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Protein Science Laboratory

Research Field

- Cellular nanotechnology, including nanotopographical control, dynamic behavior and intracellular manipulation and sensing - where efforts are continuously being made to further understand cell function and provide new ways to control cell behavior.
- Pharmacology, especially in discussing molecular and cellular mechanisms, signal transduction/cellular communication, molecular diagnostics, interactions, toxicology, chemical biology, therapy, and medical applications and anti-pathogenic capabilities.

Education

Ph.D., Biochemistry and Molecular Biology, National Taiwan University, Taipei, Taiwan

Publications

1.1. Journal Papers

- 1.1.1. Kuo KT, Chang WH*, Chen H, Chen JJ, Lin CH*. Hydrophobic and Sticky Silver-Decorated Nanoimprinted ZnO₂ Nanogras Substrates for Enhanced SERS Performance. ACS Applied Materials and Interfaces 2025, 17, 39448–39460 *Corresponding author, IF: 8.2 Q1
- 1.1.2. Chang WH*, Wu YC, Shieh J, Kuo KT, Huang CC, Cheng HL, Lin CH*. Nanoimprinted Sticky Hydrophobic SU - 8 Nanopillars for Ultra- Sensitive Surface-Enhanced Raman Spectroscopy Applications. ACS Applied Nano Materials 2025, 8, 10087–10095. *Corresponding author, IF: 5.5
- 1.1.3. Chang WH*, Zhang SQ, Yang ZY, Lin CH*. Inverted Pyramid Nanostructures Coupled with a Sandwich Immunoassay for SERS Biomarker Detection. Nanomaterials (Basel) 2025; 15(1):64. *Corresponding author, IF: 4.3
- 1.1.4. Huang YC, Chang WH*, Chen YJ, Lin CH*. Synthesis of Metal/SU-8 Nanocomposites through Photoreduction on SU-8 Substrates. Nanomaterials (Basel) 2023; 13(11):1784. *Corresponding author, IF: 4.3
- 1.1.5. Yang ZY, Chang WH*, Chen YJ, Lin CH*. Noninvasive Detection of Bladder Cancer Markers Based on Gold Nanomushrooms and Sandwich Immunoassays. ACS Applied Nano Materials 2023; 6(7), 5557–5567. *Corresponding author, IF: 5.5

- 1.1.6. Chen YJ, Chang WH*, Lin CH*. Selective Growth of Patterned Monolayer Gold Nanoparticles on SU-8 through Photoreduction for Plasmonic Applications. *ACS Applied Nano Materials* 2021; 4(1), 229–235 *Corresponding author I, F: 5.5
- 1.1.7. Chen YJ, Chang WH*, Li CY, Chiu YC, Huang CC, Lin CH*. Direct synthesis of monolayer gold nanoparticles on epoxy based photoresist by photoreduction and application to surface-enhanced Raman sensing. *Materials & Design* 2021; 197, 109211, *Corresponding author IF: 7.9 Q1
- 1.1.8. Chang WH*, Yang ZY, Chong TW, Liu YY, Pan HW, Lin CH*. Quantifying Cell Confluency by Plasmonic Nanodot Arrays to Achieve Cultivating Consistency. *ACS Sensors* 2019; 4(7):1816-1824. *Corresponding author IF: 9.1 Q1
- 1.1.9. Liang CC, Chang WH, and Lin CH*. Nanotransfer printing of plasmonic nano-pleat arrays with ultra-reduced nanocavity width using perfluoropolyether molds. *Journal of Materials Chemistry C* 2016; 4:4491-4504. IF: 5.1
- 1.1.10. Liang CC, Liao MY, Chen WY, Cheng TC, Chang WH, and Lin CH*. Plasmonic metallic nanostructures by direct nanoimprinting of gold nanoparticles. *Optics Express* 2011; 19: 4768-76. IF: 3.3
- 1.1.11. Wu YJ, Chen CH, Chang WH, Chung KT, Liu YW, Lu FJ, and Chen CH*. Anti-Cancer Effects of Protein Extracts from *Calvatia lilacina*, *Pleurotus ostreatus* and *Volvariella volvacea*. *Evidence-Based Complementary and Alternative Medicine* 2011; 2011: 982368. IF: 2.65
- 1.1.12. Ting HC, Yen CC, Chen WK, Chang WH, Chou MC, and Lu FJ. Humic acid enhances the cytotoxic effects of arsenic trioxide on human cervical cancer cells. *Environmental Toxicology and Pharmacology* 2010; 29(2):117-25. IF: 4.2 Q1
- 1.1.13. Tsai CF, Hsu YW, Chen WK, Chang WH, Yen CC, Ho YC, and Lu FJ*. Hepatoprotective effect of electrolyzed reduced water against carbon tetrachloride-induced liver damage in mice. *Food and Chemical Toxicology* 2009; 47: 2031-6. IF: 3.5
- 1.1.14. Chen CH, Huang TS, Wong CH, Hong CH, Tsai YH, Lu FJ*, and Chang WH*. Synergistic Anti-Cancer Effect of Baicalein and Silymarin on Human Hepatoma HepG2 Cells. *Food and Chemical Toxicology* 2009; 47(3):638-44. *corresponding author IF: 3.5
- 1.1.15. Hsu YW, Tsai CF, Chang WH, Ho YC, Chen WK, and Lu FJ*. Protective effects of *Dunaliella salina* — A carotenoids-rich alga, against carbon tetrachloride-induced hepatotoxicity in mice. *Food and Chemical Toxicology* 2008; 46: 3311-7. IF: 3.5
- 1.1.16. Hseu YC, Chang WH, Chen CS, Liao JW, Huang CJ, Lu FJ, Chia YC, Hsu HK, Wu JJ, and Yang HL. Antioxidant activities of *Toona sinensis* leaves extracts using different antioxidant models. *Food and Chemical Toxicology* 2008; 46(1): 105-14. IF: 3.5
- 1.1.17. Yang HL, Chang WH, Chia YC, Huang CJ, Lu FJ, Hsu HK, Hseu YC. *Toona sinensis* extracts

