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### Research Interest

- Stem cell biology
- Cell signaling
- Spine development and degeneration
- Invertebrate biology and development

### 期刊論文

1. Chen CP, **Chuang SC\***, Su KL, Chen LK, Lin YC, Wu YJ, Liu SP, Hung SW, Chen CH, Yang CD. 2024. Application of proteomics in identifying crucial virulence factors shared by different *Streptococcus iniae* isolates for developing an effective subunit vaccine against *S. iniae* in tilapia. **Aquaculture** 581:740477. \*Co-first author.
2. Nair A, Lin CY, Hsu FC, Wong TH, **Chuang SC**, Lin YS, Chen CH, Campagnola P, Lien CH, Chen SJ. Categorization of collagen type I and II blend hydrogel using multipolarization SHG imaging with ResNet regression. *Scientific Reports*. 2023 Nov 9;13(1):19534
3. Nair A, **Chuang SC**, Lin YS, Chen CH, Fang TC, Chiu HC, Lien CH, Chen SJ. **2022**. Characterization of collagen response to bone fracture healing using polarization-SHG. *Scientific Reports*. 12(1)18453. <https://doi.org/10.1038/s41598-022-21876-z>
4. Kao WC, Chen JC, Liu PC, Lu CC, Lin SY, **Chuang SC**, Wu SC, Chang LH, Lee MJ, Yang CD, Lee TC, Wang YC, Li JY, Wei CW, Chen CH. **2022**. The Role of Autophagy in Osteoarthritic Cartilage. *Biomolecules* 12, 1357. <https://doi.org/10.3390/biom12101357>
5. Chou HC, Lin SY, Chou LY, Ho ML, Chuang SC, Cheng TL, Kang L, Lin YS, Wang YH, Wei CW, Chen

CH, Wang CZ. **2022**. Ablation of Discoidin Domain Receptor 1 Provokes an Osteopenic Phenotype by Regulating Osteoblast/Osteocyte Autophagy and Apoptosis. *Biomedicine 10*, 2173. <https://doi.org/10.3390/biomedicines10092173>

