

**Chapter 8:**  
***Bibliography***

## BIBLIOGRAPHY

- Abdelhamid, E.E., Sultana, M., Portoghese, P.S., Takemori, A.E., (1991), "Selective blockage of delta opioid receptors prevents the development of morphine tolerance and dependence in mice, *J Pharmacol Exp Ther.*, 258, pp.299 – 303
- Abraham, P., and Rabi, S., (2009), "Nitrosative stress, protein tyrosine nitration, PARP activation and NAD depletion in the kidneys of rats after single dose of cyclophosphamide," *Clin.Exp.Neph.*, 13 (4), pp.281-287
- Acuna, C., (2008), "Duloxetine for the treatment of fibromyalgia," *Drugs Today.*, 44 (10), pp.725–34
- Adam, F., Dufour, E., Le Bars, D., (2008), "The glycine site-specific NMDA antagonist (+)-HA966 enhances the effect of morphine and reverses morphine tolerance via a spinal mechanism," *Neuropharmacology*, 54(3), pp.588-96
- Afanasev, I., (2010), "Signaling of reactive oxygen and nitrogen species in Diabetes mellitus," *Oxid Med Cell Longev.*, 3(6), pp.361-73
- Agthong, S., Tomlinson, D., (2002), "Inhibition of p38 MAP kinase corrects biochemical and neurological deficits in experimental diabetic neuropathy," *Ann N Y Acad Sci*, 973, pp. 359-62
- Ahluwalia, J., Urban, L., Capogna, M., Bevan, S., Nagy, I., (2000), "Cannabinoid 1 receptors are expressed in nociceptive primary sensory neurons," *Neuroscie.*, 100(4), pp.685–8
- Ahluwalia, J., Urban, L., Bevan, S., Nagy, I., (2003), "Anandamide regulates neuropeptide release from capsaicin-sensitive primary sensory neurons by activating both the cannabinoid 1 receptor and the vanilloid receptor 1 in vitro," *Eur J Neurosci.*, 17(12), pp.2611-8
- Ahmed, A.Z.O., Moustafa, H.M., Saida, A.L.Y., Randa, A.D.H., and Samy, A.R., (2006), "Attenuation of morphine tolerance and dependence by aminoguanidine in mice," *Eur.J.Pharmacol.* 540, pp.60-66
- Ahuja, J., Gupta, A.K., Gupta, M., Kohli, K., (2004), "Thalidomide Rediscovered," *Journ, "Ind.Acad.Clin.Med.*, 5(1), pp.34-7
- Aiello, L.P., Avery, R.L., Arrigg, P.G., Keyt, B.A., Jampel, H.D., Shah, S.T., Pasquale, L.R., Thieme, H., Iwamoto, M.A., Park, J.E., Nguyen, H.V., Aiello, L.M., Ferrara, N., King G.L. (1994), "Vascular endothelial growth factor in

ocular fluids of patients with diabetic retinopathy and other retinal disorders,”  
N Engl J Med., 331, pp.1480-1487

- Akopian, A.N., Ruparel, N.B., Jeske, N.A., Patwardhan, A., and Hargreaves, K.M., (2009), “Role of ionotropic cannabinoid receptors in peripheral antinociception and antihyperalgesia,” *Trends Pharmacol.Sci.*, 30(2), pp.79-84
- Aley, K., Messing, R., Mochly-Rosen, D., Levine, J., (2000), “Chronic hypersensitivity for inflammatory nociceptor sensitization mediated by the epsilon isozyme of protein kinase C,” *Journal Neurosci*, 20, pp.4680–4685
- Alp, N.J., and Channon, K.M., (2004), “Regulation of endothelial nitric oxide synthase by tetrahydrobiopterin in vascular disease,” *Arterioscler Thromb Vasc Biol.*, 24, pp.413–420
- Amann, R., Schuligoi, R., Herzeg, G., Donnerer, J., (1996), “Intraplantar injection of nerve growth factor into the rat hind paw: local edema and effects on thermal nociceptive threshold,” *Pain*, 64(2), pp.323-9
- Anand, P., Terenghi, G., Warner, G., Kopelman, P., Williams-Chestnut, P.R., and Sinicropi D.V., (1996), “The role of endogenous nerve growth factor in human diabetic neuropathy” *Nature Med.*, 2, pp.703 – 707
- Anaraki, K., Sianati, K.D., Sadeghi, S., Ghasemi, M., Paydar, M., Ejtemaei, M.J., Mehr, S., Dehpour, A.R., (2008), “Modulation by female sex hormones of the cannabinoid-induced catalepsy and analgesia in ovariectomized mice,” *Eur J Pharmacol.*, 586(1-3), pp.189-96
- Anderson, D.K., (2001), “Cytokines as Drug Targets,” *I.Drugs.*, 4, pp.375-377
- Andreassen, C.S., Jakobsen, J., Flyvbjerg, A., Andersen, H., (2009), “Expression of neurotrophic factors in diabetic muscle--relation to neuropathy and muscle strength,” *Brain.*, 132(10), pp.2724-33
- Andrew, J.M.B., (2005), “Opioids for painful diabetic neuropathy,” *Curr Diab Rep.*, 5(6)4, pp.407-408
- Angana, G.R., Xi-Fen, M., João, M.C., and Zhihong, Y., (2009), “The hexosamine biosynthesis inhibitor azaserine prevents endothelial inflammation and dysfunction under hyperglycemic condition through antioxidant effects” *Am J Physiol Heart Circ Physiol.*, 296, pp.H815-H822
- Anghel, A., Mut-Vitcu, B., Savu, L., Marian, C., Seclaman, E., Iman, R., Neghina, A.M., Dragulescu S.I., (2007), “Clinical improvement after treatment with

VEGF(165) in patients with severe chronic lower limb ischaemia., *Genomic Med.* 2007; 1(1-2), pp.47-55

- Anjaneyulu, M., Berent-Spillson, A., Russell, J.W., (2008), "Metabotropic glutamate receptors (mGluRs) and diabetic neuropathy" *Curr Drug Targets*,9(1), pp.85-93
- Apfel, S. C., Arezzo, J. C., Brownlee, M., Federoff, H., and Kessler, J. A., (1994),"Nerve growth factor administration protects against experimental diabetic sensory neuropathy," *Brain Res.*, 634, pp.7–12
- Armstrong, C.S., Wuarin,L., Ishii,D.N., (2000), "Uptake of circulating insulin-like growth factor-I into the cerebrospinal fluid of normal and diabetic rats and normalization of IGF-II mRNA content in diabetic rat brain," *Journ.Neurosci Res.*, 59(5), pp.649-660
- Arora, M., Kumar, A., Kaundal, R.K., and Sharma, S.S., (2008), "Amelioration of neurological and biochemical deficits by peroxynitrite decomposition catalysts in experimental diabetic neuropathy," *Eur.J.Pharmacol.*, 596(1-3), pp.77-83
- Atkinson, M.A., and N. K. Maclaren., (1994), "The pathogenesis of insulin dependent diabetes mellitus," *N. Engl. J. Med.*, 24, pp.1428–1436
- Attal, N., Cruccu, G., Baron, R., Haanpää, M., Hansson, P., Jensen, T.S., Nurmikko, T., (2010), "EFNS guidelines on the pharmacological treatment of neuropathic pain: *Eur J Neurol.*, 17(9), pp.1113-e88.
- Bach, J.F., (1994), "Insulin-dependent diabetes mellitus as an autoimmune disease," *Endocr Rev.*, 15, pp. 516-542
- Bailey, C.P., Llorente, J., Gabra, B.H., Smith, F.L., Dewey, W.L., Kelly, E., Henderson, G., (2009), "Role of protein kinase C and mu-opioid receptor (MOPr) desensitization in tolerance to morphine in rat locus coeruleus neurons," *Eur J Neurosci.*, 29(2), pp.307-18
- Balasa, B., and N. Sarvetnick., (1996), "The paradoxical effect of interleukin 10 in the immunoregulation of autoimmune diabetes," *J. Autoimmun.*, 9, pp. 283-286
- Banafshe, H.R., Ghazi-Khansari, M., Dehpour AR., (2005), "The effect of cyclosporine on the development and expression of cannabinoid tolerance in mice," *Pharmacol Biochem Behav.*, 82(4), pp.658-63

- Bao, M., Yang, Y., Jun, H.S., and Yoon, J.W., (2002), "Molecular mechanisms for gender differences in susceptibility to T cell-mediated autoimmunity," *J Immunol.*, 168, pp. 5369-75
- Barbosa, J.H., Oliveira, S.L., Seara, L.T., (2008), "The role of advanced glycation end-products (AGEs) in the development of vascular diabetic complications" *Arq Bras Endocrinol Metabol.*, 52(6), pp.940-50
- Basbaum, A.I., Bautista, D.M., Scher, Basbaum, A.I., Bautista, D.M., Scherrer, G., Julius, D., (2009), "Cellular and molecular mechanisms of pain," *Cell*, 139(2), pp.267–284
- Baulieu, E.E., (1997), "Neurosteroids, with special reference to the effect of progesterone on myelination in peripheral nerves," *Mult.Scler.*, 3(2), pp.105-112
- Bedard, K., and Krause, K.H., (2007), "The NOX Family of ROS-Generating NADPH Oxidases: Physiology and Pathophysiology," *Physiol Rev.*, 87(1), pp. 245-313
- Begon, S., Pickering, G., Eschalier, A., Mazur, A., Rayssiguier, Y. and Dubray, C., (2001), "Role of spinal NMDA receptors, protein kinase C and nitric oxide synthase in the hyperalgesia induced by magnesium deficiency in rats" *British. Pharmacol*, 134, pp.1227–1236
- Beltramo, M., Bernardini, N., Bertorelli, R., Campanella, M., Nicolussi, E., Fredduzzi, S., Reggiani, A., (2006), "CB2 receptor-mediated antihyperalgesia: possible direct involvement of neural mechanisms," *Eur J Neurosci*. 23, pp.1530 –1538
- Beyhum, H.N., Azar, S.T., and Almawi, W.L., (1997), "Association of altered T cell immunity with insulin-dependent diabetes mellitus (IDDM). More than a cause and effect" *Int. J. Diabetes*, 5, pp.124–141
- Bierhaus, A., Chevion, S., Chevion, M., Hofmann, M., Quehenberger, P., Illmer, T., Luther T., Berentshtein, E., Tritschler, H., Müller, M., Wahl, P., Ziegler, R., Nawroth, P.P., (1997) "Advanced glycation end product-induced activation of NF-kappaB is suppressed by alpha-lipoic acid in cultured endothelial cells" *Diabetes*, 46(9), pp.1481-90

- Bierhaus, A., Schiekofer, S., Schwaninger, M., (2001), "Diabetes-associated sustained activation of the transcription factor nuclear factor-kappa B" *Diabetes*, 50 (12), pp. 2792–2808
- Black, R.A., Rauch, C.T., Kozlosky, C.J., Peschon, J.J., Slack, J.L., Wolfson, M.F., Castner, B.J., Stocking, K.L., Reddy, P., Srinivasan, S., Nelson, N., Boiani, N., Schooley, K.A., Gerhart, M., Davis, R., Fitzner, J.N., Johnson, R.S., Paxton, R.J., March, C.J., and Cerretti, D.P., (1997), "A metalloproteinase disintegrin that releases tumour-necrosis factor-alpha from cells," *Nature.*, 385 (6618), pp. 729–33
- Bohn, L.M., Gainetdinov, R.R., Lin, F.T., Lefkowitz, R.J., Caron, M.G., (2000), "Mu-opioid receptor desensitization by beta-arrestin-2 determines morphine tolerance but not dependence," *Nature.*, 408(6813), pp.720-3
- Bohn, L.M., Lefkowitz, R.J., Caron, M.G., (2002), "Differential mechanisms of morphine antinociceptive tolerance revealed in (beta)arrestin-2 knock-out mice," *J.Neurosci.*, 22(23), pp.10494-500
- Boitard, C., Timsit, T., Sempe, P., and Bach, J.F., (1991), "Experimental immunoprevention of type I diabetes mellitus," *Diabetes Metab. Rev.*, 7, pp.15-33
- Boni-Schnetzler, M., Binz, K., Mary, J.L., Schmid, C., Schwander, J., Froesch, E. R., (1989), "Regulation of hepatic expression of IGF-I and fetal IGF binding protein mRNA in streptozotocin diabetes," *FEBS Lett.*, 251, pp.253–256
- Borgland, S.L., Connor, M., Osborne, P.B., Furness, J.B., and Christie, M.J., (2003), "Opioid Agonists Have Different Efficacy Profiles for G Protein Activation, Rapid Desensitization, and Endocytosis of Mu-opioid Receptors," *J.Biological Chem.*, 278, pp.18776-18784
- Boulton, A.J., Vinik, A.I., Arezzo, J.C., Bril, V., Feldman, E.L., Freeman, R., Malik, R.A., Maser, R.E., Sosenko, J.M., Ziegler, D., (2005), "Diabetic neuropathies: a statement by the American Diabetes Association" *Diabet. Care.*, 28, pp. 956–962
- Bouwmeester, T., Bauch, A., Ruffner, H., Angrand, P.O., Bergamini, G., Croughton, K., Cruciat, C., Eberhard, D., Gagneur, J., Ghidelli, S., Hopf, C., Huhse, B.,

- Mangano, R., Michon, A.M., Schirle, M., Schlegl, J., Schwab, M., Stein, M.A., Bauer, A., Casari, G., Drewes, G., Gavin, A.C., Jackson, D.B., Joberty, G., Neubauer, G., Rick, J., Kuster, B., and Superti-Furga, G., (2004), “A physical and functional map of the human TNF-alpha/NF-kappa B signal transduction pathway,” *Nat Cell Biol.*, 6(2), pp.97-105
- Bradley, L.M., Asensio, V.C., Schioetz, L.K., Harbertson, J., Krahl, T., Patstone, G., Woolf, N., Campbell, I.L., and Sarvetnick, N., (1999), “Islet-specific Th1, but not Th2, cells secrete multiple chemokines and promote rapid induction of autoimmune diabetes” *Journal of Immunol*, 162, pp.2511–2520
- Bril, V., Hirose, T., Tomioka, S., Buchanan, R., “Ranirestat Study Group” (2009), “Ranirestat for the management of diabetic sensorimotor polyneuropathy,” *Diabetes Care*, 32(7), pp.1256-60
- Brochu, R.M., Dick, I.E., Tarpley, J.W., McGowan, E., Gunner, D., Herrington, J., Shao, P.P., Ok, D., Li, C., Parsons, W.H., Stump, G.L., Regan, C.P., Lynch J.J., Lyons, K.A., McManus, O.B., Clark, S., Ali, Z., Kaczorowski, G.J., Martin, W.J., and Priest, B.T., (2006), “Block of peripheral nerve sodium channels selectively inhibits features of neuropathic pain in rats, “ *Mol Pharmacol.*, 69(3), pp.823-832
- Brown, M.J., and S.J. Bird., (2004), “Natural progression of diabetic peripheral neuropathy in the Zenarestat study population,” *Diabetes Care*, 27, pp.1153–9
- Bujalska, M., (2008), “Effect of cannabinoid receptor agonists on streptozotocin-induced hyperalgesia in diabetic neuropathy” *Pharmacol*, 82(3), pp.193-200
- Bujalska, M., and Makulska-Nowak, H., (2009), “Bradykinin receptor antagonists and cyclooxygenase inhibitors in vincristine and streptozotocin-induced hyperalgesia” *Pharmacol Rep*, 61(4), pp.631-40
- Buritova, J., Chapman, V., Honore, P., Besson, J.M., (1996), “Interactions between NMDA and prostaglandin receptor-mediated events in a model of inflammatory nociception,” *Eur J Pharmacol.*, 303, pp. 91–100
- Bushlin, I., Rozenfeld, R., Devi, L.A., (2010), “Cannabinoid-opioid interactions during neuropathic pain and analgesia” *Curr Opin Pharmacol*, 10(1), pp.80-86

- Cai H., (2005), "Hydrogen peroxide regulation of endothelial function: origins, mechanisms, and consequences," *Cardiovasc Res.*, 68, pp.26–36
- Cailleau, C., Diu-Hercend, A., Ruuth, A., Westwood, R., Carnaud, C., (1997), "Treatment with neutralizing antibodies specific for IL-1beta prevents cyclophosphamide-induced diabetes in nonobese diabetic mice," *Diabetes.*, 46, pp.937-940
- Calcutt, N.A., and Backonja, M.M., (2007), "Pathogenesis of pain in peripheral diabetic neuropathy," *Current Diabetes Reports*, 7, pp. 429-434
- Cameron, N.E., and Cotter, M.A., (2008) "Pro-inflammatory mechanisms in diabetic neuropathy: focus on the nuclear factor kappa B pathway" *Curr Drug Targets.*, 9(1), pp.60-7.
- Cameron, N.E, Gibson, T.M., Nangle, M.R., Cotter, M.A., (2005), "Inhibitors of advanced glycation end product formation and neurovascular dysfunction in experimental diabetes" *Ann NY Acad Sci*, 1043, pp.784–792
- Cao, T.T., Mays, R.W., VonZastrow, M., (1998), "Regulated endocytosis of G protein-coupled receptors by a biochemically and functionally distinct subpopulation of clathrin-coated pits. *J Biol Chem* 273:24592–24602
- Cardillo, C., Kilcoyne, C.M., Cannon, R.O., Panza, J.A., (2000), "Interactions between Nitric Oxide and Endothelin in the Regulation of Vascular Tone of Human Resistance Vessels in Vivo," *Hypertension*, 35, pp.1237
- Carolina, M.C., Patricia, M.B., Amanda, L.R., Melissa, C., Kathryn, S., Gary, P., Edward, J.B., Anne, M.W., and Aaron, I.V., (2007), "A 6-Month, randomized, double-masked, placebo-controlled study evaluating the effects of the protein kinase c- $\beta$  inhibitor ruboxistaurin on skin microvascular blood flow and other measures of diabetic peripheral neuropathy," *Diabet. Care*, 30 (4), pp.896-902
- Carter, A.B., Monick, M.M., Hunninghake, G.W., (1998), "Lipopolysaccharide-induced NF-kappaB activation and cytokine release in human alveolar macrophages is PKC-independent and TK- and PC-PLC-dependent" *Am J Respir Cell Mol Biol.*,18(3), pp.384-91.



- Caterina, M.J., Schumacher, M.A., Tominaga, M., Rosen, T.A., Levine, J.D., and Julius, D., (1997), "The capsaicin receptor: a heat-activated ion channel in the pain pathway," *Nature* 389, pp.816-824.
- Ceriello, A., Quagliaro, L., Catone, B., Pascon, R., Piazzola, M., Bais, B.,(2002), "Role of hyperglycemia in nitrotyrosine postprandial generation. *Diabetes Care*, 25, pp.1439–1443
- Cervero, F., Laird, J.M., García-Nicas, E., (2003), "Secondary hyperalgesia and presynaptic inhibition: an update," *Eur J Pain.*, 7(4), pp.345-51
- Chakrabarti A.K., Samantaray, S.K., (1976), "Diabetic peripheral neuropathy: nerve conduction studies before, during and after carbamazepine therapy," *Aust N Z J Med.*, 6(6), pp.565-8
- Chao, C.C., Gekker, G., Sheng, W.S., Hu, S., Tsang, M., Peterson, P.K., (1994), "Priming effect of morphine on the production of tumor necrosis factor-  $\alpha$  by microglia: implications in respiratory burst activity and human immunodeficiency virus-1 expression" *J Pharmacol Exp Ther*, 269, pp.198–203
- Charles, S., (2005), "Imbalance in Th Cell Polarization and its Relevance in Type 1 Diabetes Mellitus," *Rev Diabet Stud*, 2(4):182-186
- Chatenoud, L., Primo, J., and Bach, J.F., (1997), "CD3 antibody-induced dominant self tolerance in overtly diabetic NOD mice," *J Immunol.*, 158, pp. 2947-2954
- Chen, J., (2009), "Calcium Dysregulation Induces Apoptosis-inducing Factor Release: Cross-talk Between PARP-1- and Calpain- Signaling Pathways," *Exp Neurol.*, 218(2), 213–220
- Chen, L., and Huang, L.Y., (1992), "Protein kinase C reduces  $Mg^{2+}$  block of NMDA-receptor channels as a mechanism of modulation," *Nature*, 356, pp.521–523
- Chen, S.R., and Pan, H.L., (2003), "Antinociceptive Effect of Morphine, but not  $\mu$  Opioid Receptor Number, Is Attenuated in the Spinal Cord of Diabetic Rats," *Anesthesiology*, 99(6), pp. 1409-1414
- Chen, S.R., Samoriski, G., Pan, H.L., (2009), "Antinociceptive effects of chronic administration of uncompetitive NMDA receptor antagonists in a rat model of diabetic neuropathic pain," *Neuropharmacology*, 57(2), pp.121-6
- Chen, S.R., Sweigart, Kristi L. L, Joan, M .P., Hui, L.,(2002), "Functional  $\mu$  Opioid

- Receptors Are Reduced in the Spinal Cord Dorsal Horn of Diabetic Rats”*Anesthesiol*, 97(6), pp.1602-1608
- Chen, Y., Sommer, C., (2009), “The role of mitogen-activated protein kinase (MAPK) in morphine tolerance and dependence, “*Mol Neurobiol.*, 40(2), pp.101-7
- Chen, Y.S., Chung, S.S., Chung, S.K., (2010), “Aldose reductase deficiency improves Wallerian degeneration and nerve regeneration in diabetic thy1-YFP mice,”*J Neuropathol Exp Neurol*, 69(3), pp.294-305
- Cheng, C., Zochodne, D.W., (2003), “Sensory neurons with activated caspase-3` survive long-term experimental diabetes. *Diabetes*, 52, pp.2363–2371
- Cheng, H.T., Dauch, J.R., Oh, S.S., Hayes, J.M., Hong, Y., Feldman, E.L., (2010), “p38 mediates mechanical allodynia in a mouse model of type 2 diabetes,” *Mol Pain.*, 19, pp.6:28
- Cheryl, A.F., Beth, C.B., and Robin, B.K., (1992), “Hormonal milieu affects tail-flick latency in female rats and may be attenuated by access to sucrose,” *Physiology & behavior.*, 52(4), pp.699-706
- Chessell, I.P., Hatcher, J.P., Bountra, C., Michel, A.D., Hughes, J.P., Green, P., Egerton, J., Murfin, M., Richardson, J., Peck, W.L., Grahames, C.B., Casula, M.A., Yiangou, Y., Birch, R., Anand, P., Buell, G.N., (2005), “Disruption of the P2X7 purinoceptor gene abolishes chronic inflammatory and neuropathic pain,” *Pain.*, 114, pp.386–396
- Childers, S.R., Fleming, L., Konkoy, C., Marckel, D., Pacheco, M., Sexton, T., Ward, S., (1992), “Opioid and Cannabinoid Receptor Inhibition of Adenylyl Cyclase in Brain,”*Ann. New York Acaed. Sci.*, 654, p.33-51
- Choi, Y., Yoon, Y.W., Na, H.S., Kim, S.H., Chung, J.M., (1994), “Behavioral signs of ongoing pain and cold allodynia in a rat model of neuropathic pain,” *Pain*, 59, pp.369-376
- Chong, M.S., and Brandner, B., (2006), “Neuropathic agents and pain; New strategies,” *Biomed & Pharmacoth.*, 60, pp.318–322
- Chou, R., Carson, S., Chan, B.K., (2009), “Gabapentin versus tricyclic antidepressants for diabetic neuropathy and post-herpetic neuralgia: discrepancies between direct and indirect meta-analyses of randomized controlled trials,” *J. Gen Intern Med.*, 24(2), pp.178-88

