

DAFTAR PUSTAKA

- Ahamed, M., Akhtar, M.J., & Alhadlaq, H.A., 2020a. Influence of silica nanoparticles on cadmium-induced cytotoxicity, oxidative stress, and apoptosis in human liver HepG2 cells. *Environ. Toxicol.* 35: 599–608. doi:10.1002/tox.22895
- Ahamed, M., Akhtar, M.J., Khan, M.A.M., & Alhadlaq, H.A., 2020b. Reduced graphene oxide mitigates cadmium-induced cytotoxicity and oxidative stress in HepG2 cells. *Food Chem. Toxicol.* 143: 111515. doi:10.1016/j.fct.2020.111515
- An, X., Fu, R., Ma, P., Ma, X., & Fan, D., 2019. Ginsenoside Rk1 inhibits cell proliferation and promotes apoptosis in lung squamous cell carcinoma by calcium signaling pathway. *RSC Adv.* 9: 25107–25118. doi:10.1039/c9ra05037j
- Andayani, A., Koesharyani, I., Fayumi, U., Rasidi, R., & Sugama, K., 2020. Akumulasi Logam Berat Pada Kerang Hijau di Perairan Pesisir Jawa. *Oseanologi dan Limnol. di Indones.* 5: 135. doi:10.14203/oldi.2020.v5i2.279
- Arroyo, V.S., Flores, K.M., Ortiz, L.B., Gómez-quiroz, L.E., & Gutiérrez-ruiz, M.C., 2013a. Liver and Cadmium Toxicity. *J. Drug Metab. Toxicol.* 03. doi:10.4172/2157-7609.s5-001
- Arroyo, V.S., Flores, K.M., Ortiz, L.B., Gómez-quiroz, L.E., & Gutiérrez-ruiz, M.C., 2013b. Liver and Cadmium Toxicity. *J. Drug Metab. Toxicol.* 03: 1–7. doi:10.4172/2157-7609.s5-001
- Arzumanian, V.A., Kiseleva, O.I., & Poverennaya, E. V., 2021. The curious case of the HepG2 cell line: 40 years of expertise. *Int. J. Mol. Sci.* 22. doi:10.3390/ijms222313135
- Aubrey, B.J., Kelly, G.L., Janic, A., Herold, M.J., & Strasser, A., 2018. How does p53 induce apoptosis and how does this relate to p53-mediated tumour suppression? *Cell Death Differ.* 25: 104–113. doi:10.1038/cdd.2017.169
- Balali-Mood, M., Naseri, K., Tahergorabi, Z., Khazdair, M.R., & Sadeghi, M., 2021. Toxic Mechanisms of Five Heavy Metals: Mercury, Lead, Chromium, Cadmium, and Arsenic. *Front. Pharmacol.* 12: 1–19. doi:10.3389/fphar.2021.643972
- Biagioli, M., Pifferi, S., Ragghianti, M., Bucci, S., Rizzuto, R., & Pinton, P., 2008. Endoplasmic reticulum stress and alteration in calcium homeostasis are involved in cadmium-induced apoptosis. *Cell Calcium* 43: 184–195. doi:10.1016/j.ceca.2007.05.003
- Bock, F.J., & Tait, S.W.G., 2020. Mitochondria as multifaceted regulators of cell death. *Nat. Rev. Mol. Cell Biol.* 21: 85–100. doi:10.1038/s41580-019-0173-8
- Boucher, D., Blais, V., & Denault, J.B., 2012. Caspase-7 uses an exosite to promote poly(ADP ribose) polymerase 1 proteolysis. *Proc. Natl. Acad. Sci. U. S. A.* 109: 5669–5674. doi:10.1073/pnas.1200934109
- Brentnall, M., Rodriguez-Menocal, L., De Guevara, R.L., Cepero, E., & Boise, L.H., 2013. Caspase-9, caspase-3 and caspase-7 have distinct roles during intrinsic apoptosis. *BMC Cell Biol.* 14. doi:10.1186/1471-2121-14-32

- Briffa, J., Sinagra, E., & Blundell, R., 2020. Heavy metal pollution in the environment and their toxicological effects on humans. *Heliyon* 6. doi:10.1016/j.heliyon.2020.e04691
- Cao, L., Quan, X.B., Zeng, W.J., Yang, X.O., & Wang, M.J., 2016. Mechanism of hepatocyte apoptosis. *J. Cell Death* 9: 19–29. doi:10.4137/JCD.S39824
- Cavalcante, G.C., Schaan, A.P., Cabral, G.F., Santana-Da-Silva, M.N., Pinto, P., Vidal, A.F., et al., 2019. A cell's fate: An overview of the molecular biology and genetics of apoptosis. *Int. J. Mol. Sci.* 20: 1–20. doi:10.3390/ijms20174133
