



113 年教育部學海築夢計畫選送兩位醫學系與一位藥學系專題生赴美國匹茲堡大學醫學院眼科張昆哲教授研究室實習。

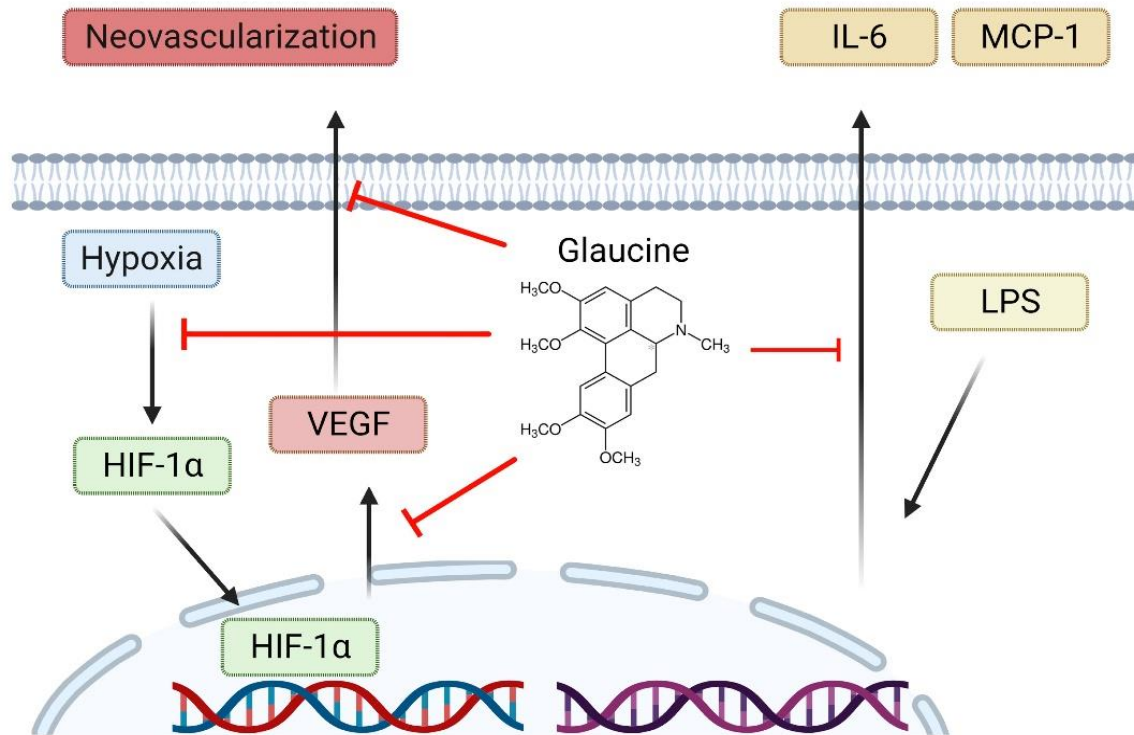
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- ▶ 第 21 屆國家新創獎-臨床新創獎
- ▶ FITI2024-2 入圍全國前七強：賀準醫藥（113 年 11 月 29 日決選）

高等教育國際化及發展國際合作以提升我國國際競爭力是近年來政府極力推動的政策目標，我們團隊獲得教育部學海築夢計畫的補助，選送大學生專題生於暑期赴美國匹茲堡大學醫學院眼科張昆哲教授研究室實習已執行兩年，累計共 7 位學生參與。另外，我們也獲得國科會龍門計畫的兩年期補助，薦送兩位優秀的博士生前往美國杜克大學病理系林慧觀院士實驗室，進行國際合作。在 113 年研究亮點中，其中有一篇論文是由目前醫學系大五的陳廷恩同學完成，廷恩在大一下學期加入我的實驗室進行專題研究，曾獲國科會大專生研究計畫以及教育部學海築夢計畫前往美國匹茲堡大學醫學院眼科張昆哲教授研究室實習，此論文也是國際合作的成果。這篇研究旨在探討海罌粟中的海罌粟鹼（Glauicine），在老年黃斑部病變（Age-related macular degeneration, AMD）中的抗血管生成與抗炎作用。AMD 是導致老年人不可逆視力喪失的主要原因，其濕性形式與脈絡膜新生血管（Choroidal neovascularization, CNV）的形成有關，這過程通常由缺氧和炎症驅動。研究發現 Glauicine 可以顯著抑制人類



視網膜色素上皮細胞 (ARPE-19 細胞) 在缺氧環境下的血管內皮生長因子 (Vascular endothelial growth factor, VEGF) 分泌及缺氧誘導因子-1 α (HIF-1 α) 表達，並減少由脂多醣 (Lipopolysaccharide, LPS) 誘導的炎症因子 (如 Interleukin-6 和 MCP-1) 的產生。此外，Glaucine 還能抑制由人臍靜脈內皮細胞進行的管狀結構形成，表明其抗血管生成潛力。這些結果顯示 Glaucine 不僅具有抗發炎作用，還可能通過抑制 CNV 的形成，為 AMD 提供一種新穎的治療策略。



Chen TE, Lo J, Huang SP, Chang KC, Liu PL, Wu HE, Chen YR, Chang YC, Liu CC, Lee PY, Lai YH, Wu PC, Wang SC*, Li CY*. Glaucine inhibits hypoxia-induced angiogenesis and attenuates LPS-induced inflammation in human retinal pigment epithelial ARPE-19 cells. *European Journal of Pharmacology*. 2024 Aug 9:176883.

