

個人資料 (Basic Information) :

姓名(Name) : 翁炳孫 Being-Sun Wung
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主要學歷 (Education)

畢業學校科系別或主修學門	學位	起迄年月
國防醫學院生命科學研究所 The Graduate Institute of Life Sciences, National Defense Medical Center, Taiwan, R.O.C.	PhD	1993/ 9 至 1998/2

現職 (Current Position)

服務學校	服務部門	職稱	起迄年月
嘉義大學 National Chiayi University	微生物免疫與生物藥學系 Department of Microbiology, Immunology and Biopharmaceuticals	教授 Professor	2011/ 8-present

經歷 (Career Positions)

服務單位	服務部門	職稱	起迄年月
嘉義大學 National Chiayi University	微生物免疫與生物藥學系 Department of Microbiology, Immunology and Biopharmaceuticals	教授兼系主任 Professor and chairman	2011/ 8-2014/7
嘉義大學 National Chiayi University	微生物免疫學系 Department of Microbiology and Immunology	副教授 Associate Professor	2006/ 8-2011/7
嘉義大學 National Chiayi University	應用微生物學系 Department of Applied Microbiology,	助理教授 Assistant Professor	2001/ 8-2006/7
中央研究院 Academia Sinica	生物醫學所 Institute of Biomedical Science	博士後研究員 Postdoctoral Research Fellow	1998/ 2-2001/7

研究領域 (Areas of Interest)

Inflammation, Atherosclerosis

(發炎反應與動脈硬化)

Response of cells to phytochemicals in cardiovascular system

(植化物在心血管的保護作用)

Anti-inflammatory and anti-oxidative effects

(抗發炎與抗氧化作用機轉)

Protein modification and intracellular redox state

(細胞氧化還原態與蛋白質修飾)

Cytoprotective mechanisms in retinal pigment epithelium cells

(視網膜色素上皮細胞的保護機轉)

研究概述 (Research overview)

研究的方向主要是在探討經由細胞氧化還原態的變化，提高細胞的保護功能。如何增加細胞保護酵素的表現，以提昇血管的抗氧化抗發炎作用。其中 2006 年發表關於綠茶酚造成內皮細胞 HO-1 表現，而達到細胞保護機轉。此研究成果至今已被兩百多篇論文引用，是在該領域相當重要的著作。我們也發現具有親電性化學結構的化合物有提高細胞保護酵素增加的功能。其中親電性化合物如 Chalcone, acrolein, 肉桂醛等可改變細胞氧化還原態，造成細胞溫和的氧化壓力。此溫和的氧化壓力可活化 Nrf-2 轉錄因子誘發產生多種抗氧化酵素及 Phase II 去毒性酵素。後續也發現此溫和的氧化壓力會調控細胞內麩胱甘肽量改變，進而會造成蛋白質麩胱甘肽化修飾。此機轉可使蛋白質可逆式的失去活性。因此更深入研究發現發炎的訊號傳遞路徑如 NF- κ B 及 STAT3 可被麩胱甘肽化後修飾，進而造成暫時性的功能喪失達到抗發炎的作用。證實如果造成細胞溫和的氧化壓力則會產生蛋白質麩胱甘肽化。如肉桂醛、薑黃素等親電性植化物就可透過此機轉達到抗發炎作用，以預防疾病發生。在細胞自身的保護機轉上亦有利利用此作用方式保護自身系統。我們的研究發現細胞自身的前列素 15d-PGJ2 及由 HO-1 產生的 CO 亦會改變細胞內氧化還原平衡，造成部份蛋白質巰基修飾，並透過此機轉達到細胞保護的功能。我們也發現 CO 釋放劑可對藍光造成的視網膜上皮細胞損傷具有保護效果，其作用可經由保護粒線體而抑制藍光造成的細胞凋亡並能抑制血管增生降低濕式黃斑部病變風險。此研究提供 CO 釋放劑用於視力保健的新方向。近來我們也探討如蘿蔔硫素可增加視網膜色素上皮細胞，發現此對抗藍光的保護機轉除 Nrf2 路徑的抗氧化機轉外，可透過 SIRT1/PGC-1 α 造成的粒線體生合成與細胞自噬調節的清理作用達到對抗藍光造成的粒線體凋亡。此對抗藍光的保護作用很可以做為未來視力保健醫藥上重要標的。