- Childs, B.G., Baker, D.J., Kirkland, J.L., Campisi, J., & van Deursen, J.M., 2014. Senescence and apoptosis: dueling or complementary cell fates? *EMBO Rep.* 15: 1139–1153. doi:10.15252/embr.201439245
- Costantini, S., Di Bernardo, G., Cammarota, M., Castello, G., & Colonna, G., 2013. Gene expression signature of human HepG2 cell line. *Gene* 518: 335–345. doi:10.1016/j.gene.2012.12.106
- Cui, Z.G., Ahmed, K., Zaidi, S.F., & Muhammad, J.S., 2021. Ins and outs of cadmium-induced carcinogenesis: Mechanism and prevention. *Cancer Treat. Res. Commun.* 27: 100372. doi:10.1016/j.ctarc.2021.100372
- Cuyppers, A., Plusquin, M., Remans, T., Jozefczak, M., Keunen, E., Gielen, H., et al., 2010. Cadmium stress: An oxidative challenge. *BioMetals* 23: 927–940. doi:10.1007/s10534-010-9329-x
- D'Arcy, M.S., 2019. Cell death: a review of the major forms of apoptosis, necrosis and autophagy. *Cell Biol. Int.* 43: 582–592. doi:10.1002/cbin.11137
- Edianto, 2020. UNIVERSITAS SUMATERA UTARA Poliklinik UNIVERSITAS SUMATERA UTARA. *Disertasi*.
- Edlich, F., 2018. BCL-2 proteins and apoptosis: Recent insights and unknowns. *Biochem. Biophys. Res. Commun.* 500: 26–34. doi:10.1016/j.bbrc.2017.06.190
- Elmore, S., 2007. Apoptosis: A Review of Programmed Cell Death. *Toxicol. Pathol.* 35: 495–516. doi:10.1080/01926230701320337
- Famurewa, A.C., Renu, K., Eladl, M.A., Chakraborty, R., Myakala, H., El-Sherbiny, M., et al., 2022. Hesperidin and hesperetin against heavy metal toxicity: Insight on the molecular mechanism of mitigation. *Biomed. Pharmacother.* 149: 112914. doi:10.1016/j.biopha.2022.112914
- Fatima, G., Raza, A.M., Hadi, N., Nigam, N., & Mahdi, A.A., 2019. Cadmium in Human Diseases: It's More than Just a Mere Metal. *Indian J. Clin. Biochem.* 34: 371–378. doi:10.1007/s12291-019-00839-8
- Genchi, G., Sinicropi, M.S., Lauria, G., Carocci, A., & Catalano, A., 2020. The effects of cadmium toxicity. *Int. J. Environ. Res. Public Health* 17: 1–24. doi:10.3390/ijerph17113782
- Guo, H., Cui, H., Fang, J., Zuo, Z., Deng, Junliang, Wang, X., et al., 2016. Nickel chloride-induced apoptosis via mitochondria- and Fas-mediated caspase-dependent pathways in broiler chickens. *Oncotarget* 7: 79747–79760. doi:10.18632/oncotarget.12946
- Haupt, S., Berger, M., Goldberg, Z., & Haupt, Y., 2003. Apoptosis - The p53 network. *J. Cell Sci.* 116: 4077–4085. doi:10.1242/jcs.00739
- Hernández-Cruz, E.Y., Amador-Martínez, I., Aranda-Rivera, A.K., Cruz-Gregorio,

- A., & Pedraza Chaverri, J., 2022. Renal damage induced by cadmium and its possible therapy by mitochondrial transplantation. *Chem. Biol. Interact.* 361. doi:10.1016/j.cbi.2022.109961
- Hernández Borrero, L.J., & El-Deiry, W.S., 2021. Tumor suppressor p53: Biology, signaling pathways, and therapeutic targeting. *Biochim. Biophys. Acta - Rev. Cancer* 1876. doi:10.1016/j.bbcan.2021.188556
- Hill, D.T., Jandev, V., Petroni, M., Atallah-Yunes, N., Bendinskas, K., Brann, L.S., et al., 2023. Airborne levels of cadmium are correlated with urinary cadmium concentrations among young children living in the New York state city of Syracuse, USA. *Environ. Res.* 223. doi:10.1016/j.envres.2023.115450
- Hsu, Y.-T., & Soraya, S., n.d. of the Proapoptotic Protein Bax 37: 1–20.