【具體成果】

1. 113 年高雄醫學大學優秀論文獎-2 篇
2. 113 年研究計畫績優獎
3. 113 年研究成果績優獎 (一般教師組)
4. 第 21 屆國家新創獎-臨床新創獎:攝護腺癌二代賀爾蒙藥物精準檢測服務



5. FITI2024-2 入圍全國前七強：賀準醫藥（113 年 11 月 29 日決選）
6. 中華民國專利 發明第 I808838 號（二代荷爾蒙藥物於治療攝護腺癌療效評估之臨床治療藥物預測暨推薦系統及方法）（美國、中國、歐盟已送件申請）

【研究團隊】

團隊成員：李佳陽教授 (<https://wp.kmu.edu.tw/chiayangli/>)

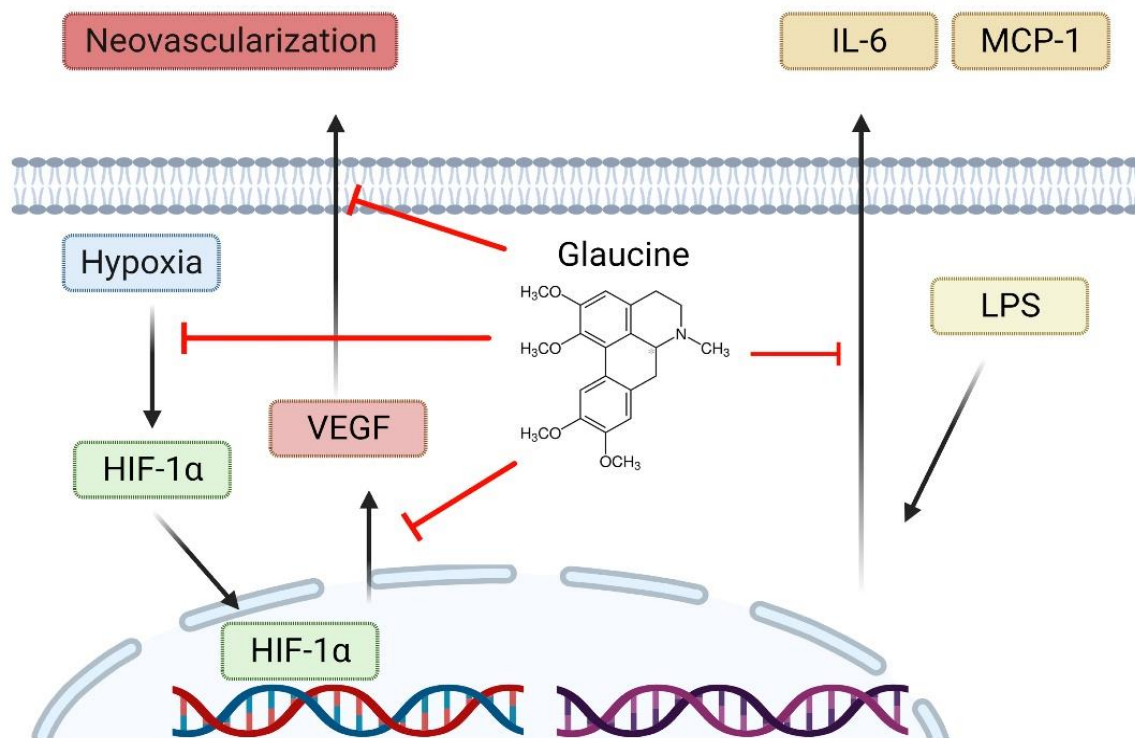
團隊簡介：我們團隊近年來以 NLRP3 發炎體相關疾病的研究為主軸，並與許多臨床學科的醫師合作，聚焦在目前臨床重要的疾病，開發出新穎治療藥物或精準治療策略。