induces apoptosis via reactive oxygen species in human premyelocytic leukemia cells. *Food and Chemical Toxicology* 2006; 44(12): 1978-88. IF: 3.5

- 1.1.18. Liu GY, Liao YF, Hsu PC, Chang WH, Hsieh MC, Lin CY, Hour TC, Kao MC, Tsay GJ, Hung HC. Antizyme, a natural ornithine decarboxylase inhibitor, induces apoptosis of haematopoietic cells through mitochondrial membrane depolarization and caspases' cascade. *Apoptosis* 2006; 11(10): 1773-88. IF: 8.1 Q1
- 1.1.19. Ho SY, Huang PC, Guo HR, Chang WH, Chen RJ, Wei BL, Wu WJ, Tai C, Wang YJ. Mechanisms of apoptosis induction and cell cycle regulation in irradiated leukemia U937 cells and enhancement by arsenic trioxide. *Radiation Research* 2006; 165(4): 390-9. IF:2.7
- 1.1.20. Lee PH, Chang MC, Chang WH, Wang TM, Wang YJ, Hahn LJ, Ho YS, Lin CY, Jeng JH. Prolonged exposure to arecoline arrested human KB epithelial cell growth: regulatory mechanisms of cell cycle and apoptosis. *Toxicology* 2006; 220(2-3): 81-9. IF: 4.6 Q1
- 1.1.21. Hsu PC, Hour TC, Liao YF, Hung YC, Liu CC, Chang WH, Kao MC, Tsay GJ, Hung HC, Liu GY. Increasing ornithine decarboxylase activity is another way of prolactin preventing methotrexate-induced apoptosis: crosstalk between ODC and BCL-2. *Apoptosis* 2006; 11(3): 389-99. IF: 8.1 Q1
- 1.1.22. Liu GY, Liao YF, Chang WH, Liu CC, Hsieh MC, Hsu PC, Tsay GJ, Hung HC. Overexpression of peptidylarginine deiminase IV features in apoptosis of haematopoietic cells. *Apoptosis* 2006; 11(2): 183-96. IF: 8.1 Q1
- 1.1.23. Yang HL, Chen CS, Chang WH, Lu FJ, Lai YC, Chen CC, Hseu TH, Kuo CT, Hseu YC. Growth inhibition and induction of apoptosis in MCF-7 breast cancer cells by *Antrodia camphorata*. *Cancer Letters* 2006; 231(2): 215-27. IF: 10.1 Q1
- 1.1.24. Lin CH*, Chen HL, Chao WC, Hsieh CI, and Chang WH. Optical characterization of two-dimensional photonic crystals based on spectroscopic ellipsometry with rigorous coupled-wave analysis," *Microelectronic Engineering* 2006; 83, 1798-1804. IF: 3.1
- 1.1.25. Hseu YC, Wu FY, Wu JJ, Chen JY, Chang WH, Lu FJ, Lai YC, Yang HL. Anti-inflammatory potential of *Antrodia Camphorata* through inhibition of iNOS, COX-2 and cytokines via the NF-kappaB pathway. *International Immunopharmacology* 2005; 5(13-14): 1914-25. IF: 4.7 Q1
- 1.1.26. Liao YF, Hung YC, Chang WH, Tsay GJ, Hour TC, Hung HC, Liu GY. The PKC delta inhibitor, rottlerin, induces apoptosis of haematopoietic cell lines through mitochondrial membrane depolarization and caspases' cascade. *Life Sciences* 2005; 77(6): 707-19. IF: 5.1 Q1
- 1.1.27. Liu GY, Hung YC, Hsu PC, Liao YF, Chang WH, Tsay GJ, Hung HC. Ornithine decarboxylase prevents tumor necrosis factor alpha-induced apoptosis by decreasing intracellular reactive oxygen species. *Apoptosis*. 2005; 10(3): 569-81. IF: 8.1 Q1
- 1.1.28. Liu JJ, Huang TS, Hsu ML, Chen CC, Lin WS, Lu FJ*, Chang WH*. Antitumor effects of the partially purified polysaccharides from *Antrodia camphorata* and the mechanism of its action. *Toxicology and*

