



DAFTAR PUSTAKA

- Abdul-Salam, V. B., Russomanno, G., Chien-Nien, C., Mahomed, A. S., Yates, L. A., Wilkins, M. R., *et al.* (2019). CLIC4/Arf6 pathway: a new lead in BMPRII inhibition in pulmonary hypertension. *Circ Res*, 124(1), 52–65.
- Amsellem V, Abid S, Poupel L, Parpaleix A, Rodero M, Gary-Bobo G, *et al.* Roles for the CX3CL1/CX3CR1 and CCL2/CCR2 chemokine systems in hypoxic pulmonary hypertension. *Am J Respir Cell Mol Biol*.
- Andruska, A., & Spiekerkoetter, E. (2018). Consequences of BMPR2 Deficiency in the Pulmonary Vasculature and Beyond: Contributions to Pulmonary Arterial Hypertension. *Int J Mol Sci*, 19(9), 2499.
- Areschoug T. & Gordon S. (2009). Scavenger receptors: role in innate immunity and microbial pathogenesis. *Cell Microbiol*.11(8):1160-1169.
- Babicheva, A., Makino, A., & Yuan, J. X. (2021). mTOR Signaling in Pulmonary Vascular Disease: Pathogenic Role and Therapeutic Target. *Int J Mol Sci*, 22(4), 2144.
- Bancroft, E., Srinivasan, R., & Shapiro, L. A. (2019). Macrophage Migration Inhibitory Factor Alters Functional Properties of CA1 Hippocampal Neurons in Mouse Brain Slices. *Int J Mol Sci*, 21(1), 276.
- Barrangou, R. (2015). The roles of CRISPR-Cas systems in adaptive immunity and beyond. *Curr Opin Immunol*, 32, 36–41.
- Barros, M. H., Hauck, F., Dreyer, J. H., Kempkes, B., & Niedobitek, G. (2013). Macrophage polarisation: an immunohistochemical approach for identifying M1 and M2 macrophages. *PLoS one*, 8(11), e80908.
- Boucherat, O., Chabot, S., Antigny, F., Perros, F., Provencher, S., & Bonnet, S. (2015). Potassium channels in pulmonary arterial hypertension. The European respiratory journal, 46(4): 1167-77.
- Capera, J., Pérez-Verdaguer, M., Navarro-Pérez, M., & Felipe, A. (2021). Kv1.3 Controls Mitochondrial Dynamics during Cell Cycle Progression. *Cancers*, 13(17), 4457.
- Chistiakov, D. A., Killingsworth, M. C., Myasoedova, V. A., Orekhov, A. N., & Bobryshev, Y. V. (2017). CD68/macrosialin: not just a histochemical marker. *Lab Invest*, 97(1), 4–13.