- Hu, W., Zhu, Q.L., Zheng, J.L., & Wen, Z.Y., 2022. Cadmium induced oxidative stress, endoplasmic reticulum (ER) stress and apoptosis with compensative responses towards the up-regulation of ribosome, protein processing in the ER, and protein export pathways in the liver of zebrafish. *Aquat. Toxicol.* 242. doi:10.1016/j.aquatox.2021.106023
- Huang, Y., He, C., Shen, C., Guo, J., Mubeen, S., Yuan, J., et al., 2017. Toxicity of cadmium and its health risks from leafy vegetable consumption. *Food Funct.* 8: 1373–1401. doi:10.1039/c6fo01580h
- Indran, I.R., Tufo, G., Pervaiz, S., & Brenner, C., 2011. Recent advances in apoptosis, mitochondria and drug resistance in cancer cells. *Biochim. Biophys. Acta - Bioenerg.* 1807: 735–745. doi:10.1016/j.bbabi.2011.03.010
- Jiang, Liping, Cao, J., An, Y., Geng, C., Qu, S., Jiang, Lijie, et al., 2007. Genotoxicity of acrylamide in human hepatoma G2 (HepG2) cells. *Toxicol. Vitro.* 21: 1486–1492. doi:10.1016/j.tiv.2007.06.011
- Juliani, A., Rahmawati, S., & Yoneda, M., 2021. Heavy Metal Characteristics of Wastewater From Batik Industry in Yogyakarta Area, Indonesia. *Int. J. GEOMATE* 20: 59–67. doi:10.21660/2021.80.6271
- Kashyap, D., Garg, V.K., & Goel, N., 2021. Intrinsic and extrinsic pathways of apoptosis: Role in cancer development and prognosis, 1st ed, *Advances in Protein Chemistry and Structural Biology*. Elsevier Inc. doi:10.1016/bs.apcsb.2021.01.003
- Khansakorn, N., Wongwit, W., Tharnpoophasiam, P., Hengprasith, B., Suwannathon, L., Chanprasertyothin, S., et al., 2012. Genetic variations of glutathione S-transferase influence on blood cadmium concentration. *J. Toxicol.* 2012. doi:10.1155/2012/356126
- Kroemer, G., & Martin, S.J., 2005. Caspase-independent cell death. *Nat. Med.* 11: 725–730. doi:10.1038/nm1263
- Lamkanfi, M., & Kanneganti, T.D., 2010. Caspase-7: A protease involved in apoptosis and inflammation. *Int. J. Biochem. Cell Biol.* 42: 21–24. doi:10.1016/j.biocel.2009.09.013
- Lawal, A.O., & Ellis, E.M., 2012. Phospholipase C Mediates Cadmium-Dependent Apoptosis in HEK 293 Cells. *Basic Clin. Pharmacol. Toxicol.* 110: 510–517. doi:10.1111/j.1742-7843.2011.00843.x
- Lawal, A.O., Marnewick, J.L., & Ellis, E.M., 2015a. Heme oxygenase-1 attenuates cadmium-induced mitochondrial-caspase 3- dependent apoptosis in human

- hepatoma cell line. *BMC Pharmacol. Toxicol.* 16: 1–13. doi:10.1186/s40360-015-0040-y
- Lawal, A.O., Marnewick, J.L., & Ellis, E.M., 2015b. Heme oxygenase-1 attenuates cadmium-induced mitochondrial-caspase 3- dependent apoptosis in human hepatoma cell line. *BMC Pharmacol. Toxicol.* 16: 1–13. doi:10.1186/s40360-015-0040-y
- Lee, D., Yu, J.S., Ryoo, R., Kim, J.C., Jang, T.S., Kang, K.S., et al., 2021. Pulveraven A from the fruiting bodies of *Pulveroboletus ravenelii* induces apoptosis in breast cancer cell via extrinsic apoptotic signaling pathway. *J. Antibiot. (Tokyo)*. 74: 752–757. doi:10.1038/s41429-021-00435-0