- Christensen, D., Guilbaud, G., Kayser, V., (2000), "Complete prevention but stimulus-dependent reversion of morphine tolerance by the glycine/NMDA receptor antagonist (+)-HA966 in neuropathic rats," *Anesthesiology*, 92(3), pp.786-94
- Christine, P.M., and Ayikoe, G. M.N., (2008), "Peripheral neuropathy and neurosteroid formation in the central nervous system" *Brain Res. Rev*, 57 (2), pp.454-459
- Christoph, T., De, V.J., Tzschentke, T.M., (2010), "Tapentadol, but not morphine, selectively inhibits disease-related thermal hyperalgesia in a mouse model of diabetic neuropathic pain," *Neurosci Lett.*, 470(2), pp.91-4
- Chuang, T.T., Iacovelli, L., Sallèse, M., De Blasi, A., (1996), "G protein-coupled receptors: heterologous regulation of homologous desensitization and its implications," *Trends Pharmacol. Sci.*, 17:416–421.
- Cichewicz, D.L., (2004), "Synergistic interactions between cannabinoid and opioids analgesics," *Life Sciences.*, 74 (11), pp.1317-1324
- Cichewicz, D.L., and Mccarthy, E.A., (2003), "Antinociceptive Synergy between delata-9-Tetrahydrocannabinol and Opioids after Oral Administration," *JPET* 304, pp.1010–1015
- Cichewicz, D.L., and Welch, S.P., (2003), "Modulation of oral morphine antinociceptive tolerance and naloxone-precipitated withdrawal signs by oral Delta 9tetrahydrocannabinol. *J Pharmacol Exp Ther.*, 305, pp.812–817
- Clark, A.K., Staniland, A.A., Marchand, F., Kaan, T.M., McMahon, S.B., and Malcangio, M., (2010), "P2X7-Dependent Release of Interleukin-1 $\beta$  and Nociception in the Spinal Cord following Lipopolysaccharide," *J Neurosci.*, 30(2), pp.573-582
- Cohen, D. M., (1997), "Mitogen-activated protein kinase cascades and the signalling of hyperosmotic stress to immediate early genes," *Comp. Biochem. Physiol. A. Physiol.* 117, pp.291–299
- Comelli, F., Bettoni, I., Colleoni, M., Giagnoni, G., Costa, B., (2009), "Beneficial effects of a Cannabis sativa extract treatment on diabetes-induced neuropathy and oxidative stress," *Phytother Res.*, 23(12), pp.1678-84
- Connor O, A.B., (2009), "Neuropathic pain: quality-of-life impact, costs and cost effectiveness of therapy" *Pharmacoeconomics*, 27(2), pp.95-112

- Corchero, J., Manzanares, J., Fuentes, J.A., (2004), "Cannabinoid/opioid crosstalk in the central nervous system," *Crit Rev Neurobiol.*,16(1-2), pp.159-72.
- Corrala, L.G., and Kaplan, G., (1999), "Immunomodulation by thalidomide and thalidomide analogues," *Ann Rheum Dis.*, 58, pp.1107-1113
- Correa, F., Docagne, F., Mestre, L., Clemente, D., Hernangomez, M., Loria, F., Guaza, C., (2009), "A role for CB2 receptors in anandamide signaling pathways involved in the regulation of IL-12 and IL-23 in microglial cells," *Biochem. Pharmacol.*, 77, pp.86-100
- Coughlan, M.T., Oliva, K., Georgiu, H.M., (2001), "Glucose-induced release of tumor necrosis factor-alpha from human placental tissues in gestational diabetes mellitus," *Diabet Med.*, 18, pp.921-927
- Courteix, C., Bourget, P.F., Caussade, M., Bardin, F., Coudore, J., Fialip and Eschalier, A., (1998), "Is the Reduced Efficacy of Morphine in Diabetic Rats Caused by Alterations of Opiate Receptors or of Morphine Pharmacokinetics?," *JPET*, 285, pp.63-70
- Courteix, C., Eschalier, A., Lavarenne, J., (1993), "Streptozocin-induced diabetic rats: behavioural evidence for a model of chronic pain," *Pain* 53(1), pp.81-88
- Courteix, C., Bardin, M., Chantelauze, C., Lavarenne, J., Eschalier, A., (1994), "Study of the sensitivity of the diabetes-induced pain model in rats to a range of analgesics," *Pain*, 57: 153-60
- Craner, M.J., Klein, J.P., Renganathan, M., Black, J.A., and Waxman, S.G., (2002), "Changes of sodium channel expression in experimental painful diabetic neuropathy," *Ann Neurol.*, 52(6), pp. 786-92
- Cridland, R.A., Henry, J.L., (1998), "Effects of intrathecal administration of neuropeptides on a spinal nociceptive reflex in the rat: VIP, galanin, CGRP, TRH, somatostatin and angiotensin II" *Neuropeptide*, 11, pp.23-32
- Cui, Y., Chen, Y., Zhi, J. L., Guo, R. X., Feng, J. Q., Chen, P. X., (2006), "Activation of p38 mitogen-activated protein kinase in spinal microglia mediates morphine antinociceptive tolerance," *Brain Res.*, 1069, pp.235-243
- Cumbie, B.C., Hermayer, K.L., (2007), "Current concepts in targeted therapies for the pathophysiology of diabetic microvascular complication," *Vasc Health Risk Manag.*, 3(6), pp.823-832

- D'Amour, W.L., Smith, D.L., (1941), "A method for determining loss of pain sensation," *J. Pharmacol. Exp. Ther.*, 72, pp.74–79.
- Danis, R.P., and Sheetz, M.J., (2009), "Ruboxistaurin: PKC-beta inhibition for complications of diabetes" *Expert Opin Pharmacother*, 10(17), pp.2913-225
- David, G.A., Ryan, P.P., Christian, G., Steven, B.K., and David, I.B., (2000), "Aberrant Macrophage Cytokine Production Is a Conserved Feature Among Autoimmune-Prone Mouse Strains," *Diabetes*, 49(7), pp. 1106-1115
- Davies, M., Brophy, S., Williams, R., Taylor, A., (2006), "The prevalence, severity, and impact of painful diabetic peripheral neuropathy in type 2 diabetes" *Diabet. Care.*, 29. pp. 1518– 1522
- Daulhac, L., Mallet, C., Courteix, C., Etienne, M., Duroux, E., Privat, A.M., Eschalier, A., Fialip, J., (2006), "Diabetes-induced mechanical hyperalgesia involves spinal mitogen-activated protein kinase activation in neurons and microglia via N-methyl-D-aspartate-dependent mechanisms," *Mol Pharmacol*, 70, pp.1246-1254
- Deadwyler, S. A., Hampson, R. E., Mu, J., Whyte, A., and Childers, S., (1995), "Cannabinoids modulate voltage sensitive potassium A-current in hippocampal neurons via a cAMPdependent process. *J.Pharmacol.Exp.Ther.* 273: 734-743
- Debray-Sachs, M., Carnaud, C., Boitard, C., Cohen, H., Gresser, I., Bedossa, P., and Bach, J.F., (1991), "Prevention of diabetes in NOD mice treated with antibody to murine IFN gamma," *J Autoimmun.*, 4, pp. 237–248
- Deng, W., Theil, B., Tannenbaum, C.S., Hamilton, T.A., Stuehr, D.J., (1993), "Synergistic co-operation between T cell lymphokines for induction of nitric oxide synthase in murine peritoneal macrophages. *Journal of Immunology*, 151, 322–329
- De Nicola, A.F., Pietranera, L., Beauquis, J., Ferrini, M.G., Saravia, F., (2009), "Steroid protection in aging and age associated diseases," *Exp. Gerontol.*, 44, pp.34-40
- Dionne, R.A., Max, M.B., Gordon, S.M., Parada, S., Sang, C., Gracely, R.H., Sethna, N.F., MacLean, D.B., (1998), "The substance P receptor antagonist CP-99,994 reduces acute postoperative pain," *Clin Pharmacol Ther.*, 64(5), pp.562-8
- Dorazil-Dudzic, M., Mika, J., and Schafer, M.K., (2004), "The effects of local pentoxifylline and propentofylline treatment on formalin-induced pain and

- tumor necrosis factor-alpha messenger RNA levels in the inflamed tissue of the rat paw,” *Anesth. Analg.*, 98, pp. 1566–1573
- Doupis, J., Thomas, E., Lyons, Szuhuei, W., Charalambos, G., Thanh, D., and Aristidis V., (2009), “Microvascular Reactivity and Inflammatory Cytokines in Painful and Painless Peripheral Diabetic Neuropathy” *J Clin Endocrinol Metab*, 94, pp. 2157-2163
- Doyle T, Bryant L, Batinic-Haberle I, Little J, Cuzzocrea S, Masini E, Spasojevic I, Salvemini D., (2009), “Supraspinal inactivation of mitochondrial superoxide dismutase is a source of peroxynitrite in the development of morphine antinociceptive tolerance,” *Neuroscience*, 164(2), pp.702-10
- Drel, V.R., Pacher, P., Stevens, M.J., Obrosova, I.G., (2006a), “Aldose reductase inhibition counteracts nitrosative stress and poly(ADP-ribose) polymerase activation in diabetic rat kidney and high glucose-exposed human mesangial cells,” *Free Radic Biol Med.*, 40, pp.1454–1465
- Drel VR, Mashtalir N, Ilnytska O, Shin J, Li F, Lyzogubov VV, Obrosova IG., (2006b), “The leptin-deficient (ob/ ob) mouse: a new animal model of peripheral neuropathy of type 2 diabetes and obesity. *Diabetes*, 55, pp.3335–3343
- Drel, V.R., Pacher, P., Vareniuk, I., Pavlov, I.A., Ilnytska, O., Lyzogubov, V.V., Bell, S.R., Groves, J.T., Obrosova, I.G., (2007), “Evaluation of the peroxynitrite decomposition catalyst Fe(III) tetra-mesitylporphyrin octasulfonate on peripheral neuropathy in a mouse model of type 1 diabetes,” *Int J Mol Med.*, 20(6), pp.783-92
- Drel, V.R., Lupachyk, S., Shevalye, H., Vareniuk, I., Xu, W., Zhang, J., Delamere, N.A., Shahidullah, M., Slushe, B., Obrosova, I.G., (2010), “New Therapeutic and Biomarker Discovery for Peripheral Diabetic Neuropathy: PARP Inhibitor, Nitrotyrosine, and Tumor Necrosis Factor- $\alpha$ ,” *Endocrinology*, 151(6), pp.2547-2555
- Du, X.L., Edelstein, D., Rossetti, L., et al., (2000), “Hyperglycemia-induced mitochondrial superoxide overproduction activates the hexosamine pathway and induces plasminogen activator inhibitor-1 expression by increasing Sp1 glycosylation” *Proc Nat Acad Sci USA*, 97, pp.12222-6

- Du, Y., Sarthy, V., and Kern, T., (2004), "Interaction between NO and COX pathways in retinal cells exposed to elevated glucose and retina of diabetic rats," *Am J Physiol.*, 287, pp. R735–R741
- Dubin, A.E., and Patapoutian, A., (2010), "Nociceptors: the sensors of the pain pathway. *J Clin Invest*, 120(11), pp.3760–3772
- Dudhgaonkar, S.P., Tandan, S.K., Kumar, D., Naik, A.K., and Raviprakash, V., (2007), "Ameliorative effect of combined administration of induced nitric oxide synthase inhibitor with cyclooxygenase-2 inhibitors in neuropathic pain in rats" *Eur. J. Pain.*, 11, pp. 528-534
- Dudhgaonkar, S.P., S.K. Tandan., D. Kumar., R. Arunadevi., V.R. Prakash., (2008), "Synergistic interaction between meloxicam and aminoguanidine in formalin induced nociception in mice," *Eur J Pain.*, 12(3), pp. 321-8
- Duncan, D.D., and S. L. Swain., (1994), "Role of antigen-presenting cells in the polarized development of helper T cell subsets: evidence for differential cytokine production by Th0 cells in response to antigen presentation by B cells and macrophages," *Eur. J. Immunol.*, 24, pp. 2506-2514
- Duplain, H., Sartori, C., Dessen, P., Jayet, P.Y., Schwab, M., Bloch, J., Nicod, P., and Scherrer, U., (2008), "Stimulation of peroxynitrite catalysis improves insulin sensitivity in high fat diet-fed mice," *J Physiol* 586.16 (2008) pp 4011–4016
- Eddy, N.B., Leimbach, D., (1953), "Synthetic analgesics.II.Dithienylbutenyl-and dithienylbutylamines *Pharmacol Exp Ther.*, 107(3), pp.385-93
- Ehrhart, J., Obregon, D., Mori, T., Hou, H., Sun, N., Bai, Y., Klein, T., Fernandez, F., Tan, J., Shytle, R.D., (2005), "Stimulation of cannabinoid receptor 2 (CB2) suppresses microglial activation," *J Neuroinflammation.*, pp.2:29
- Eizirik, D.L., Flodstrom, M., Karlens, A.E., & Welsh, N., (1996), "The harmony of the spheres: inducible nitric oxide synthase and related genes in pancreatic beta cells" *Diabetologia.*, 39, pp.875–890
- Ekberg, K., and Johansson, B. L., (2008), "Effect of C-Peptide on Diabetic Neuropathy in Patients with Type 1 Diabetes," *Experimental Diabetes Res*, pp.01-05.?
- Ekstrom, A.R., Kanje, M., Skottner, A., (1989), "Nerve regeneration and serum levels

- of insulin-like growth factor-I in rats with streptozotocin-induced insulin deficiency,” *Brain Res.*, 496, pp.141–147
- Elias, D., Prigozin, H., Polak, N., Rapoport, M., Lohse, A.W., Cohen, I.R., (1994), “Autoimmune diabetes induced by the b - Cell toxin STZ,” *Diabetes*, 43, pp.992-8.
- Ellman, G.L., (1959), “Tissue sulfhydryl groups.” *Arch Biochem Biophys.*, 82, pp.70-7
- Ellington, H.C., Cotter, M.A., Cameron, N.E., Ross, R.A., (2002), “The effect of cannabinoids on capsaicin-evoked calcitonin gene-related peptide (CGRP) release from the isolated paw skin of diabetic and non-diabetic rats,” *Neuropharmacology*, 42(7), pp.966-75.
- Eva, S., Zsolt, B., László, C., Gáboi, C., János, S., (2000), “Interacting effects of capsaicin and anandamide on intracellular calcium in sensory neurons,” *Neuroreport*, 11(9), pp.1949-19512
- Evcimen, D.N., King, G.L., (2007), “The role of protein kinase C activation and the vascular complications of diabetes” *Pharmacol Res*, 55(6), pp.498-510
- Fan F, Compton DR, Ward S, Melvin L, Martin BR., (1994), “Development of cross tolerance between delta 9-tetrahydrocannabinol, CP 55,940 and WIN 55,212,” *J Pharmacol Exp Ther.*, 271(3), pp.1383-90
- Fan, G. H., Zhao, J., Wu, Y. L., Lou, L. G., Zhang, Z., Jing, Q., Ma, L. & Pei, G., (1998),” N-methyl-d-aspartate attenuates opioids receptor-mediated G protein activation and this process involves protein kinase C” *Molecul. Pharmacol* 53, pp.684–690
- Faubert, K.B.L., Kaminski, N.E., (2003), “Cannabinoids inhibit the activation of ERK MAPK in PMA/Io-stimulated mouse splenocytes,” *Int Immunopharmacol.*, 3(10-11), pp.1503-10
- Ferguson, S.S., (2001), “Evolving concepts in G protein-coupled receptor endocytosis: the role in receptor desensitization and signalling,” *Pharmacol Rev.*, 53, pp.1-24
- Fernandez-Real, J.M., and Ricart, W., (1999), “Insulin resistance and inflammation in



- an evolutionary perspective: The contribution of cytokine genotype/phenotype to thriftiness,” *Diabetologia*, 42, pp. 1367–1374
- Fernyhough, P., Diemel, L.T., Brewster, W.J., & Tomlinson, D.R., (1994), “Deficits in sciatic nerve neuropeptide content coincide with a reduction in target tissue nerve growth factor messenger mRNA in streptozotocin-diabetic rats: effects of insulin treatment,” *Neurosci.*, 62, pp.337–344
- Figueredo, A., Ibarra, J.L., Rodriguez, A.L., Molino, M., Gomez-de la, E., Concha., Fernandez-Cruz, A., and Patino, R., (1996), “Increased serum levels of IgA antibodies to hsp 70 protein in patients with diabetes mellitus; their relationship with vascular complications,” *Clin. Immunol. Immunopathol.*, 79, pp. 252–255
- Flodstrom, M., Welsh, N., and Eizirik, D.L., (1996), “Cytokines activate the nuclear factor- $\kappa$ B (NF- $\kappa$ B) and induce nitric oxide production in human pancreatic islets.” *FEBS Letters*, 385, pp.4–6
- Fox, A., Kesingland, A., Gentry, C., McNair, K., Patel, S., Urban, L., James, I., (2001), “The role of central and peripheral Cannabinoid1 receptors in the antihyperalgesic activity of cannabinoids in a model of neuropathic pain,” *Pain.*, 92(1–2), pp.91–100.
- Frederick, A. L., and William, D.F., (2004), “Thalidomide analogues: derivatives of an orphan drug with diverse biological activity,” *Exp.Opin.Pat.*, 14 (2), pp. 215-229
- Freeman, R., (1999), “Human Studies of Recombinant Human Nerve Growth Factor And Diabetic Peripheral Neuropathy,” 41(1), pp.20-26
- Freeman, R., Durso-Decruz, E., and Emir, B., (2008), “Efficacy, safety and tolerability of pregabalin treatment of painful diabetic peripheral neuropathy: findings from 7 randomized, controlled trials across a range of doses,” 31, pp. 1448–1454
- Fride, E., Mechoulam, R., (1993), “Pharmacological activity of the cannabinoid receptor agonist, anandamide, a brain constituent,” *Eur J Pharm.*, 231, pp.313 314
- Friederich, M., Hansell, P., Palm, F., (2009), “Diabetes, oxidative stress, nitric oxide and mitochondria function” *Curr Diabetes Rev*, 5(2), pp.120-144

- Fundyus, M.E., (2001), "Glutamate receptors and nociception: implications for the drug treatment of pain," *CNS Drugs.*, 15, pp. 29–58
- Gaidarov, I., Krupnick, J.G., Falck, J.R., Benovic, J.L., Keen, J.H., (1999), "Arrestin function in G protein-coupled receptor endocytosis requires phosphoinositide binding," *EMBO J.* 18:871–881
- Gaku, S., Motomu, S., Tetsuo, F., Takachika, H., Takaya, I., Norio, H., Taichi, S., Yoshiki, S., Ryuichi, M., Hiroshi, K., Koichi, N., Takashi, M., (2001), "NF- $\kappa$ B decoy suppresses cytokine expression and thermal hyperalgesia in a rat neuropathic pain model," *Neuroreport.*, 12(10), pp.2079-2084
- Gambhir, M., Mediratta, P.K., Sharma, K.K., (2002), "Evaluation of the analgesic effect of neurosteroids and their possible mechanism of action," *Indian J Physiol Pharmacol.*, 46(2):202-8
- Gaoni, Y.; and Mechoulam, R., (1964), "Isolation, structure, and partial synthesis of an active constituent of hashish," *J. Am. Chem. Soc.*, 86, PP.1646 1647
- Gaoni Y. and Mechoulam, R., (1971), "The isolation and structure of delta-1 tetrahydrocannabinol and other neutral cannabinoids from hashish," *J. American Chem. Society*, 93, pp.217-224
- Garcia, D. E., Brown, Hille, B., and Mackie, K., (1998), "Protein kinase C disrupts cannabinoid actions by phosphorylation of the CB1 cannabinoid receptor" *Journ Neurosci.*, 18, pp. 2834–2841
- Gardell, L.R., Burgess, S.E., Dogrul, A., Ossipov, M.H., Malan, T.P., Lai, J., Porreca, F., (2002), "Pronociceptive effects of spinal dynorphin promote cannabinoid induced pain and antinociceptive tolerance," *Pain.*, 98(1-2), pp.79-88.
- Gaur, U., Aggarwal, B.B., (2003), "Regulation of proliferation, survival and apoptosis by members of the TNF superfamily," *Biochem. Pharmacol.*, 66 (8), pp. 1403–8
- Gelot, A., Francés B., Gicquel, S., and Zajac, A.M., (1998), "Antisense oligonucleotides to human SQA-neuropeptide FF decrease morphine tolerance and dependence in mice *Eur.Pharmacol.*, 358(3), pp.203-206

- Gendron, L., Pintar, J.E., Chavkin, C., (2007), "Essential role of mu opioid receptor in the regulation of delta opioid receptor-mediated antihyperalgesia," *Neuroscience*, 150(4), pp.807-17
- Geng, Y., Zhang, B., and Lotz, M (1993), "Protein tyrosine kinase activation is required for lipopolysaccharide induction of cytokines in human blood monocytes," *J Immunol.*, 151(12), pp. 6692-6700
- George, L. K., (2008), "The Role of Inflammatory Cytokines in Diabetes and Its Complications" *J Periodontol.*, 79 (8), pp.1527-1534
- Geraldes, P., and King, G.L., (2010), "Activation of protein kinase C isoforms and its impact on diabetic complications" *Circ Res.*, 106(8), pp.1319-1331
- Giamberardino, M.A., (1999), "Recent and forgotten aspects of visceral pain," *Eur J Pain*, 3, pp.77-92
- Giblin, G.M., O'Shaughnessy, C.T., Naylor, A., Mitchell, W.L., Eatherton, A.J., Slingsby, B.P., Rawlings, D.A., Goldsmith, P., Brown ,A.J., Haslam, C.P., Clayton, N.M., Wilson, A.W., Chessell, I.P., Wittington, A.R., Green, R., (2007), "Discovery of 2-[(2,4-dichlorophenyl)-amino]-N-[(tetrahydro-2 H -pyran-4-yl) methyl]-4-(trifluoromethyl)-5-pyrimidinecarboxamide, a selective CB2 receptor agonist for the treatment of inflammatory pain," *J Med Chem.*, 50, pp.2597–2600
- Gilron, I., Bailey, J.M., Tu, D., Holden, R.R., Weaver, D.F., Houlden, R.L., (2005), "Morphine, gabapentin, or their combination for neuropathic pain" *N Engl J Med*, 352, pp.1324–1334
- Gilron, I., Bailey, J.M., Tu, D., Holden, R.R., Jackson, A.C., Houlden, R.L., (2009), "Nortriptyline and gabapentin, alone and in combination for neuropathic pain: a double-blind, randomised controlled crossover trial," *Lancet.*, 374(9697), pp.1252-61
- Gimbel, J.S., Richards, P., Portenoy, R.K., (2003), "Controlled-release oxycodone for pain in diabetic neuropathy: a randomized controlled trial," *Neurology*, 60(6), pp.927-34
- Giovanni R.L.A., Salvatore, C., Tiziana, G., Alfredo, C., Rosanna, D.P., Domenico, L.T., Fabio, C., Salvatore, C., (2004), "Inhibition of the nuclear factor- $\kappa$ B activation with pyrrolidine dithiocarbamate attenuating inflammation and