6. Chou YS, **Chuang SC**, Chen CH, Ho ML, Chang JK. 2021. G-protein-coupled estrogen receptor-1 positively regulates the growth plate chondrocyte proliferation in female pubertal mice. *Frontiers in Cell and Developmental Biology. August 2021, Volume 9, Article 710664*. (IF=6.684, ranking: 6/41 in DEVELOPMENTAL BIOLOGY)
7. Chen CH, Kang L, Chang LH, Cheng TL, Lin SY, Wu SC, Lin YS., **Chuang SC**, Lee TC, Chang JK, Ho ML. 2021. Intra-articular low-dose parathyroid hormone (1-34) improves mobility and articular cartilage quality in a preclinical age-related knee osteoarthritis model. *Bone Joint Res 10(8):514–525*. <https://doi.org/10.1302/2046-3758.108.BJR-2020-0165.R2> (IF=5.853, ranking: 4/82 in ORTHOPEDICS)
8. Chen CH, Nair AV, **Chuang SC**, Lin YS, Cheng HH, Lin CY, Chang CY, Chen SJ, Lien CH. 2021. Dual-LC PSHG microscopy for imaging collagen type I and type II gels with pixel-resolution analysis. *Biomed. Opt. Express 12*, 3050-3065. <https://doi.org/10.1364/BOE.416193> (IF:3.732; OPTICS 23/99 = 23.2%)
9. Yang CD, **Chuang SC**, Cheng TL, Lee MJ, Chen HT, Lin SY, Huang HT, Ho CJ, Lin YS, Kang L, Ho ML, Chang JK, Chen CH. 2021. An Intermediate Concentration of Calcium with Antioxidant Supplement in Culture Medium Enhances Proliferation and Decreases the Aging of Bone Marrow Mesenchymal Stem Cells. *Int. J. Mol. Sci. 22*, 2095. <https://doi.org/10.3390/ijms22042095> (**Equal contribution**) (IF:5.923; BIOCHEMISTRY & MOLECULAR BIOLOGY 67/298=22.4%)
10. Huang HT; Cheng TL, Yang CD, Chang CF, Ho CJ, **Chuang SC**, Li JY, Huang SH, Lin YS, Shen HY, Yu TH, Kang L, LinSY, Chen CH. 2021. Intra-Articular Injection of (-)-Epigallocatechin 3-Gallate (EGCG) Ameliorates Cartilage Degeneration in Guinea Pigs with Spontaneous Osteoarthritis. *Antioxidants 10*, 178. <https://doi.org/10.3390/antiox10020178> (IF:6.312; BIOCHEMISTRY & MOLECULAR BIOLOGY 60/298=20.1%)
11. Huang HT, Cheng TL, Ho CJ, Huang HH, Lu CC, **Chuang SC**, Li JY, Lee TC, Chen ST, Lin YS, Lee CY, Kang, L, Lin, S.-Y, Chen, C.-H. 2021. Intra-Articular Injection of (-)-Epigallocatechin 3-Gallate to Attenuate Articular Cartilage Degeneration by Enhancing Autophagy in a Post-Traumatic Osteoarthritis Rat Model. *Antioxidants 10*, 8. [doi.org/10.3390/antiox10010008](https://doi.org/10.3390/antiox10010008). (IF:6.312; BIOCHEMISTRY & MOLECULAR BIOLOGY 60/298=20.1%)
12. Chou LY, Chen CH, **Chuang SC**, Cheng TL, Lin YH, Chou HC, Fu YC, Wang YH, Wang, CZ. 2021. Discoidin Domain Receptor 1 Regulates Runx2 during Osteogenesis of Osteoblasts and Promotes Bone Ossification via Phosphorylation of p38. *Int. J. Mol. Sci. 21*, 7210. [doi.org/10.3390/ijms21197210](https://doi.org/10.3390/ijms21197210) (IF:5.923; BIOCHEMISTRY & MOLECULAR BIOLOGY 67/298=22.4%)
13. Cho, HC, Chen CH, Chou LY, Cheng TL, Kang L, **Chuang SC**, Lin YS, Ho ML, Wang YH, Lin SY, Wang, CZ. 2020. Discoidin Domain Receptors 1 Inhibition Alleviates Osteoarthritis via Enhancing Autophagy. *Int. J. Mol. Sci. 21*, 6991. [doi.org/10.3390/ijms21196991](https://doi.org/10.3390/ijms21196991) (IF:5.923; BIOCHEMISTRY & MOLECULAR BIOLOGY 67/298=22.4%)

