# the role of HIF-1α/mTOR and IL-1β in the cartilage of osteoarthritic rats.

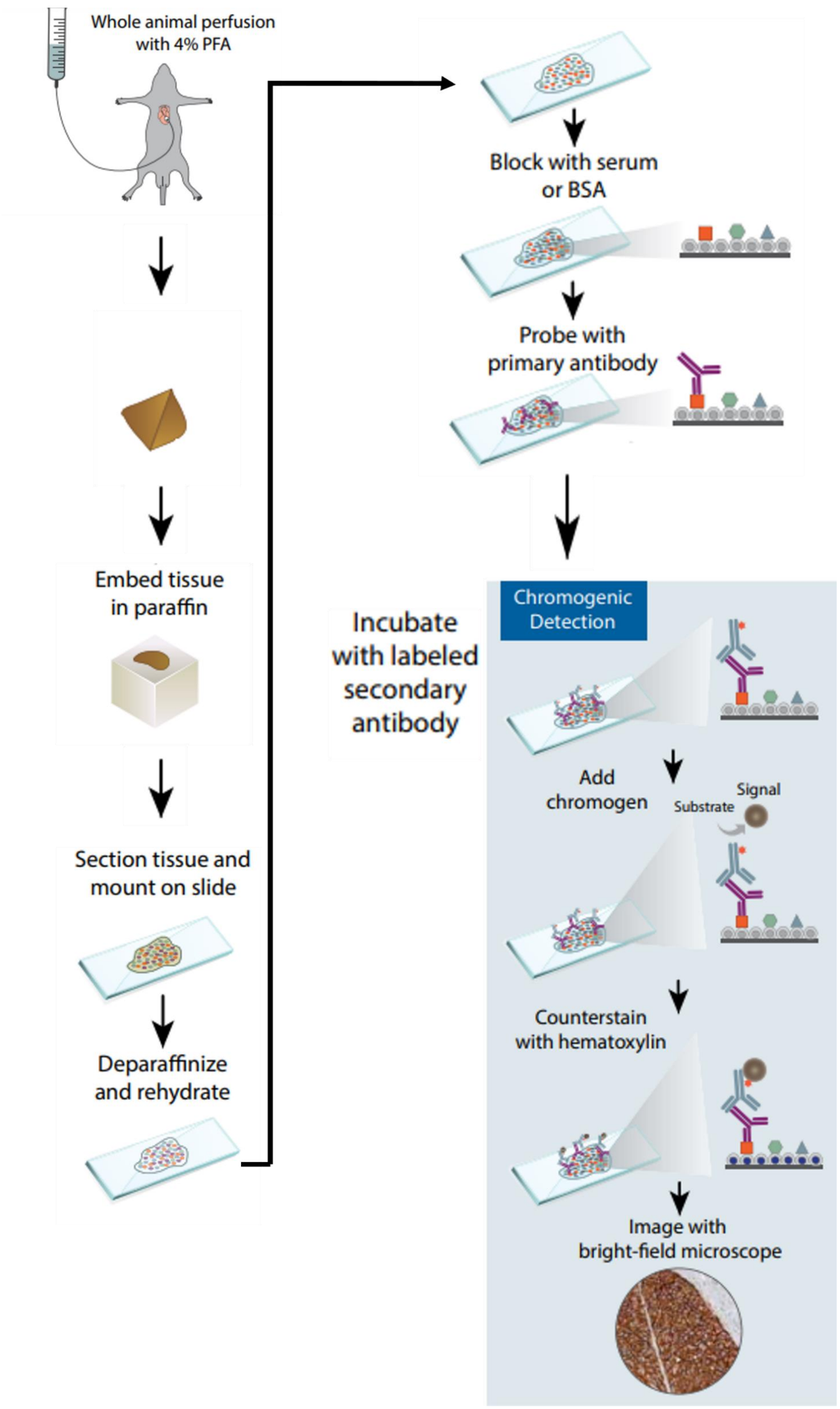
Sim Ni [1], Wen Zhi-Hong, Professor[2]
1 Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University, Tainan 701401, Taiwan.
2 Department of Marine Biotechnology and Resources, National Sun Yat-sen University, Kaohsiung 80424, Taiwan.