- Lee, W.K., & Thévenod, F., 2008. Novel roles for ceramides, calpains and caspases in kidney proximal tubule cell apoptosis: Lessons from in vitro cadmium toxicity studies. *Biochem. Pharmacol.* 76: 1323–1332. doi:10.1016/j.bcp.2008.07.004
- Leu, J.I.J., Dumont, P., Hafey, M., Murphy, M.E., & George, D.L., 2004. Mitochondrial p53 activates Bak and causes disruption of a Bak-Mcl1 complex. *Nat. Cell Biol.* 6: 443–450. doi:10.1038/ncb1123
- Li, X., Liu, H., Lv, L., Yan, H., & Yuan, Y., 2018. Antioxidant activity of blueberry anthocyanin extracts and their protective effects against acrylamide-induced toxicity in HepG2 cells. *Int. J. Food Sci. Technol.* 53: 147–155. doi:10.1111/ijfs.13568
- Luckert, C., Schulz, C., Lehmann, N., Thomas, M., Hofmann, U., Hammad, S., et al., 2017. Comparative analysis of 3D culture methods on human HepG2 cells. *Arch. Toxicol.* 91: 393–406. doi:10.1007/s00204-016-1677-z
- Maes, M.E., Schlamp, C.L., & Nickells, R.W., 2017. Live-cell imaging to measure BAX recruitment kinetics to mitochondria during apoptosis. *PLoS One* 12: 1–21. doi:10.1371/journal.pone.0184434
- Maximov, G.K., & Maximov, K.G., 2008. The role of p53 tumor-suppressor protein in apoptosis and cancerogenesis. *Biotechnol. Biotechnol. Equip.* 22: 664–668. doi:10.1080/13102818.2008.10817532
- Moroni-González, D., Sarmiento-Ortega, V.E., Diaz, A., Brambila, E., & Treviño, S., 2023. Pancreas–Liver–Adipose Axis: Target of Environmental Cadmium Exposure Linked to Metabolic Diseases. *Toxics* 11: 1–29. doi:10.3390/toxics11030223
- Mu, Y.P., Ogawa, T., & Kawada, N., 2010. Reversibility of fibrosis, inflammation, and endoplasmic reticulum stress in the liver of rats fed a methionine-choline-deficient diet. *Lab. Investig.* 90: 245–256. doi:10.1038/labinvest.2009.123
- Nair, A.R., DeGheselle, O., Smeets, K., Van Kerkhove, E., & Cuypers, A., 2013. Cadmium-induced pathologies: Where is the oxidative balance lost (or not)? *Int. J. Mol. Sci.* 14: 6116–6143. doi:10.3390/ijms14036116
- Nguyen, K.C., Willmore, W.G., & Tayabali, A.F., 2013. Cadmium telluride quantum dots cause oxidative stress leading to extrinsic and intrinsic apoptosis in hepatocellular carcinoma HepG2 cells. *Toxicology* 306: 114–123. doi:10.1016/j.tox.2013.02.010
- Nikoletopoulou, V., Markaki, M., Palikaras, K., & Tavernarakis, N., 2013. Crosstalk between apoptosis, necrosis and autophagy. *Biochim. Biophys. Acta*

- *Mol. Cell Res.* 1833: 3448–3459. doi:10.1016/j.bbamcr.2013.06.001
- Noor, K.K., Ijaz, M.U., Ehsan, N., Tahir, A., Yeni, D.K., Neamul Kabir Zihad, S.M., et al., 2022. Hepatoprotective role of vitexin against cadmium-induced liver damage in male rats: A biochemical, inflammatory, apoptotic and histopathological investigation. *Biomed. Pharmacother.* 150: 112934. doi:10.1016/j.biopha.2022.112934
- Obeng E, 2020. Apoptosis (programmed cell death) and its signals - A review. *Brazilian J. Biol.* 81: 1133–1143.