14. **Chuang SC**, Chen CH, Chou YS, Ho ML, Chang JK. 2020. G Protein-Coupled Estrogen Receptor Mediates Cell Proliferation through the camp/PKA/CREB Pathway in Murine Bone Marrow Mesenchymal Stem Cells. *Int. J. Mol. Sci.* 21, 6490. doi.org/10.3390/ijms21186490 (IF:5.923; BIOCHEMISTRY & MOLECULAR BIOLOGY 67/298=22.4%)
15. Chou LY, Chen CH, Lin YH, **Chuang SC**, Lin SY, Fu YC, Chang JK, Ho ML, Wang CZ. 2020. Discoidin domain receptor 1 regulates endochondral ossification through terminal differentiation of chondrocytes. *FASEB J.* 34: 5767-5781 (IF:5.191; BIOLOGY 14/93=15.1%)
16. Liu SP, **Chuang SC**, Yang CD. 2020. Protective Immunity against *Vibrio harveyi* in Grouper Induced by Single Vaccination with Poly (Lactide-co-glycolide) Microparticles Releasing Pleurocidin Peptide and Recombinant Glyceraldehyde-3-phosphate Dehydrogenase. *Vaccines.* 8(1), 33. doi.org/10.3390/vaccines8010033 (IF:4.422; MEDICINE, RESEARCH & EXPERIMENTAL 63/140=45%)
17. Lin SY, Kan JU, Lu CC, Huang SS, Cheng TL, Huang HT, Ho CJ, Lee TC, **Chuang SC**, Lin YS, Kang L, Chen CH. 2020. Green Tea Catechin (-)-Epigallocatechin-3-Gallate (EGCG) Facilitates Fracture Healing. *Biomolecules.* 0(4), 620; <https://doi.org/10.3390/biom10040620>. (IF:4.879; BIOCHEMISTRY & MOLECULAR BIOLOGY 96/298=32.2%)
18. Huang WL, **Chuang SC**, Yang CD. 2019. Anti-Idiotypic Vaccine Provides Protective Immunity Against *Vibrio Harveyi* in Grouper (*Epinephelus Coioides*). *Vaccines.* 7, 210; doi:10.3390/vaccines7040210. (IF:4.422; MEDICINE, RESEARCH & EXPERIMENTAL 63/140=45%)
19. Ko JC, **Chuang SC**, Yang CD. 2019. Amidated pleurocidin peptide encapsulated in biodegradable poly(lactide-co-glycolide) microparticles sustains its antibacterial activity against *Photobacterium damsela* subsp. piscicida in cobia. *Aquaculture.* 512:734290. doi.org/10.1016/j.aquaculture.2019.734290. (IF:4.242; Marine & Freshwater Biology 11/110=10%)
20. **Chuang SC**, Chung YC Yang CD. 2017. Protective immunity against toxoplasmosis in mice induced by single-dose immunization with rSAG1/2 protein released from poly(lactide-co-glycolide) microparticles. *Parasite* 24, 5. DOI: doi.org/10.1051/parasite/2017004. (IF:3; Parasitology 13/39=33.3%)
21. **Chuang SC**, Chen CH, Fu YC, Li CJ, Chang LF, Ho ML, Chang JK. 2015. Estrogen receptor mediates simvastatin-stimulated osteogenic effects in bone marrow mesenchymal stem cells. *Biochemical Pharmacology.* 98(3): 453-464. (IF:5.858; Pharmacology 38/275=13.3%)
22. Tai IC, Wang YH, Chen CH, **Chuang SC**, Chang JK, Ho ML. 2015. Simvastatin enhances Rho/actin/cell rigidity pathway contributing to mesenchymal stem cells' osteogenic differentiation. *Internat. J. Nano Med* 10:5881-5894. (IF:6.4; Pharmacology 27/275=9.8%)
23. Hsieh KC, Kao CL, Feng CW, Wen ZH, Chang HF, **Chuang SC**, Wang GJ, Ho ML, Wu SM, Chang JK, Chen HT. 2014. A novel anabolic agent: a simvastatin analogue without hmg-coa reductase inhibitory activity. *Organic Letters.* 16:4376-4379. DOI: 10.1021/ol501486b (IF:6.005; Chemistry, Organic. 6/57=10.5%)
24. **Chuang SC**, Yang CD. 2014. Sustained release of recombinant surface antigen 2 (rSAG2) from poly(lactide-co-glycolide) microparticles extends protective cell-mediated immunity against *Toxoplasma gondii* in mice. *Parasitology.* 18: 1-10 (IF:3.234; Parasitology 11/38=28.9%)

