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Education and Positions

- B. S., in Chemistry, Chung Yuan Christian University, Taiwan R.O.C., 1989–1992
- M. S., Department of Chemistry, National Chung Hsing University, 1992–1994
- Ph.D., Department of Chemistry, National Taiwan University, 1994–1998
- Postdoctoral Research Fellow, Institute of Biological Chemistry, Academia Sinica, 1998–2002
- Assistant Professor, Graduate Institute of Pharmacognosy Science, Taipei Medical University, 2002–2003
- Assistant Research Fellow, Genomics Research Center, Academia Sinica, 2003–present

Honors

- Fellowship of Ministry of Education and NSC, 1992–1994
- Graduate Fellowship of National Science Council (NSC), 1994–1998
- The best research paper in *Journal of the Chinese Chemical Society*, 2000
- Postdoctoral fellowship in Academia Sinica, 1998–2002

Selected Publications (2007-2010)

- Chang, W. C.; Huang, L. C. L.; Wang, Y. S.; Peng, W. P.; Chang, H. C.; Hsu, N. Y.; Yang, W. B.; Chen, C. H., Matrix-assisted laser desorption/ionization (MALDI) mechanism revisited. *Anal Chim Acta* 2007, 582, 1-9.
- Huang, H. J.; Yang, W. B., Synthesis of moenocinol and its analogs using BT-sulfone in Julia-Kocienski olefination. *Tetrahedron Let* 2007, 48, 1429-33.
- Hsu, N. Y.; Yang, W. B.; Wong, C. H.; Lee, Y. C.; Lee, R. T.; Wang, Y. S.; Chen, C. H., Matrix-assisted laser desorption/ionization mass spectrometry of polysaccharides with 2',4',6'-trihydroxyacetophenone as matrix. *Rapid Commun Mass Spectrom* 2007, 21, (13), 2137-46.
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- Hua, K. F.; Hsu, H. Y.; Chao, L. K.; Chen, S. T.; Yang, W. B.; Hsu, J.; Wong, C. H., Ganoderma lucidum Polysaccharides Enhance CD14 Endocytosis of LPS and Promote TLR4 Signal Transduction of Cytokine Expression. *J Cell Phy* 2007, 212, (2), 537-550.
- Cheng, K. C.; Huang, H. C.; Chen, J. H.; Hsu, J. W.; Cheng, H. C.; Ou1, C. H.; Yang, W. B.; Chen, S. T.; Wong, C. H.; Juan, H. F., Ganoderma lucidum polysaccharides in human monocytic leukemia cells: from gene expression to network construction. *BMC Genomics* 2007, 8, 411.
- Lin, C.; Lai, P. T.; Liao, K. S.; Hung, W. T.; Yang, W. B.; Fang, J. M., Using molecular iodine in direct oxidative condensation of aldoses with diamines: An improved synthesis of aldo-benzimidazoles and aldo-naphthimidazoles for carbohydrate analysis. *J Org Chem* 2008, 73, 3848-53.
- Hsieh, Yves S. Y.; Chien, C.; Liao, Sylvian K. S.; Liao, S. F.; Hung, W. T.; Yang, W. B.; Lin, C. C.; Cheng, Rachel T. J.; Chang, C. C.; Fang, J. M.; Wong, C. H., Structure and bioactivity of the polysaccharides in medicinal plant *Dendrobium huoshanense*. *Bioorg*

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- Hung, W. T.; Wang, S. H.; Chen, C. H.; Yang, W. B., Structure determination of beta-glucans from *Ganoderma lucidum* with matrix-assisted laser desorption/ionization (MALDI) mass spectrometry. *Molecules* 2008, 13, 1538-50.
- Shao, Y. M.; Yang, W. B.; Kuo, T. H.; Tsai, K. C.; Lin, C. H.; Yang, A. S.; Liang, P. H.; Wong, C. H., Design, synthesis, and evaluation of trifluoromethyl ketones as inhibitors of SARS-CoV 3CL protease. *Bioorg Med Chem* 2008, 16, 4652-60.
- Chen, M. L.; Adak, A. K.; Yeh, N. C.; Yang, W. B.; Chuang, Y. J.; Wong, C. H.; Hwang, K. C.; Hwu, J. R.; Hsieh, S. L.; Lin, C. C., Fabrication of an oriented Fc-fused lectin microarray through boronate formation. *Angew Chem Int Ed* 2008, 47, 8627-30.
- Chuang, M. H.; Chiou, S. H.; Huang, C. H.; Yang, W. B.; Wong, C. H., The lifespan-promoting effect of acetic acid and Reishi polysaccharide. *Bioorg Med Chem* 2009, 17, 7831-40.
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- Chang, C. C.; Ku, A. F.; Tseng, Y. Y.; Yang, W. B.; Fang, J. M.; Wong, C. H., 6,8-Di-C-glycosyl flavonoids from *Dendrobium huoshanense*. *J Nat Prod* 2010, 73, 229-232.
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- Wu, M. H.; Lee, Y. C.; Tsai, W. J.; Yang, W. B.; Chen, Y. C.; Chuang, K. A.; Liao, J. F.; Wang, C. C.; Kuo, Y. C., Characterized polysaccharides from black soybean induce granulocyte colony-stimulated factor gene expression in a phosphoinositide 3-kinase-dependent manner. *Immunological Investigations* 2010, 39, Sep. 1-23.