Applied Pharmacology 2004; 201(2): 186-93. *corresponding author IF: 3.4

- 1.1.29. Jeng JH, Wang YJ, Chang WH, Wu HL, Li CH, Uang BJ, Kang JJ, Lee JJ, Hahn LJ, Lin BR, Chang MC. Reactive oxygen species are crucial for hydroxychavicol toxicity toward KB epithelial cells. Cellular and Molecular Life Sciences 2004; 61(1): 83-96. IF: 6.2 Q1
- 1.1.30. Ho YS, Ma HY, Chang HY, Wei BL, Lee CC, Ho SY, Guo HR, Wu TP, Chang WH, Wang YJ. Lipid peroxidation and cell death mechanisms in rats and human cells induced by chloral hydrate. Food and Chemical Toxicology 2003; 41(5): 621-9. IF: 3.5
- 1.1.31. Chang WH, Liu JJ, Chen CH, Huang TS, Lu FJ. Growth inhibition and induction of apoptosis in MCF-7 breast cancer cells by fermented soy milk. Nutrition and Cancer 2002;43(2):214-26. IF: 2.4
- 1.1.32. Chang WH, Chen CH, Gau RJ, Lin CC, Tsai CL, Tsai K, Lu FJ. Effect of baicalein on apoptosis of the human Hep G2 cell line was induced by mitochondrial dysfunction. Planta Medica 2002; 68(4): 302-6. IF: 2.0
- 1.1.33. Chang WH, Chen CH, Lu FJ. Different effects of baicalein, baicalin and wogonin on mitochondrial function, glutathione content and cell cycle progression in human hepatoma cell lines. Planta Medica 2002; 68(2): 128-32. IF: 2.0
- 1.1.34. Tsai WY, Chang WH, Chen CH, Lu FJ. Enhancing effect of patented whey protein isolate (Immunocal) on cytotoxicity of an anticancer drug. Nutrition and Cancer 2000; 38(2): 200-8. IF: 2.4

Academic Projects

2.1 MOST

- 2.1.1 Planar micro-electro and chemical experimental platform_STEM experimental teaching plan design and production
- 2.1.2 Development of Surface-Enhanced Raman Scattering Detection Chip for Citrullinated Protein Detection II
- 2.1.3 Development of Surface-Enhanced Raman Scattering Detection Chip for Citrullinated Protein Detection
- 2.1.4 Promoting Household Chemistry in Pingtung Primary and Middle Schools

2.2 MOE

2.3 Others

Relevant Experience

3.1 Academic Experience

Guest editor of Nanomaterials

3.2 Teaching Experience

3.3 Others