- oxidative stress after experimental spinal cord trauma in rats,”  
*J.Nerurosurgery.*, 1(3), pp.311-321
- Girard, P., Pansart, Y., Gillardin, J. M., (2004), “Nefopam potentiates morphine antinociception in allodynia and hyperalgesia in the rat” *Pharmacol Biochem Behav*,77 (4), pp.695-703
- Goh, S. Y., and Cooper, M. E., (2008), “The Role of Advanced Glycation End Products in Progression and Complications of Diabetes” *J Clin Endocrinol Metab*, 93(4), pp.1143–1152
- Goldberg, R.B., (2009), “Cytokine and cytokine-like inflammation markers, endothelial dysfunction, and imbalanced coagulation in development of diabetes and its complications,” *J Clin Endocrinol Metab.*, 94(9), pp. 3171-82
- Gomes, I., Jordan, B.A., Gupta, A., Trapaidze, N., Nagy, V., Devi, L.A., (2000), “Heterodimerization of mu and delta opioid receptors: a role in opiate synergy,” *J Neurosci.*,20, RC110
- González-Clemente, J.M., Mauricio, D., Richart, C., Broch, M., Caixàs, A., Megia, A., Giménez-Palop, O., Simón, I., Martínez-Riquelme, A., Giménez-Pérez, G., and Vendrell, J., (2005), “Diabetic neuropathy is associated with activation of the TNF-alpha system in subjects with type 1 diabetes mellitus,” *Clin Endocrinol (Oxf)*., 63(5), pp.525-9.
- Gover, T.D., Moreira, T.H., Weinreich, D., (2009), "Role of calcium in regulating primary sensory neuronal excitability,"*Handb Exp Pharmacol.*, 194 (194), pp.563–87
- Graham, S.H., and Hickey, R.W., (2003), “Cyclooxygenases in Central Nervous System Diseases.A Special Role for Cyclooxygenase 2 in Neuronal Cell Death,” *Arch Neurol.*, 60, pp.628-630
- Green, L.C., Wagner, D.A., Glogowski, J., Skipper, P.L., Wishnok, J.L., Tannenbaum, S.R., (1982), “Analysis of nitrate, nitrite, and [15N]nitrate in biological fluids,”*Anal Biochem.*, 126(1), pp.131-138
- Grover, V.S., Sharma, A., & Singh,M., (2000), “Role of nitric oxide in diabetes-induced attenuation of antinociceptive effect of morphine in mice” *Eur. JouN. Pharmacol.*, 399, pp.161-164

- Gu, D., Arnush, M., Sawyer, S.P., and Sarvetnick, N., (1995), "Transgenic mice expressing IFN-gamma in pancreatic beta-cells are resistant to streptozotocin induced diabetes," *Endocrinol.Metab.*, 269(6), pp.E1089-E1094
- Guan, Y., Yaster, M., Raja, S.N., and Tao, Y.X., (2007), "Genetic knockout and pharmacologic inhibition of neuronal nitric oxide synthase attenuate nerve injury-induced mechanical hypersensitivity in mice," *Molecular Pain.*, 3, pp.29
- Guha, M., Bai, W., and Nadler, J.L., (2000), "Molecular mechanisms of tumor necrosis factor alpha gene expression in monocytic cells via hyperglycemia-induced oxidant stress-dependent and -independent pathways," *J Biol Chem.*, 275, pp.17728–17739
- Gühring, H., Hamza, M., Sergejeva, M., Ates, M., Kotalla, C.E., Ledent, K., Brune, K., (2002), "A role for endocannabinoids in indomethacin-induced spinal antinociception," *Eur. J. Pharmacol.*, 454, pp.153–163
- Guindon, J., Hohmann, A.G., (2008), "Cannabinoid CB2 receptors: a therapeutic target for the treatment of inflammatory and neuropathic pain," *Br J Pharmacol*, 153, pp.319 –334
- Guindon J, Desroches J, Dani M, Beaulieu P., (2007), "Pre-emptive antinociceptive effects of a synthetic cannabinoid in a model of neuropathic pain., *Eur J Pharmacol.*, 568(1-3), pp.173-6
- Guo, R.X., Zhang, M., Liu, W., Zhao, C.M., Yu, Cui., Wang, C.H., Feng, J., and Peixi, Chen., (2009), "NMDA receptors are involved in upstream of the spinal JNK activation in morphine antinociceptive tolerance," *Neuroscience Letters*, 467(2), pp. 95-99
- Gutierrez, T., Farthing, J.N., Zvonok, A.M., Makriyannis, A., Hohmann, A.G.,(2007), "Activation of peripheral cannabinoid CB<sub>1</sub> and CB<sub>2</sub> receptors suppresses the maintenance of inflammatory nociception: a comparative analysis,"*Brit.Pharmacol.*, 150(2), pp.153-163
- Haddad, J.J., (2007), "Cellular and molecular regulation of inflammatory pain, nociception and hyperalgesia – the role of the transcription factor NF- $\kappa$ B as

- the lynchpin nociceptor: Hyperalgesic or analgesic effect?," *Curr Immunol Rev.*, 3, pp.117-31
- Hagopian, W.A., B. Michelsen., A. E. Karlsen., F. Larsen., A. Moody., C. E. Grubin., R. Rowe., J. Petersen., R. McEvoy., and A. Lernmark., (1993), "Autoantibodies in IDDM primarily recognize the 65,000-Mr rather than the 67,000-Mr isoform of glutamic acid decarboxylase," *Diabetes*, 42, pp. 631–636
- Hains, B.C., Waxman, S.G., (2006), "Activated microglia contribute to the maintenance of chronic pain after spinal cord injury," *J Neurosci* 2006, 26:4308-4317
- Halford, W.K., Cuddihy, S., and Mortimer, R.M., (1990)," Psychological stress and blood glucose regulation in Type-1 diabetic patients, " *Health Psychology.*, 9, 516-528
- Hall, J.A., Wang, F., Myers, T.M., Oakes, Utterback, B.N., Crucitti, A., Acharya, N., (2010), "Safety and tolerability of duloxetine in the acute management of diabetic peripheral neuropathic pain: analysis of pooled data from three placebo-controlled clinical trials," *Expert Opin Drug Saf.*, 9(4), pp.525-37
- Hama, A., and Sagan, J., (2007), "Antinociceptive effect of cannabinoid agonist WIN 55,212–2 in rats with a spinal cord injury," *Exp Neurol.*, 204(1), pp.454-457
- Hama, A.T., and Sagen, J., (2010), "Cannabinoid receptor-mediated antinociception with acetaminophen drug combinations in rats with neuropathic spinal cord injury pain" *Neuropharmacol*, 58 (4-5), pp.758-766
- Hamid, R.B., Mahmoud, G.K., Ahmad, D.R., (2005),"The effect of cyclosporine on the development and expression of cannabinoid tolerance in mice" *Pharmacol biochem and behavior*, 82(4), pp.658-63
- Hamm H. E., (1998), "The many faces of G protein signaling," *J. Biol. Chem.*, 273, pp.669–672
- Han, J.S, Li, W., Neugebauer, V., (2005), "Critical Role of Calcitonin Gene-Related Peptide 1 Receptors in the Amygdala in Synaptic Plasticity and Pain Behavior" *J Neurosci*, 25, pp.10717–10728
- Hanisch, U.K., (2002), "Microglia as a source and target of cytokines," *Glia*, 40, pp.140-155

- Hanna, M., O'Brien, G., Wilson, M.C., (2008), "Prolonged-release oxycodone enhances the effects of existing gabapentin therapy in painful diabetic neuropathy patients," *Eur Jour pain.*, 12(6), pp.804-13
- Hargreaves, K.M., Dubner, R., Brown, F., Flores, C., & Joris, J. (1988), "A new and sensitive method for measuring thermal nociception in cutaneous hyperalgesia," *Pain*, 32, 77–88
- Haslbeck, K.M., Schleicher, E., Bierhaus, A., Nawroth, P., Haslbeck, M., Neundorfer, B., Heuss, D., (2005), "The AGE/RAGE/NF-(kappa) B pathway may contribute to the pathogenesis of polyneuropathy in impaired glucose tolerance (IGT)" *Exp Clin Endocrinol Diab.*, 113, pp.288 –291
- Hays, L., Reid, C., Doran, M., and Geary, K., (2005), "Use of Methadone for the Treatment of Diabetic Neuropathy," *Diabetes Care*, 28 (2); 485-487
- He, L., Kim, J.A., Whistler, J.L., (2009), "Biomarkers of morphine tolerance and dependence are prevented by morphine-induced endocytosis of a mutant mu opioid receptor," *FASEB J.*, 23(12), pp.4327-34
- He, L., Fong, J., Zastrow, M.V., and Whistler, J.L., (2002), "Regulation of Opioid Receptor Trafficking and Morphine Tolerance by Receptor Oligomerization," *Cell*, 108(2), pp.271-282
- Heinricher, M.M., Tavares, I., Leith, J.L., and Lumb, M.M., (2009), "Descending control of nociception: specificity, recruitment and plasticity," *Brain Res.Rev.*, 60(1), pp.214-225
- Hellweg, R., and Hartung, H.D., (1990), "Endogenous levels of nerve growth factor (NGF) are altered in experimental diabetes mellitus: a possible role for NGF in the pathogenesis of diabetic neuropathy" *J Neurosci Res*, 26(2), pp.258–267
- Hellweg, R., Raivich, G., Hartung, H. D., Hock, C., & Kreutzberg, G. W., (1994), "Axonal transport of endogenous nerve growth factor (NGF) and NGF receptor in experimental diabetic neuropathy" *Exp Neurol*, 130(1), pp.24–30.
- Hemstapat, K., Monteith, G.R., Smith, D., Smith, M.T., (2003), "Morphine-3 glucuronide's toxicological effects are mediated via indirect activation of NMDA receptors: mechanistic studies in embryonic cultured hippocampal neurones. *Anesth Analg.*, 97, pp.494–505

- Henry, C.J., Ornelles, D.A., Mitchell, L.M., Brzoza-Lewis., and Hiltbold, E.M., (2008), "IL-12 Produced by Dendritic Cells Augments CD8+ T Cell Activation through the Production of the Chemokines CCL1 and CCL17," *J Immunol.*, 181, pp. 8576-84
- Herkenham, M., Lynn, A.L., Litrle, M.D., Johnson, M.R., Melvins, L.S., DeCosta, B.R., Rice, K.C., (1990),"Cannabinoid receptor localization in brain," *Proc. Natl. Acad. Sci. USA.*, 87, pp.1932-1936
- Hernan, B., John, L., Clifford, P., Peter, W., and Alexander, R., (1989), "Mechanisms of cyclosporine protection against spontaneous diabetes mellitus in the BB/Wor rat," *Journal of Autoimmunity*, 2(2), pp. 133-150
- Hernandez-Delgado, G.P. and Cruz, S.L. (200) Endogenous opioids are involved in morphine and dipyron analgesic potentiation in the tail flick test in rats, " *Eur J Pharmacol*, 546, pp.54-59
- Herold, K. C., Vezys, V., Sun, Q., Viktora, D., Seung, E., Reiner, E., and Brown, D.R., (1996), "Regulation of cytokine production during development of autoimmune diabetes induced with multiple low doses of streptozotocin. *J. Immunol.* 156: 3521–3527
- Hideaki, K., Gang, Xu., Ki-Ho, Song., Kiyoshi, S., Susan, B.W., Arun, S., and Gordon, C.W., (2001), "Activation of the Hexosamine Pathway Leads to Deterioration of Pancreatic  $\beta$ -Cell Function through the Induction of Oxidative Stress" *The Journal of Biol Chem*, 276, pp.31099-31104
- Hirose, T., (2010), "Management of diabetic neuropathy," *Masui.*, 59(11), pp.1378-84
- Hoffman, D.L., Sadosky, A., Alvir, J., (2009), "Cross-national burden of painful diabetic peripheral neuropathy in Asia, Latin America, and the Middle East" *Pain Pract.*, 9(1), pp.35-42
- Hogenboom, F., Wardeh, G., De Vries, T.J., (2006), "Interactions between CB1 cannabinoid and mu opioid receptors mediating inhibition of neurotransmitter release in rat nucleus accumbens core," *Neuropharmacol.*, 51(4), pp.773-81
- Homayoun, H., Khavandgar, S., Namirani, K., Dehpour, A.R., (2002), "The effect of cyclosporin A on morphine tolerance and dependence: involvement of L-arginine/nitric oxide pathway," *Eur J Pharmacol.*, 452(1), pp.67-75



- Hong, S., Wiley, J.W. and Wiley, J.W., (2006), "Altered expression and function of sodium channels in large DRG neurons and myelinated A-fibers in early diabetic neuropathy in the rat," *Biochem. Biophys. Res. Commun.*, 339(2), pp.652-660
- Hong, S., Morrow, T.J., Paulson, P.E., Isom, L.L., Wiley, J.W., (2004), "Early painful diabetic neuropathy is associated with differential changes in tetrodotoxin sensitive and -resistant sodium channels in dorsal root ganglion neurons in the rat," *J Biol Chem.*, 279(28), pp.29341-50
- Horan, P., Tallarida, R.J., Haaseth, R.C., Matsunaga, T.O., Hruby, V.J., Porreca, F., (1992), "Antinociceptive interactions of opioid delta receptor agonists with morphine in mice: supra- and sub-additivity. *Life Sci.*, 50, pp.1535 – 1541
- Horvath, R., Romero-Sandoval, E.A., Deleo, J.A., (2010), "Inhibition of microglial P2X4 receptors attenuates morphine tolerance, Iba1, GFAP and opioids receptor protein expression while enhancing perivascular microglial ED2," *Pain*, 150(3), pp.401-13
- Howard, B.V., (2002), "Dietary Fat as a Risk Factor for Type 2 Diabetes., 967, pp.324-328
- Howlett, A.C., Padgett, L.W., Shim, J.Y., (2009), *Cannabinoid Agonist and Inverse Agonist Regulation of G-Protein Coupling*, Chapter 7, In: *The Cannabinoid Receptors*; Reggio, P.H., Ed.; USA: Humana Press Inc, pp. 173-202
- Hua, X.Y., Svensson, C.I., Matsui, T., Fitzsimmons, B., Yaksh, T.L., Webb, M., (2005), "Intrathecal minocycline attenuates peripheral inflammation-induced hyperalgesia by inhibiting p38 MAPK in spinal microglia," *Eur J Neurosci.*, 22, pp.2431-2440
- Huber, K.M., Mauk, M.D., Kelly, P.T., (1995), "Distinct LTP induction mechanisms: contribution of NMDA receptors and voltage-dependent calcium channels" *J Neurophysiol*, 73(1), pp.270-9
- Hucho, T., Levine, J.D., (2007), "Signaling pathways in sensitization: toward a nociceptor cell biology," *Neuron*, 55, pp.365-376
- Hull, L.C., Llorente, J., Gabra, B.H., Smith, FL., Kelly, E., Bailey, C., Henderson, G., Dewey, W.L., (2010), "The effect of protein kinase C and G protein-coupled receptor kinase inhibition on tolerance induced by mu-opioid agonists of different efficacy," *J Pharmacol Exp Ther.*, 332(3), pp.1127-35
- Hyllested, M., Jones, S., Pedersen, J.L., and Kehlet, H., (2002), "Comparative effect of

- paracetamol, NSAIDs or their combination in postoperative pain management: a qualitative review” *Br. J. Anaesth*, 88, pp.199–214
- Ibironke, G.F., and Saba, O.J., (2006), “Effect of hyperglycemia on the efficacy of morphine analgesia in rats,” *Afr J Med Med Sci.*, 5(4), pp. 443-5
- Ibrahim, M.M., Rude, M.L., Stagg, N.J., Mata, H.P., Lai, J., Vanderah, T.W., Porreca, F., Buckley, N.E., Makriyannis, A., Malan, T.P., (2006), “CB2 cannabinoid receptor mediation of antinociception,” *Pain*, 122, pp.36–42
- Igarashi, M., Wakasaki, H., Takahara, N., Ishii, H., Jiang, Z.Y., Yamauchi, T., Kuboki, K., Meier, M., Rhodes, C. J., and King, G. L., (1999), “Glucose or diabetes activates p38 mitogen-activated protein kinase via different pathways,” *J. Clin. Invest*, 103, pp.185–195
- Igwe, O., and Chronwall, B., (2001), “Hyperalgesia induced by peripheral inflammation is mediated by protein kinase C beta II isozyme in the rat spinal cord,” *Neurosci*, 104, pp.875–890
- Inoue, K., (2006), “The function of microglia through purinergic receptors: neuropathic pain and cytokine release” *Pharmacol Ther*, 109, pp.210–226
- Inoue, K., (2008), “Purinergic systems in microglia,” *Cell. Mol. Life Sci.*, 65, pp. 3074–3080
- International Association for the Study of Pain: IASP pain terminology, (1994), :Classification of Pain eds). Seattle, IASP Task Force on Taxonomy, 2nd ed, pp 209-214
- Intondi, A.B., Dahlgren, M.N., Eilers, M.A., Taylor, B.K., (2008), “Intrathecal neuropeptide Y reduces behavioural and molecular markers of inflammatory or neuropathic pain,” *Pain*, 137(2), pp.352-65
- Ishii, D.N., Lupien, S.B., (1995), “Insulin-like growth factors protect against diabetic neuropathy: effects on sensory nerve regeneration in rats,” *J. Neurosci. Res*, 40, pp.138–144
- Iskandar, I., (2006), “Protein kinase C  $\beta$  inhibition: a novel therapeutic strategy for diabetic microangiopathy” *Diab. Vascul Dis Res*, 3(3), pp.172-178
- Itoh, N., T. Hanafusa., A. Miyazaki., J. Miyagawa., K. Yamagata., K. Yamamoto., M. Waguri., A. Imagawa., S. Tamura., M. Inada., S. Kawata., S. Tarui., N. Kono., and Y. Matsuzawa., (1993), “Mononuclear cell infiltration and its relation to the expression of major histocompatibility complex antigens and adhesion

- molecules in pancreas biopsy specimens from newly diagnosed insulin-dependent diabetes mellitus patients,” *J. Clin. Investig.*, 92, pp. 2313–2322
- Iwasaki, Y, Kambayashi, M, Asai, M., Yoshida, M., Nigawara, T., and Hasimoto, K., (2007), “High glucose alone, as well in combination with proinflammatory cytokines, stimulates nuclear factor kappa-B- mediated transcription in hepatocytes in vivo. *J. Diab and Its Compl* 21(1): 56-62
- Jeroen, V., Flip, K., Jan-Luuk, H., Ar Jansen., Lucas, V., and Jan., (2004), “Thymectomy should be the first choice in the protection of diabetes-prone BB rats for breeding purposes,” *Laboratory Animal.*, 38, pp.371–375
- Ji, R.R., Gereau, R.W., Malcangio, M., Strichartz, G.R., (2009), “MAP kinase and pain,” *Brain Res Rev.*, 60, pp.135–148
- Jia, H.Y., Qi-fu, L., Song, P.D., Zhen-mei, A.N., Liu, Y.P., Xing-wu, R., Wu Ren-hua, Hao-ming, T., (2006), “Effects of Venlafaxine and Carbamazepine for Painful Peripheral Diabetic Neuropathy: A Randomized, Double-blind and Double dummy, Controlled Multi-center Trial,” *Chin J Evid-based Med.*, 6(5), pp.321-327
- Jobin, C., Morteau, O., Han, D.S., Balfour, S.R., (1998), “Specific NF-kappaB blockade selectively inhibits tumour necrosis factor-alpha-induced COX-2 but not constitutive COX-1 gene expression in HT-29 cells,” *Immunology.*, 95(4), pp.537-43
- Jockers, R., Angers, S., Da Silva A., Benaroch, P., Strosberg, AD., Bouvier, M., Marullo, S.,(1999),” $\beta_2$ -Adrenergic receptor down-regulation.Evidence for a pathway that does not require endocytosis. *J Biol Chem* 274:28900–28908
- Johanek, L.M., Heitmiller, D.R., Turner,M., Nader, N., Hodges, J., Simone, D.A., (2001), “Cannabinoids attenuate capsaicin-evoked hyperalgesia through spinal and peripheral mechanisms,” *Pain.*, 93(3), pp.303-15
- Johansson, B.L., Borg, K., Fernqvist-Forbes, E., Odergren, T., Remahl, S., and Wahren, J., (1996), “C-peptide improves autonomic nerve function in IDDM patients,” *Diabetologia*, 39(6), pp. 687–695
- Johansson, B.L., Borg, K., Fernqvist-Forbes, E., Kernell, A., Odergren, T., and Wahren, J., (2000), “Beneficial effects of C-peptide on incipient nephropathy and neuropathy in patients with Type 1 diabetes mellitus,” *Diabetic Medicine*,