- Cidat, P., Novensà, L., Garabito, M. (2014). K⁺ Channels Expression in Hypertension After Arterial Injury, and Effect of Selective Kv1.3 Blockade with PAP-1 on Intimal Hyperplasia Formation. *Cardiovasc Drugs Ther* **28**, 501–511.
- Danneowitz Prosseda, S., Ali, M. K., & Spiekerkoetter, E. (2020). Novel Advances in Modifying BMPR2 Signaling in PAH. *Genes*, **12**(1), 8.
- Evans, J. D., Girerd, B., Montani, D., Wang, X. J., Galie, N., Austin, E. D., Morell, N. W. (2016). BMPR2 mutations and survival in pulmonary arterial hypertension: an individual participant data meta-analysis. *Lancet Respir Med*, **4**, 129–37.
- Felipe, A., Soler, C., & Comes, N. (2010). Kv1.5 in the immune system: the good, the bad, or the ugly?. *Front Physiol*, **1**: 152.
- Galie, N., Humbert, M., Vachiery, J.L., Gibbs, S., Lang, I., Torbicki, A., et al. (2016). ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension. *Eur Heart J*, **37**:67-119.
- Ginhoux, F. & Jung, S. (2014). Monocytes and macrophages: developmental pathways and tissue homeostasis. *Nature Rev Immun*, **14**, 392–404.
- Gordon, S., & Martinez-Pomares, L. (2017). Physiological roles of macrophages. *Pflugers Arch*, **469**(3-4), 365–374.
- Gutman, G. A., Chandy, K. G., Grissmer, S., Lazdunski, M., McKinnon, D., Pardo, L. A., et al. (2005). International Union of Pharmacology. LIII. Nomenclature and molecular relationships of voltage-gated potassium channels. *Pharmacol Rev*, **57**(4), 473–508.
- Hansen, L., Burks, M., Kingman, M., Stewart, T. (2018). Volume management in pulmonary arterial hypertension patients: an expert pulmonary hypertension clinician perspective. *Pulm Ther* **4**, 13–27.
- Hassel, S., Eichner, A., Yakymovych, M., Hellman, U., Knaus, P. & Souchelnytskyi, S. (2004). Proteins associated with type II bone morphogenetic protein receptor (BMPR-II) and identified by two-dimensional gel electrophoresis and mass spectrometry. *Proteomics*, **4**, 1346-1358.
- He, G., Ma, Y., Chou, S. Y., Li, H., Yang, C., Chuang, J. Z., et al. (2011). Role of CLIC4 in the host innate responses to bacterial lipopolysaccharide. *Eur J Immunol*, **41**(5), 1221–1230.
- Hemnes A.R., Brittain E.L., Trammell A.W., Fessel J.P., Austin E.D., Penner N., et al. 2014. Evidence for right ventricular lipotoxicity in heritable



- pulmonary arterial hypertension. *Am J Respir Crit Care Med*, 189(3), 325–34.
- Hemnes, A.R. & Humbert, M. (2017). Pathobiology of pulmonary arterial hypertension: understanding the roads less travelled. *Eur Respir Rev* 2017; 26: 170093.
- Hirofumi, S., Toshie, S., Nils, P. N., Tero-Pekka, A., Jason, P. G., Roshelle, C., et al. (2014). Reduced BMPR2 expression induces GM-CSF translation and macrophage recruitment in humans and mice to exacerbate pulmonary hypertension. *J Exp Med*, 211(2), 263–280.
- Hollifield M., Bou-Ghanem E., de Villiers W.J., & Garvy B.A. (2007). Scavenger receptor A dampens induction of inflammation in response to the fungal pathogen *Pneumocystis carinii*. *Infect Immun.* 75(8):3999-4005.
- Hong K.H., Lee Y.J., Lee E., Park, S.O., Han, C., Beppu, H., et al. (2008). Genetic ablation of the BMPR2 gene in pulmonary endothelium is sufficient to predispose to pulmonary arterial hypertension. *Circulation*. 118(7).
- Horie, T., Ono, K., Nagao, K., Nishi, H., Kinoshita, M., Kawamura, T., et al. (2008). Oxidative stress induces GLUT4 translocation by activation of PI3-K/Akt and dual AMPK kinase in cardiac myocytes. *J. Cell. Physiol.*, 215: 733-742.
- Hsu, P. D., Lander, E. S., & Zhang, F. (2014). Development and applications of CRISPR-Cas9 for genome engineering. *Cell*, 157(6), 1262–1278.
- Hudu, S.A., Alshrari, A.S., Syahida, A., & Sekawi, Z. (2016). Cell culture, technology: enhancing the culture of diagnosing human diseases. *J Clin Diagn Res*, 10(3), DE01–DE5.
- Humbert M, Guignabert C, & Bonnet S. (2019). Pathology and pathobiology of pulmonary hypertension: state of the art and research perspectives. *Eur Respir J*, 53, 1801887.
- Jayasingam, S. D., Citartan, M., Thang, T. H., Mat Zin, A. A., Ang, K. C., & Ch'ng, E. S. (2020). Evaluating the Polarization of Tumor-Associated Macrophages Into M1 and M2 Phenotypes in Human Cancer Tissue: Technicalities and Challenges in Routine Clinical Practice. *Front Oncol*, 9, 1512.
- Jiang L., Phang J.M., Yu J., Harrop, S.J., Sokolova, A.V., Duff, A.P., et al. (2014). CLIC proteins, ezrin, radixin, moesin and the coupling of membranes to the actin cytoskeleton: a smoking gun? *Biochim Biophys Acta*. 1838(2):643-657.