專長 (Specialty)

細胞生理	抗氧化生物醫學	細胞訊號傳遞	分子藥理
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Cell Physiology	Antioxidant Biomedicine	Cell signal transduction	Molecular Pharmacology
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學術服務 (Research services):

Editorial Board (期刊編輯委員):

1. World Journal of Gastrointestinal Pharmacology and Therapeutics
2. ISRN Vascular Medicine
3. Journal of Geriatric Cardiology (SCI Journal; IF:1.395 ; ranking 85/124)

Journal Reviewer (期刊審查委員):

- Reviewer for Pharmacological Research (2006/1)
- Reviewer for Acta Biochimica et Biophysica Sinica (2007/3)
- Reviewer for Molecular Nutrition and Food Research (2007/5)
- Reviewer for Pharmacological Research (2007/12)
- Reviewer for Antioxidants & Redox Signaling (2008/2), (2008/5)
- Reviewer for Antioxidants & Redox Signaling (2008/12)
- Reviewer for Inflammation Research (2008/9), (2009/2)
- Reviewer for Neuroscience Letters (2008/11)
- Reviewer for Planta Medica (2008/11)
- Reviewer for The Journal of Immunology (2009/1)
- Reviewer for Inflammation Research (2009/2)
- Reviewer for International Journal of Developmental Neuroscience (2009/6)
- Reviewer for Environmental Toxicology (2009/10)
- Reviewer for Biochemistry and Cell Biology (2010/09)
- Reviewer for Molecular Nutrition and Food Research (2011/2)
- Reviewer for Toxicology and Applied Pharmacology(2011/6), (2011/9)
- Reviewer for Molecular Nutrition and Food Research (2011/12)
- Reviewer for Complementary and Alternative Medicine (2012/3)
- Reviewer for Journal of Ethnopharmacology (2012/10)
- Reviewer for Canadian Journal of Physiology and Pharmacology (2013/2)
- Reviewer for Mediators of Inflammation (2014/3)
- Reviewer for PLOS ONE (2015/3)
- Reviewer for International Journal of Molecular Sciences (2015/4)
- Reviewer for Canadian Journal of Physiology and Pharmacology (2015/4/10)
- Reviewer for BMC Complementary and Alternative Medicine (2015/7)
- Reviewer for Journal of Geriatric Cardiology (2015/8)
- Reviewer for BMC Cancer (2015/9)
- Reviewer for Nitrients (2016/4)
- Reviewer for IOVS (2016/8)
- Reviewer for PHYMED (2018/2)

- Reviewer for Biochemistry and Biophysics Reports (2019/3, 4)
- Reviewer for BMC Molecular and Cell Biology (2019/11)
- Reviewer for MDPI Molecules

Honors(榮譽獎項):