- 17(3), pp. 181–189, 2000
- Johansson, B.L., Bibra, V.H., Hansen, A., and Wahren, J., (2001), “Effects of C-peptide on regional myocardial function in patients with Type 1 diabetes,” *Diabetes*, 50, p. A256, 2001
- Johansen, J.S., Harris, A.K., Rhychly, D.J., Ergul, A., (2005), “Oxidative stress and the use of antioxidants in diabetes: Linking basic science to clinical practice,” *Cardiovas. Diabetology*, 4, pp.5–9
- Joharchi, K., and Jorjani, M., (2007), “The role of nitric oxide in diabetes-induced changes of morphine tolerance in rats,” *Eur J Pharmacol.*, 570(1-3), pp.66-71
- Jones, S.L., (1996), “Dipyrone into the nucleus raphe magnus inhibits the rat nociceptive tail flick reflex,” *Eur J Pharmacol*, 318, pp.37-40.
- Jordan, B.A., Cvejic, S., Devi, L., (2000), “Opioids and their complicated receptor complexes, *Neuropsychopharmacol.*, 19, pp.19-27
- Juan, P.C., Han-Rong, W., Patrick, M.D., (2008), “The effects of thalidomide and minocycline on taxol-induced hyperalgesia in rats” *Brain Research*, 1229, pp.100-110
- Jung-Testas, I., Renoir, M., Bugnard, H., Greene, G.L., Baulieu, E.E., (1992), “Demonstration of steroid hormone receptors and steroid action in primary cultures of rat glial cells,” *J Steroid Biochem Mol Biol.*, 41(38), pp.621-31
- Jung-Testas, I., Do Thi, A., Koenig, H., Désarnaud, F., Shazand, K., Schumacher, M., Baulieu, E.E., (1999), “Progesterone as a neurosteroid: synthesis and actions in rat glial cells,” *J Steroid Biochem Mol Biol.*, 69(1-6), pp.97-107
- Junod, A., Lambert, A.E., Orci, L., Pictet, R., Gonet, A.E, Renold, A.E., (1967), “Studies of the diabetogenic action of streptozotocin,” *Proc Soc Exp Biol Med.*, 126(1), pp.201-5.
- Kadiroglu, A.K., Sit, D., Kayabasi, H., Tuzcu, A.K., Tasdemir, N., Yilmaz, M.E., (2008), “The effect of venlafaxine HCl on painful peripheral diabetic neuropathy in patients with type 2 diabetes mellitus,” *J Diabetes Compl.*, 22(4), pp.241-5

- Kakkar, P., Das, B., Viswanathan, P.N., (1984), "A modified spectrophotometric assay of superoxide dismutase," *Indian J Biochem Biophys.*, 21(2), pp.130-132
- Kamei, J., Iwamoto, Y., Hitosugi, H., Misawa, M., Nagase, H., and Kasuya, Y., (1994a), "Streptozotocin-induced diabetes selectively reduces antinociception mediated by  $\mu_1$ -opioid receptors, but not that mediated by  $\mu_2$ -opioid receptors," *Neurosci.Letter.*, 165(1-2), pp.141-145
- Kamei, J., Iwamoto, Y., Misawa, M., Nagase, H., Kasuya, Y., (1994b), "Evidence for differential modulation of mu-opioid receptor-mediated antinociceptive and antitussive activities by spleen-derived factor(s) from diabetic mice," *Neuropharmacology*, 33(12), pp.1553-8
- Kamei, J., Kawashima, N., Kasuya, Y., (1992) "Role of spleen or spleen product in the deficiency in morphine-induced analgesia in diabetic mice" *Brain Research*, 576(1), pp. 139-142
- Kamei J, Kawashima N, Suzuki T, Misawa M, Kasuya Y., (1993), "The effects of cyclosporine on morphine-induced antinociception in diabetic mice," *Neurosci Lett.*, 158(2), pp.213-6
- Kamei, J., Ohsawa, M., Saitoh, A., Iwamoto, Y., Suzuki T., Misawa, M., Nagase, H., Kasuya, Y., (1995a), "Modification of mu-opioid agonist-induced locomotor activity and development of morphine dependence by diabetes," *J Pharmacol Exp Ther.*, 274(2), pp.700-6
- Kamei, J., Saitoh, A., Ohsawa, M., Suzuki, T., Misawa, M., Nagase, H., and Kasuya, Y., (1995b), "Antinociceptive effects of the selective non-peptidic  $\delta$ -opioid receptor agonist TAN-67 in diabetic mice," *Eur.J.pharmacol.*, 276(1-2), pp.131-135
- Kamei, J., Sodeyama, M., Ohsawa, M., Kimura, M., and Tanaka, S., (1998), "Modulation by serum glucose levels on morphine-induced antinociceptive effect in C57BL/KsJ-db/db mice," *Life Sci.*, 62(1), pp.PL1-6

- Kamei, J., Zushida, K., Morita, K., Sasaki, M., and Tanaka, S., (2001), "Role of vanilloid VR1 receptor in thermal allodynia and hyperalgesia in diabetic mice," *Eur J Pharmacol.*, 422, pp.83-86
- Kaneto, H., Xu, G., Song, K.H., Suzuma, K., Bonner-Weir, S., Sharma, A., Weir, G.C., (2001), "Activation of the hexosamine pathway leads to deterioration of pancreatic beta-cell function through the induction of oxidative stress," *J Biol Chem*, 276, pp.31099–31104
- Karagiannis, A., Gallopin, T., Dávid, C., Battaglia, D., Geoffroy, H., Rossier, J., Hillman, E.M., Staiger, J.F., Cauli, B., (2009), "Classification of NPY expressing neocortical interneurons," *J Neurosci* 29, pp.3642-59
- Karci, A., Tasdogan, A., Erkin, Y., Aktaş, G., and Elar, Z., (2004), "The analgesic effect of morphine on postoperative pain in diabetic patients. *Acta Anaesthesiol Scand.*, 48(5):619-24
- Katz, J.D., C. Benoist., and D. Mathis., (1995), "T helper cell subsets in insulin-dependent diabetes," *Science.*, 268, pp.1185–1190
- Kawamura, M., Kuraishi, Y., Minami, M., Satoh, M., (1989), "Antinociceptive effect of intrathecally administered antiserum against calcitonin gene-related peptide on thermal and mechanical noxious stimuli in experimental hyperalgesic rats," *Brain Res.*, 497, pp.199–203
- Kaye, G., Wollitzer, A and Jovanovic, L., (2003), "Comfort and support improve painful diabetic neuropathy, whereas disappointment and frustration deteriorate the metabolic and neuropathic status despite an intensive diabetes care program," *Diabetes Care*, 26(8), pp.2470-80
- Kellogg, A.P., Pop-Busui, R., (2005), "Peripheral nerve dysfunction in experimental diabetes is mediated by cyclooxygenase-2 and oxidative stress" *Antioxid Redox Signal*, 7, pp.1521–1529
- Kellogg, A.P., Wiggin, T.D., Larkin, D.D., Hayes, J.M., Stevens, M.J., Pop-Busui, R., (2007), "Protective effects of cyclooxygenase-2 gene inactivation against peripheral nerve dysfunction and intraepidermal nerve fiber loss in experimental diabetes," *Diabetes*, 56(12), pp. 2997-3005
- Kellogg, A.P., Cheng, H.T., Pop-Busui, R., (2008), "Cyclooxygenase-2 pathway as a potential therapeutic target in diabetic peripheral neuropathy," *Curr Drug Targets.*, 9(1), pp.68-76

- Kelly, D.J., Chanty, A., Gow, R.M., Zhang, Y., Gilbert, R.E., (2005), "Protein kinase C beta inhibition attenuates osteopontin expression, macrophage recruitment, and tubulointerstitial injury in advanced experimental diabetic nephropathy," *J Am Soc Nephrol*, 16, pp.1654–1660
- Kenney, A.M., Kocsis, J.D., (1998), "Peripheral axotomy induces long-term c-Jun amino-terminal kinase-1 activation and activator protein-1 binding activity by c-Jun and junD in adult rat dorsal root ganglia In vivo," *Neurosci.*,18(4), pp.1318-28
- Khan, N., Nirmal, S., & Ameteswar, J., (2008), "Possible role of spleen derived factor, vanilloid receptor and calcitonin gene related protein in diabetes induced Hyperalgesia in mice" *Yakkujakku jasshi.*, 128(11), pp.1699-1705
- Khara, M. R., Yun, J., Camilla, I.S., and Nigel, A.C., (2007), " Pathogenesis of Spinally Mediated Hyperalgesia in Diabetes" *Diabetes.*, 56( 6), pp.1569-1576
- Kim, S.F., Huri, D.A., and S.H., (2005), "Inducible Nitric Oxide Synthase Binds, S-Nitrosylates, and Activates Cyclooxygenase-2,"*Science.*, 310(5756), pp. 1966-1970.
- Kiss, L., and Szabó, C., (2005), "The pathogenesis of diabetic complications: the role of DNA injury and poly(ADP-ribose) polymerase activation in peroxynitrite-mediated cytotoxicity," *Mem Inst Oswaldo Cruz.*, 100(1), pp. 29-37
- Klausner, J.D., Freedman, V.H, and Kaplan, G., (1996), "Thalidomide as an Anti-TNF- $\alpha$  Inhibitor: Implications for Clinical Use," *Clin immunol. Immunopathol.*,81(3), pp. 219–223
- Kobayashi, T., and Kamata, K., (2002), "Short-term insulin treatment and aortic expressions of IGF-1 receptor and VEGF mRNA in diabetic rats," *Am J Physiol Heart Circ Physiol.*, 283, pp.H1761–H1768
- Koch, A., Zacharowski, k., Boehm, O., Stevens, M., Lipfert, p., Von Giesen, H.J., Wolf, A., and Freynhagen, R., (2007), "Nitric oxide and pro-inflammatory cytokines correlate with pain intensity in chronic pain patients, " *Biomedical and Life Sciences.*, 56(1), pp. 32-37
- Koch, T., Widera, A., Bartzsch, K., Schulz, S., Brandenburg, L. O., Wundrack, N., Beyer, A., Grecksch, G., and Holtt, V., (2005), "Receptor endocytosis counteracts the development of opioid tolerance, " *Mol. Pharmacol.*, 67, p. 280–287

- Kochakian, M., Manjula, B.N., Egan, J.J., (1996) "Chronic dosing with aminoguanidine and novel advanced glycosylation end product-formation inhibitors ameliorates cross-linking of tail tendon collagen in STZ-induced diabetic rats" *Diabetes*, 45, pp.1694-1700
- Koetzner, L., Hua, X.Y., Lai, J., Porreca, F., Yaksh, T., (2004), "Nonopioid actions of intrathecal dynorphin evoke spinal excitatory amino acid and prostaglandin E2 release mediated by cyclooxygenase-1 and -2," *J Neurosci.*, 24(6):1451-8
- Kohno, T., Moore, K.A., Baba, H., Woolf, C.J., (2003), "Peripheral nerve injury alters excitatory synaptic transmission in lamina II of the rat dorsal horn," *J Physiol* 548, pp.131-138
- Kohout, T.A., Lefkowitz, R.J., (2003), "Regulation of G Protein-Coupled Receptor Kinases and Arrestins During Receptor Desensitization," *Mol.Pharmacol.*, 63(1), pp.9-18
- Koizumi S, Shigemoto-Mogami Y, Nasu-Tada K et al (2007) UDP acting at P2Y6 receptors is a mediator of microglial phagocytosis. *Nature* 446:1091–1095
- Kolb, H., Kroncke K, D., (1993), "IDDM: lessons from the low-dose streptozotocin model in mice," *Diabetes Rev.*, 1, pp.116-126
- Komatsu, T., Sakurada, S., Katsuyama, S., Sanai, K., Sakurada, T., (2009), "Mechanism of allodynia evoked by intrathecal morphine-3-glucuronide in mice," *Int Rev Neurobiol.*, 85, pp.207-19.
- Kono, and Matsuzawa, Y., (1993), "Mononuclear cell infiltration and its relation to the expression of major histocompatibility complex antigens and adhesion molecules in pancreas biopsy specimens from newly diagnosed insulin-dependent diabetes mellitus patients," *J.Clin. Investig.*, 92, pp.2313–2322
- Kovoor, A., Celver, J.P., Wu, A., and Chavkin, C., (1998), "Agonist Induced Homologous Desensitization of  $\mu$ -Opioid Receptors Mediated by G Protein Coupled Receptor Kinases Is Dependent on Agonist Efficacy," *Mol.Pharmacol.*, 54(4), pp. 704-711
- Kozak AJ, Liu F, Funovics P, Jacoby A, Kubant R and Malinski T., (2005), "Role of peroxynitrite in the process of vascular tone regulation by nitric oxide and prostanoids—a nanotechnological approach," *Prostaglandins, Leukotrienes and Essential Fatty Acids.*, 72 (2), pp.105-113



- Kultz, D., and Burg, M., (1998), "Evolution of osmotic stress signaling via map \ kinase cascades., *J. Exp. Biol.*, 201, pp.3015–3021
- Kumar, R., Mehra, R.D., Ray, S.B., (2010), "L-type calcium channel blockers, morphine and pain: Newer insights. *Indian J Anaesth.*, 54, pp.127-31
- Kuwabara, S., Misawa, S., (2008), "Pharmacologic intervention in axonal excitability: in vivo assessment of nodal persistent sodium currents in human neuropathies" *Curr Mol Pharmacol*, 1(1), pp.61-67
- Lai, J., Ossipov, M.H., Vanderah, T.W., Malan Jr, T.O., and Porreca, F., (2001), "Neuropathic Pain: The Paradox of Dynorphin," *Mol.Intervention.*, 1(3), pp.160-167
- Lake, J.R., Hammond, M.R., Shaddox, R.C., Hunsicker, L.M., Hsui-Ying, Yang, T., and Malin, D.H., (1991), "IgG from neuropeptide FF antiserum reverses morphine tolerance in the rat," *Neuroscience Letters.*, 132(1), pp.29-32
- Laorden, M.L., Milanés, M.V., Chapleur-Château, M., Bulet, A., (1997), "Changes in hypothalamic oxytocin levels during morphine tolerance," *Neuropeptides*, 31(2):143-146
- Larsson, M., and Broman, J., (2010), "Synaptic Plasticity and Pain: Role of Ionotropic Glutamate Receptors. *Neuroscint*, [Epub ahead of print].
- Latremoliere, A., and Woolf, C.J., (2009), "Central Sensitization: A Generator of Pain Hypersensitivity by Central Neural Plasticity," *The Journal of Pain*, 10(9), pp 895-926
- Law, P.Y., Wong, Y.H., Loh, H.H., (2000), "Molecular mechanisms and regulation of opioid receptor signalling" *Annu Rev Pharmacol Toxicol*, 40, pp.389-430
- Ledeboer, A., Sloane, E.M., Milligan, E.D., Frank, M.G., Mahony, J.H., Maier, S.F., Watkins, L.R., (2007), "Minocycline attenuates mechanical allodynia and proinflammatory cytokine expression in rat models of pain facilitation" *Pain*, 115, pp.71–83.
- Lee, K.F., Li, E., Huber, L., Jharpe, A.H., Chao, M.V., Jaenisch, R., Petty, B.G., et al., (1994), "The effect of systemically administered recombinant human nerve growth factor in healthy human subjects," *Ann. Neurol.*, 36, pp.244–246
- Lee, K.F., Li, E., Huber, L.J., Landis, S.C., Sharpe, A.H., Chao, M.V., Jaenisch, R., (1992), "Targeted mutation of the gene encoding the low affinity NGF

- receptor p75 leads to deficits in the peripheral sensory nervous system,” *Cell.*, 69(5), pp.737-49
- Lee, K.M., Kang, B.S., Lee, H.L., Son, S.J., Hwang, S.H., Kim, D.S., Park, J.S., Cho, H.J., (2004), “Spinal NF- $\kappa$ B activation induces COX-2 upregulation and contributes to inflammatory pain hypersensitivity,” *Eur J Neurosci.*, 19(12), pp.3375-81
- Leininger, G.M., Vincent, A.M., and Feldman, E.L., (2004), “The role of growth factors in diabetic peripheral neuropathy,” *J Peripher Nerv Syst.*, 9(1), pp. 26–53
- Lenschow, D.J., Herold, K.C., Rhee, L., Patel, B., Koons, A., Qin, H.Y., Fuchs, E., Singh, B., Thompson, C.B., and Bluestone, J.A., (1996), “CD28/B7 regulation of Th1 and Th2 subsets in the development of autoimmune diabetes,” *Immunity*, 5, pp. 285-293
- Leonelli, E., Bianchi, R., Cavaletti, G., Caruso, D., Crippa, D., Garcia-Segura, L.M., Lauria, G., Magnaghi, V., Roglio, I., Melcangi, R.C., (2007), “Progesterone and its derivatives are neuroprotective agents in experimental diabetic neuropathy: a multimodal analysis,” *Neurosci.*, 144(4), pp.1293-304
- Lewin, R., Rueff, A., and Mendell, L.M., (1994), “Peripheral and central mechanisms of NGF-induced hyperalgesia,” *Eur. J. Neurosci.*, 6, pp. 1903–1912
- Li, J., Schmidt, A.M., (1997), “Characterization and functional analysis of the promoter of RAGE, the receptor for advanced glycation end products. *J Biol Chem* 272:16498–16506
- Li, J.Q., Chen, S.R., Chen, H., Cai, Y.Q., Pan, H.L., (2010), “Regulation of increased glutamatergic input to spinal dorsal horn neurons by mGluR5 in diabetic neuropathic pain,” *J Neurochem.*, 112(1), pp.162-72
- Li, S.Q., Xing, Y.L., Chen, W.N., Yue, S.L., Li, L., Li, W.B., (2009), “Activation of NMDA Receptor is Associated with Up-regulation of COX-2 Expression in the Spinal Dorsal Horn during Nociceptive Inputs in Rats,” *Neuchem.Res.*, 34(8), pp.1451-1463
- Li, Y.P., Chen, Y., John, J., Moylan, J., Jin, B., Mann, D.L., Reid, M.B., (2005), “TNF-alpha acts via p38 MAPK to stimulate expression of the ubiquitin ligase atrogin1/MAFbx in skeletal muscle,” *FASEB J.*, 19(3), pp.362-70

- Lichtman, A.H., Martin, B.R., (1991),“Spinal and supraspinal components of cannabinoid-induced antinociception,” *J Pharmacol Exp Ther.*, 258, pp.517–23
- Lichtman, A.H, Martin, B.R., (2005), “Cannabinoid tolerance and dependence, “ *Handb Exp Pharmacol.*, (168):691-717
- Like, A.A., and Rossini, A.A., (1976), “Streptozotocin-induced pancreatic insulinitis: new model of diabetes mellitus,” *Science*, 193(4251), pp.415-7
- Like, A.A. Kislauskis, E., Williams, R.R., and Rossini, A.A., (1982),“Neonatal thymectomy prevents spontaneous diabetes mellitus in the BB/W rat,” *Science*, 216(4546), pp. 644-646
- Lipton, R.B., M. Kocova., R. E. LaPorte., J. S. Dorman., T. J. Orchard., W. J. Riley., A.L. Drash., D. J. Becker., and M. Trucco., (1992), “Autoimmunity and genetics contribute to the risk of insulin-dependent diabetes mellitus in families: islet cell antibodies and HLA DQ heterodimers,” *Am. J. Epidemiol.*, 136, pp. 503–512
- Lizarraga, I., Chambers, J.P., Johnson, C.B., (2008), “Synergistic depression of NMDA receptor-mediated transmission by ketamine, ketoprofen and L-NAME combinations in neonatal rat spinal cords in vitro. *Br J Pharmacol.*, 153(5), pp.1030-42
- Llewelyn, J.G., Thomas, P.K., Fonseca, V., King, R.H.M., and Dandona, P., (1986), “Acute painful diabetic neuropathy precipitated by strict glycaemic control,” *Acta Neuropathol.*, 72, pp. 157–163
- Loseth, S., Stålberg, E., Jorde, R., Mellgren, S.I., (2008), “ Early diabetic neuropathy: thermal thresholds and intraepidermal nerve fibre density in patients with normal nerve conduction studies” *J Neurol .*, 255(8), pp.1197-1202
- Luki, M.L., Al-Sharif, R., Mostarica, M., Bahr, G., and Behbehani, K., (1991), “ Immunological basis of the strain differences in susceptibility to low-dose streptozotocin-induced diabetes in rats.In *Lymphatic Tissues and In-vivo Immune Responses*, “Imhof, et al., Eds. (New York: Marcel Dekker), pp. 643–647
- Lukic, I.K., Humpert, P.M., Nawroth, P.P., Bierhaus, A., (2008), “The RAGE pathway: activation and perpetuation in the pathogenesis of diabetic neuropathy” *Ann N Y Acad Sci.*, 1126, pp.76-80.