- Oginawati, K., Susetyo, S.H., Cahyani, Z.N., & Fahimah, N., 2022. Investigation of exposure to heavy metals (Hg, Pb, Cd, Co, and Cr) as the cause of congenital anomaly cases (orofacial cleft) in infants. *Environ. Sci. Pollut. Res.* 29: 82169–82185. doi:10.1007/s11356-022-21611-1
- Omidifar, N., Nili-Ahmadabadi, A., Gholami, A., Dastan, D., Ahmadimoghaddam, D., & Nili-Ahmadabadi, H., 2020. Biochemical and Histological Evidence on the Protective Effects of *Allium hirtifolium* Boiss (Persian Shallot) as an Herbal Supplement in Cadmium-Induced Hepatotoxicity. *Evidence-based Complement. Altern. Med.* 2020. doi:10.1155/2020/7457504
- Pallepati, P., & Averill-Bates, D.A., 2011. Mild thermotolerance induced at 40 °C protects HeLa cells against activation of death receptor-mediated apoptosis by hydrogen peroxide. *Free Radic. Biol. Med.* 50: 667–679. doi:10.1016/j.freeradbiomed.2010.11.022
- Puttahanumantharayappa, L.D., Sannappa Gowda, N.G., Shiragannavar, V.D., & Santhekadur, P.K., 2021. Origin and properties of hepatocellular carcinoma cell lines. *Japanese J. Gastroenterol. Res.* 1: 1–5. doi:10.52768/jjgastro/1040
- Rahimzadeh, Mehrdad Rafati, Rahimzadeh, Mehravar Rafati, Kazemi, S., & Moghadammia, A.A., 2017. Cadmium toxicity and treatment: An update. *Casp. J. Intern. Med.* 8: 135–145. doi:10.22088/cjim.8.3.135
- Rani, A., Kumar, A., Lal, A., & Pant, M., 2014. Cellular mechanisms of cadmium-induced toxicity: A review. *Int. J. Environ. Health Res.* 24: 378–399. doi:10.1080/09603123.2013.835032
- Rao, R. V., Ellerby, H.M., & Bredesen, D.E., 2004. Coupling endoplasmic reticulum stress to the cell death program. *Cell Death Differ.* 11: 372–380. doi:10.1038/sj.cdd.4401378
- Redza-Dutordoir, M., & Averill-Bates, D.A., 2016. Activation of apoptosis signalling pathways by reactive oxygen species. *Biochim. Biophys. Acta - Mol. Cell Res.* 1863: 2977–2992. doi:10.1016/j.bbamcr.2016.09.012
- Rifkiana, N.A., 2023. EFEK KADMIUM TERHADAP VIABILITAS SEL, EKSPRESI mRNA GSTM1 DAN EKSPRESI mRNA CASPASE-3 PADA SEL HEPG2. *Tesis*.
- Rikans, L.E., & Yamano, T., 2000. Mechanisms of cadmium-mediated acute hepatotoxicity. *J. Biochem. Mol. Toxicol.* 14: 110–117. doi:10.1002/(SICI)1099-0461(2000)14:2<110::AID-JBT7>3.0.CO;2-J
- Ristanti, E.Y., Suprpti, S., & Ramlah, S., 2016. Kandungan Logam Berat Pada Biji Kakao Asal Sulawesi Barat Dan Tenggara. *J. Ind. Has. Perkeb.* 11: 67. doi:10.33104/jihp.v11i2.3413
- Riwaldt, S., Corydon, T.J., Pantalone, D., Sahana, J., Wise, P., Wehland, M., et al.,

2021. Role of Apoptosis in Wound Healing and Apoptosis Alterations in Microgravity. *Front. Bioeng. Biotechnol.* 9: 1–22. doi:10.3389/fbioe.2021.679650
- Souza-Arroyo, V., Fabián, J.J., Bucio-Ortiz, L., Miranda-Labra, R.U., Gomez-Quiroz, L.E., & Gutiérrez-Ruiz, M.C., 2022. The mechanism of the cadmium-induced toxicity and cellular response in the liver. *Toxicology* 480: 153339. doi:10.1016/j.tox.2022.153339
- Strumylaite, L., Bogusevicius, A., Abdrachmanovas, O., Baranauskiene, D., Kregzdyte, R., Pranys, D., et al., 2011. Cadmium concentration in biological media of breast cancer patients. *Breast Cancer Res. Treat.* 125: 511–517. doi:10.1007/s10549-010-1007-8
- Suhani, I., Sahab, S., Srivastava, V., & Singh, R.P., 2021. Impact of cadmium pollution on food safety and human health. *Curr. Opin. Toxicol.* 27: 1–7. doi:10.1016/j.cotox.2021.04.004