指導柯雯馨大專生專題計畫，獲九十七年度國科會大專生專題計畫研究創作獎

榮獲 99 年度國科會補助大專校院獎勵特殊優秀人才

榮獲 100 年度國科會補助大專校院獎勵特殊優秀人才

榮獲 101 年度國科會補助大專校院獎勵特殊優秀人才

榮獲 104 年度國科會補助大專校院獎勵特殊優秀人才

榮獲 106 年度科技部補助大專校院獎勵特殊優秀人才

文獻著作(Publications): *為責任作者

Full Papers

1. Wang DL*, Tang CC, **Wung BS**, Chen HH and Wang JJ: Cyclical strain increases endothelin-1 secretion and gene expression in human endothelial cells. Biochem. Biophys. Res. Commun. 195:1050, 1993. (SCI)
2. Wang DL*, **Wung BS**, Peng YC and Wang JJ: Mechanical strain increase endothelin-1 gene expression via protein kinase C pathway in human endothelial cells. J. Cell. Physiol. 163:400-406, 1995. (SCI)
3. Wang DL*, **Wung BS**, Shyy YJ, Lin CF, Chao YJ, Usami S and Chien S: Mechanical strain induces monocyte chemotactic protein-1 gene expression in endothelial cells: effects of mechanical strain on monocyte adhesion to endothelial cells. Circ. Res. 77:294-302, 1995. (SCI) (IF: 17.367)
4. **Wung BS**, Cheng JJ, Chao YJ, Lin J and Wang DL*: Cyclical strain increases monocyte chemotactic protein-1 secretion in human endothelial cells. Am. J. Physiol. 39: H1462-H1468, 1996.SCI
5. Cheng JJ, **Wung BS**, Chao YJ and Wang DL*: Cyclic strain enhances adhesion of monocytes to endothelial cells by increasing intercellular adhesion molecule-1 expression. Hypertension 28:386-391, 1996.SCI
6. Cheng JJ, Chao YJ, **Wung BS** and Wang DL*: Cyclic strain-induced plasminogen activator inhibitor-1 (PAI-1) release from endothelial cells involves reactive oxygen species. Biochem. Biophys. Res. Commun. 225:100-105, 1996. SCI
7. **Wung BS**, Cheng JJ, Shyy YJ and Wang DL*: Cyclic strain-induced monocyte chemotactic protein-1 gene expression involves reactive oxygen species activation of AP-1. Circ. Res. 81:1-7, 1997.SCI (IF: 17.367)
8. Chiu JJ, **Wung BS**, Shyy YJ and Wang DL*: Reactive oxygen species are involved in the shear stress-induced intercellular adhesion molecule-1 expression in endothelial cells. Arterioscler. Thromb. Vasc. Biol. 17:3570-3577,1997.SCI

9. Cheng JJ, **Wung BS**, Chao YJ and Wang DL*: Cyclic strain-induced reactive oxygen species involved in ICAM-1 gene induction in endothelial cells. *Hypertension* 31:125-130, 1998. SCI
10. Hsieh HJ, Cheng CC, Wu ST, Chiu JJ, **Wung BS** and Wang DL*: Increased reactive oxygen species (ROS) in endothelial cells by shear flow and involvement of ROS in shear-induced c-fos expression. *J. Cell. Physiol.* 175:156-162, 1998. SCI
11. **Wung BS**, Cheng JJ, Shyy YJ, Chao YJ and Wang DL*: Modulation of Ras/Raf/extracellular signal-regulated kinase pathway by reactive oxygen species is involved in cyclic strain-induced early growth response-1 gene expression in endothelial cells. *Circ. Res.* 84:804-812, 1999. SCI, (IF: 17.367).
12. Chiu JJ, **Wung BS**, Hsieh HJ, Lo LW and Wang DL*: Nitric oxide modulates shear stress-induced Egr-1 expression via Ras/Raf-1/ERK pathway in endothelial cells. *Circ. Res.* 85: 238-246, 1999. SCI, (IF: 17.367).
13. Cheng JJ, **Wung BS**, and Wang DL*: Cyclic strain induces redox changes in endothelial cells. *Chinese J. Physiol.* 42(2):103-111, 1999
14. Lo LW, Cheng JJ, Chiu JJ, **Wung BS**, and Wang DL*: Hypoxia-induced early growthresponse-1 expression in endothelial cell involves the activation of PKC and Ras/Raf-1/ERK pathway. *J. Cell. Physiol.* 188:304-312, 2001. SCI
15. Cheng JJ, **Wung BS**, Chao YJ and Wang DL*: Sequential activation of protein kinase C (PKC)-alpha and PKC-epsilon contributes to sustained Raf/ERK1/2 activation in endothelial cells under mechanical strain. *J. Biol. Chem.* 276:31368-31375, 2001. SCI
16. Chang YL, Shen JJ, **Wung BS**, Cheng JJ and Wang DL*: Chinese herbal Remedy Wogonin inhibits monocytechemotactic prtein-1 gene expression in human endothelial cells. *Mol. Pharmacol.*60:507-513, 2001. SCI
17. **Wung BS**, Cheng JJ, Shyue SK and Wang DL*: Nitric oxide modulates monocyte chemotactic protein-1 expression in endothelial cells under cyclic strain. *Arterioscler. Thromb. Vasc. Biol.* 21:1941-1947, 2001. SCI
18. **Wung BS** C. W. Ni and Wang DL*: ICAM-1 Induction by TNF- α and IL-6 is mediated by distinct pathways via Rac in endothelial cells. *J. Biomed. Sci.* 12:91-101, 2005. SCI. (NSC 92-2614-B-415-001)
19. **Wung BS***, Hsu MC., Wu CC. and CW Hsieh Resveratrol suppresses IL-6-induced ICAM-1 gene expression in endothelial cells: effects on the inhibition of STAT3 phosphorylation. *life Sci.* 78:389-397, 2005, SCI. (NSC 92-2614-B-415-001)
20. **Wung BS***, Hsu MC, Wu CC and Hsieh CW Piceatannol upregulates endothelial heme oxygenase-1 expression via novel protein kinase C and tyrosine kinase pathways. *Pharmacol. Res.* 53(2):113-122 2006. SCI. (NSC 91-2320-B-415 -001)
21. Wu CC, Hsu MC, Hsieh CW, Lin JB, Lai PH and **Wung BS*** Upregulation of heme