- Maedler, K., Sergeev, P., Ris, F., Oberholzer, J., Joller-Jemelka, H.I., Spinas, G.A., Kaiser, N., Halban, P.A., and Donath, M.Y., (2002), "Glucose-induced beta cell production of IL-1beta contributes to glucotoxicity in human pancreatic islets," *J Clin Invest.*, 110(6), pp. 851-60
- Maguma, H.T., and Taylor, D.A., (2008), "Comparison of the development of tolerance following chronic in-vivo exposure to opioid (morphine) versus cannabinoid receptor agonists (WIN-55,212-2)," *The FASEB Journal.*, 22:7125
- Mahnaz, T., Morteza, A., and Gholamali, J., (2009), "Pain sensitivity in diabetic rats during estrous" *Camp Clin Path.*, 19(2); 189-192
- Malin F, Nils, W., and Decio L.E., (1996), "Cytokines activate the nuclear factor  $\kappa$ B (NF- $\kappa$ B) and induce nitric oxide production in human pancreatic islets." *FEBS Letters.* 385(1-2), 4-6.
- Malmberg, A.B., Chen, C., Tonegawa, S., Basbaum, A.I., (1997), "Preserved acute pain and reduced neuropathic pain in mice lacking PKC $\gamma$ ," *Science*, 278(5336), pp.279-83
- Manish, M., Girish, R., Venkataswamy, N., Hariharan, R.S., Lohati, S.R., (2007), "Efficacy, safety, and tolerability of Epalrestat compared to Methylcobalamine in patients with diabetic neuropathy." *Int.Journ.Dev Count.*, 29(1), pp.28-34
- Mansour, A., Thompson, R.C., Akil, H., Watson, S.J., (1993), "Delta opioid receptor mRNA distribution in the brain: comparison to delta receptor binding and proenkephalin mRNA." *J Chem Neuroanat.*, 6(6), pp.351-62
- Mao, J., Price, D.D., Hayes, R.L., Lu, J., Mayer, D.J., (1992), "Intrathecal GM 1 ganglioside and local nerve anesthesia reduce nociceptive behaviours in rats with experimental peripheral mononeuropathy." *Brain Res.*, 584, Pp.28-35
- Maria, G.B., (2005), "Hexosamines, insulin resistance, and the complications of diabetes: current status," *Am J Physiol Endocrinol Metab*, 290, pp.E1-E8, 2006
- Marques, L.J., Zheng, L., Poulakis, N., Guzman, J., and Costabel, U.,(1999), "Pentoxifylline inhibits TNF-alpha production from human alveolar macrophages," *Am. J. Respir. Crit. Care Med.*, 159(2), pp. 508-11
- Marselli, L., Dotta, F., Piro, S., Santangelo, C., Masini, M., Lupi, R., Realacci, M.,

- Guerra, S., Mosca, F., Boggi, U., Purrello, F., Navalesi, R., and Marchetti, P., (2001), "Th2 cytokines have a partial, direct protective effect on the function and survival of isolated human islets exposed to combined proinflammatory and Th1 cytokines," *J Clin Endocrinol Metab.*, 86(10), pp. 4974-4978
- Martin, M.R., (1983), "Pharmacology of opioids. *Pharmacological Reviews*, 35(4), pp.283-323
- Martin, B.R., Sim-Selley, L.J., Selley, D.E., (2004), "Signaling pathways involved in the development of cannabinoid tolerance," *Trends Pharmacol Scii.*, 25(6), pp.325-30
- Martin, W.J., Malmberg, A.B., Basbaum, A.I., (2001), "PKCgamma contributes to a subset of the NMDA-dependent spinal circuits that underlie injury-induced persistent pain," *J Neurosci.*, 21(14), pp.5321-7
- Martini, L., Whistler, J.L., (2007), "The role of mu opioid receptor desensitization and endocytosis in morphine tolerance and dependence," *Curr Opin Neurobiol.*, 17(5), pp.556-64
- Martini, L., Waldhoer, M., Pusch, M., Kharazia, V., Fong, J., Lee, J. H., Freissmuth, C., Whistler, J. L., (2007), "Ligand-induced down-regulation of the cannabinoid 1 receptor is mediated by the G-protein-coupled receptor associated sorting protein GASP1," *FASEB J.* 21, pp.802–811
- Martini, L., Thompson, D., Kharazia, V., Whistler, J.L., (2010), "Differential regulation of behavioral tolerance to WIN55, 212-2 by GASP1," *Neuropsychopharmacol.*, 35(6),1363-73
- Maryam, B., & Zeinab, K.(2010).Short-and long-term modulation of microvascular responses in streptozotocin-induced diabetic rats by glycosylated products. *J Diab Compl.*, 24, 64–72
- Marzo, V.D., (1998), "Endocannabinoids and other fatty acid derivates with cannabimimetic properties: biochemistry and possible physiopathological relevance. *Biochim Biophys Acta* 1392:153–175

- Marzo, V.D., (2009), "The endocannabinoid system: Its general strategy of action, tools for its pharmacological manipulation and potential therapeutic exploitation," *Pharmacol Res.*, 60, pp. 77–84
- Marzo, D.V., and Matias, I., (2005), "Endocannabinoid control of food intake and energy balance," *Nat. Neurosci.* 8,585-589
- Masutani, M., Nozaki, T., Nakamoto, K., Nakagama, H., Suzuki, H., Kusuoka, O., Tsutsumi, M., and Sugimura, T., (2000), "The response of Parp knockout mice against DNA damaging agents." *Mutation Res/Rev Mutation Res.*, 462 (2-3), 159-166
- Mathews, M.T., Berk, B.C., (2008), "PARP-1 Inhibition Prevents Oxidative and Nitrosative Stress–Induced Endothelial Cell Death via Transactivation of the VEGF Receptor 2," *Arterioscler Thromb Vasc Biol.*, 28(4), pp.711-7
- Matias, I., Gonthier, M.P., Orlando, P., Martiadis, V., De Petrocellis, L., Cervino, C., Petrosino, S., Hoareau, L., Festy, F., Pasquali, R., Roche, M., Maj, M., Pagotto, U., Monteleone, P., Di Marzo, V., (2006), "Regulation, function, and dysregulation of endocannabinoids in models of adipose and  $\beta$ -pancreatic cells and in obesity and hyperglycemia," *J Clin Endocrinol Metab*, 91, pp.3171-3180.
- Matsuda, L.A, Lolait, S.J., Brownstein, M.J., Young, A.C., Bonner, T.I., (1990), "Structure of a cannabinoid receptor and functional expression of the cloned cDNA," *Nature*, 346, pp.561–564
- Matthew, R. N., Mary, A.C., and Norman, E.C., (2004), "Effects of the peroxynitrite decomposition catalyst, FeTMPyP, on function of corpus cavernosum from diabetic mice," *Eur.Pharmacol*, 502(1-2), pp.143-148
- Max, M.B., Kishore, R .K., Schafer, S.C., Meister, B., Gracely, R.H., Smoller, B., Dubner, R., (1991), "Efficacy of desipramine in painful diabetic neuropathy: a placebo-controlled trial," *Pain.*, 45(1), pp.3-9
- Max, M.B., Lynch, S.A., Muir, J., Shoaf, S.E., Smoller, B., and Dubner, R., (1992b), "Effects of Desipramine, Amitriptyline, and Fluoxetine on Pain in Diabetic Neuropathy," *N Engl J Med.*, 326, 1250–6
- Mayer, D.J., Mao, J., and Price, DD., (1995), "The development of morphine tolerance and dependence is associated with translocation of protein kinase C," *Pain*, Volume 61, Issue 61(3), pp.365-374

- McMahon, S.B., Cafferty, W.B., Marchand, F., (2005), "Immune and glial cell factors as pain mediators and modulators" *Exp Neurol*, 192, pp.444-462
- Mechoulam, R.; and Gaoni, Y., (1987), "Recent advances in chemistry of hashish;" *Fortschr. Chem. Org. NatStoffe*, 25, pp.175-213
- Melcangi, R.C., Pesaresi, M., Maschi, O., Giatti, S., Caruso, D.G., (2009), Differences in neuroactive steroid levels: observations in diabetic neuropathy and encephalopathy. 5th international meeting steroids and nervous system; Villa Gualino, Torino, Italy. Feb 13-18.
- Mellado-Gil, J.M and Aguilar-Diosdado, M., (2004), "High glucose potentiates cytokine- and streptozotocin-induced apoptosis of rat islet cells: effect on apoptosis-related genes," *Journal of Endocrinol.*, 183, pp.155–162
- Melzack, R., Wall, P.D., (1965), "Pain mechanisms: a new theory" *Science*, 150(699), pp. 971–979
- Merskey, H., Bogduk, N., (1994), "Classification of chronic pain. Classification of neuropathic pain syndromes based on symptoms and signs, Seattle IASP Press., 34, pp.123-136
- Mielke, K., and Herdegen, T., (2000) "JNK and p38 stresskinases-degenerative effectors of signal-transduction-cascades in the nervous system," *Progress in Neurobiol.*, 61(1), pp.45-60
- Migdalís I. N., Kalogeropoulou, K., Kalantzis, L., Nounopoulos, C., Bouloukos, A., Samartzis, M., (1995), "Insulin-like growth factor-I and IGF-I receptors in diabetic patients with neuropathy," *Diabetic Med.*, 12, pp.823–827
- Mika, J., Osikowicz, M., Makuch, W., Przewlocka, B., (2007), "Minocycline and pentoxifylline attenuate allodynia and hyperalgesia and potentiate the effects of morphine in rat and mouse models of neuropathic pain," *Eur J Pharmacol*, 560, pp.142-149
- Miller, G., (2005), "Neuroscience. The dark side of glia," *Science*, 308, pp.778–781
- Millns, P.J., Chapman, V., Kendall, D.A., (2001), "Cannabinoid inhibition of the capsaicin-induced calcium response in rat dorsal root ganglion neurones. *Br J Pharmacol.*, 132(5), pp.969–71
- Mizisin, A.P., Calcutt, N.A., Tomlinson, D.R., Gallagher, A., Fernyhough, P., (1999), "Neurotrophin-3 reverses nerve conduction velocity deficits in streptozotocin-diabetic rats," *J Peripher Nerv Syst.*, 4(3-4), pp.211-21

- Moller, D.E., (2000), "Potential role of TNF-alpha in the pathogenesis of insulin resistance and type 2 diabetes," *Trends Endocrinol Metab.*, 11, pp. 212–217
- Morgado, C., Terra, P.P., Tavares, I., (2010), "Neuronal hyperactivity at the spinal cord and periaqueductal grey during painful diabetic neuropathy: Effects of gabapentin," *Eur J Pain.*, 4(7), pp.693-9
- Morgado, C., Terra, P.P., Cruz, C.D., Tavares, I., (2011), "Minocycline completely reverses mechanical hyperalgesia in diabetic rats through microglia-induced changes in the expression of the potassium chloride co-transporter 2 (KCC2) at the spinal cord," 13(2), pp.150-159
- Morohoshi, M., Fujisawa, K., Uchimura, I., and Numano, F., (1996), "Glucose-dependent interleukin 6 and tumor necrosis factor production by human peripheral blood monocytes in vitro," *Diabetes*, 45, pp. 954–959
- Murata, Y., Shimamura, T., and Hamuro, J., (2002), "The polarization of T(h)1/T(h)2 balance is dependent on the intracellular thiol redox status of macrophages due to the distinctive cytokine production," *Int Immunol.*, 14(2), pp. 201-212
- Muscoli, C., Cuzzocrea, S., Ndengele, M.M., Mollace, V., Porreca, F., Fabrizi, F., Esposito, E., Masini, E., Matuschak, G.M., Salvemini, D., (2007), "Therapeutic manipulation of peroxynitrite attenuates the development of opiate-induced antinociceptive tolerance in mice," *J Clin Invest.*, 117, pp.3530–9
- Myint, K.M., Yamamoto, Y., Doi, T., Kato, I., Harashima, A., Yonekura, H, Watanabe, T., Shinohara, H., Takeuchi, M., Tsuneyama, K., Hashimoto, N., Asano, M., Takasawa, S., Okamoto, H., Yamamoto, H., (2006), "RAGE control of diabetic nephropathy in a mouse model: effects of RAGE gene disruption and administration of low-molecular weight heparin." *Diabetes.*, 55(9), pp.2510-22
- Naef M, Curatolo, M., Petersen-Felix, S., Arendt-Nielsen, L., Zbinden, A., Brenneisen, R., (2003), "The analgesic effect of oral delta-9 tetrahydrocannabinol (THC), morphine, and a THC-morphine combination in healthy subjects under experimental pain conditions," *Pain*, 105, pp.79–88
- Nagata, M., P. Santamaria., T. Kawamura., T. Utsugi., and J.W. Yoon., (1994), "Evidence for the role of CD81 cytotoxic T cells in the destruction of pancreatic beta cells in NOD mice," *J. Immunol.*, 152, pp. 2042–2050



- Nakazawa, T., Ikeda, M., Kaneko, T., Yamatsu, K., (1985), "Analgesic effects of dynorphin-A and morphine in mice," *Peptides*, 6(1), pp.75-78
- Narita, M., Shimamura, M., Imai, S., Kubota, C., Yajima, Y., Takagi, T., Shiokawa, M., Inoue, T., Suzuki, M., Suzuki, T., (2008), "Role of interleukin-1beta and tumor necrosis factor-alpha-dependent expression of cyclooxygenase-2 mRNA in thermal hyperalgesia induced by chronic inflammation in mice," *Neurosci.*, 152(2), pp.477-86.
- Negi, G., Kumar, A., Sharma, S.S., (2010), "Concurrent targeting of nitrosative stress-PARP pathway corrects functional, behavioral and biochemical deficits in experimental diabetic neuropathy" *Biochem Biophys Res Commun*, 391(1), pp.102-106
- Newsholme, P., Haber, E.P., Hirabara, S.M., Rebelato, E.L.O., Procopio, J., Morgan, D., Oliveira-Emilio, H.C., Carpinelli, A.R., and Curi, R., (2007), "Diabetes associated cell stress and dysfunction: role of mitochondrial and non mitochondrial ROS production and activity," *J Physiol.*, 583(Pt-1), pp.9-24
- Nichols, M.L., Lopez, Y., Ossipov, M.H., Bian, D., Porreca, F., (1997), "Enhancement of the antiallodynic and antinociceptive efficacy of spinal morphine by antisera to dynorphin A (1-13) or MK-801 in a nerve-ligation model of peripheral neuropathy," *Pain.*, 69(3), pp.317-322
- Nicoletti, F., Zaccone, P., Di Marco, R., Lunetta, M., Magro, G., Grasso, S., Meroni, P., Garotta, G., (1997), "Prevention of spontaneous autoimmune diabetes in diabetes-prone BB rats by prophylactic treatment with antirat interferon-gamma antibody," *Endocrinology.*, 138(1), pp. 281-8
- Nishimura, M., Obayashi, H., Mizuta, I., Hara, H., Adachi, T., Ohta, M., Tegoshi, H., Fukui, M., Hasegawa, G., Shigeta, H., Kitagawa, Y., Nakano, K., Kaji, R., Nakamura, N., (2003), "TNF, TNF receptor type 1, and allograft inflammatory factor-1 gene polymorphisms in Japanese patients with type 1 diabetes," *Hum Immunol.*, 64(2), pp.302-9.
- Nomiyama, T., Igarashi, Y., Taka, H., Mineki, R., Uchida, T., Ogihara, T., Choi, J.B., Uchino, H., Tanaka, Y., Maegawa, H., Kashiwagi, A., Murayama, K., Kawamori, R. & Watada, H., (2004), "Reduction of insulin-stimulated glucose uptake by peroxynitrite is concurrent with tyrosine nitration of insulin receptor substrate-1. *Biochem Biophys Res Commun.*, 320, pp.639-647

- Nozaki, C., Saitoh, A., and Kamei, J., (2006), "Characterization of the antinociceptive effects of oxycodone in diabetic mice," *Eur.J.Pharmacol.*, 535(1-3), 145-151
- Obrosova, I.G., Drel, V.R., Oltman, C.L., Mashtalir, N., Tibrewala, J., Groves, J.T., Yorek, M.A., (2007), "Role of nitrosative stress in early neuropathy and vascular dysfunction in streptozotocin-diabetic rats" *Am J Physiol Endocrinol Metab*, 293(6), pp.E1645-55
- Obrosova, I.G., Mabley, J.G., Zsengellér, Z., Charniauskaia, T., Abatan, O.I., Groves, J.T., and Szabo, C., (2005a), "Role for nitrosative stress in diabetic neuropathy: evidence from studies with a peroxynitrite decomposition catalyst," *FASEB Journal*, 19, pp.401-403
- Obrosova, I.G., Drel, V.R., Pacher, P., Ilnytska, O., Wang, Z.Q., Stevens, M.J., Yorek, M.A., (2005b), "Oxidative-nitrosative stress and poly(ADP-ribose) polymerase (PARP) activation in experimental diabetic neuropathy: the relation is revisited. *Diabetes*, 54, pp.3435–3441
- Obrosova, I.G., Mabley, J.G., Zsengeller, Z., Charniauskaia, T., Abatan, O.I., Szabó, C., (2004), "A peroxynitrite decomposition catalyst ameliorates early diabetic neuropathy," *Diabetologia*, 47: A367
- Obrosova, I.G., Xu, W., Lyzogubov, V.V., Ilnytska, O., Mashtalir, N., Vareniuk, I., Pavlov, I.A., Zhang, J., Slusher, B., Drel, V.R., (2008), "PARP inhibition or gene deficiency counteracts intraepidermal nerve fiber loss and neuropathic pain in advanced diabetic neuropathy," *Free Radic Biol Med.*, 44(6), pp.972-81
- Ogawa, M., Maruyama, T., Hasegawa, T., Kanaya, T., Kobayashi, F., Tochino, Y., and Uda, H., (1985), "The inhibitory effect of neonatal thymectomy on the incidence of insulinitis in non-obese diabetes (NOD) mice," *Biomed. Res.*, 6, pp.103
- Ohkawa, H., Ohishi, N., Yagi, K., (1979), "Assay for lipid peroxides in animal tissues by thiobarbituric acid reaction. *Anal Biochem.*, 95, pp.351–358

- Ohsawa, M., Kamei, J., (1997), "Possible involvement of protein kinase C in the attenuation of [D-Ala<sup>2</sup>, NMePhe<sup>4</sup>, Gly-ol<sup>5</sup>]enkephalin-induced antinociception in diabetic mice," *Eur J Pharmacol.*, 339, pp.27–31
- Okamoto, M., Baba, H., Goldstein, P.A., Higashi, H., Shimoji, K., Yoshimura, M., (2001), "Functional reorganization of sensory pathways in the rat spinal dorsal horn following peripheral nerve injury," *J Physiol.*, 532, pp.241-250
- Olga, I., V.L. Valeriy., J.S. Martin., R.D. Viktor., and M. Nazar., (2006), "Poly(ADP-Ribose) polymerase inhibition alleviates experimental diabetic sensory neuropathy," 55, pp.1686-1694
- Oliver, S.J., Freeman, S.L., Corral, L.J., Okampo, C.J., Kaplan, G., (1999), "Thalidomide analogue CC1069 inhibits development of rat adjuvant arthritis," *Clin.Exp.Immunol.*, 118 (2), pp.315-321
- Oltman, C.L., Coppey, L.J., Gellett, J.S., Davidson, E.P., Lund, D.L., and Yorek, M.A., (2005), "Progression of vascular and neural dysfunction in sciatic nerves of Zucker diabetic fatty and Zucker rats," *Am J Physiol Endocrinol Metab.*, 289, pp. E113–E122
- Osikowicz, M., Mikam J., Makuchm, W., Przewlockam, B., (2008), "Glutamate receptor ligands attenuate allodynia and hyperalgesia and potentiate morphine effects in a mouse model of neuropathic pain," *Pain*, 139, pp.117–126
- Ottani, A.; Leone, S.; Sandrini, M.; Ferrari, A., Bertolini, A., (2006), "The analgesic activity of paracetamol is prevented by the blockade of cannabinoid CB1 receptors. *Eur. J. Pharmacol.*, 531, pp.280–281
- Ozkul, A., Ayhan, M., Yenisey, C., Akyol, A., Guney, E., Ergin, F.A., (2010), "The role of oxidative stress and endothelial injury in diabetic neuropathy and neuropathic pain. *Neuro Endocrinol Lett*, 31(2),pp.261-264
- Pabbidi, R.M., Yu, S.Q., Peng, S., Khardori, R., Pauza, M.E., and Premkumar, L.S., (2008), "Influence of TRPV1 on diabetes-induced alterations in thermal pain sensitivity," *Molecular Pain*, pp.4-9
- Pacher, P., Obrosova, I.G., Mabley, J.G., Szabó C., (2005), "Role of nitrosative stress and peroxynitrite in the pathogenesis of diabetic complications. Emerging new therapeutical strategies," *Curr Med Chem*, 12(3), pp.267-75

- Pahan, K., Sheikh, F., Xiaojuan L, Hilger, S., McKinney, M., and Petro, T.M., (2000), "Induction of nitric oxide synthase and activation of NFkB by interleukin12 p40 in microglial cells," *J. Biol. Chem.* 276: 7899–7905
- Pakala, S.V., M.D. Kurrer., and J.D. Katz., (1997), "T helper 2 (Th2) T cells induce acute pancreatitis and diabetes in immune-compromised nonobese diabetic (NOD) mice," *J. Exp. Med.*, 186, pp. 299-306
- Pamela, B.J., and Benjamin, B.G., (1998), "Increased vulnerability to demyelination in streptozotocin diabetic rats," *The Journal of Comparative Neurology*, 373(1), pp. 55-61
- Panahi, M., and Sameni,M.,(2009),"The neuroprotective effects of progesterone on experimental diabetic neuropathy in rats.*Toxicology.Letter.*, 189(1), pp.S265
- Paquette, J., and Olmstead, M., (2005), "Ultra-low dose naltrexone enhances cannabinoid induced antinociception. *Behavioural Pharmacology*, 16, 597-603
- Parmely, M.J., Zhou, W.W., Edwards, C.K. 3rd., Borcharding, D.R., Silverstein, R., and Morrison, D.C., (1993), "Adenosine and a related carbocyclic nucleoside analogue selectively inhibit tumor necrosis factor-alpha production and protect mice against endotoxin challenge," *J Immunol.*, 151(1), pp. 389-96
- Patte-Mensah, C., Kibaly, C., Boudard, D., Schaeffer, V., Béglé. A., Saredi, S., Meyer, L., Mensah-Nyagan, A.G., (2006), "Neurogenic pain and steroid synthesis in the spinal cord." *J Mol Neurosci.*, 28(1), pp.17-31
- Patwardhan, A.M., Jeske, N.A., Price, T.J., Gamper , N., Akopian , A.N., and Hargreaves, K.M., (2006), "The cannabinoid WIN 55,212-2 inhibits transient receptor potential vanilloid 1 (TRPV1) and evokes peripheral antihyperalgesia via calcineurin," *PNAS.*, 103(30), pp.11393-11398
- Pavlov, I., Vareniuk, I., Drel V.R., Lyzogubov, V.V., Ilnytska, O., Mashtalir, N., Tibrewala, J., Groves, J.T., Obrosova, I.G., (2007), "Nitrosative stress and neuropathy in mouse models of Type 1 and Type 2 diabetes. *Diabetes*, 56(Suppl 1):A207
- Pazdro, R., and Burgess, J.R., (2010), "The role of vitamin E and oxidative stress in diabetes complications," *Mech Ageing Dev.*, 131(4), pp.276-86
- Pergolizzi, J., Böger, R.H., Budd, K., Dahan, A., Erdine, S., Hans, G., Kress, H.G.,

- Langford, R., Likar, R., Raffa, R.B., Sacerdote, P., (2008), "Opioids and the management of chronic severe pain in the elderly: consensus statement of an International Expert Panel with focus on the six clinically most often used World Health Organization Step III opioids (buprenorphine, fentanyl, hydromorphone, methadone, morphine, oxycodone). *Pain Pract.* 8(4), pp.287-313
- Pertwee, R.G., (2005), "Inverse agonism and neutral antagonism at cannabinoid CB1 receptors. *Life Sci.*,76, 1307-1324
- Pertwee, R.G., Stevenson, L.V., Griffen, G., (1993), "Cross-tolerance between delta-9-tetrahydrocannabinol and the cannabimimetic agents, CP 55,940, WIN 55,212-2 and anandamide," *Br. J. Pharmacol.*,110, pp.1483-1490
- Pesaresi, M., Giatti, S., Cavaletti, G., Abbiati, F., Calabrese, D., Bianchi, R., Caruso, D., Garcia-Segura, L.M., Melcangi, R.C., (2011), "Sex differences in the manifestation of peripheral diabetic neuropathy in gonadectomized rats: A correlation with the levels of neuroactive steroids in the sciatic nerve," *Experimental Neurology*, 228(2), pp.215-221
- Pesaresi, M., Giatti, S., Garcia-Segura, M.L., Maschi, O., Caruso, D., and Melcangi, R.C., (2010a), "Dihydroprogesterone Increases the Gene Expression of Myelin Basic Protein in Spinal Cord of Diabetic Rats," *J.Mol.Neurosci.*, 42(2), pp.135-139
- Pesaresi, M., Maschi, O., Giatti, S., Garcia-Segura, M.L., Caruso, D., and Melcangi, R.C., (2010a), "Sex differences in neuroactive steroid levels in the nervous system of diabetic and non-diabetic rats," *Hormones and Behavior.*, 57(1), pp.46-55
- Pickersgill, L.M., and Mandrup-Poulsen, T.R., (2009), "The anti-interleukin-1 in type 1 diabetes action trial--background and rationale," *Diabetes Metab Res Rev.*, 25(4), pp. 321-4
- Pierson, C.R., Zhang, W., and Sima, A.A.F., (2003), "Proinsulin C-peptide replacement in Type 1 diabetic BB/Wor-rats prevents deficits in nerve fiber regeneration," *J. Neuropathol & Exp. Neurol*, 62(7), pp. 765-779
- Pinardi, G., Prieto, J.C., and Miranda, H.C., (2005), "Analgesic synergism between intrathecal morphine and cyclooxygenase-2 inhibitors in mice," *Pharmacol.Biochem. Behavior.*, 82(1), pp.120-124

- Pittenger, G., and Vinik, A., (2003), "Nerve Growth Factor and Diabetic Neuropathy," *Exp.Diab.Res.*, 4, pp.271–285
- Pluijms, W., Huygen, F., Cheng, J., Mekhail, N., Kleef, V. M., Zundert, V. J., Dongen, V. R., (2010), "Painful Diabetic Polyneuropathy" *Pain Pract.*, 11 (2), 191-198
- Pop-Busui, R., (2007), "Does lamotrigine alleviate the pain in diabetic neuropathy?," *Nature Reviews Neurology.*, 3, 424-425
- Pop-Busui, R., Marinescu, V., Van Huysen, C., Li, F., Sullivan, K., Greene, D. A., Larkin, D., and Stevens, M. J., (2002), "Dissection of metabolic, vascular, and nerve conduction interrelationships in experimental diabetic neuropathy by cyclooxygenase inhibition and acetyl-L-carnitine administration," *Diabetes*, 51, pp.2619-2628
- Pop-Busui, R., Herman, W.H., Feldman, E.L., Low, P.L., Martin, C.L., Cleary, P.L., Waberski, B.H., Lachin, Albers, J.W., for the DCCT/EDIC Research Group" (2010), "DCCT and EDIC Studies in Type 1 Diabetes: Lessons for Diabetic Neuropathy Regarding Metabolic Memory and Natural History," *Curr Diab Rep.*, 10(4), pp.276-282
- Pop-Busui, R., Sullivan, K.A., Huysen, C.V., Bayer, L., Cao, X., Towns, R., Stevens, M.J., (2001), "Depletion of taurine in experimental diabetic neuropathy: implications for nerve metabolic, vascular, and functional deficits" *Exp Neurol.*, 168(2), pp.259-72
- Price, S.A., Agthong, S., Middlemas, A.B., Tomlinson, D.R., (2004), "Mitogen activated protein kinase p38 mediates reduced nerve conduction velocity in experimental diabetic neuropathy: interactions with aldose reductase," *Diabetes*, 53(7), pp.1851-1856
- Przewlocka, B., Sieja, A., Starowicz, K., Maj, M., Bilecki, W., Przewlocki, R (2002), "Knockdown of spinal opioid receptors by antisense targeting beta arrestin reduces morphine tolerance and allodynia in rat," *Neurosci Lett.*, 325(2), pp.107-10.
- Puffenbarger, R.A., Boothe, A.C., Cabral, G.A., (2000), "Cannabinoids inhibit LPS-inducible cytokine mRNA expression in rat microglial cells," *Glia.*, 29, pp.58-69.

