



Yang, Mu-Chen Ph.D.

Assistant Professor

Research Interests: Animal disease model development,
Articular cartilage and bone histology,
Digital Imaging and 3D Anatomy Applications

Courses Taught: Veterinary Anatomy, Veterinary Anatomy Lab

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Educational Background

2013-2020	Department of Dentistry, National Yang-Ming University, Taipei, Taiwan	Ph.D.
2011-2013	Science in Institute of Anatomy & Cell Biology, National Yang-Ming University, Taipei, Taiwan	Master
2007-2011	Department of Medical Laboratory and Biotechnology, Chung Shan Medical University, Taichung, Taiwan	Bachelor

Professional Career

2025-Now	Department of Veterinary Medicine, College of Veterinary Medicine, National Chung Hsing University, Taichung, Taiwan	Assistant Professor
2020-2025	Tohoku University Graduate School of Dentistry, Sendai, Japan Medical Laboratory Scientist License, Taiwan	Assistant Professor

Past Research Projects

2025-2026	<u>General Science and Technology Projects by the Ministry of Agriculture</u> Establishment of an AI-based image analysis system for automated facial pain assessment in laboratory mice	PI
2024-2026	<u>Japan Society for the Promotion of Science (JSPS) Grant-in-Aid for Early-Career Scientists</u> Exploring the inflammatory mediators degraded by MMP-2 in MMP-2-deficient mice with knee arthritis through a novel TMT-TAILS quantitative proteomics	PI
2021-2023	<u>JSPS Grant-in-Aid for Scientific Research (C)</u> Analysis of regenerated bone maturation regulated by MMP-2 using proteome and mineralome imaging	Co-PI
2022-2023	<u>Tohoku University Center for Diversity, Equity and inclusion (TUMUG) Next Step Research Grant</u> Immunolocalization of types I and II collagens, and proteoglycans in the TMJ condyle of aged mice.	PI
2021-2022	<u>Tohoku University TUMUG Next Step Research Grant</u> Immunolocalization and quantification of matrix metalloproteinases-3, -9, and -13 in the TMJ condyle of aged mice.	PI
2020-2021	<u>Tohoku University TUMUG Start-up Research Fund</u> Establishment of CFA-induced TMJ OA experimental mouse model for evaluation of TMDs in in vivo study.	PI

Publications

- Chen H, Nguyen KD, Doan HT, **Yang MC**, Chang YC, Marya A, Hong G, Wang DH, Hsu ML. Deep learning-based automated per-tooth detection and segmentation from unretracted smile photographs. *Journal of Dental Sciences*. 2026. (Accepted)

2. Wang DH, Nguyen KX, Tran TT, Wu PH, Hong G, Lin YM, Hsu YC, Yang CC, Lin YC, Hsu WE, Hsu ML*, **Yang MC***. Phosphotungstic acid-enhanced micro-computed tomography and RNA sequencing provide a new perspective on temporomandibular joint arthritis induced by complete Freund's adjuvant and collagen-induced arthritis in rat models. *Journal of Dental Sciences*. 2025;20(1):189-200. (*Corresponding author)
3. Tsai FT, Yang CC, Lin YC, Hsu ML, Hong G, **Yang MC**, Wang DH, Huang LJ, Lin CT, Hsu WE, Tu HF. Temporal stability of tongue microbiota in older patients - A pilot study. *Journal of Dental Sciences*. 2024;19(2):1087-1095.
4. **Yang MC**, Nakamura M, Kageyama Y, Igari Y, Sasano Y. Age-related gene and protein expression in mouse mandibular condyle analyzed by cap analysis of gene expression and immunohistochemistry. *Gerontology*. 2023;69(11):1295-1306.
5. Sasano Y, Konno A, Nakamura M, Henmi A, Mayanagi M, **Yang MC**, Yao I. Visualization of the localization of phospholipids in developing rat teeth by matrix-assisted laser desorption/ionization imaging mass spectrometry. *Biomedical Research*. 2023;44(4):173-179.
6. **Yang MC**, Nakamura M, Mayanagi M, Sasano Y. Immunohistochemical characterization of the mandibular condyle in MMP-2-deficient mice for type I and II collagen, aggrecan, MMP-9, and MMP-13. *Biomedical Research*. 2023;44(2):65-72.
7. Tran TT, Wang DH, **Yang MC**, Chen JC, Wu PH, Yang CC, Hsu WE, Hsu ML. Effects of food hardness on temporomandibular joint osteoarthritis: Qualitative and quantitative micro-CT analysis of rats in vivo. *Annals of Anatomy*. 2023;246:152029.
8. Nakamura M, **Yang MC**, Ashida K, Mayanagi M, Sasano Y. Calcification and resorption of mouse Meckel's cartilage analyzed by von Kossa and tartrate-resistant acid phosphatase histochemistry and scanning electron microscopy/energy-dispersive X-ray spectrometry. *Anatomical Science International*. 2022;97(2):213-220.
9. **Yang MC***, Wang DH*, Cherng JH, Li WC, Lin PY, Hsu WE, Hsu ML. Role of Link N in modulating inflammatory conditions. *Journal Oral Facial Pain Headache*. 2019;33:114-122. (*Co-first author)
10. **Yang MC**, Wang DH, Wu HT, Li WC, Chang TY, Lo WL, Hsu ML. Correlation of magnetic resonance imaging grades with cytokine levels of synovial fluid of patients with temporomandibular joint disorders: A cross-sectional study. *Clinical Oral Investigations*. 2019;23(10):3871-3878.
11. Lo WL, Leu BH, **Yang MC**, Wang DH, Hsu ML. Dysphagia and risk of aspiration pneumonia: A nonrandomized, pair-matched cohort study. *Journal of Dental Sciences*. 2019;14(3), 241-247.
12. Chang CL, Wang DH, **Yang MC**, Hsu WE, Hsu ML. Functional disorders of the temporomandibular joints: Internal derangement of the temporomandibular joint. (Review) *The Kaohsiung journal of medical sciences*. 2018;34(4):223-230.1.
13. Wang DH, **Yang MC**, Hsu WE, Hsu ML, Yu LM. Response of the temporomandibular joint tissue of rats to rheumatoid arthritis induction methods. *Journal of Dental Sciences*. 2017;12(1):83-90.
14. Wang DH, **Yang MC**, Hsu WE, Hsu ML. Comparison of Three Techniques for Swine Temporomandibular Joint Space Injection. *Journal Oral Facial Pain Headache*. 2016;30(2):165-70.