- Koch Hansen L, Sevelsted-Møller L, Rabjerg M, *et al.* (2014). Expression of T-cell KV1.3 potassium channel correlates with pro-inflammatory cytokines and disease activity in ulcerative colitis. *J Crohns Colitis*. 8(11):1378-1391.
- Kumar, V., Abbas, A. K. & Aster, J. C. (2013) *Robbins Basic Pathology Ninth Edition*. Elsevier Saunders.
- Lambert, M., Capuano, V., Olschewski, A., Sabourin, J., Nagaraj, C., Girerd, B., *et al.* (2018). Ion Channels in Pulmonary Hypertension: A Therapeutic Interest? *Int J Mol Sci*, 19(10), 3162.
- Le Ribeuz, H., Capuano, V., Girerd, B., Humbert, M., Montani, D., & Antigny, F. (2020). Implication of potassium channels in the pathophysiology of pulmonary arterial hypertension. *Biomolecules*, 10(9), 1261.
- Leanza, L., Zoratti, M., Gulbins, E., & Szabò, I. (2012). Induction of apoptosis in macrophages via Kv1.3 and Kv1.5 potassium channels. *Curr Med Chem*, 19(31), 5394–5404.
- Lee, S-II., Kim, J.W., Lee, Y.K., Yang, S.H., Lee, I., Suh, J.W., *et al.* (2011). Anti-obesity effect of monascus pilosus mycelial extract in high fat diet-induced obese rat. *J Appl. Biol. Chem.* 54, 197-205.
- Li, Z., Lu, N., & Shi, L. (2014). Exercise training reverses alterations in Kv and BKCa channel molecular expression in thoracic aorta smooth muscle cells from spontaneously hypertensive rats. *J Vasc Res*. 51(6):447-457
- Lin, F. & Yang, X. (2010). TGF- β signaling in aortic aneurysm: Another round of controversy. *J. Genet. Genomics*. 37, 583–591.
- Lin P, Ji HH, Li YJ, Guo SD. (2021). Macrophage Plasticity and Atherosclerosis Therapy. *Front Mol Biosci*. 8:679797.
- Machado, R. Southgate L, Eichstaedt CA, *et al.* (2015). Pulmonary arterial hypertension: a current perspective on established and emerging molecular genetic defects. *Hum Mutat*, 36(12), 1113-27.
- Marsh L.M., Jandl K., Grunig G., Foris V., Bashir M., Ghanim B., *et al.* (2018). The inflammatory cell landscape in the lungs of patients with idiopathic pulmonary arterial hypertension. *Eur. Respir. J.* 2018; 51.
- Meekel, J.P., Groeneveld, M.E., Bogunovic, N. Keekstra, N., Musters, R.J.P., Zandieh-Doulabi, B., *et al.* (2018). An in vitro method to keep human aortic tissue sections functionally and structurally intact. *Sci Rep* 8, 8094.



Moore K. J., Freeman M. W. (2006). Scavenger receptors in atherosclerosis: beyond lipid uptake. *Arterioscler. Thromb. Vasc. Biol.* 26: 1702–1711.

Morrell, N. W., Aldred, M. A., Chung, W. K., Elliott, C. G., Nichols, W. C., Soubrier, F., et al. (2019). Genetics and genomics of pulmonary arterial hypertension. *Eur Respir J*, 53(1), 1801899.

Muñoz-Planillo, R., Kuffa, P., Martínez-Colón, G., Smith, B. L., Rajendiran, T. M., & Núñez, G. (2013). K⁺ efflux is the common trigger of NLRP3 inflammasome activation by bacterial toxins and particulate matter. *Immunity*, 38(6), 1142–1153.