- Purves, T., Middlemas, A., Agthong, S., Jude, E. B., Boulton, A. J. M., Fernyhough, P., Tomlinson, D. R. (2001), "A role for mitogen-activated protein kinases in the etiology of diabetic neuropathy. *FASEB J.* 15, pp.2508–2514
- Quijano, C., Castro, J., Peluffo, G., Valez, V., and Radi, R., (2007), "Enhanced mitochondrial superoxide in hyperglycemic endothelial cells: direct measurements and formation of hydrogen peroxide and peroxynitrite," *American Journal of Physiology*, "293(6), pp. H3404–H3414
- Rabinovitch, A., (2003), "Immunoregulation by cytokines in autoimmune diabetes," *Adv Exp Med Biol.*, 520, pp.159-93
- Rabinovitch, A., and Suarez-Pinzon, W.L., (1998), "Cytokines and Their Roles in Pancreatic Islet  $\beta$ -Cell Destruction and Insulin-Dependent Diabetes Mellitus," *Biochem.Pharmacol.*, 55 (8), pp.1139-1149
- Racz, I., Nadal, X., Alferink, B.J., Rehnelt, J., Martín, M., Pintado, B., Gutierrez-Adan., (2008), "A, Sanguino E, Manzanares J, Zimmer A, and Maldonado R. Crucial Role of CB2 Cannabinoid Receptor in the Regulation of Central Immune Responses during Neuropathic Pain," *J Neurosci*, 28(46), pp.12125-12135
- Radi, R., (2004), "Nitric oxide, oxidants, and protein tyrosine nitration," *Proc Natl Aca Sci USA.*, 101, pp.4003–4008
- Raehal, K.M., Walker, J.K., Bohn, L.M., (2005), "Morphine side effects in beta arrestin 2 knockout mice," *J Pharmacol Exp Ther.* 314(3), pp.1195-201
- Ragavendra, V., Rutkowski, M.D., DeLeo, J.A., (2002), "The role of spinal neuroimmune activation in morphine tolerance/hyperalgesia in neuropathic and sham-operated rats," *J Neurosci* 22, pp.9980–9989
- Ragavendra, V., Rutkowski, M.D., & DeLeo, J.A., (2004), "Attenuation of Morphine Tolerance, Withdrawal-Induced Hyperalgesia, and Associated Spinal Inflammatory Immune Responses by Propentofylline in Rats" *Neuropsychopharmacology*, 29, 327–334
- Ragavendra, V., Tanga, F., DeLeo, J.A., (2003), "Inhibition of microglial activation attenuates the development but not existing hypersensitivity in a rat model of neuropathy," *J Pharmacol Exp. Ther.*, 306, pp.624–630
- Rakieten N., Rakieten, M.L., Nadkarni, M.V., (1963), "Studies on the diabetogenic action of streptozotocin," *Cancer Chemother.Rep.*, 29, pp.91-103

- Ramirez, M.A., and Borja, N.L., (2008), "Epalrestat: an aldose reductase inhibitor for the treatment of diabetic neuropathy," *Pharmacotherapy*, 28(5), pp.646-55
- Rashid, G., Benchetrit, S., Fishman, D., and Bernheim, J., (2004), "Effect of advanced glycation end-products on gene expression and synthesis of TNF-alpha and endothelial nitric oxide synthase by endothelial cells," *Kidney Int.*, 66(3), pp.1099-106.
- Raskin, J.B., (1999), "Gastrointestinal Effects of Nonsteroidal Anti-inflammatory Therapy," *Am J Med.*, 106 (5B), pp.3S-12S
- Ratka, A., and Kloet, E.R., (1988), "Vasopressin and adrenalectomy-induced sensitivity to morphine," *Eur.Pharmacol.*, 153(1), pp. 65-71
- Raz, I., Hasdai, D., Seltzer, Z., Melmed, R.N., (1988), "Effect of hyperglycemia on pain perception and on efficacy of morphine analgesia in rats" *Diabetes*, 37, pp.1253–1259
- Recio-Pinto, E., Ishii, D.N., (1988), "Insulin and related growth factors: Effects on the nervous system and mechanism for neurite growth and regeneration," *Neurochem. Int.* 12, pp.397–414
- Reinold, H., Ahmadi, S., Depner, U.B., Layh, B., Heindl, C., Hamza, M., Pahl, A., Brune, K., Narumiya, S., Müller, U., and Zeilhofer, H.U., (2005), "Spinal inflammatory hyperalgesia is mediated by prostaglandin E receptors of the EP2 subtype," *J Clin Invest.*, 115(3), pp.673–679
- Ren, K., Dubner, R., (2008), "Neuron-glia crosstalk gets serious: role in pain hypersensitivity," *Current Opinion in Anaesthesiology*, 21(5), pp.570-579
- Ren, K., Wei, F., Dubner, R., Murphy, A., Hoffman, G.E., (2000), "Progesterone attenuates persistent inflammatory hyperalgesia in female rats: involvement of spinal NMDA receptor mechanisms," *Brain Res.*, 865(2), pp.272-7
- Revsin, Y., Saravia, F., Roig, P., Lima, A., de Kloet, E.R., Homo-Delarche, F., (2005), "Neuronal and astroglial alterations in the hippocampus of a mouse model for type 1 diabetes. *Brain Res.*, 1038(1), pp.22-31
- Riazi, A., Pickup, J., and Bradley, C., (2004), "Daily stress and glycemic control in Type-1 diabetes; individual differences in magnitude, direction, and timing of stress reactivity," *Diabetic.Clinical Practice.*, 66, pp.237-244
- Ribeiro, R.A., Vale, M.L., Ferreira, S.H., Cunha, F.Q., (2000), "Analgesic effect of



- thalidomide on inflammatory pain,” *Eur. J Pharmacol.*, 391, pp.97–103
- Richard, E. G., Sandra, A. K., Katherine, R.T., George, L.B., Robert, D.T., Janet, B.M., Douglas, J.H., Darren, J.K., and Pamela, W.A., (2007), “Effect of Ruboxistaurin on Urinary Transforming Growth Factor- $\beta$  in Patients with Diabetic Nephropathy and Type 2 Diabetes,” *Diab.Care*, 30(4), pp.995-996
- Richardson, J., Peck, W.L., Grahames, C.B., Casula, M.A., Yiangou, Y., Birch, R., Anand, P., Buell, G.N., (2005), “Disruption of the P2X7 purinoceptor gene abolishes chronic inflammatory and neuropathic pain,” *Pain.*, 114, pp.386–396
- Riley, J., Eisenberg, E., Müller-Schwefe, G., Drewes, A.M., Arendt-Nielsen, L., (2008), “Oxycodone: a review of its use in the management of pain. *Curr Med Res Opin.*, 24(1), pp.175-92
- Rivard, A., Silver, M., Chen, D., et al., (1999), “Rescue of diabetes-related impairment of angiogenesis by intramuscular gene therapy with adeno-VEGF,” *Am J Pathol.*, 154, pp.355–363
- Robertson, R.P., (2004), “Chronic oxidative stress as a central mechanism for glucose toxicity in pancreatic islet beta cells in diabetes, *J. Biol. Chem.*, 279(41), pp.42351–42354
- Roglio, I., Bianchi, R., Giatti, S., Cavaletti, G., Caruso, D., Scurati, S., Crippa, D., Garcia-Segura, L.M., amozzi, F., Lauria, G., Melcangi, R.C., (2007), “Testosterone derivatives are neuroprotective agents in experimental diabetic neuropathy,” *Cell. Mol. Life Sci.*, 64, pp.1158-1168
- Romanelli, P., and Esposito, V., (2004), “The functional anatomy of neuropathic pain” *Neurosurg.clinics of North America* 15 (3): 257–68
- Romero-Sandoval, A., Nutile-McMenemy, N., DeLeo J.A., (2008), “Spinal microglial and perivascular cell cannabinoid receptor type 2 activation reduces behavioural hypersensitivity without tolerance after peripheral nerve injury,” *Anesthesiology.*, 108, pp.722–734
- Rosen, P., Nawroth, P.P., King, G., Moller, G., Tritschrev, H.J., Packer, L., (2001), “The role of oxidative stress in the onset and progression of diabetes and its complication, *Diabetes/Metabolism Research and Reviews*, 2001, 17, pp.189–212
- Rossi, G.C., Pasternak, G.W., and Bodnar, R.J., (1994), “mu and delta- opioids synergy between the periaqueductal gray and the rostro-ventral medulla,” *Brain Res* 665:85–93

- Rowbotham, M.C., Goli, V., Kunz, N.R., Lei, D., (2004), "Venlafaxine extended release in the treatment of painful diabetic neuropathy: a double-blind, placebo-controlled study." *Pain*, 110, pp.697–706
- Rubino, T., Forlani, G., Viganò, D., Zippel, R., Parolaro, D., (2005), "Ras/ERK signalling in cannabinoid tolerance: from behaviour to cellular aspects," *J.Neurochem.*, 93: 984-91
- Ruggieri, V., Vitale, G., Filafarro, M., Frigeri, C., Pini, L.A., Sandrini, M., (2010), "The antinociceptive effect of acetylsalicylic acid is differently affected by a CB1 agonist or antagonist and involves the serotonergic system in rats," *Life Sci.*, 86(13-14), pp.510-7.
- Rull, J.A., Quibrera, R., González-Millán, H., and Castañeda, O.L., (1969), "Symptomatic treatment of peripheral diabetic neuropathy with carbamazepine (Tegretol®): Double blind crossover trial," *Diabetologia*, 5(4), 215-218
- Saini, A.K., Arun, K.H.S., Kaul, C.L., and Sharma, S.S., (2004), "Acute hyperglycemia attenuates nerve conduction velocity and nerve blood flow in male Sprague–Dawley rats: reversal by adenosine," *Pharmacol.Res.*, 50(6), pp.593-599
- Salio, C., Doly, S., Fischer, J., Franzoni, M.F., Conrath, M., (2002), "Neuronal and astrocytic localization of the cannabinoid receptor-1 in the dorsal horn of the rat spinal cord," *Neurosci Let.*, 329(1), pp.13-6
- Salvemini, D., (2009), "Peroxynitrite and Opiate Antinociceptive Tolerance: A Painful Reality," *Arch Biochem Biophys.*, 484 (2), pp.238-244
- Salvemini, D., Neumann, W.I., (2009), "Peroxynitrite: a strategic linchpin of opioid analgesic tolerance, *Trends in pharmacological sciences*, 30, pp.194-202
- Salvemini, D., and Neumann, W., (2010), "Targeting peroxynitrite driven nitroxidative stress with synzymes: A novel therapeutic approach in chronic pain management," *Life Sciences.*, 86(15-16), pp. 604-614
- Salvemini, D., Settle, S.L., Masfertr, J.L., Seibert, K., Currie, K., & Needleman, P., (1995), "Regulation of prostaglandin production by nitric oxide; an in vivo analysis," *Brit. J.Pharmacol.*, 114, pp.1171-1178

- Samad, T.A., Moore, K.A., Sapirstein, A., Billet, S., Allchorne, A., Poole, S., Bonventre, J.V., Woolf, C.J., (2001), "Interleukin-1 $\beta$ -mediated induction of Cox-2 in the CNS contributes inflammatory pain hypersensitivity" *Nature*, 410, pp. 471-475
- Sami T. Azar., Hala, Tamim., Hayfa N. Beyhum., M. Zouhair Habbal., and Wassim Y. Almawi., (1999), "Type I (Insulin-Dependent) Diabetes Is a Th1- and Th2-Mediated Autoimmune Disease," *Clinical and Diagnostic Laboratory Immunology*, 6(3), pp. 306-310
- Sampaio, E.P., Sarno, E.N., Galilly, R., Cohn, Z.A., and Kaplan, G., (1991), "Thalidomide selectively inhibits tumor necrosis factor- $\alpha$  production by stimulated human monocytes," *J. Exp. Med.*, 173, pp. 699-703
- Sandercock, D., Cramer, M., Wu, J., Chiang, Y.K., Biton, V., Heritier, M., (2009), "Gabapentin extended release for the treatment of painful diabetic peripheral neuropathy: efficacy and tolerability in a double-blind, randomized, controlled clinical trial," *Diabetes Care.*, 32(2), pp.e20.
- Sang, C.N., Booher,S., Gilron, I., Parada,S., Max, M.B., (2002), "Dextromethorphan and Memantine in Painful Diabetic Neuropathy and Postherpetic Neuralgia," *Anesthesiology*, 96, pp.1053–61
- Sango, K., Suzuki,T., Yanagisawa, H., Takaku, S., Hirooka, H., Tamura, M., Watabe, K., (2006), "High glucose-induced activation of the polyol pathway and changes of gene expression profiles in immortalized adult mouse Schwann cells IMS32" *J Neurochem.*, 98(2), pp.446-58
- Sarah, W., Gojka, R., Anders, G., Richards,S., Hilary,K., (2004)., "Global Prevalence of Diabetes; Estimates for the year 2000 and projections for 2030" *Diabetes Care*, 27(5), pp.1047–1053
- Satoh, J., Yagihashi, S., & Toyota, T., (2003), "The Possible Role of Tumor Necrosis Factor- $\alpha$  in Diabetic Polyneuropathy," *Exp.Diabesity Res.*, 4, pp.65–71
- Sayers, N.M., Beswick, L.J., Middlemas, A., Calcutt, N.A., Mizisin, A.P., Tomlinson, D.R., Fernyhough, P., (2003), "Neurotrophin-3 prevents the proximal accumulation of neurofilament proteins in sensory neurons of streptozocin-induced diabetic rats,"*Diabetes*, 52(9), pp.2372-80
- Scheinfeld, N., (2004), "A comprehensive review and evaluation of the side effects of

- the tumor necrosis factor alpha blockers etanercept, infliximab and adalimumab,” *J Dermatolog Treat.*, 15, pp. 280-294
- Schmidt, R. E., Dorsey, D. A., Roth, K. A., Parvin, C. A., Hounsom, L., and Tomlinson, D. R., (2000), “Effect of streptozotocin– induced diabetes on NGF, P75(NTR) and TrkA content of prevertebral and paravertebral rat sympathetic ganglia,” *Brain Res.*, 867, pp.149–156.
- Scholz, J., Woolf, C.J., (2007), “The neuropathic pain triad: neurons, immune cells and glia,” *Nat Neurosci.*, 10, pp.1361-1368
- Schratzberger, P., Walter, D.H., Rittig, K., Bahlmann, F.H., Pola, R., Curry, C., Silver, M., Krainin, J.G., Weinberg, D.H., Ropper, A.H., and Jeffrey, M.I., (2001), “Reversal of experimental diabetic neuropathy by VEGF gene transfer” *J Clin Invest*, 107(9), pp.1083-1092.
- Scott, D.A., Wright, C.E., Angus, J.A., (2004), “Evidence that CB-1 and CB-2 cannabinoid receptors mediate antinociception in neuropathic pain in the rat,” *Pain* 109, pp.124–131
- Sean, B. Lupien., Erik J. Bluhm., and Douglas, N., (2003), “Ishii Systemic insulin like growth factor-I administration prevents cognitive impairment in diabetic rats, and brain IGF regulates learning/memory in normal adult rats,” *Journal of Neurosci Res.* 74(4), pp. 512–523
- Segev and Katz, (2004), “Selective COX inhibitors and risk of cardiovascular events,” *Hosp. Physicion.*, pp.39-46
- Segond, V.B., Scholze, A., and Schaible, H.D., (2003), “Prostaglandin E2 increases the expression of the neurokinin1 receptor in adult sensory neurones in culture: a novel role of prostaglandins,” *Br. J. Pharmacol.*, 139, pp. 672–680
- Selvarajah, D., Wilkinson, I.D., and Emery, C.J., (2006), “Early involvement of the spinal cord in diabetic peripheral neuropathy,” *Diab Care.*, 29, pp. 2664-2669
- Selvarajah, D., Gandhi, R., and Emery, C.J., (2010), “Tesfaye S. Randomized placebo controlled double-blind clinical trial of cannabis-based medicinal product (Sativex) in painful diabetic neuropathy: depression is a major confounding factor,” *Diabetes Care.*, 33(1), pp. 128-30
- Seo-Yeon, Y., Dae-Hyun, R., Hyoung-Sig, S., Suk-Yun, K., Ho-Jae, H., Alvin, J.B., and Jang-Hern, L., (2009), “Intrathecal injection of the neurosteroid, DHEAS,

- produces mechanical allodynia in mice: involvement of spinal sigma-1 and GABA<sub>A</sub> receptors,” *Br J Pharmacol.*, 157(4), pp.666–673
- Serreze, D.V., Chapman, H.D., Post, C.M., Johnson, E.A., Suarez-Pinzon, W.L., and Rabinovitch, A., (2001), “Th1 to Th2 cytokine shifts in nonobese diabetic mice: sometimes an outcome, rather than the cause, of diabetes resistance elicited by immunostimulation,” *J Immunol.*, 166, pp.1352-1359
- Serreze, D.V., Post, C.M., Chapman, H.D., Johnson, E.A., Lu, B., Rothman, P.B., (2000), “Interferon- $\gamma$  receptor signaling is dispensable in the development of autoimmune type 1 diabetes in NOD mice. *Diabetes*, 49, pp.2007 –2011
- Shah, R., Carrig, B., (2004), “Opioids for painful diabetic neuropathy” *Am J Health Syst Pharm*, 61(14), pp.1446-1467
- Shan, S., Hong, C., Mei, H., Ting-Ting, L., Hai-Li, P., Zhi-Qi, Z., and Yu-Qiu, Z., (2007), “New evidence for the involvement of spinal fractalkine receptor in pain facilitation and spinal glial activation in rat model of monoarthritis,” *Pain*, 129(1-2), pp.64-75
- Shankaran, H., Wiley, H.S., and Resat, H., (2007), “Receptor downregulation and desensitization enhance the information processing ability of signalling receptors,” *BMC Systems Biology* 2007, 1:48
- Shanmugam, N., Todorov, I.T., Nair, I., Omori, K., Reddy, M.A., Natarajan, R., (2006), “Increased expression of cyclooxygenase-2 in human pancreatic islets treated with high glucose or ligands of the advanced glycation endproduct specific receptor (AGER), and in islets from diabetic mice,” *Diabetologia* 49, pp.100–107
- Shimoshige, Y., Enomoto, R., Aoki, T., Matsuoka, N., Kaneko, S., (2010), “The involvement of aldose reductase in alterations to neurotrophin receptors and neuronal cytoskeletal protein mRNA levels in the dorsal root ganglion of streptozotocin-induced diabetic rats” *Biol Pharm Bull*, 33(1), pp. 67-71
- Shimoshige, Y., Minoura, K., Matsuoka, N., Takakura, S., Mutoh, S., Kamijo, M., (2009), “Thirteen-month inhibition of aldose reductase by zenarestat prevents morphological abnormalities in the dorsal root ganglia of streptozotocin-induced diabetic rats,” *Brain Res*, 1247, pp.182-7