- oxygenase-1 by Epigallocatechin-3-gallate via the phosphatidylinositol 3-kinase/Akt and ERK pathways. *life Sci.* 78(25): 2889-2897, 2006. SCI. (NSC 93-2321-B-415-001)
22. **Wung BS***, Wu CC, Hsu MC, and Hsieh CW 15-Deoxy-12,14-prostaglandin J2 suppresses IL-6-induced STAT3 phosphorylation via electrophilic reactivity in endothelial cells. *life Sci.* 78(26): 3035-3042, 2006. SCI. (NSC 92-2614-B-415-001)
23. Wu CC, Hsieh CW, Lai PH, Lin JB, Liu YC and **Wung BS*** Upregulation of endothelial heme-oxygenase-1 expression through the activation of the JNK pathway by sublethal concentrations of acrolein. *Toxicol. Appl. Pharmacol.* 214(3): 244-252, 2006. SCI. (NSC 94-2321-B-415-001)
24. Lia PH, Sun YW, Hsieh CW, **Wung BS*** Upregulation of endothelial heme oxygenase-1 expression by non-toxicity concentrations of cinnamaldehyde. *Food Sci. Agric. Chem.* 44(5): 292-299, 2006. (NSC 94-2321-B-415-001)
25. Liu YC, Hsieh CW, Wu CC and **Wung BS*** Chalcone inhibits the activation of NF- κ B and STAT3 in endothelial cells via endogenous electrophile. *life Sci.* 80: 1420-1430, 2007, SCI. (NSC 95-2320-B-415 -001)
26. Liu YC, Hsieh CW, Weng YC, Chuang SH, Hsieh CY and **Wung BS*** Sulforaphane inhibition of monocyte adhesion via the suppression of ICAM-1 and NF- κ B is dependent upon glutathione depletion in endothelial cells *Vasc. Pharmacol.* 48: 54-61, 2008, SCI. (NSC-95-2320-B-415-003)
27. Liao BC, Hsieh CW, Liu YC, Tzeng TT, Sun YW and **Wung BS*** Cinnamaldehyde inhibits the tumor necrosis factor- α -induced expression of cell adhesion molecules in endothelial cells by suppressing NF- κ B activation: effects upon I κ B and Nrf2. *Toxicol. Appl. Pharmacol.* 2008, 229: 161-171, SCI. (NSC 95-2320-B-415 -001)
28. Lu KT, Ko MC, Chen BY, Huang JC, Hsieh CW, Lee MC, Chiou RY, **Wung BS**, Peng CH, Yang YL*. Neuroprotective effects of resveratrol on MPTP-induced neuron loss mediated by free radical scavenging. *J Agric Food Chem.* 2008, 56:6910-3. SCI.
29. Chen LG, Liu YC, Hsieh CW, Liao BC and **Wung BS*** Tannin 1-alpha-O-galloylpunicalagin induces the calcium-dependent activation of endothelial nitric-oxide synthase via the phosphatidylinositol 3-kinase/Akt pathway in endothelial cells. *Mol. Nutr. Food Res.* 2008 52:1162-71. SCI. (NSC 95-2320-B-415-003)
30. Wei YS, **Wung BS**, Lin YC, Hsieh CW* Isolating a cytoprotective compound from *Ganoderma tsugae*: effects on induction of Nrf-2-related genes in endothelial cells. *Biosci Biotechnol Biochem.* 2009 73:1757-63. (co-first authors) SCI.
31. Lian KC, Chuang JJ, Hsieh CW, **Wung BS***, Huang GD, Jian TY, and Sun YW Dual