Nakagawa M., Karim M.R., Izawa T., Kuwamura M., & Yamate J. (2021). Immunophenotypical Characterization of M1/M2 Macrophages and Lymphocytes in Cisplatin-Induced Rat Progressive Renal Fibrosis. *Cells*. 10(2):257.

Narasimhulu, C.A., & Singla, D. K. (2020). The Role of Bone Morphogenetic Protein 7 (BMP-7) in Inflammation in Heart Diseases. *Cells*, 9(2), 280.

Olivencia M.A., Martínez-Casales M., Peraza D.A., Garcia-Redondo, A.B., Mondejar-Parenno, G., Hernanz, R. et al. (2021). Kv 1.3 channels are novel determinants of macrophage-dependent endothelial dysfunction in angiotensin II-induced hypertension in mice. *Br J Pharmacol.* 178(8):1836–1854.

Opie L.H. (2004). Fuels: Aerobic and Anaerobic Metabolism. In: *The Heart: Physiology, From Cell to Circulation*. Philadelphia, Pa: Lippincott-Raven; 2004; 295–342.

Peng, Q., Liu, G., Li, P., Wu, X., Zeng, Q., & Zhu, C. (2020). A Potential Role for GLUT4 in Predicting Sepsis in Critically ill Children. *Res Sq.* available at Research Square [<https://doi.org/10.21203/rs.3.rs-66823/v1>].

Pioli PA, Goonan KE, Wardwell K, Guyre PM. (2004). TGF-beta regulation of human macrophage scavenger receptor CD163 is Smad3-dependent. *J Leukoc Biol.* 76(2):500-508.

Pugliese, S. C., Poth, J. M., Fini, M. A., Olszewski, A., El Kasmi, K. C., & Stenmark, K. R. (2015). The role of inflammation in hypoxic pulmonary hypertension: from cellular mechanisms to clinical phenotypes. *Am J Physiol Lung Cell Mol Physiol*, 308(3), L229–L252.



Pullamsetti S.S., Savai, R., Janssen, W., Dahal, B.K., Seeger, W., Grimminger, F., *et al.* (2012). Inflammation, immunological reaction and role of infection in pulmonary hypertension. *Clin Microbiol Infect*, 17(1), 7-14.

Qiu, M. R., Campbell, T. J., & Breit, S. N. (2002). A potassium ion channel is involved in cytokine production by activated human macrophages. *Clin Exp Immunol*, 130(1), 67–74.

Rabinovitch, M., Guignabert, C., Humbert, M., & Nicolls, M.R. 2015. Inflammation and immunity in the pathogenesis of pulmonary arterial hypertension. *Circ Res*. 115(1):165–175.

Reference Sequence. (2008). CLIC potassium voltage-gated channel subfamily A member 2 [Internet]. Bethesda (MD): National Library of Medicine (US), National Center for Biotechnology Information – [cited 13 April 2021]. Available from: <https://www.ncbi.nlm.nih.gov/gene/1192>

Reference Sequence. (2008). KCNA2 potassium voltage-gated channel subfamily A member 2 [Internet]. Bethesda (MD): National Library of Medicine (US), National Center for Biotechnology Information – [cited 13 April 2021]. Available from: <https://www.ncbi.nlm.nih.gov/gene/3737>

Reference Sequence. (2020). BMPR2 bone morphogenetic protein receptor type 2 [Internet]. Bethesda (MD): National Library of Medicine (US), National Center for Biotechnology Information – [cited 8 April 2021]. Available from: <https://www.ncbi.nlm.nih.gov/gene/659>

Reis, A., Hornblower, B., Robb, B., & Tzertzinis, G. (2014). CRISPR/Cas9 & targeted genome editing: New era in molecular biology. *NEB Expressions*, (1), 3-5.