- Sibilia, Q., Jeremy, C., Mickael, I., Dominique, S., Gérard, S., Trong, K.L., Ana, G.C., and Brigitta, M., (2009), "Meta-analysis of duloxetine vs. pregabalin and gabapentin in the treatment of diabetic peripheral neuropathic pain," *BMC Neurol.*, 9, 6
- Sima, A.A., Dunlap, A.J., Davidson, P.E., Wiese, J.T., Lightle, L.R., Greene, A.D., and Yorek, A.M., (1997), "Supplemental myo-inositol prevents L-fucose-induced diabetic neuropathy," *Diabetes.*, 46 (2), pp.301-306
- Simonian, A.L., and Revzin, A., (2010), "Detecting interferon-gamma release from human CD4 T-cells using surface plasmon resonance. *Colloids and Surfaces B,*" *Biointerfaces.*, 80 (2), pp. 251-255
- Sindrup, S.H., Bach, F.W., Madsen, C., Gram, L.F., and Jensen, T.S., (2003), "Venlafaxine versus imipramine in painful polyneuropathy. A randomized, controlled trial," *Neurology.*, 60, pp.1284-1289
- Sindrup S.H., Otto, M., Finnerup, N.B., Jensen, T.S., (2005), "Antidepressants in the treatment of neuropathic pain," *Basic Clin Pharmacol Toxicol.*, 96, pp.399-409
- Sinha, A.K., (1972), "Colorimetric assay of catalase," *Anal Biochem.*, 47, pp.389-94
- Skeen, M.J., Miller, M.A., Shinnick, T.M., and Ziegler, H.K., (1996), "Regulation of murine macrophage IL-12 production: activation of macrophages in vivo, restimulation in vitro, and modulation by other cytokines," *J Immunol.*, 156, pp.1196-1206
- Skundric, D.S., Dai, R., James, J., and Lisak, R.P., (2002), "Activation of IL-1 signaling pathway in Schwann cells during diabetic neuropathy," *Ann N Y Acad Sci.*, 958, pp. 393-8
- Smith, M.T., (1990), "Neuroexcitatory effects of morphine and hydromorphone: evidence implicating the 3-glucuronide metabolites," *Clin Exp Pharmacol Physiol.*, 27, pp.524-528
- Smith, G.D., Smith, M.T., (1995), "Morphine-3-glucuronide: evidence to support its putative role in the development of tolerance to the antinociceptive effects of morphine in the rat. *Pain,* 62, pp.51-60
- Smith, M.T., Watt, J.A., Cramond, T., (1990), "Morphine-3-glucuronide: a potent antagonist of morphine analgesia," *Life Sci.*, 47, pp.579-585

- Smith, P.B., Compton, D.R., Welh, S.P., Razdan, R.K., Mechoulam, R., and Martin, B.R., (1994), "The pharmacological activity of anandamide, a putative endogenous cannabinoids, in mice," *JPET.*, 270(1), pp.219-227
- Smith, M. T., (2000), "Neuroexcitatory effects of morphine and hydromorphone: evidence implicating the 3-glucuronide metabolites," *Clin. Exp. Pharmacol. Physiol.*, 27, 524–528
- Smith, P.L., Selley, D.E., Sim-Selley, L.J., and Welch, S.P., (2007), "Low dose combination of morphine and  $\Delta^9$ -tetrahydrocannabinol circumvents antinociceptive tolerance and apparent desensitization of receptors," *Eur J Pharmacol*, 571(2-3), pp.129–137
- Sondell, M., Lundborg, G., Kanje, M., (1999), "Vascular endothelial growth factor has neurotrophic activity and stimulates axonal outgrowth, enhancing cell survival and Schwann cell proliferation in the peripheral nervous system," *J Neurol Sci.*, 19, pp.5731-5740
- Song, Z., Fu, D.T., Chan, Y.S., Leung, S., Chung, S.S., Chung, S.K., (2003), "Transgenic mice overexpressing aldose reductase in Schwann cells show more severe nerve conduction velocity deficit and oxidative stress under hyperglycemic stress. *Mol Cell Neurosci.*, 23(4), pp.638-47
- Sookja, K.C., and Stephen, S.M.C., (2007), "Transgenic and Gene Knockout Analysis of Diabetic Neuropathy," *Clin Diab.*, pp.51-67
- Sorensen, L., Molyneaux, L., Yue, D.K., (2006), "The relationship among pain, sensory loss, and small nerve fibers in diabetes" *Diabet.Care*, 29, pp.883–887
- Sotgiu, M.L., Bellomi, P., Biella, G.E., (2003), "The mGluR5 selective antagonist 6 methyl-2-(phenylethynyl)-pyridine reduces the spinal neuron pain-related activity in mononeuropathic rats," *Neurosci Lett.*, 342(1-2), pp.85-8
- Sousa, M.M., Yan, S.D., Stern, D., Saraiva, M.J., (2000), "Interaction of the receptor for advanced glycation end products (RAGE) with transthyretin triggers nuclear transcription factor  $\kappa$ B (NF- $\kappa$ B) activation," *Lab Invest.*, 80(7), pp.1101-10
- Spina, E., Trovati, V., Parolaro, D., Giagnoni, G., (1998), "Role of nitric oxide in WIN 55,212-2 tolerance in mice," *Eur.J.Pharmacol.*, 343(2-3), pp. 157-163

- Srdjan, S., Dragana, S., Milan, N., Smiljana, R., Mihajlo, S., Vesna, N., (2005), "Manganese superoxide dismutase (MnSOD) catalyzes NO-dependent tyrosine residue nitration," *J.Serbian Chemical Society*, 70(4), pp.601-608
- Srinivasan, V., Sandhya, N., Sampathkumar, R., Farooq, S., Mohan, V., Balasubramanyam, M., (2007), "Glutamine fructose-6-phosphate amidotransferase (GFAT) gene expression and activity in patients with type 2 diabetes: inter-relationships with hyperglycaemia and oxidative stress, *Clin Biochem.*, 40(13-14), pp.952-7
- Stassi, G., De Maria, R., Trucco, G., Rudert, W., Testi, R., Galluzo, A., Giordano, C., Trucco, M., (1997), "Nitric oxide primes pancreatic beta cells for Fas-mediated destruction in insulin-dependent diabetes mellitus. *J Exp Med* 186, pp.1193–1200
- Stoffel, E.C., Ulibarri, C.M., Folk, J.E., Rice, K.C., and Craft, R.M., (2005), "Gonadal Hormone Modulation of Mu, Kappa, and Delta Opioid Antinociception in Male and Female Rats," *J Pain.*, 6(4), pp.261–274
- Stosić-Grujčić, S.D., Maksimović, D.D., Stojković, M.B., Lukić, M.L., (2001), "Pentoxifylline prevents autoimmune mediated inflammation in low dose streptozotocin induced diabetes," *Dev Immunol.*, 8(3-4):213-21.
- Stuart, C.A., Sherwin, S., Bruce, T.A., Freeman, R., Victor, B., Marc, R., Aaron, V., Michael, G.J., (2000), "Polyneuropathy: A Randomized Controlled Trial Growth Factor in Patients with Diabetic polyneuropathy," *JAMA*, 284(17), pp.2215-2221
- Stump, P., (2009), "Pregabalin--profile of efficacy and tolerability in neuropathic pain," *Drugs Today (Barc).*, 45 Suppl C:pp.19-27
- Su, J., Chen, Y.F., Tang, J.R., Wu, L., Zhang, P., Yu, L.B., Niu, Q., Xiao, H., (2010), "Protective effects of the calcium-channel blocker flunarizine on crush injury of sciatic nerves in a rat model" *Neurol India.*, 58(4), pp.530-536
- Sugimoto, K., Yasujima, M., Yagihashi, S., (2008), "Role of advanced glycation end products in diabetic neuropathy" *Curr Pharm Des*, 14(10), pp.953-61



- Sultan, A., Gaskell, H., Derry, S., Moore, R.A., (2008), "Duloxetine for painful diabetic neuropathy and fibromyalgia pain: systematic review of randomised trials" *BMC Neurol.*, 8, pp.29
- Sun, R.Q., Zhao, C.S., Wang, H.J., Jing, Z., Wang, W., Yang, K., Wang, Y., Chang, J.K., Han, J.S., (2001), "Nocistatin, a peptide reversing acute and chronic morphine tolerance," *Neuroreport*, 12(8), pp. 1789-1792
- Sun, R.Q., Lawand, N.B., Willis, W.D., (2003), "The role of calcitonin gene-related peptide (CGRP) in the generation and maintenance of mechanical allodynia and hyperalgesia in rats after intradermal injection of capsaicin," *Pain*, 104, pp.201–208
- Sung, C.S., Wen, Z.H., Chang, W.K., Chan, K.H., Ho, S.T., Tsai, S.K., Chang, Y.C., Wong, C.S., (2005), "Inhibition of p38 mitogen-activated protein kinase attenuates interleukin-1 $\beta$ -induced thermal hyperalgesia and inducible nitric oxide synthase expression in the spinal cord. *J Neurochem.*, 94, pp.742–52
- Surcheva, S.K., Surcheva, L.K., Milev, M.D., Kasakov, L.N., Vlaskovska, M.V., (2009), "Possible involvement of spinal glial cells and glutamatergic transmission in streptozotocin-induced neuropathic pain in rats," *J. Biomed Clin Res.*, 2(1), pp.26-30
- Suzuki, C., Ozaki, I., and Taosaki, M., (2000), "Peripheral and central conduction abnormalities in diabetes mellitus," *Neurology.*, 54, pp. 1932-1937
- Sweitzer, S.M., Schubert, P., DeLeo, J.A., (2001), "Propentofylline, a glialmodulating agent, exhibits antiallodynic properties in a rat model of neuropathic pain," *J Pharmacol Exp Ther.*, 297, pp.1210-1217
- Sweitzer, S.M., Medicherla, S., Almirez, R., Dugar, S., Chakravarty, S., Shumilla, J.A., Yeomans, D.C., Protter, A.A., (2004), "Antinociceptive action of a p38 $\alpha$  MAPK inhibitor, SD-282, in a diabetic neuropathy model, *Pain.*, 109(3), pp.409-19
- Szabó C, Mabley JG, Moeller SM, Shimanovich R, Pacher P, Virag L, Soriano FG, Van Duzer JH, Williams W, Salzman AL, Groves JT 2002a. Pathogenetic role of peroxynitrite in the development of diabetes and diabetic vascular complications: studies with FP15, a novel potent pero-xynitrite decomposition catalyst. *Mol Med* 8: 571-580

- Takafumi, M., Yoshiyuki, O., Akemi, K., Kaoru, T., Yoshinaka, U., and Vera, B., (2008), "Long-Term Treatment With Ranirestat (AS-3201), a Potent Aldose Reductase Inhibitor, Suppresses Diabetic Neuropathy and Cataract Formation in Rats", *J Pharmacol Sci*, 107, pp. 340 – 348
- Takenouchi, T., Sugama, S., Iwamaru, Y., Hashimoto, M., Kitani, H., (2009), "Modulation of the ATP-induced release and processing of IL-1 beta in microglial cells," *Crit Rev Immunol* 29, pp.335–345
- Talbot, S., Chahmi, E., Dias, J.p., and Couture, R., (2010), "Key role for spinal dorsal horn microglial kinin B<sub>1</sub> receptor in early diabetic pain neuropathy," *J. Neuroinflam.*, 7, pp.36
- Taliyan, R., Singh, M., Sharma, P.L., (2010a), "Beneficial Effect of Cyclosporine in Experimental Diabetes Induced Neuropathic Pain in Rats" *Inter J Pharmacol*, 6, pp.355-361
- Taliyan, R., and Sharma, P.L., (2010b), "Diabetic Neuropathic Pain: An Update and Novel Pharmacological Strategies for Relief of Pain," *J. Med Sci.*, 10 (4), pp.93-109
- Taliyan, R., Singh, M., and Sharma, P.L., (2010c), "Possible mechanism of hyperglycemia induced decrease in antinociceptive effect of analgesics in rats," *IJPSR*, 1(5), pp.99-107
- Tang, P., Hung, M.C., and Klostergaard, J., (1996), "Human pro-tumor necrosis factor is a homotrimer," *Biochemistry.*, 35 (25), pp. 8216–25
- Tang, Q., Gandhoke, R., Burritt, A., Hrubby, V.J, Porreca, F., Lai, J., (1999), "High affinity interaction of (des-Tyrosyl)dynorphin A(2-17) with NMDA receptors," *J Pharmacol Exp Ther.*, 291(2):760-5
- Tangpong, J., Sompol, P., Vore, M., Clair, W., Butterfield, D.A., Clair, D.K .St., (2008), "Tumor necrosis factor alpha-mediated nitric oxide production enhances manganese superoxide dismutase nitration and mitochondrial dysfunction in primary neurons: an insight into the role of glial cells," *Neurosci.*, 151, pp.622–9.
- Tanya, L. D., Christopher, S. K., and Ken, M., (2008), "Rapid CB<sub>1</sub> cannabinoid receptor desensitization defines the time course of ERK1/2 MAP kinase signalling" *Neuropharmacol*, 54(1), pp. 36–44.

- Tappe-Theodor, A., Agarwal, N., Katona, I., Rubino, T., Martini, L., Swiercz, J., Mackie, K., Monyer, H., Parolaro, D., Whistler, J., Kuner, T., and Kune R., (2007), "A Molecular Basis of Analgesic Tolerance to Cannabinoids," *J. Neurosci.*, 27(15), pp.4165– 4177
- Tasatargil, A., and Sadan, J., (2004), "Reduction in [D-Ala<sup>2</sup>, NMePhe<sup>4</sup>, Gly-ol<sup>5</sup>]Enkephalin-Induced Peripheral Antinociception in Diabetic Rats: The Role of the L-Arginine/Nitric Oxide/Cyclic Guanosine Monophosphate Pathway," *Anaest.Analg.*, 98(1), pp.185-192
- Tatsuro, K., and Micho, I., (2006), "Peripheral and central mechanisms of pain: recent developments: Different effects of opioid and cannabinoid receptor agonists in neuropathic pain: analysis of neuropathic pain using nerve injured model rats," *Pain clinic*, 27(5), pp.569-577
- Tavakkoly-Bazzaz, J., Amoli, M.M., Pravica, V., Chandrasegaran, R., Boulton, A.J.M., Larijani, B., and Hutchinson, I.V., (2010), "VEGF gene polymorphism association with diabetic neuropathy," *Mol.Biol.Reports*, 37(7), pp.3625-3630
- Tegeder, I., Niederberger, E., Vetter, G., Brautigam, L., Geisslinger, G., (2001), "Effects of selective COX-1 and -2 inhibition on formalin-evoked nociceptive behaviour and prostaglandin E(2) release in the spinal cord. *J Neurochem.*, 79, pp.777 -786
- Tesfaye, S., (2009), "Advances in the management of diabetic peripheral neuropathy," *Curr Opin Support Palliat Care.*, 3(2), pp.136-43
- Tetsuka, T., Daphna-iken, D., Srivastava, S.K., Baier, L.D., Dumaine, J., and Morrison, A.R., (1994), "Cross-talk between cyclooxygenase and nitric oxide pathways: Prostaglandin E2 negatively modulates induction of nitric oxide synthase by interleukin 1," *Proc. Natl. Acad. Sci. USA.*, 91, pp.12168-12172
- Thanos, P.K., Dimitrakakis, E.S., Rice, O., Gifford, A., Volkow, N.D., (2005), "Ethanol self-administration and ethanol conditioned place preference are reduced in mice lacking cannabinoid CB1 receptors. *Behav. Brain Res.* 164,206-213
- The Diabetes Control and Complications Trial Research Group., (1993), "The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus," *N Engl J Med.*, 329, pp.977-86

- Thorat, S.N., and Bhargava, H.N., (1994), "Evidence for a bidirectional cross tolerance between morphine and delta 9-tetrahydrocannabinol in mice. *European Journal of Pharmacology*, 260, pp.5-13
- Thornalley, P. J., (1998), "Cell activation by glycated proteins. AGE receptors, receptor recognition factors and functional classification of AGEs, " *Cell. Mol. Neurobiol.*, 44, pp.1013–1023
- Thorsby, E., and K. S. Ronningen., (1993), "Particular HLA-DQ molecules play a dominant role in determining susceptibility or resistance to type I (insulin dependent) diabetes mellitus," *Diabetologia.*, 36, pp. 371–377
- Thuraisingham, R.C., Nott, C.A., Dodd, S.M., Yaqoob, M.M., (2000), "Increased nitrotyrosine staining in kidneys from patients with diabetic nephropathy, " *Kidney Int.*, 57, pp.1968–1972
- Tiefenbacher, C.P., (2001), "Tetrahydrobiopterin: a critical cofactor for eNOS and a strategy in the treatment of endothelial dysfunction?," *Am J Physiol Heart Circ Physiol.*, 280(6), pp. H2484 - H2488
- Tomer, Y., Barbesion, G., Greenberg, D., and Davies, T.F., (1997), "The immunogenetics of autoimmune diabetes and autoimmune thyroid disease," *Trends Endocrinol. Metab.*, 8, pp. 63–70
- Tomlinson, D. R., (1999), "Mitogen-activated protein kinases as glucose transducers for diabetic complications," *Diabetologia.*, 42, pp.1271–1281
- Tomlinson, D.R., Fernyhough, P., Diemel, L.T.,(1997), "Role of neurotrophins in diabetic neuropathy and treatment with nerve growth factors," *Diabetes.*, 46(2), pp.S43-9
- Torreggiani M, Liu H, Wu J, Zheng F, Cai W, Striker G, Vlassara H., (2009), "Advanced glycation end product receptor-1 transgenic mice are resistant to inflammation, oxidative stress, and post-injury intimal hyperplasia, " *Am J Pathol.*, 175(4), pp.1722-32
- Tortorici, V. and Vanegas, H. (2000) Opioid tolerance induced by metamizol (dipyrone) microinjections into the periaqueductal gray of rats. *Eur J Neurosci*, 12, 4074- 4080

- Tortorici, V., Aponte, Y., Acevedo, H., Nogueira, L., Vanegas, H., (2009), "Tolerance to non-opioid analgesics in PAG involves unresponsiveness of medullary pain-modulating neurons in male rats," *Eur J Neurosci.*, 29(6), pp.1188-96
- Tortorici, V., Nogueira, L., Aponte, Y. and Vanegas, H., (2004), Involvement of cholecystokinin in the opioid tolerance induced by dipyrone (metamizol) microinjections into the periaqueductal gray matter of rats. *Pain*, 112, 113-120
- Toth, C., Rong, L.L., Yang, C., Martinez, J., Song, F., Ramji, M., Brussee, V., Liu, W., Durand, J., Nguyen, M.D., Schmidt, A.M., Zochodne, D.W., (2008), "Receptor for advanced glycation end products (RAGEs) and experimental diabetic neuropathy" *Diabetes.*, 57(4), pp.1002-17
- Toth, A., Blumberg, P.M., Boczán, J., (2009), "Anandamide and the vanilloid receptor (TRPV1)," *Vitam Horm.*, 81, pp.389-419
- Toth, C.C., Jedrzejewski, N.M., Ellis, C.L., Frey, W.H., (2010), "Cannabinoid-mediated modulation of neuropathic pain and microglial accumulation in a model of murine type I diabetic peripheral neuropathic pain" *Mol Pain*. 6, pp.16-20
- Trang, T., Beggs, S., Wan, X., Salter, M.W., (2009), "P2X4-receptor-mediated synthesis and release of brain-derived neurotrophic factor in microglia is dependent on calcium and p38-mitogen-activated protein kinase activation," *J Neurosci.*, 29, pp.3518–3528
- Traynor, J.R., Elliott, J., (1993), "δ-Opioid receptor subtypes and cross-talk with μ receptors. *Trends Pharmacol Sci.*, 14, pp.84 - 86
- Treede, R.D., Jensen, T.S., Campbell, J.N., et al., (2008), "Neuropathic pain: redefinition and a grading system for clinical and research purposes" *Neurology* 70 (18): 1630–5
- Trembleau, S., Penna, G., Gregori, S., Gately, M.K., Adorini, L., (1997). "Deviation of pancreas-infiltrating cells to Th2 by interleukin-12 antagonist administration inhibits autoimmune diabetes, *Eur. Immunol.*, 27(9), pp.2330-2339
- Trevor, A., Wei, Z., Margaret, C.E., and Martin, J.S., (2009), "Oxidative stress and dysregulation of the taurine transporter in high-glucose-exposed human

- Schwann cells: implications for pathogenesis of diabetic neuropathy,” *Am J Physiol Endocrinol Metab.*, 297, pp.E620-E628
- Tsiklauri, N., and Tsagareli., M.G., (2006), “Non-opioid-induced tolerance in rats,” *Neurophysiol*, 38, pp.314-317
- Tsiklauri, N., Gurtskaia, G., Tsagareli, M.G., (2006), “Is endogenous opioid system involved in non-opioid analgesics tolerance? *Georgian Med News*, 137, pp.121-5
- Tsiklauri, N., Nozadze, I., Gurtskaia, G., Abzianidze, E., Tsagareli, M.G., (2008), “Tolerance Induced by Non-Opioid Analgesic Microinjections into the Central Nucleus of Amygdala of Rats,” *Bull. Georgian Nat. Acad Sci.*, 2(3), pp.129-134
- Tsiklauri, N., Viatchenko-Karpinski, V., Voitenko, N., Tsagareli, M.G., (2010), “Non-opioid tolerance in juvenile and adult rats,” *Eur J Pharmacol.*, 629(1-3), pp. 68-72
- Tsou, K., Brown, S., Sanudo-Pena, M. C., Mackie, K., Walker, J. M., (1998), “Immunohistochemical distribution of cannabinoid CB1 receptors in the rat central nervous system,” *Neurosci.*, 83, pp.393-411
- Tsuda, M., Inoue, K., Salter, M.W., (2005), “Neuropathic pain and spinal microglia: A big problem from molecules in “small” glia” *Trends Neurosci*, 28, pp.101-107
- Tsuda, M., Kuboyama, K., Inoue, T., Nagata, K., Tozaki-Saitoh, H., Inoue, K., (2009), “Behavioral phenotypes of mice lacking purinergic P2X4 receptors in acute and chronic pain assays,” *Mol Pain.*, pp.5:28.
- Tumati, S., Yamamura, H.I., St John, P.A., Vanderah, T.W., Roeske, W.R., Varga, E.V., (2009), “Sustained cannabinoid agonist treatment augments CGRP release in a PKA-dependent manner,” *Neuroreport*, 20(8), pp 815-819
- Tsuda, M., Ueno, H., Kataoka, A., Tozaki-Saitoh, H., Inoue, K., (2008), “Activation of dorsal horn microglia contributes to diabetes-induced tactile allodynia via extracellular signal-regulated protein kinase signalling,” *Glia*, 56, pp.378-386
- Ueda, H., (2006), “Molecular mechanisms of neuropathic pain-phenotypic switch and initiation mechanisms,” *Pharmacol Ther.*, 109, pp.57-77