- mechanisms of NF- κ B inhibition in carnosol-treated endothelial cells. *Toxicol. Appl. Pharmacol.* 2010, 245; 21-35 SCI. (NSC 97-2320-B-415-005-MY3)
32. Liao BC, Hsieh CW, Lin YC and **Wung BS*** The glutaredoxin/glutathione system modulates NF- κ B activity by glutathionylation of p65 in cinnamaldehyde-treated endothelial cells. *Toxicol. Sci.* 2010 116(1):151-63. SCI. (NSC 97-2320-B-415-005-MY3)
33. Chen CC, Ke WH, Ceng LH, Hsieh CW and **Wung BS*** Calcium-and phosphatidylinositol 3-kinase/Akt-dependent activation of endothelial nitric oxide synthase by apigenin. *Life Sci.* 2010, 87:743-749. SCI.
34. Chen CC, Chen HL, Hsieh CW, Yang YL and **Wung BS*** The upregulation of NF-E2-related factor-2-dependent glutathione by carnosol provokes a cytoprotective response and enhances cell survival. *Acta Pharmacologica Sinica* 2011, 32:62-9. SCI.
35. Lin YC, Huang GD, Hsieh CW, and **Wung BS*** The glutathionylation of p65 modulates NF- κ B activity in 15-Deoxy- Δ 12,14 Δ -prostaglandin J2-treated endothelial cells. *Free Radic. Biol. Med.* 2012, 52:1844-1853. SCI. IF: 7.376; 44/298(Q1)
36. Yeh PY, Li CY, Hsieh CW, Yang YC, Yang PM and **Wung BS*** CO-releasing molecules and increased heme oxygenase-1 induce protein S-glutathionylation to modulate NF- κ B activity in endothelial cells. *Free Radic. Biol. Med.* 2014, 70: 1–13. IF: 7.376; 44/298(Q1)
37. Yang Y, Huang YT, CY, Hsieh CW, Yang PM and **Wung BS*** Carbon monoxide induces heme oxygenase-1 to modulate STAT3 activation in endothelial cells via S-glutathionylation. *Plos one* 2014, Jul 29;9(7):e100677. IF: 3.24; 26/73
38. Yang PM, Wu ZZ, Zhang YQ and **Wung BS*** Lycopene inhibits ICAM-1 expression and NF- κ B activation by Nrf2-regulated cell redox state in human retinal pigment epithelial cells. *Life Sci*, 2016, 155:94-101. IF: 5.037; 64/275(Q1)
39. Yang PM, Huang Yu-Ting, Zhang YQ, Hsieh CW, **Wung BS*** Carbon monoxide releasing molecule induces endothelial nitric oxide synthase activation through a calcium and phosphatidylinositol 3-kinase/Akt mechanism. *Vascul Pharmacol* 2016 Dec;87:209-218. IF: 5.773; 43/275(Q1)
40. Liu YF, Hsieh CW, Chang YS, Wung BS. Effect of acetic acid on ethanol production by *Zymomonas mobilis* mutant strains through continuous adaptation. *BMC Biotechnol.* 2017 Aug 1;17(1):63.
41. Yang PM, Chen HZ, Huang YT, Hsieh CW and **Wung BS*** Lycopene inhibits NF- κ B activation and adhesion molecule expression through Nrf2-related heme oxygenase-1 in