Reynolds, A. M., Holmes, M. D., Danilov, S. M., & Reynolds, P. N. (2012). Targeted gene delivery of BMPR2 attenuates pulmonary hypertension. *Eur Respir J*, 39(2), 329–343.

Richter E.A. & Hargreaves M. (2013). Exercise, GLUT4, and skeletal muscle glucose uptake. *Physiol Rev*. 93(3):993-1017.

Rocher, Crystal, "Bone Morphogenetic Protein-7 (bmp-7) Polarizes Monocytes Into M2 Macrophages" (2013). *Electronic Theses and Dissertations*. 2923. <https://stars.library.ucf.edu/etd/2923>

Roig S.R., Estadella I., Cirera-Rocosa S., Navarro-Pérez M., Felipe A. (2018). Kv1.3 In Microglia: Neuroinflammatory Determinant and Promising Pharmaceutical Target. *J Neurol Neuromedicine*. 3(4):18-23.



- Rubin, L.J. (2017). Targeting bone morphogenic protein receptor 2 (BMPR2) signalling to treat pulmonary arterial hypertension. *Eur Respir J*, 50, 1701370.
- Sato A.Y.S., Bub G.L., & Campos A.H. (2014). BMP-2 and -4 produced by vascular smooth muscle cells from atherosclerotic lesions induce monocyte chemotaxis through direct BMPRII activation. *Atherosclerosis*. 235(1):45e55.
- Savai R., Pullamsetti S.S., Kolbe J., Bieniek, E., Voswinckel, R. Fink, L., et al. (2012). Immune and inflammatory cell involvement in the pathology of idiopathic pulmonary arterial hypertension. *Am J Respir Crit Care Med*. 186(9):897-908.
- Sawada H, Saito T, Nickel NP, Alastalo TP, Glotzbach JP, Chan R, et al. Reduced BMPR2 expression induces GM-CSF translation and macrophage recruitment in humans and mice to exacerbate pulmonary hypertension. *J Exp Me*. 211(2):263e80.
- Schreiber, I., Dörpholz, G., Ott, C.E., Kragesteen, B., Schanze N., Lee, C.T., et al. (2017). BMPs as new insulin sensitizers: enhanced glucose uptake in mature 3T3-L1 adipocytes via PPAR γ and GLUT4 upregulation. *Sci Rep* 7, 17192.
- Schwartz R.S., Huber K.C., Murphy J.G., Edwards W.D., Camrud A.R., Vliestra R.E., et al. (1992). Restenosis and the proportional neointimal response to coronary artery injury: Results in a porcine model. *J Am Coll Cardiol*, 19: 267-274
- Siddiqui T.A., Lively S., Schlichter L.C. (2016). Complex molecular and functional outcomes of single versus sequential cytokine stimulation of rat microglia. *J Neuroinflamm*. 13: 66.
- Simmons, P. J., Levesque, J. P., & Haylock, D. N. (2001). Mucin-like molecules as modulators of the survival and proliferation of primitive hematopoietic cells. *Ann N Y Acad Sci*, 938, 196–207.
- Simonneau, G., Montani, D., Celermajer, D. S., Denton, C. P., Gatzoulis, M. A., Krowka, et al. (2019). Haemodynamic definitions and updated clinical classification of pulmonary hypertension. *Eur Respir J*, 53(1), 1801913.
- Siswanto, B.B. (2017). Pulmonary hypertension in indonesia: Where and how is the data? What is the gaps. *ACI 2017* 3; 2:S6.
- Song L, Lee C, Schindler C. (2011). Deletion of the murine scavenger receptor CD68. *J Lipid Res*. 52(8):1542-1550.



