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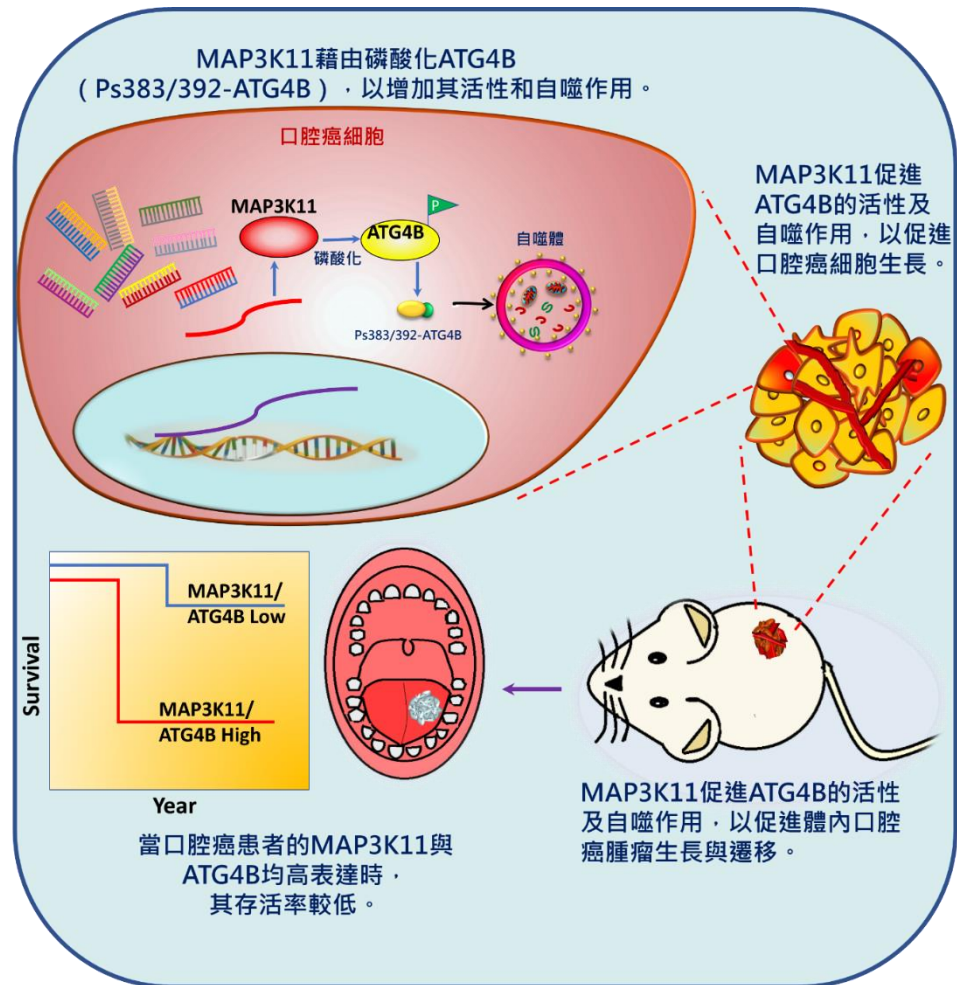
這項研究探討了 ATG4B 在細胞自噬過程中的角色，並發現其與癌症預後之間具有密切關聯。自噬作用是一種細胞清除損傷或不需要物質的關鍵過程，有助於維持細胞健康。ATG4B 作為一種蛋白酶，在自噬過程中扮演著重要角色，尤其在癌細胞中，ATG4B 的磷酸化促進了自噬作用，並與口腔癌患者的預後不良相關。

然而，ATG4B 磷酸化的調控機制仍不完全明瞭。本研究透過篩選特定基因庫，發現 MAP3K11 是一個關鍵激酶，能夠促使 ATG4B 磷酸化，進一步增強 ATG4B 的酶活性。當 MAP3K11 被去除時，ATG4B 磷酸化下降，自噬作用減弱，這證實了 MAP3K11 在癌細胞中的重要作用。

此外，我們的研究指出，MAP3K11 在口腔鱗狀細胞癌患者的腫瘤組織中的表達高於正常組織，並且與 ATG4B 及其磷酸化形式的表達呈正相關。這顯示 MAP3K11 和 ATG4B 的高表達與口腔癌患者的不良預後密切相關，尤其 MAP3K11 和 ATG4B 共同高表達與患者較低的生存率有關，為未來癌症治療提供了潛在的新方向。

總結來說，本研究強調了 MAP3K11 在口腔癌細胞自噬過程中的作用，並提出 MAP3K11 作為口腔癌患者潛在的治療與診斷標靶。這些發現不僅加深了我們對口腔癌細胞如何利用自噬促進惡性生長的理解，也為未來的口腔癌治療开辟了新道路。