- endothelial cells. *Int J Mol Med*. 2017 Jun;39(6):1533-1450. IF: 4.01; 68/140
42. Chen LG, Zhang YQ, Wu ZZ, Hsieh CW, Chu CS and **Wung BS*** Peanut arachidin-1 enhances Nrf2-mediated protective mechanisms against TNF α -induced ICAM-1 expression and NF- κ B activation in endothelial cells. *Int J Mol Med*. 2018 Jan; 41(1):541-547. IF: 4.01; 68/140
43. Yang PM, Cheng KC, Yuan SH, **Wung BS***. Carbon monoxide-releasing molecules protect against blue light exposure and inflammation in retinal pigment epithelial cells. *Int J Mol Med*. 2020 Sep;46(3):1096-1106. IF: 4.01; 68/140
44. Yang PM, Cheng KC, Huang JY, Wang SY, Lin YN, Tseng YT, Hsieh CW and **Wung BS*** Sulforaphane inhibits blue light-induced inflammation and apoptosis by upregulating the SIRT1/PGC-1 α /Nrf2 pathway and autophagy in retinal pigment epithelium cells. *Toxicol. Appl. Pharmacol*. 2021, 421: 110545, SCI. National Science Council of Taiwan (108-2320-B-415-005) IF: 4.219; 29/93

Conference Papers and Invited Lectures (近五年內):

1. **Being-Sun Wung*** and Yu-Ting Huang Carbon Monoxide Donor in Endothelial Cells Mediates NO Synthesis via Intracellular Calcium and PI3/Akt-Dependent Signaling. 12nd International Congress of Cell Biology, July 2016, Prague Czech Republic
2. **Being-Sun Wung*** Protein S-glutathionylation as a phytochemical-induced cytoprotective mechanism in endothelial cells. The 6th International Symposium in Phytochemicals Bioactivities and Diseases Prevention of Phytochemicals and Natural Products for Health 2016, Chiayi, ROC
3. Yu-Qi Zhang , Zhi-Zhen Wu and **Being-Sun Wung** Lycopene inhibits ICAM-1 expression by Nrf2-regulated cell redox state in RPE cells. The 6th International Symposium in Phytochemicals Bioactivities and Diseases Prevention of Phytochemicals and Natural Products for Health 2016, Chiayi, ROC
4. **Being-Sun Wung*** The phytochemical-induced cytoprotective mechanism in endothelial cells. International seminar on Medicinal Plant Biochemistry: Antibacterial and Cytotoxic Activity of Tropical Medicinal Plant Extract. 2017, Bogor, Indonesia
5. An-Chen Ku, Shun Yang, Kai-Chein Su, **Being-Sun Wung*** GYY4137, a hydrogen sulfide donor, inhibits NF- κ B signals by cell redox state in endothelial cells. The 33rd Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, ROC, 2018.
6. Shao-Ho Yuan, Tzu-Chiao Lan, **Being-Sun Wung*** Protective Mechanisms of CO Releasing Molecules on Retinal Pigment Epithelial Cells against Inflammation. The 33rd Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, ROC, 2018.
7. Shi-Yun Wang, Yung-Ni Lin, Yen-Tzu Tseng, Po-Min Yang and **Being-Sun Wung** Sulforaphane inhibits blue light-induced cell injury through autophagy and

SIRT1/Nrf2 pathway in retinal pigment epithelium cells 2020 International Conference on Biotechnology and Healthcare, Chiayi, ROC

8. Being-Sun Wung¹, Shi-Yun Wang, Yung-Ni Lin and Yen-Tzu Tseng Protective mechanism of sulforaphane on blue light-induced retinal cell damage through upregulating SIRT1/PGC-1alpha/Nrf2 pathway and autophagy. 14th Asia Pacific Federation of Pharmacologists, E094 Taipei, Taiwan, ROC, 2021.
9. Yu-Han Wu, Wei-Han Deng, Yi-Zhen Chen and Being-Sun Wung* Kaempferol prevents against blue light-induced oxidative stress and mitochondrial apoptosis through PGC-1 α /Nrf2 pathway and autophagy in retinal pigment epithelial cells. The 36th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, ROC, 2022.

