding RNA, GAS5, plays a critical role in the regulation of miR-21 during osteoarthritis. *J Orthop Res*, 32(12): 1628–1635. Available at: http://doi.wiley.com/10.1002/jor.22718.

Szabó E, Páska C, Kaposi Novák P, and Schaff Z, 2004. Similarities and differences in hepatitis B and C virus induced hepatocarcinogenesis. *Pathol oncol Res*, 10(1): 5–11. Available at:

UNIVERSITAS GADJAH MADA
PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA SEBAGAI PENANDA DIAGNOSIS NON INVASIF KARSINOMA HEPATOSELULER
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Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

http://www.webio.hu/por/2004/10/1/0005.

Tsuchiya, N., Sawada, Y., Endo, I., Saito, K., Uemura, Y., and Nakatsura, T., 2015. Advances in Hepatocellular Carcinoma Biomarkers for the early diagnosis of hepatocellular carcinoma. *World J Gastroenterol*, 21(37): 10573–10583. Available at http://dx.doi.org/10.3748/wjg.v21.i37.10573.

Wan, D.W. Tzimas, D., Smith, J.A., Kim, S., Araujo, J., and David, R., 2011. Risk Factors for Early-Onset and Late-Onset Hepatocellular Carcinoma in Asian Immigrants With Hepatitis B in the United States. *Am J Gastroenterol*, 106(11): 1994–2000. Available at: http://dx.doi.org/10.1038/ajg.2011.302.

Wang, X., Zhang, J., Zhou, L., Lu, P., Zheng, Z.G., Sun, W., Wang, J.L., Yang, X.S., Li, X.L., Xia, N., Zhang, N., and Dou, K.F., 2015. Significance of serum microRNA-21 in diagnosis of hepatocellular carcinoma (HCC): Clinical analyses of patients and an HCC rat model. *Int J Clin Exp Pathol*, 8(2): 1466–1478.

Wang, Y., Gao, X., Wei, F., Zhang, X., Yu, J., Zhao, H., Sun, Q., Yan, F., Yan, C., Li, H., and Ren, X., 2014. Diagnostic and prognostic value of circulating miR-21 for cancer: A systematic review and meta-analysis. *Gene*, 533(1): 389–397. Available at: http://dx.doi.org/10.1016/j.gene.2013.09.038.

Wei, F., Cao, C., Xu, X.,and Wang, J., 2015. Diverse functions of miR-373 in cancer. *J Trans Med*, 13(1): 162. Available at: http://www.translational-medicine.com/content/13/1/162.

Weinberg, R.A., 2014. *The Biology of Cancer*, Ney York: Garland Science.

What Is Liver Cancer? ACS 2011;1–6.

Witjes, C.D.M., Van Aalten, S.,M., Steyerberg, E.W., Borsboom, G.J.J.M., De Man, R.A., Verhoef, C., and Ijzermans, J.N.M., 2013. Recently introduced biomarkers for screening of hepatocellular carcinoma: A systematic review and meta-analysis. *Hepatol Int*, 7(1): 59–64. Available at: http://dx.doi.org/10.1007/s12072-012-9374-3.

Yan, S.R., Liu, Z. J., Yu, S., and Bao, Y. X. 2015. Investigation of the value of miR-21 in the diagnosis of early stage HCC and its prognosis: A meta-analysis. *Genet Mol Res*, 14(3): 11573–11586. Available at: http://dx.doi.org/10.4238/2015.September.28.9.

Yang, M., Zhu, M., Tang, L., Zhu, H., Lu, Y., Xu, B., Jiang, J., and Chen, X 2016. Polymorphisms of TGFbeta-1 and TGFBR2 in relation to coronary artery disease in a Chinese population. *Clin Biochem*, 49(12): 873–878. Available at: http://www.ncbi.nlm.nih.gov/pubmed/27234600.

UNIVERSITAS GADJAH MADA
PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA SEBAGAI PENANDA DIAGNOSIS NON INVASIF KARSINOMA HEPATOSELULER
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Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Yang, N., Ekanem, N.R., Sakyi, C.A., and Ray, S.D., 2015. Hepatocellular carcinoma and microRNA : New perspectives on therapeutics and diagnostics. *Adv Drug Del Rev*, 81: 62–74. Available at: http://dx.doi.org/10.1016/j.addr.2014.10.029.