Technology Licensing and Patents

- C.-H. Lin, W.-B. Yang, H.-C. Lin, "Glycosylation of exo-glycals. Patent No.: US 7,078,520 B2. Date of patent Jul. 18, 2006.
- C.-H. Wong, C.-H. Lin, C.-C. Lin, K.-H. Khoo, S.-T. Chen, Y.-Y. Wang, W.-B. Yang, "Preparation and composition analysis of Immuno-modulating of *Ganoderma lucidum* polysaccharides F3," AS Docket Number: 28A-931014-1E. *This patent had been licensed to Wyntek Biotech Cop. for commercial application and has a highest licensed royalty in Academia Sinica and the royalties was paid year by year since 2005.*
- C.-H. Wong, H.-Y. Hsu, K.-F. Hua, C.-H. Lin, J. Hsu, S.-T. Chen, K.-I. Lin, W.-B. Yang, J. Yu, A. Yu, "Methods and compositions associated with administration of an extract of *Ganoderma lucidum*," PCT Patent Application No. PCT/US2005/036961, Taiwan Patent Application No. 095131055 (2006), Japanese Patent Application No. 2007536927 (2007),

- European Patent Application No. 05810080.1 (2007).
- C.-H. Wong, J.-M. Fang, W.-B. Yang, T.-J. R. Cheng, Y. S.-Y. Hsieh, C. Chien, C.-C. Lin, H.-Y. Wen, "Structure and Bioactivity of the Polysaccharides in Medicinal Plant *Dendrobium huoshanense*," US Patent Application No. 12/378,263 (2009), PCT Patent Application No. PCT/US2009/033940 (2009), Taiwan Patent Application No. 098104560 (2009).
 - C.-H. Wong, M.-H. Chuang, W.-B. Yang, S.-H. Chiou, "Longevity-Promoting Effects of Acetic Acid and Reishi Polysaccharide," US Patent Application No. 12/425,319 (2009), PCT Patent Application No. PCT/US09/40879 (2009). *This patent had been licensed to Wyntek Biotech Cop. and the licensed royalties have paid to Academia Sinica year by year since 2009.*
 - S.-M. Liang, Y.-P. Chen, W.-B. Yang, C.-H. Wong, "Reishi F3 subfraction polysaccharides and methods of using same," IPC8 Class: AC12N502F1, USPC Class: 435377, Patent application number: US 2009/0263897 A1.

Research Interests

The main interest of our group is the structural determination of polysaccharides in medicinal herbs. Polysaccharides such as *Ganoderma lucidum* (靈芝), *Dendrobium hoshanense* (霍山石斛) and *Cordyceps sinensis* (冬蟲夏草) were isolated to study their biological activities and structural SAR. For characterization of polysaccharides we used HPAEC, GC-MS, CE, NMR, glycanase and MALDI-MS spectrum to investigate structures of oligosaccharides and polysaccharides. We also developed some convenient and efficient methods to label poly-, oligosaccharides which can be useful on purification and detection. A series of aldose-imidazole and aldose-bis-indole derivatives with fluorescence active was synthesized for composition analysis and chiral resolution of monosaccharides from medicinal herbs. Research work in Yang laboratory covers several areas:

- Organic chemistry (有機化學)
- Carbohydrates chemistry (醣化學)
- Natural product chemistry (天然物化學)
- Saccharides analytic chemistry (醣分析化學)
- Asymmetric catalytic reaction (不對稱催化反應)