- Soon E., Crosby A., Southwood M., Yang P., Tajsic T., Toshner M., *et al.* (2015). Bone morphogenetic protein receptor type II deficiency and increased inflammatory cytokine production: a gateway to pulmonary arterial hypertension. *Am J Respir Crit Care Med.* 192(7):859e72.
- Spiekerkoetter E., Guignabert C., de Jesus P.V., Alastalo T.P., Powers J.M., Wang L., *et al.* (2009). S100A4 and bone morphogenetic protein-2 codependently induce vascular smooth muscle cell migration via phospho-extracellular signal-regulated kinase and chloride intracellular channel 4. *Circ Res.* 105:639–647.
- Sprink, T., Metje, J., & Hartung, F. (2015). Plant genome editing by novel tools: TALEN and other sequence specific nucleases. *Curr Opin Biotechnol.* 32, 47-53.
- Supatmi. (2016). Bioteknologi CRISPR/Cas9: cara terbaru untuk “memukul jatuh gen”. *BioTrends*, 7(2), 31-36.
- Świderska, E., Strycharz, J., Wróblewski, A., Szemraj, J., Drzewoski, J., & Sliwinska, A. (2018). Role of PI3K/AKT Pathway in Insulin-Mediated Glucose Uptake. 10.5772/intechopen.80402.
- Talati, M., West, J., Zaynagetdinov, R., Hong, C. C., Han, W., Blackwell, T., *et al.* (2014). BMP pathway regulation of and by macrophages. *PLoS One*, 9(4), e94119.
- Tamosiuniene R., Tian W., Dhillon G., Wang L., Sung Y.K., Gera L., *et al.* (2011). Regulatory T cells limit vascular endothelial injury and prevent pulmonary hypertension. *Circ Res.* 109(8):867e79.
- Tang, T., Lang, X., Xu, C., Wang, X., Gong, T., Yang, Y., *et al.* (2017). CLICs-dependent chloride efflux is an essential and proximal upstream event for NLRP3 inflammasome activation. *Nat Commun*, 8(1), 202.
- Theilmann, A. L., Hawke, L. G., Hilton, L. R., Whitford, M., Cole, D. V., Mackeil, J. L., *et al.* 2020. Endothelial BMPR2 loss drives a proliferative response to BMP (Bone Morphogenetic Protein) 9 via prolonged canonical signaling. *Arterioscler Thromb Vasc Biol*, 40(11), 2605–2618.
- Thenappan T., Piao, L., Rehman, J., & Archer, S.L. (2014). Ion Channels and Transporters in Pulmonary Arterial Hypertension. In Voelkel, N.F. *Pulmonary Hypertension: The Present and Future*. (pp.19-50). Shelton, Connecticut. People's Medical Publishing House



- Tian, R. & Abel, E.D. (2001). Responses of GLUT4-deficient hearts to ischemia underscore the importance of glycolysis. *Circulation*. 103(24):2961-2966.
- Trammell, A. W., Talati, M., Blackwell, T. R., Fortune, N. L., Niswender, K. D., Fessel, J. P., et al. (2017). Pulmonary vascular effect of insulin in a rodent model of pulmonary arterial hypertension. *Pulm Circ*, 7(3), 624–634.
- Trammell, A.W., Talati, M., Brittain, E., Penner, N., Gladson, S., Blackwell, T., et al. (2013). Bmpr2 mutation results in impaired glut4 trafficking. *Am J Respir Crit Care Med*. 187: A1735.
- Tsukamoto, K., Kinoshita, M., Kojima, K., Mikuni, Y., Kudo, M., Mori, M., et al. (2002). Synergically increased expression of CD36, CLA-1 and CD68, but not of SR-A and LOX-1, with the progression to foam cells from macrophages. *J Atheroscler Thromb*, 9(1), 57–64.
- Tung, J. J. & Kitajewski, J. (2010). Chloride intracellular channel 1 functions in endothelial cell growth and migration. *J. Angiogenesis Res*. 2, 23.
- Ulmasov, B., Bruno, J., Oshima, K., Cheng, Y. W., Holly, S. P., Parise, L. V., et al. (2017). CLIC1 null mice demonstrate a role for CLIC1 in macrophage superoxide production and tissue injury. *Physiol Rep*, 5(5), e13169.
- Villalonga, N., David, M., Bielanska, J., Vicente, R., Comes, N., Valenzuela, C., et al. (2010). Immunomodulation of voltage-dependent K⁺ channels in macrophages: molecular and biophysical consequences. *J Gen Physiol*, 135(2), 135–147.
- West, J. D., Chen, X., Ping, L., Gladson, S., Hamid, R., Lloyd, J. E., et al. (2019). Adverse effects of BMPR2 suppression in macrophages in animal models of pulmonary hypertension. *Pulm Circ*, 24:2045894019856483.
- Wojciak-Stothard, B., Abdul-Salam, V. B., Lao, K. H., Tsang, H., Irwin, D. C., Lisk, C., et al. (2014). Aberrant chloride intracellular channel 4 expression contributes to endothelial dysfunction in pulmonary arterial hypertension. *Circulation*, 129(17), 1770–1780.
- Wu, L., & Derynck, R. (2009). Essential role of TGF-beta signaling in glucose-induced cell hypertrophy. *Dev Cell*, 17(1), 35–48.
- Wu, D. H., & Hatzopoulos, A. K. (2019). Bone morphogenetic protein signaling in inflammation. *Exp Biol Med (Maywood)*, 244(2), 147–156.
- Xu, Y., Zhu, J., Hu, X., Wang, C., Lu, D., Gong, C., et al. (2016). CLIC1 Inhibition Attenuates Vascular Inflammation, Oxidative Stress, and Endothelial Injury. *PLoS One*, 11(11), e0166790.