專利 Patents

1. 魏鈺姍、謝佳雯、翁炳孫 內皮細胞保護・閉鎖性動脈硬化予防効果を有するガノデルマ・ツガエの活性物質及びその組成物;日本特許第 5044612 號; 2012/7/20。
2. 魏鈺姍、謝佳雯、翁炳孫 松杉靈芝活性物質，其制備法及其組合物;中國 ZL 2009 I 0203171.3; 2012/10/24-2029/6/3。
3. 魏鈺姍、謝佳雯、翁炳孫 具有內皮細胞保護、預防動脈粥狀硬化之松杉靈芝活性物質、其制備法及含彼組合物;中華民國 發明第 I 457130 號; 2014/10/2-2029/3/26。

研究計畫 (Grant Proposal)

- 發炎性細胞素經活化 Rac1 訊號傳遞導致內皮細胞 ICAM-1 基因表現 Inflammatory cytokines induce ICAM-1 gene expression via activation of Rac1 signaling cascade in endothelial cells. (NSC 90-2320-B-415-002), 2001.10.01 至 2002.07.31 國科會, (669,600 元)
- 抑制 Rho 蛋白在內皮細胞抗發炎及抗動脈硬化上的作用 Antiinflammatory and antiarteriosclerotic action through inhibition of Rho protein in endothelial cell. (NSC 91-2320-B-415-001), 2002.08.01 至 2003.07.31 國科會, (1,179,400 元)
- NADPH 氧化酶在內皮細胞傳訊上的角色 The role of NADPH oxidase in endothelial signaling, 2003.08.01 至 2004.07.31 國科會, (NSC 92-2614-B-415-001) (925,700 元)
- 血管內皮細胞發炎反應的細胞與分子機制-發炎物質引起內皮細胞反應中 Rho 蛋白家族的角色 The role of Rho family in inflammatory agent-induced endothelial responses (1/3) (2004.08.01 至 2005.07.31)(NSC 93-2321-B-415-001), 國科會, (900,000 元)
- 血管內皮細胞發炎反應的細胞與分子機制-發炎物質引起內皮細胞反應中 Rho 蛋白家族的角色 The role of Rho family in inflammatory agent-induced endothelial responses (2/3) (2005.08.01 至 2006.07.31) (NSC 94-2321-B-415-001), 國科會, (841,000 元)

- 建構生物活性成分高效分離純化及活性檢測之技術平台，嘉義大學，(400,000 元)
- 血管內皮細胞發炎反應的細胞與分子機制-發炎物質引起內皮細胞反應中 Rho 蛋白質家族的角色 The role of Rho family in inflammatory agent-induced endothelial responses (3/3) (2006.08.01 至 2007.07.31) (NSC 95-2320-B-415 -001); 2006.08.01 至 2007.07.31，國科會，(900,000 元)
- 植物化合物對內皮細胞保護作用的機轉(NSC 95-2320-B-415-003); 2006.08.01 至 2007.07.31，國科會，(700,000 元)
- GRX/GSH 經由蛋白質 glutathionylation 調控內皮細胞發炎反應 (97-2320-B-415-005-MY3); 2008.08.01 至 2011.07.31，國科會，(2,655,000 元)
- 開發富含伽瑪氨基丁酸(GABA)的雜糧類醱酵機能性計畫。2011.01.01 至 2011.12.31 (雜糧發展基金會)，主持人
- 一氧化碳造成的蛋白質麩胱甘肽化做為內皮細胞抗發炎機制 (100-2320-B-415-001); 2011.08.01 至 2012.07.31，國科會，主持人
- 應用富含伽瑪氨基丁酸(GABA)的乳酸醱酵雜糧類機能素材之產品開發。2011.01.01 至 2012.12.31 (雜糧發展基金會)，主持人
- 一氧化碳對血管內皮細胞的保護機制：蛋白質巰基修飾所扮演的角色 (102-2320-B-415-002-MY3); 2013.08.01 至 2016.07.31，國科會，(3,637,000 元)，主持人
- 含硫氫基抗氧化酵素穀氧還蛋白 3 在內皮細胞的保護機轉; (105-2320-B-415-007) 2016.08.01 至 2017.07.31，科技部，(1,240,000 元)，主持人
- 內皮細胞單硫醇基穀氧還蛋白對細胞壓力反應所扮演的角(108-2320-B-415-005-) 2018.08.01 至 2019.10.31，科技部，(1,359,000 元)，主持人
- 調控自噬作用與 SIRT-1/PGC-1 α /Nrf-2 路徑對抗視網膜上皮細胞遭受藍光造成的細胞凋亡與發炎 MOST 110-2314-B-705-001，科技部，(1,000,000 元)，共同主持人