- Vidyashankar, S., Nandakumar, K.S., & Patki, P.S., 2012. Alcohol depletes coenzyme-Q 10 associated with increased TNF-alpha secretion to induce cytotoxicity in HepG2 cells. *Toxicology* 302: 34–39. doi:10.1016/j.tox.2012.07.009
- Vinken, M., Maes, M., Oliveira, A.G., Cogliati, B., Marques, P.E., Menezes, G.B., et al., 2014. Primary hepatocytes and their cultures in liver apoptosis research. *Arch. Toxicol.* 88: 199–212. doi:10.1007/s00204-013-1123-4
- Wang, H., Guo, M., Wei, H., & Chen, Y., 2023. Targeting p53 pathways: mechanisms, structures, and advances in therapy. *Signal Transduct. Target. Ther.* 8: 1–35. doi:10.1038/s41392-023-01347-1
- Wanner, E., Thoppil, H., & Riabowol, K., 2021. Senescence and Apoptosis: Architects of Mammalian Development. *Front. Cell Dev. Biol.* 8: 1–16. doi:10.3389/fcell.2020.620089
- Wen, S., Wang, L., Zhang, W., Xu, M., Song, R., Zou, H., et al., 2021. Induction of mitochondrial apoptosis pathway mediated through caspase-8 and c-Jun N-terminal kinase by cadmium-activated Fas in rat cortical neurons. *Metallomics* 13: 1–11. doi:10.1093/mtomcs/mfab042
- Yamada, K., & Yoshida, K., 2019. Mechanical insights into the regulation of programmed cell death by p53 via mitochondria. *Biochim. Biophys. Acta - Mol. Cell Res.* 1866: 839–848. doi:10.1016/j.bbamcr.2019.02.009
- Yang, C., Kaushal, V., Haun, R.S., Seth, R., Shah, S. V., & Kaushal, G.P., 2008. Transcriptional activation of caspase-6 and -7 genes by cisplatin-induced p53 and its functional significance in cisplatin nephrotoxicity. *Cell Death Differ.* 15: 530–544. doi:10.1038/sj.cdd.4402287
- Yang, Z., He, Y., Wang, H., & Zhang, Q., 2021. Protective effect of melatonin against chronic cadmium-induced hepatotoxicity by suppressing oxidative stress, inflammation, and apoptosis in mice. *Ecotoxicol. Environ. Saf.* 228. doi:10.1016/j.ecoenv.2021.112947
- Ye, H., Nelson, L.J., Del Moral, M.G., Martínez-Naves, E., & Cubero, F.J., 2018. Dissecting the molecular pathophysiology of drug-induced liver injury. *World J. Gastroenterol.* 24: 1373–1385. doi:10.3748/wjg.v24.i13.1373
- Yunita Dewi, P.N., Nurjazuli, N., & Budiyono, B., 2022. Urinary Cadmium Level



- Causing Impaired Kidney Function in Farmers in Gintungan Village, Bandungan District. *J. Kesehat. Lingkung.* 14: 21. doi:10.20473/jkl.v14i1.2022.21-26
- Zalups, R.K., & Ahmad, S., 2003. Molecular handling of cadmium in transporting epithelia. *Toxicol. Appl. Pharmacol.* 186: 163–188. doi:10.1016/S0041-008X(02)00021-2
- Zhang, J., Huang, K., O’neill, K.L., Pang, X., & Luo, X., 2016. Bax/bak activation in the absence of Bid, Bim, Puma, and p53. *Cell Death Dis.* 7. doi:10.1038/cddis.2016.167
- Zhang, J., Zhang, Y., Qi, X., Cui, Y., Chen, X., & Lin, H., 2022. TRAF2/ASK1/JNK Signaling Pathway Is Involved in the Lung Apoptosis of Swine Induced by Cadmium Exposure. *Biol. Trace Elem. Res.* 200: 2758–2766. doi:10.1007/s12011-021-02860-6
- Zheng, J., Zhuo, L., Ran, D., Ma, Y., Luo, T., Zhao, H., et al., 2020. Cadmium induces apoptosis via generating reactive oxygen species to activate mitochondrial p53 pathway in primary rat osteoblasts. *Toxicology* 446: 1–8. doi:10.1016/j.tox.2020.152611
- Zhu, M.K., Li, H.Y., Bai, L.H., Wang, L.S., & Zou, X.T., 2020. Histological changes, lipid metabolism, and oxidative and endoplasmic reticulum stress in the liver of laying hens exposed to cadmium concentrations. *Poult. Sci.* 99: 3215–3228. doi:10.1016/j.psj.2019.12.073