Yin, D., Wang, Y., Sai, W., Zhang, L., Miao, Y., Cao, L., Zhai, X., Feng, X., and Yang, L., 2016. HBx-induced MIR-21 suppresses cell apoptosis in hepatocellular carcinoma by targeting interleukin-12. *Oncol Rep*, 36(4): 2305–2312. Available at: http://dx.doi.org/10.3892/or.2016.5026.

Yoshida, K., Murata, M., Yamaguchi, T., and Matsuzaki, K., 2014. TGF- β / Smad signaling during hepatic fibro-carcinogenesis (Review). *Int J Oncol*, 45: 1363–1371. Available at: http://dx.doi.org/10.3892/ijo.2014.2552.

Yu, Y., Kanwar, S. S., Patel, B.B., Oh, P.S., Nautiyal, J., Sarkar, F.H., and Majumdar, A.P.N., 2012. MicroRNA-21 induces stemness by downregulating transforming growth factor beta receptor 2 (TGFβr2) in colon cancer cells. *Carcinogen*, 33(1): 68–76. Available at: http://dx.doi.org/10.3892/ijo.2014.2552.

Zaman,M.S., Chauhan,N., Gara,R.K., Maher,D., Kumari,S., Sikander,M., Khan,S. , Yallapu,M.M., Jaggi,M., and Chauhan,S.C., 2015. Smoking Carcinogen (BaP) enhances tumorigenic phenotypes of cervical cancer cells by modulation of HPV oncogenes and microRNA profiles. *AACR* (Abstr).

Zhang, D.Y. and Friedman, S.L., 2012. Fibrosis-Dependent Mechanisms of Hepatocarcinogenesis. *Hepatol*, 56(2): 769–775. Available at: http://dx.doi.org/10.1002/hep.25670.

Zhang, J., Li, S., Li, L., Li, M., Guo, C., Yao, J., and Mi, S.,2015. Exosome and exosomal microRNA: Trafficking, sorting, and function. *Gen.Prot.Bio.*, 13(1): 17–24. Available at: http://dx.doi.org/10.1016/j.gpb.2015.02.001.

Zhang, J., Zhao, H., Gao, Y., and Zhang, W., 2012. Secretory miRNAs as novel cancer biomarkers. *BBA - Rev Cancer*, 1826(1): 32–43. Available at: http://dx.doi.org/10.1016/j.bbcan.2012.03.001.

Zhang, Z., Zhu, Z., Watabe, K., Zhang, X., Bai, C., Xu, M., Wu, F., and Mo, Y-Y., 2013. Negative regulation of lncRNA GAS5 by miR-21. *Cell Death Differ*, 20(11): 1558–1568. Available at: http://www.nature.com/doifinder/10.1038/cdd.2013.110.

Zhao, J. Tang, N. Wu, K., Dai, W., Ye, C., Shi, J., Zhang, J., Ning, B., Zeng, X., and Lin, Y., 2014. MiR-21 simultaneously regulates ERK1 signaling in HSC activation and hepatocyte EMT in hepatic fibrosis. *PLoS ONE*, 9(10): 1–10.

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GADJAH MADA
**PROFIL EKSPRESI miRNA 21 DAN mRNA TGFBR2 (TRANSFORMING GROWTH FACTOR BETA RECEPTOR TYPE 2) PLASMA
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Available at: http://dx.doi.org/10.1371/journal.pone.0108005.

Zhao, N., Koenig, S.N., Trask, A.J., Lin, C.H., Hans, C.P., Garg, V., and Lilly, B., 2015. MicroRNA miR145 regulates TGFBR2 expression and matrix synthesis in vascular smooth muscle cells. *Circ Res*, 116(1): 23–34. Available at: http://dx.doi.org/10.1161/CIRCRESAHA.115.303970.

Zhu, S., Wu, H., Wu, F., Nie, D., Sheng, S.,Mo, and Y-Y.,2008. MicroRNA-21 targets tumor suppressor genes in invasion and metastasis. *Cell res*, 18(3): 350–359. Available at: http://dx.doi.org/10.1038/cr.2008.24.

Zhuang, C., Jiang, W., Huang, D., Xu, L., Yang, Q., Zheng, L., Wang, X., and Hu, L., 2015. Serum miR-21, miR-26a and miR-101 as potential biomarkers of hepatocellular carcinoma. *Clin Res Hepatol Gas*, 30: 1–11. Available at: http://linkinghub.elsevier.com/retrieve/pii/S2210740115002636.