合作計畫 (cooperation projects)

- 花生白藜蘆醇及其衍生物預防老化相關疾病與延長壽命之探討-白藜蘆醇及其醱酵衍生物對心血管疾病及神經退化性之預防及保護作用探討(1/3) 2006.08.01 至 2007.07.31 國科會，(1,235,000 元) 共同主持人
- 茯苓菌絲體功能性產品之開發-抗憂鬱(安神、助眠)、抗氧化(防老化)及抗發炎功能性篩選平台技術之開發。2006.01.01 至 2006.12.31 台糖公司，共同主持人
- 白藜蘆醇及其醱酵衍生物對心血管疾病及神經退化性之預防及保護作用探討(2/3) (國科會 96-2321-B-415-002, 2007.08.01 至 2008.07.31, 1,235,000 元 共同主持人)
- 細胞貼附力量測系統之研發 2007.08.01 至 2010.07.31 (國科會 2,808,000 元)，共同主持人
- 白藜蘆醇及其醱酵衍生物對心血管疾病及神經退化性之預防及保護作用探討(3/3) (國科會 97-2321-B-415-002, 2008.08.01 至 2009.07.31, 1,235,000 元 共同

主持人)

- 探討大白鼠頭部外傷所引發之腦水腫現象中鈉鉀氯轉運蛋白所扮演之角色及其分子機轉 2008.08.01 至 2011.07.31 (國科會 2,565,000 元), 共同主持人
- 中草藥之抗氧化、抗老化生理活性測試 960201-961231 台糖公司, 共同主持人
- 整合雷射加熱與微流體系統在細胞選別與基因檢測平台之研究(國科會 NT 1,454,000) NSC 99-2313-B-415-008-MY2, 共同主持人 2010.08.01~2012.07.31
- 探討斑馬魚(Danio rerio)金屬硫蛋白 mt2 與 smtB 對抗重金屬鎘與低溫緊迫誘導的氧化壓力功能 101-2313-B-415-003-MY3 2012/08/01~2015/07/31 4,155,000
- 高異黃酮非基改大豆之高加價值產品研發-102 年度經濟部在地型學界科專計畫
- 茄紅素經 Nrf2 相關抗氧化作用抑制人類視網膜色素上皮細胞發炎反應;104 年度嘉義基督教醫院研究計畫
- 一氧化碳釋放劑對視網膜細胞的保護作用;105 年度嘉義基督教醫院研究計畫 (R105-22).
- 蘿蔔硫素對視網膜細胞的保護作用;小港醫院專題研究計畫(Kmhk-108- 032)
- 硫化氫釋放劑對視網膜細胞的保護作用;嘉義基督教醫院研究計畫 (R109-030)

大專生專題研究計畫

1. 陳健邦:探討植物化合物抗發炎機轉 2004.04.01 至 2004.12.31, 國科會大專生專題計畫(97-2815-C-415-015-B)
2. 曾才騰:探討肉桂醛(Cinnamaldehyde)對於內皮細胞的抗發炎機轉 2007.04.01 至 2007.12.31, 國科會大專生專題計畫
3. 柯雯馨:探討多酚類化合物促進內皮細胞一氧化氮產生 2008.04.01 至 2008.12.31, 國科會大專生專題計畫
4. 劉珍秀: 探討 Carnosol 誘導增加 NO 及其調控路徑機轉 (100-2815-C-415-025-B), 2011/07/01~2012/02/28.
5. 王建凱: 探討 p65 的麩胱甘肽化對 NF- κ B 活性之影響 (100-2815-C-415-026-B), 2011/07/01~2012/02/28.
6. 李國璋: 探討 Lycopene 對內皮細胞之抗發炎反應機轉 (102-2815-C-415-032-B), 2013/07/01~2014/02/28
7. 籃子喬: 一氧化碳釋放劑對視網膜色素上皮細胞抗氧化壓力及抗發炎的保護機轉(106-2813-C-415-051-B), 2017/07/01~2018/02/28