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The internationalization of higher education and the development of international cooperation to enhance Taiwan's international competitiveness are policy goals that the government has vigorously promoted in recent years. Our team received the funding from the Ministry of Education (Overseas Internship Program) to send students to study at the University of Pittsburgh School of Medicine in the summer. The internship in the laboratory of Professor Kun-Che Chang of the Department of Ophthalmology has been carried out for two years, with a total of 7 students participating. In addition, we also received a two-year subsidy from the Taiwan Dragon Gate Project of the National Science and Technology Council to support two outstanding Ph.D. students to the laboratory of Academician Hui-Kuan Lin of the Department of Pathology, Duke University, USA, for international cooperation. Among the 2024 research highlights, one of the papers was completed by Ting-En Chen, a fifth-year student in the School of Medicine. Ting-En joined my laboratory in the second semester of his freshman year to conduct special research. He was awarded the College Student Research Scholarship of National Science and Technology Council and Overseas Internship Program of Ministry of Education to proceed the internship in the laboratory of Professor Kun-Che Chang of the Department of Ophthalmology at the University of Pittsburgh School of Medicine in the United States. This paper is also the result of international cooperation. This study aimed to explore the anti-angiogenic and anti-inflammatory effects of glaucine, an aporphine alkaloid isolated from *Glaucium flavum*, in age-related macular degeneration (AMD). AMD is the leading cause of irreversible vision loss in the elderly, and its wet form is associated with the formation of choroidal neovascularization (CNV), a



process often driven by hypoxia and inflammation. Our results indicated that glaucine significantly inhibited the secretion of vascular endothelial growth factor (VEGF) and the expression of hypoxia-inducible factor-1 α (HIF-1 α) in human retinal pigment epithelial cells (ARPE-19 cells) under hypoxic environment. Moreover, glaucine also reduced the production of inflammatory factors (such as Interleukin-6 and MCP-1) induced by lipopolysaccharide (LPS). Additionally, glaucine inhibited tubular structure formation by human umbilical vein endothelial cells, indicating its anti-angiogenic potential. These results suggest that glaucine not only has anti-inflammatory effects but may also provide a novel therapeutic strategy for AMD by inhibiting CNV formation.



Chen TE, Lo J, Huang SP, Chang KC, Liu PL, Wu HE, Chen YR, Chang YC, Liu CC, Lee PY, Lai YH, Wu PC, Wang SC*, Li CY*. Glaucine inhibits hypoxia-induced angiogenesis and attenuates LPS-induced inflammation in human retinal pigment epithelial ARPE-19 cells. *European Journal of Pharmacology*. 2024 Aug 9:176883.

【Concrete Results】

1. 2024 Kaohsiung Medical University Excellent Paper Award - 2 papers.
2. 2024 Kaohsiung Medical University Research Project Merit Award.



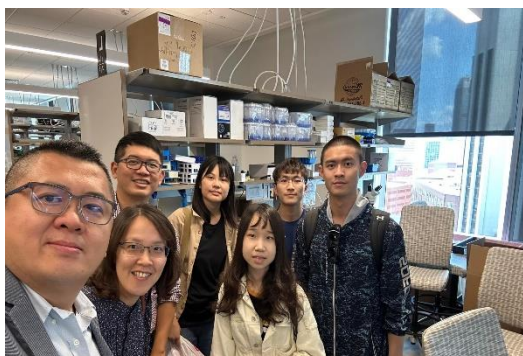
3. 2024 Kaohsiung Medical University Research Achievements Excellence Award (General Teacher Group).
4. The 21st National Innovation Award–Clinical Innovation Award: Drug Decision Helper for Second-Generation Hormonal Drugs in Prostate Cancer
5. FITI2024-2 Shortlisted among the top seven in the country: Hormone Precision Medicine (final selection on November 29, 2024).
6. Republic of China Invention Patent, No. I808838 (Clinical treatment drug prediction and recommendation system and method for evaluating the efficacy of second-generation hormonal drugs in the treatment of prostate cancer) (The patent applications of United States, China, and European have been submitted).

【Research Team】

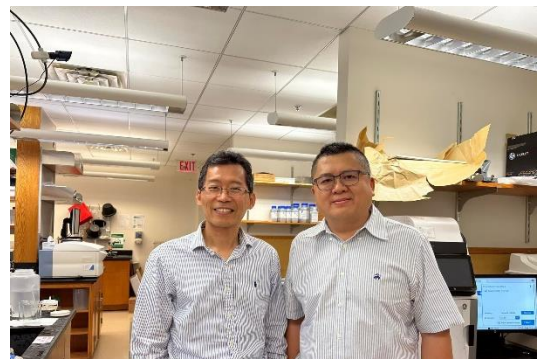
Professor Chia-Yang Li (<https://wp.kmu.edu.tw/chiayangli/>)

Research Team Introduction: In recent years, our team focuses on the research of NLRP3 inflammasome-related diseases, and has cooperated with physicians from many clinical disciplines to focus on currently clinically important diseases and develop novel therapeutic drugs or precision treatment strategies.

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112 年教育部學海築夢計畫選送四位醫學系專題生赴美國匹茲堡大學醫學院眼科張昆哲教授研究室實習。(右一陳廷恩同學為本篇學研亮點發表論文的第一作者)



國科會龍門計畫國外合作單位美國杜克大學病理學系林慧觀院士。