- Xiao, K., Liu, C., Tu, Z., Xu, Q., Chen, S., Zhang, Y., Wang, X., Zhang, J., Hu, C. A., & Liu, Y. (2020). Activation of the NF- κ B and MAPK Signaling Pathways Contributes to the Inflammatory Responses, but Not Cell Injury, in IPEC-1 Cells Challenged with Hydrogen Peroxide. *Oxid med cell longevity*, 5803639.
- Yang, J., Li, X., & Morrell, N. W. (2014). Id proteins in the vasculature: from molecular biology to cardiopulmonary medicine. *Cardiovasc Res*, 104(3), 388–398.
- Yang, P., & Yu, P. B. (2019). In Search of the Second Hit in Pulmonary Arterial Hypertension. *Circ Res*, 124(1), 6–8.
- Young, K. A., Ivester, C., West, J., Carr, M., & Rodman, D. M. (2006). BMP signaling controls PASMC KV channel expression in vitro and in vivo. *Am J Physiol Lung Cell Mol Physiol*, 290(5), L841–L848.
- Zawia A, Arnold ND, West L, Pickworth JA, Turton H, Iremonger J, et al. (2021). Altered Macrophage Polarization Induces Experimental Pulmonary Hypertension and Is Observed in Patients With Pulmonary Arterial Hypertension. *Arterioscler Thromb Vasc Biol*, 41(1), 430-445.
- Zawia, A., Arnold, N., Braithwaite, A., Pickworth, J., Hopkinson, K., Iremonger, J., et al. (2016). Reduction of CD68 macrophages causes gender specific spontaneous pulmonary arterial hypertension in mice. *Thorax* 2016; 71:A49.
- Zeiger, T., Cobo, G. C., Dillingham, C., & Burger, C. D. (2015). Prevalence of Sodium and Fluid Restriction Recommendations for Patients with Pulmonary Hypertension. *Healthcare (Basel)*, 3(3), 630–636.
- Zeibig S., Li Z., Wagner S., Holthoff, H.P., Ungerer, M., Bultmann, A., et al. (2011). Effect of the oxLDL binding protein Fc-CD68 on plaque extension and vulnerability in atherosclerosis. *Circ Res*. 108(6):695-703.
- Zhao Z.G., Wang H.F., Wang Y.W., Li, J., Li, X.Y., Xiu, H., et al. 2018. The mechanisms of Ang II-induced hypertensive vascular remodeling under suppression of CD68 in macrophages. *Eur Rev Med Pharmacol Sci*. 22(18):6093-6099.