- Ulmann, L., Hatcher, J.P., Hughes, J.P., Chaumont, S., Green, P.J., Conquet, F., Buell, G.N., Reeve, A.J., Chessell, I.P., Rassendren, F., (2008), "Up-regulation of P2X4 receptors in spinal microglia after peripheral nerve injury mediates BDNF release and neuropathic pain," *J. Neurosci.*, 28, pp.11263–11268
- Ulugol, A., Ozyigit, F., Yeşilyurt, O., and Dogrul, A., (2006), "The Additive Antinociceptive Interaction Between WIN 55,212-2, a Cannabinoid Agonist, and Ketorolac," *Anaesth. Anal.*, 102 (2), pp.443-447
- Ulugol, A., Karadag, H.C., Ipci, Y., Tamer, M and Dokmeci, I., (2004), "The effect of WIN 55,212-2, a cannabinoid agonist, on tactile allodynia in diabetic rats" *Neurosci. Lett.*, 371 (2-3), pp.167-170
- Unger, J.W., Klitzsch T., Pera, S., and Reiter, R., (1998), "Nerve Growth Factor (NGF) and Diabetic Neuropathy in the Rat: Morphological Investigations of the Sural Nerve, Dorsal Root Ganglion, and Spinal Cord," *Exp. Neurol.*, 153 (1), pp.23-34
- Ushio-Fukai, M., (2006), "Localizing NADPH Oxidase–Derived ROS. *Sci. STKE*, 349; pp.re8
- Vanderah, T.W., Gardell, L.R., Burgess, S.E., Ibrahim, M., Dogrul, A., Zhong, C.M., Zhang, E.T., Malan, Jr. T.P., Ossipov, M.H., Lai, J., and Porreca, F., (2000), "Dynorphin Promotes Abnormal Pain and Spinal Opioid Antinociceptive Tolerance," *J. Neurosci.*, 20(18):7074-7079.
- Vanderah, T.W., Ossipov, M.H., Lai, J., Malan, T.P., Porreca, F., (2001), "Mechanisms of opioid-induced pain and antinociceptive tolerance: descending facilitation and spinal dynorphin," *Pain.*, 92(10), pp.5-9
- Vanegas, H., and Tortorici, V., (2002), "Opioidergic effects of non-opioid analgesics on the central nervous system," *Cell Mol Neurobiol*, 22, pp.655-661
- Vanegas, H., Vazquez, E., and Tortorici, V., (2010), "NSAIDs, Opioids, Cannabinoids and the Control of Pain by the Central Nervous System," *Pharmaceuticals*, 3, pp.1335-1347
- Vareniuk I, Pavlov IA, Obrosova IG. 2008. Inducible nitric oxide synthase gene deficiency counteracts multiple manifestations of peripheral neuropathy in a streptozotocin-induced mouse model of diabetes," *Diabetologia*, 51(11):2126

- Vasquez-Vivar, J., Kalyanaraman, B., Martasek, P., Hogg, N., Masters, and B.S., Karoui, H., (1998), "Superoxide generation by endothelial nitric oxide synthase: the influence of cofactors," *Proc Natl Acad Sci U S A.*, 95, pp. 9220–5
- Vaughan, C.W., and Connor, M., (2003), "In Search of a Role for the Morphine Metabolite Morphine-3-Glucuronide," *Anaesth. Analg.*, 97(2), pp.311-312
- Vazquez, E., Hernandez, N., Escobar, W., Vanegas, H., (2005), "Antinociception induced by intravenous dipyron (metamizol) upon dorsal horn neurons: involvement of endogenous opioids at the periaqueductal gray matter, the nucleus raphe magnus, and the spinal cord in rats," *Brain Res.*, 1048, pp.211–217
- Veiga, S., Leonelli, E., Beelke, M., Garcia-Segura, L.M., Melcangi, R.C., (2006), "Neuroactive steroids prevent peripheral myelin alterations induced by diabetes," *Neurosci. Lett.*, 402, pp.150-153
- Verhaar, M.C., Westerweel P.E., van Zonneveld A.J., Rabelink T.J., (2004), "Free radical production by dysfunctional eNOS," *Heart.*, 90, pp.494–495
- Veves, A., King, G.L., (2001), "Can VEGF reverse diabetic neuropathy in human subjects?," *J Clin Invest*, 107, pp.1215–1218.
- Viganò, D., Rubino, T., Vaccani, A., Bianchessi, S., Marmorato, P., Castiglioni, C., Parolaro, D., (2005), "Molecular mechanisms involved in the asymmetric interaction between cannabinoid and opioid systems," *Psychopharmacol.*, 182(4), pp.527-536
- Vincent, A.M., Edwards, J .L., McLean,L.L., Hong,H., Cerri,F., Lopez,I., Quattrini,A., Feldman,E.L., (2010), "Mitochondrial biogenesis and fission in axons in cell culture and animal models of diabetic neuropathy," *Acta Neuropathol.*, 120(4), pp.477-89
- Vincent, A .M., Perrone, L., Sullivan, K. A., Backus, C., Sastry, A. M., Lastoskie, C., and Feldman, E., L.2007), "Receptor for Advanced Glycation End Products Activation Injures Primary Sensory Neurons via Oxidative Stress" *Endocrinol*, 148(2), pp.548–558
- Vinik, A. I., (1999), "Treatment of diabetic polyneuropathy (DPN) with recombinant human nerve growth factor (rhNGF)," *Diabetes.*, 48(1), pp.A54–A55



- Vinik A.I., Tuchman, M., Safirstein, B., Corder, C., Kirby, L., Wilks, K., Quessy, S., Blum, D., Grainger, J., White, J., Silver, M., (2007), "Lamotrigine for treatment of pain associated with diabetic neuropathy: results of two randomized, double-blind, placebo-controlled studies," *Pain.*, 128(1-2), pp.169-79
- Virak, M.S., and Williams, J.T., (2008), "Agonist-Specific Regulation of {micro} Opioid Receptor Desensitization and Recovery from Desensitization," *Mol. Pharmacol.*, 73(4), pp.1301-1308
- Vlassara, H., and Striker, G. E., (2010), "The Role of Advanced Glycation End products in the Etiology of Insulin Resistance and Diabetes" *US Endocrinology*, 6, pp.14–9
- Vosler, P.S., Sun, D., Wang, S., Gao, S., Kintner, D.B., Signore, A.P., Cao, G., and Chen, J., (2009), "Calcium dysregulation induces apoptosis-inducing factor release: cross-talk between PARP-1- and calpain-signaling pathways," *Exp Neurol.*, 218(2), pp.213-20
- Wahren, J., Ekberg, K., and Jörnvall, K.,(2007), "C-peptide and Neuropathy in Type 1 Diabetes," *Immun., Endoc. & Metab. Agents in Med. Chem.*, 7, pp. 69-77
- Walker, J.M., Hohmann, A.G., (2005), "Cannabinoid mechanisms of pain suppression. *Handb. Exp. Pharmacol.* ,pp.509-554
- Wall, P.D., (1978), "The gate control theory of pain mechanisms. A re-examination and re-statement," *Brain*, 101(1), pp.1–18
- Wallace, M.J., Newton, P.M., McMahon, T., Connolly, J., Huibers, A., Whistler, J., Messing, R.O (2009), "PKCepsilon regulates behavioral sensitivity, binding and tolerance to the CB1 receptor agonist WIN55, 212-2," *Neuropsychopharmacol.*, 34(7):1733-42
- Wang, H.Y., Friedman, E., Olmstead, M.C., & Burns, L.H., (2005), "Ultra-low-dose naloxone suppresses opioid tolerance, dependence and associated changes in mu opioid receptor-G protein coupling and G-beta-gamma signaling." *Neuroscience*, 135, 247-261

- Wang, X.L., Zhang, H.M., Chen, S.R., and Pan, H.L., (2007), "Altered synaptic input and GABA<sub>B</sub> receptor function in spinal superficial dorsal horn neurons in rats with diabetic neuropathy," *J Physiol.*, 579(Pt 3), pp.849–861
- Wang, X. T., Martindale, J. L., Liu, Y. S., and Holbrook, N. J., (1998), "The cellular response to oxidative stress: influences of mitogen-activated protein kinase signalling pathways on cell survival," *Biochem. J.* 333, pp.291–300
- Wang, Y., Hao, L., Gill, R.G., and Lafferty, K.J., (1987), "Autoimmune diabetes in NOD mouse is L3T4 T-lymphocyte dependent," *Diabetes*, 36, pp. 535-538
- Wang, Z., Gardell, L.R., Ossipov, M.H., Vanderah, T.W., Brennan, M.B., Hochgeschwender, U., Hruby, V.J., Malan Jr, T.P., Lai, J., and Porreca, F., (2001c), "Pronociceptive Actions of Dynorphin Maintain Chronic Neuropathic Pain," *The Journal of Neuroscience*, 21(5): 1779-178
- Wang, Z., Ma, W., Chabot, J.G., (2009), "Quirion, R. Cell-type specific activation of p38 and ERK mediates calcitonin gene-related peptide involvement in tolerance to morphine-induced analgesia," *FASEB J.*, 23, pp.2576–2586
- Watkins, L.R., Maier, S.F., (2003), "Glia: a novel drug discovery target for clinical pain.," *Nat Rev Drug Discov.*, 2, pp.973-985
- Watkins, L.R., Hutchinson, M.R., Johnston, I.N., Maier, S.F., (2005), "Glia: novel counter-regulators of opioids analgesia. *Trends Neurosci.*, 28, pp.661–669
- Wautier, M.P., Chappey, O., Corda, S., et al, (2001), "Activation of NADPH oxidase by AGE links oxidant stress to altered gene expression via RAGE" *Am J Physiol Endocrinol Metab*, 280, pp.685-694
- Wegner, M., Winiarska, H., Bobkiewicz-Kozłowska, T., and Dworacka, M., (2008), "IL-12 serum levels in patients with type 2 diabetes treated with sulphonylureas," *Cytokine*, 42(3), pp. 312-316
- Weiss RB., (1982), "Streptozocin: a review of its pharmacology, efficacy, and toxicity," *Cancer Treat Rep.*, 66(3):427-38
- Welch, S.P., (2002), "Blockade of cannabinoid-induced antinociception by naloxonebenzoylhydrazone (NalBZH)," *Pharmacol.Biochemist. Behavior*, 49(4), pp. 929-934
- Welch, S.P., (2009), "Interaction of the cannabinoid and opioid systems in the modulation of nociception, 21(2), pp.143-151
- Welch, S.P., (1997), "Characterization of anandamide-induced tolerance: comparison to

- $\Delta^9$ -THC-induced interactions with dynorphinergic systems,” *Drug and Alcohol Dependence*, 45(1-2), pp.39-45
- Welch, S.P., Eads, M., (1999), “Synergistic interactions of endogenous opioids and cannabinoid systems,” *Brain Res.*,848(1-2), pp.183-190
- Wellmer, A., Misra, V.P., Sharief, M.K., Kopelman, P.G., and Anand, P., (2001), “A double-blind placebo-controlled clinical trial of recombinant human brain-derived neurotrophic factor (rhBDNF) in diabetic polyneuropathy,” *J Peripher Nerv Syst.*, 6, pp. 204-210
- Welsh, N., Cnop, M., Kharroubi, I., Bugliani, M., Lupi, R., Marchetti, P., and Eizirik, D.L., (2005), “Is there a role for locally produced interleukin-1 in the deleterious effects of high glucose or the type 2 diabetes milieu to human pancreatic islets?,” *Diabetes*, 54(11), pp. 3238-44
- Whitehouse, M.W., (2004), “Anti-TNF- $\alpha$  therapy for chronic inflammation reconsidering pentoxifylline as an alternative to therapeutic protein drugs,” *Inflammopharmacol.*, 12(3), pp. 223–227
- Whiteside, G.T., Lee, G.P., Valenzano, K.J., (2007), “The role of the cannabinoids CB2 receptor in pain transmission and therapeutic potential of small molecule CB2 receptor agonists,” *Curr Med Chem.*, 14, pp.917–936
- Wiesenfeld-Hallin, Z., Alster, P., Grass, S., Hoffmann, O., de Araujo Lucas, G., Plesan, A., Xu, X.-J., (1999), “Opioid sensitivity in antinociception: role of anti-opioid systems with emphasis on cholecystokinin and NMDA receptors,” *Prog. Pain Res. Manage.* 1999, 14, 237–252
- Wilson, A., Moher, L., Morgan, M., (2008), “Repeated cannabinoid injections into the rat periaqueductal gray enhance subsequent morphine antinociception” *Neuropharm*, 55(7), pp. 1219-1225
- Williams, I.J., Edwards, S., Rubo, A., Haller, V.L., Stevens, D.L., and Welch, S.P., (2006), “Time course of the enhancement and restoration of the analgesic efficacy of codeine and morphine by tetrahydrocannabinol,” *Eur.J.Pharmacol.*, 539(1-2),pp. 57-63.
- Winter, L., Nadeson, R., Tucker, A.P., and Goodchild, C.S., (2003), “Antinociceptive Properties of Neurosteroids: A Comparison of Alphadolone and Alphaxalone in Potentiation of Opioid Antinociception,” *Anesth Analg.*, 97, pp.798 –805

- Wodarski, R., Clark, A.K., Grist, J., (2009), "Marchand F, Malcangio M: Gabapentin reverses microglial activation in the spinal cord of streptozotocin-induced diabetic rats," *Eur J Pain.*, 13, pp.807-811
- Wong, M.C., (2008), "TCAs, anticonvulsants, opioids, and capsaicin cream are effective for diabetic neuropathy," *Evid Based Med.*, pp.13:21
- Wong, C. S., Hsu, M. M., Chou, R., Chou, Y.Y., and Tang, C.S., (2000), "Intrathecal cyclooxygenase inhibitor administration attenuate morphine tolerance in rats" *British J Anesth*, 85(5), pp.747-751
- Woolf, C.J., (2010), "What is this thing called pain?" *J.Clin Invest.*, 120(11), pp.3742–3744
- Woolf, C.J., Shortland, P., Coggeshall, R.E., (1992), "Peripheral nerve injury triggers central sprouting of myelinated afferents," *Nature*, 355, pp.75-78
- Wu, D.F., Yang, L.Q., Goschke, A., Stumm, R., Brandenburg, L.O., Liang, Y.J., Höllt, V., Koch, T., (2008),"Role of receptor internalization in the agonist induced desensitization of cannabinoid type 1 receptors," *J Neurochem.* 104(4):1132-43
- Wuarin, L., Namdev, J., Burns, J.G., Fei, Z., Ishii, D.N., (1996), "Brain insulin-like growth factor-II mRNA content is reduced in insulin-dependent and non-insulin-dependent diabetes mellitus," *J. Neurochem.*, 67, pp.1–10
- Xie, Q.W., Kashiwabara, Y., Nathan, C., (1994), "Role of transcription factor NF-kappaB/Rel in induction of nitric oxide synthase," *J Biol Chem.*, 269, pp.4705–4708
- Xu, Y., Wang, S., Feng, L., Zhu, Q., Xiang, P., He, B., (2010), "Blockade of PKC-beta protects HUVEC from advanced glycation end products induced inflammation" *Int. Immunopharmacol*, 10(12), pp.1552-1559
- Yajima, Y., Narita, M., Narita, M., Matsumoto, N., Suzuki, T., (2002), "Involvement of a spinal brain-derived neurotrophic factor/full-length TrkB pathway in the development of nerve injury-induced thermal hyperalgesia in mice," *Brain Res.*, 958, pp.338-346
- Yamada, N., Kaneko, K., Saito, K., and Tatsuno, I., (2002), "Anticonvulsant Hypersensitivity Syndrome With Marked Eosinophilia in Treatment of Diabetic Neuropathy," *Diabetes Care.*, 25(6), pp.1099-1100

- Yamagishi, S., (2009), "Advanced glycation end products and receptor-oxidative stress system in diabetic vascular complications, *Ther Apher Dial.*, 13(6), pp.534-9
- Yamakura F, Taka H, Fujimura T, and Murayama K (1998) Inactivation of human manganese-superoxide dismutase by peroxynitrite is caused by exclusive nitration of tyrosine 34 to 3-nitrotyrosine. *J Biol Chem* 273:14085–14089
- Yan, S.F., Ramasamy, R., Schmidt, A.M., (2010), "The RAGE axis: a fundamental mechanism signaling danger to the vulnerable vasculature" *Circ Res.*, 106(5), pp.842-53
- Ye, Q., Chen,B., Tong, Z., Nakamura, S., Sarria, R., Costabel, U., Guzman, J.,(2006), "Thalidomide reduces IL-18, IL-8 and TNF-alpha release from alveolar macrophages in interstitial lung disease," *Eur Respir J.*, 28(4), pp. 824-31
- Yeshao, W., Jiali, G., Shu-Lian, L., Marpadga, A.R., Rama, N., and Jerry, L.N., (2006), "Elevated Glucose and Diabetes Promote Interleukin-12 Cytokine Gene Expression in Mouse Macrophages," *Endocrinology*, 147(5), pp. 2518-2525
- Yoon, J.W., H.S. Jun., and P.S. Santamaria., (1998), "Cellular and molecular mechanisms for the initiation and progression of b-cell destruction resulting from the collaboration between macrophages and T cells," *Autoimmunity.*, 127, pp. 109–122
- Yoon, J.W., and Jun, H.S., (2003), "Pathogenic mechanism of Type-1 diabetes, "BRIC.BioWave, 5(8), pp.1-18
- Yu, S.W., Wang, H., Poitras, M.F., Coombs, C., Bowers, W.J., Federoff, H.J., Poirier, G.G., Dawson, T.M., and Dawson, V.L., (2002), "Mediation of Poly(ADP-Ribose) Polymerase-1-Dependent Cell Death by Apoptosis-Inducing Factor,"*Science.*, pp.259-263
- Yu-Ching, Lu., Chen, C.W., Wang S.Y., and Wu, F.S., (2009), "17β-Estradiol Mediates the Sex Difference in Capsaicin-Induced Nociception in Rats," *JPET.*, 331(3), pp.1104-1110
- Zalish, M., and Lavie, V., (2003), "Dexanabinol (HU-211) has a beneficial effect on axonal sprouting and survival after rat optic nerve crush injury,"*Vision Res.*, 43(3), pp.237-242

- Zdenko, H., and Zhao-Qi, W., (2001), "Function of poly (ADP-ribose) polymerase (PARP) in DNA repair, genomic integrity and cell death," *Mut.Res/Fund.Mech.Mut.* 477(1-2), pp. 97-110
- Zelcer, S., Kolesnikov, Y., Kovalyshyn, I., Pasternak, D.A., and Pasternak, G.W., (2005), "Selective potentiation of opioid analgesia by nonsteroidal anti inflammatory drugs," *Brain Research.*, 1040(1-2)., pp.151-156
- Zelenka, M., Schafers, M., and Sommer, C., (2005), "Intraneural injection of interleukin-1beta and tumor necrosis factor-alpha into rat sciatic nerve at physiological doses induces signs of neuropathic pain," *Pain.*, 116, pp. 257-263
- Zhang, F., Shuang song, Hong., Vicki, Stone., and Paula, J. W., Smith, (2007), "Expression of Cannabinoid CB-1 Receptors in Models of Diabetic Neuropathy" *JPET*, 323 (2), pp. 508-515
- Zhang, J., Hoffert, C., Vu, H.K., Groblewski, T., Ahmad, S., O'Donnell, D., (2003) Induction of CB2 receptor expression in the rat spinal cord of neuropathic but not inflammatory chronic pain models, "Eur J Neurosci 17, pp.2750 –2754.
- Zhang, H., Xin, W., and Dougherty, P.M., (2009), "Synaptically evoked glutamate transporter currents in Spinal Dorsal Horn Astrocytes," *Mol.Pain.*, pp.5-36
- Zhao, M., Cribbs, D.H., Anderson, A.J., Cummings, B.J., Su, J.H., Wasserman, A.J., and Cotman, C.W., (2003), "The induction of the TNFalpha death domain signaling pathway in Alzheimer's disease brain," *Neurochem Res.*, 28(2), pp. 307-18
- Zheng, L., Kern, T.S., (2009), "Role of nitric oxide, superoxide, peroxynitrite and PARP in diabetic retinopathy" *Front Biosci.*, 14, pp.3974-87
- Zhou, D., Chen, M.L., Zhang, Y.Q., and Zhao, Z.Q., (2010), "Involvement of Spinal Microglial P2X7 Receptor in Generation of Tolerance to Morphine Analgesia in Rats. *J Neu.Sci.*, 30 (23), pp.8042-8047
- Zhu, X., Eisenach, J.C., (2003), "Cyclooxygenase-1 in the Spinal Cord Is Altered after Peripheral Nerve Injury," *Anesthesiology.*, 99(5), pp.1175-9
- Zhuang, H.X., Synder, C.K., Pu, S.F., Ishii, D.N., (1996), "Insulin-like growth factors reverse or arrest diabetic neuropathy: Effects on hyperalgesia and impaired nerve regeneration in rats," *Exp Neurol*, 140, pp.198–205

- Zhuang, Z.Y., Wen, Y.R., Zhang, D.R., Borsello, T., Bonny, C., Strichartz, G.R., Decosterd, I., Ji, R.R., (2006), "A peptide c-Jun N-terminal kinase (JNK) inhibitor blocks mechanical allodynia after spinal nerve ligation: respective roles of JNK activation in primary sensory neurons and spinal astrocytes for neuropathic pain development and maintenance," *J Neurosci.*, 26, pp.3551–60
- Ziegler, D., (2010), "Can diabetic polyneuropathy be successfully treated?," *MMW Fortschr Med.*, 152(9), pp. 64-8
- Ziegler, D., (2008), "Painful diabetic neuropathy: treatment and future aspects," *Diabetes Metab Res Rev.*, 24(1), pp. S52-7
- Ziegler, D., Rathmann, W., Dickhaus, T., Meisinger, C., Mielck, A., (2009) "KORA Study Group Neuropathic pain in diabetes, pre-diabetes and normal glucose tolerance. The MONICA/KORA Augsburg Surveys S2 and S3" *Pain Med.*, 10, pp.393– 400
- Zimmerman, M., (1983), "Ethical guidelines for investigations of experimental pain in conscious animals," *Pain*, 16, pp. 109–110
- Zin, C.S., Nissen, L.M., O'Callaghan, J.P., Duffull, S.B., Smith, M.T., Moore, B.J., (2010), "A randomized, controlled trial of oxycodone versus placebo in patients with postherpetic neuralgia and painful diabetic neuropathy treated with pregabalin," *J Pain.*, 11(5):462-71
- Zochodne, D.W., and Ho, L.T., (1992), "The influence of indomethacin and guanethidine on experimental streptozotocin diabetic neuropathy" *Can J Neurol Sci*, 19(4), pp.433-441
- Zochodne, D.W., Ho, L.T., (1994), "The influence of sulindac on experimental streptozotocin-induced diabetic neuropathy," *Can J Neurol Sci.*, 21(3), pp.194-202
- Zochodne, D.W., Said, G., (1998), "Recombinant human nerve growth factor and diabetic polyneuropathy," *Neurology*, 51(3), pp.662-663