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【具體成果】

1. 受邀學術演講-中正大學生物醫學科學系(20240105)
2. 課程評量績優-高雄醫學大學(112 學年)
3. 教師研究論文獎-高雄醫學大學(112 學年)
4. 指導暑期大專生榮獲專題研究成果論文壁報競賽自然組最佳口頭發表-高雄醫學大學(113 學年)
5. 指導暑期大專生榮獲專題研究成果論文壁報競賽自然組特優-高雄醫學大學(113 學年)
6. 指導暑期大專生榮獲專題研究成果論文壁報競賽自然組優等-高雄醫學大學(113 學年)
7. 指導大專生榮獲學生論文壁報競賽生醫與生技組優等-高雄醫學大學生命科學院(112 學年)
8. 指導大專生榮獲學生論文壁報競賽生醫與生技組佳作-高雄醫學大學生命科學院(112 學年)



【研究團隊】

團隊成員：劉佩芬、陳竣峰、葛魯蘋、蔡維倫、曾和馨、李政昕、楊玟芯、徐志文
個人簡介網址：

<https://biology.kmu.edu.tw/index.php/zh-tw/%E5%B8%AB%E8%B3%87%E4%BB%8B%E7%B4%B9/%E5%B0%88%E4%BB%BB%E6%95%99%E5%B8%AB/%E5%8A%89%E4%BD%A9%E8%8A%AC-%E5%89%AF%E6%95%99%E6%8E%88%E5%85%BC%E7%B3%BB%E4%B8%BB%E4%BB%BB>

團隊簡介：我們的主要研究方向是開發癌症的潛在生物標記和治療靶點。為了鑑定這些潛在的生物標記，我們採用高通量篩選技術，例如 siRNA 基因庫篩選。我們也利用癌細胞和異種移植小鼠模型來驗證這些生物標記的分子機制。此外，我們還從收集的病人樣本以及如癌症基因組圖譜（TCGA）等臨床資料庫中，進行臨床意義的驗證。

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This study explored the role of ATG4B in the autophagy process and found a strong association with cancer prognosis. Autophagy is a critical process by which cells remove damaged or unwanted materials, helping to maintain cellular health. As a protease, ATG4B plays an important role in the autophagy process. Especially in cancer cells, phosphorylation of ATG4B promotes autophagy and is associated with poor prognosis in oral cancer patients.

However, the regulatory mechanism of ATG4B phosphorylation is still not fully understood. By screening a specific gene library, this study found that MAP3K11 is a key kinase that can promote the phosphorylation of ATG4B and further enhance the enzymatic activity of ATG4B. When MAP3K11 is removed, ATG4B phosphorylation decreases and autophagy is weakened, confirming the important role of MAP3K11 in cancer cells.