## INTRODUCTION

The most common form of arthritis and joint disorder is osteoarthritis (OA). In this multifactorial disease, articular cartilage gradually degenerates, resulting in joint pain and dysfunction. Osteoarthritic chondrocytes that are metabolically reprogrammed to glycolysis instead of oxidative phosphorylation accumulate less ATP, lactate, and more reactive oxygen species(ROS). Pyruvate is converted into lactate by lactate dehydrogenase A (LDHA).

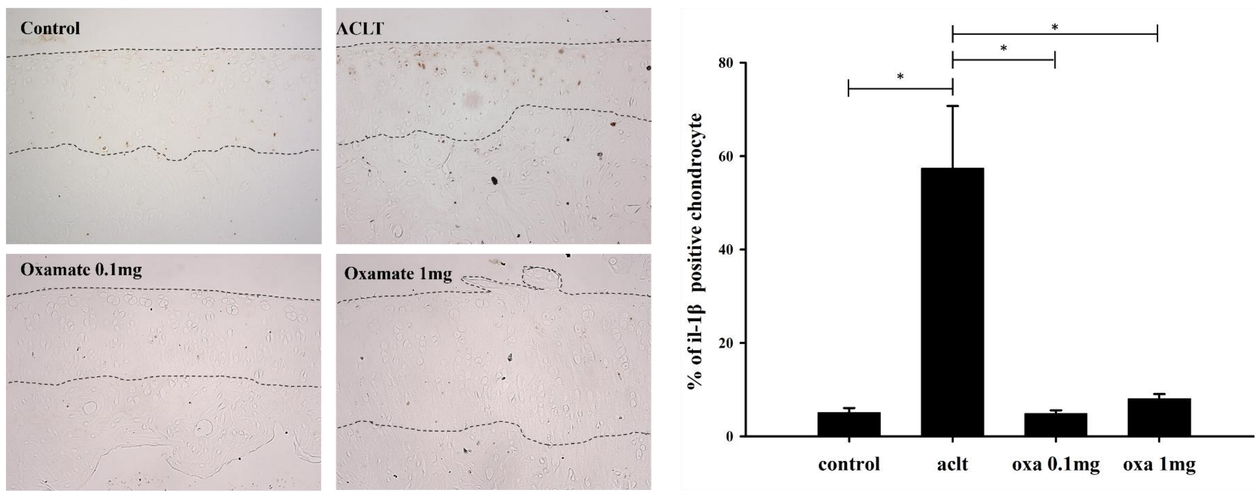
The present study examined the effects of oxamate, an LDHA inhibitor, on OA rats' anterior cruciate ligament transection (ACLT)-induced HIF-1α/mTOR, IL-1β, and LHDA protein expression in the cartilage. From the 10th to the 14th after surgery, ACLT-rats received an intraarticular (IA) injection of oxamate once a week for 5 weeks. In this study, we examine the potential mechanisms by which ACLT-induced LDHA upregulation after oxamate administration may occur via HIF-1α, mTOR and IL-1β.

## MATERIALS AND METHODS

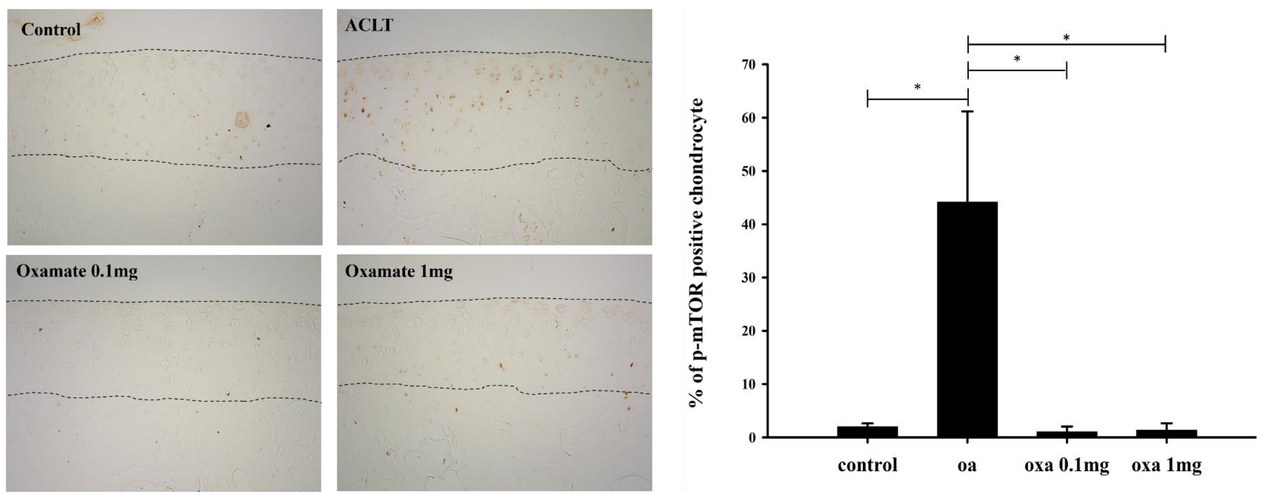



## RESULTS

### A. IL-1β




### B. P-mTOR




### C. HIF-1α

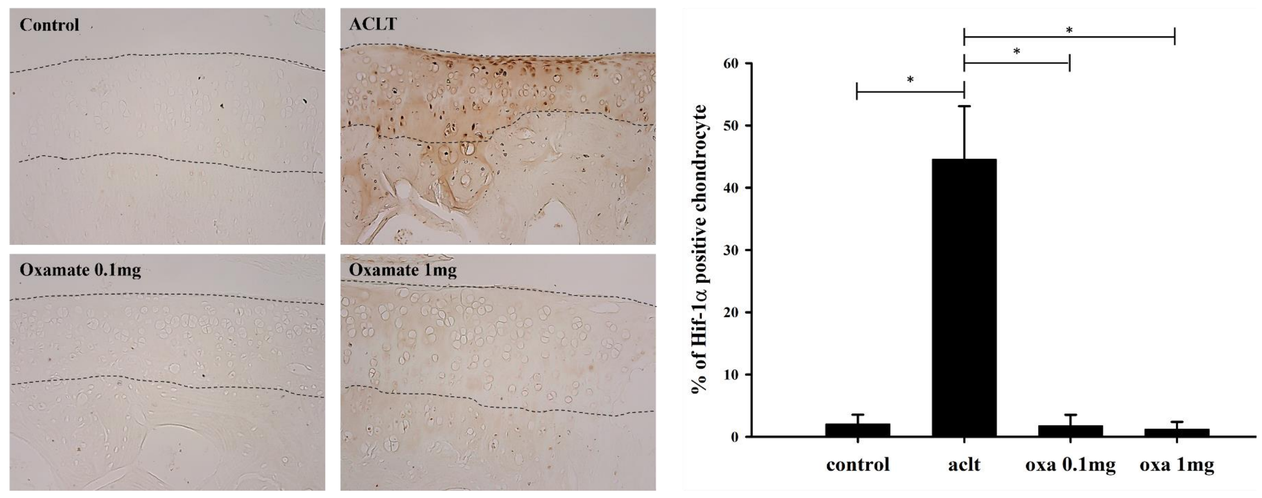



**Fig. A-C: i**ntraarticular administration of oxamate attenuated ALCT-induced the upregulation of p-mTOR, IL-1b, and Hif-1a in cartilage tissues.(N=3, * ,P < 0.05)

## CONCLUSION

The inhibitory effects of LHDA inhibitor, oxamate on ACLT-induced cartilage degradation, HIF-1α, mTOR and IL-1β expression. Previous studies have demonstrated that activation of HIF-1α, mTOR, and IL-1β contribute to inflammatory responses resulting in OA progression.

In conclusion, oxamate reduces the severity of experimental OA, at least partly by inhibiting HIF-1α, mTOR, and IL-1β. Based on the above results, pharmacological inhibition of LDHA by oxamate may be an effective treatment for OA.

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