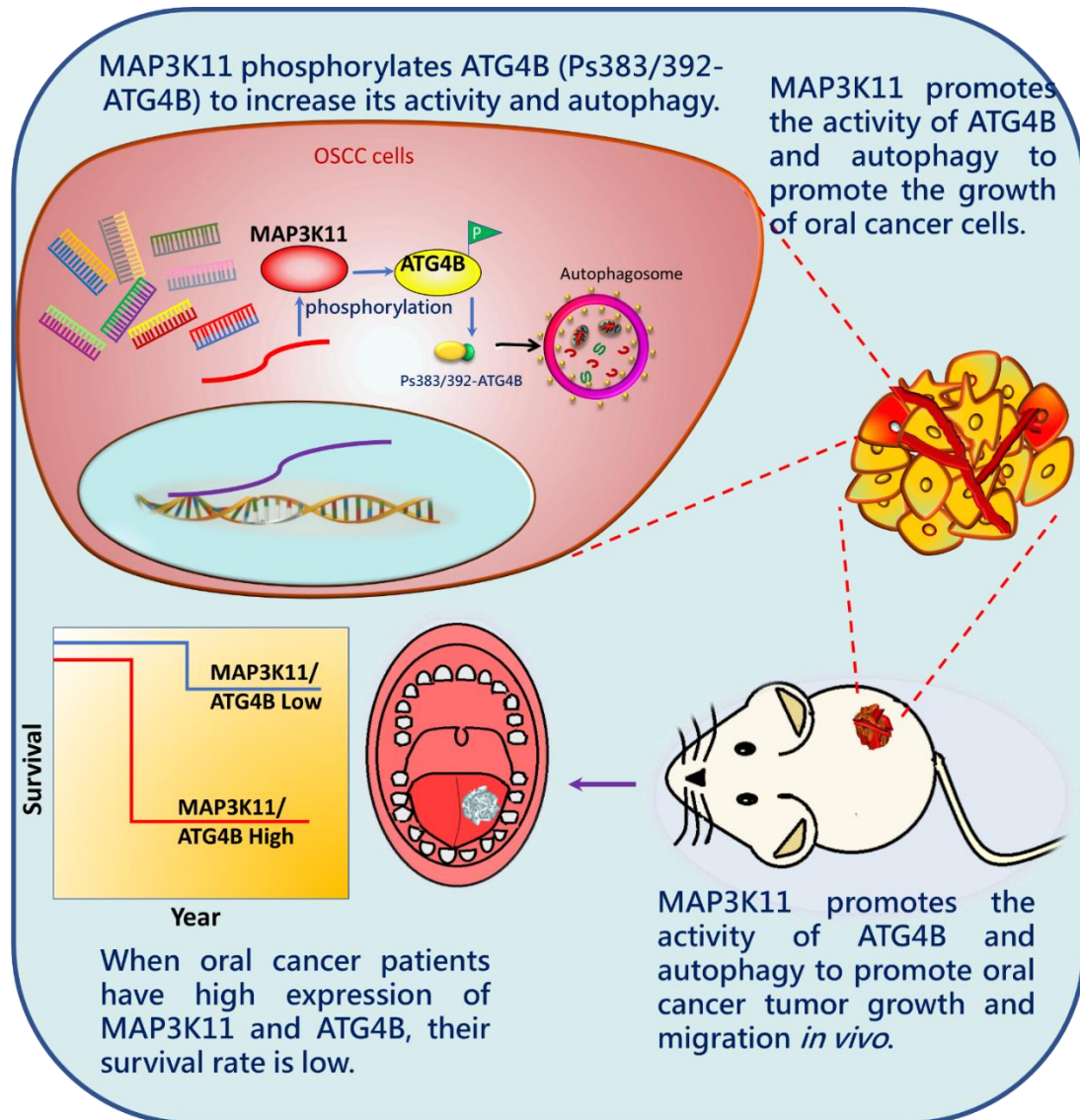
In addition, our study pointed out that the expression of MAP3K11 in tumor tissues of oral squamous cell carcinoma patients was higher than that in normal tissues and was positively correlated with the expression of ATG4B and its phosphorylated form. This shows that the high expression of MAP3K11 and ATG4B is closely related to the poor prognosis of oral cancer patients. In particular, the high expression of MAP3K11 and ATG4B is related to the lower survival rate of patients, providing a potential new direction for future cancer treatment.

In summary, this study highlights the role of MAP3K11 in the autophagy process of oral cancer cells and proposes MAP3K11 as a potential therapeutic and diagnostic target for oral cancer patients. These findings deepen our



understanding of how oral cancer cells use autophagy to promote malignant growth and open up new avenues for future oral cancer treatments.

Reference: J Cell Physiol. 2022 Nov;237(11):4275–4291. doi: 10.1002/jcp.30881. Epub 2022 Sep 14.



Concrete Results:

1. Invited Speech-Department of Biomedical Sciences, National Chung Cheng University (Jan 5, 2024)
2. Excellent Performance in Course Evaluation-Kaohsiung Medical University (Academic Year 112)
3. Teacher Research Paper Award-Kaohsiung Medical University (Academic Year 112)



4. Guiding summer undergraduate students to win the best oral presentation in the research paper poster competition - Kaohsiung Medical University (113 Academic Years)
5. Guiding summer undergraduate students to win the top prize in the research paper poster competition-Kaohsiung Medical University (Academic Year 113)
6. Guiding summer undergraduate students to win first place in the research paper poster competition-Kaohsiung Medical University (Academic Year 113)
7. Guiding undergraduate students to win the top prize in the Student Paper Poster Competition-College of Life Science, Kaohsiung Medical University College (112 Academic Years)
8. Guiding college students to win the best work in the Student Paper Poster Competition-College of Life Science, Kaohsiung Medical University College (112 Academic Years)

【Research Team】

Team Members: Pei-Feng Liu, Chun-Feng Chen, Luo-Ping Ger, Wei-Lun Tsai, Ho-Hsing Tseng, Cheng-Hsin Lee, Wen-Hsin Yang, Chih-Wen Shu

personal profile URLs:

<https://biology.kmu.edu.tw/index.php/en-gb/faculty-members/233-%E3%80%90chairman%E3%80%91liu,-pei-feng%E3%80%91associate-professor>

Research Team Introduction: Our main research focus is on developing potential biomarkers and therapeutic targets for cancer. We employ high-throughput screening techniques such as siRNA gene library screening to identify these potential biomarkers. We also utilize cancer cells and xenograft mouse models to validate the molecular mechanisms of these biomarkers. In addition, we also conduct clinical significance verification from collected patient samples and clinical databases such as The Cancer Genome Atlas (TCGA) and so on.

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