25. **Chuang SC**, Huang WL, Kau SW, Yang YP, Yang CD. 2014. Pleurocidin Peptide Enhances Grouper Anti-*Vibrio harveyi* Immunity Elicited by Poly(lactide-co-glycolide)-Encapsulated Recombinant Glyceraldehyde-3-phosphate Dehydrogenase. *Vaccines*. 2: 380-396. (IF:4.422; MEDICINE, RESEARCH & EXPERIMENTAL 63/140=45%)
26. Chang CH, **Chuang SC**, Wu JH, Chen JH. 2014. New species of earthworms belonging to the *Metaphire formosae* species group (Clitellata: Megascolecidae) in Taiwan. *Zootaxa*. Doi: dx.doi.org/10.11646/zootaxa.3774.4.2. (IF=1.091; Zoology 119/175=68%)
27. **Chuang SC** and Chen JH. 2013. Photooxidation and antioxidant responses in the earthworm *Amyntas gracilis* exposed to environmental levels of ultraviolet B radiation. *Comp. Biochem. Physiol. A. Mol. Integr. Physiol.* 164: 429-437. (IF:2.32; Zoology 32/175=18.2%)
28. **Chuang SC**, Ko JC, Chen CP, Du JT and Yang CD. 2013. Encapsulation of chimeric protein rSAG1/2 into poly(lactide-co-glycolide) microparticles induces long-term protective immunity against *Toxogondii gondii* in mice. *Experimental Parasitology*. 134(4):430-437 (IF=2.011; Parasitology 24/38=63.1%,)
29. **Chuang SC**, Ko JC, Chen CP, Du JT and Yang CD. 2013. Induction of long-lasting protective immunity against *Toxoplasma gondii* in BALB/c mice by recombinant surface antigen 1 protein encapsulated in poly (lactide-co-glycolide) microparticles. *Parasites & Vectors*. 6:34 (doi:10.1186/1756-3305-6-34) (IF=3.876; Parasitology 8/38=21%, Tropical Medicine 3/23=13%)
30. **Chuang SC**, Liao HJ, Li CJ, Wang GJ, Chang JK, Ho ML. 2013. Simvastatin enhances human osteoblast proliferation involved in mitochondrial energy generation. *E J Pharmacol* 714:74-82 (IF:4.432; Pharmacology 85/275=30.9%)
31. Lee MJ, Chen HT, Ho ML, Chen CH, **Chuang SC**, Huang SC, Fu YC, Wang GJ, Kang L and Chang JK, 2013. PPAR $\gamma$  silencing enhances osteogenic differentiation of human adipose-derived mesenchymal stem cells. *J. Cell. Mol. Med.*17(9):1188-1193 (IF: 5.31; Medicine, Research & Experimental 44/140=31.4%)
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33. **Chuang SC** and Chen JH. 2008. Role of diurnal rhythm of oxygen consumption in emergence from soil at night after heavy rain by earthworms. *Invertebrate Biol.* 127 (1):80–86 (IF:1.25, Zoology 106/175=60.5%)
34. Chang CH, Lin YH, Chen IH, **Chuang SC**, Chen JH. 2007. Taxonomic reevaluation of the Taiwanese montane earthworm *Amyntas wulinensis* Tsai, Shen and Tsai, 2001 (Oligochaeta: Megascolecidae): a polytypic species or a species complex? *Org. Divers. Evol.* 7:231-240. ( IF:2.94; Zoology 15/175=8.5% )
35. **Chuang SC**, Lai WS and Chen JH. 2006. Influence of ultraviolet radiation on selected physiological responses of earthworms. *J. Exp. Biol.* 209 : 4304-4312 (IF: 3.312; Biology 29/112=25.8%)

36. Blakmore RJ, Chang CH, **Chuang SC**, Ito M, James S, Chen JH. 2006. Biodiversity of Earthworms in Taiwan: a species checklist with a new record exotic lumbricid *Eisenia fetida* and confirmation of *Eiseniella tetraedra*. *Taiwania*: 51(3):226-236. (IF:0.925; Plant Science 195/235=82.9%)
37. Chang CH, **Chuang SC**, Chen YR, Chen JH. 2005. NADH Dehydrogenase subunit 1 gene of the earthworm *Amyntas gracilis* (Kinberg, 1867) (Oligochaeta: Megascolecidae), with the discussion on inferring the Megascolecid phylogeny using DNA sequences. *Taiwania*: 50(2):71-79. (IF:0.925; Plant Science 195/235=82.9%)
38. **Chuang SC**, Chen JH. 2005. The study of crawling behavior, oxygen consumption and oxidative stress in earthworm *Amyntas gracilis* after UV-B exposure. *Integr. Comp. Biol.* 45(6):1118. (Abstract) (IF: 3.326; Zoology 7/175=4%)
39. **Chuang SC**, Lee H, Chen JH. 2004. Diurnal rhythm and effect of temperature on oxygen consumption in earthworms, *Amyntas gracilis* and *Pontoscolex corethrurus*. *J. Exp. Zool.* 301A(9): 731-744. (IF:2.553; Zoology 29/175=16.5%)
40. Chen JH, **Chuang SC**. 2003. A new record of the bithecal megascolecid earthworm *Amyntas papilio* (Gates) (Oligochaeta) from Taiwan. *End. Spec. Res.* 5(2):89-94.
41. **Chuang SC**, Chen JH. 2002. A New Record Earthworm *Amyntas masatacae* (Beddard) (Megascolecidae: Oligochaeta) from Taiwan. *Acta Zool. Taiwan*, 13(2): 73-79.
42. Chang CH, Yang KW, Wu JH, **Chuang SC**, Chen JH 2001. The species composition of earthworms in the main campus of National Taiwan University. *Acta Zool. Taiwan*, 12:75-81.

## 專書

1. González G, Huang CY, **Chuang SC**. 2008. Earthworms and post agricultural succession in the Neotropics. In: *Post-Agricultural Succession in the Neotropics*. Edited by Randall W. Myster. Springer. Pages 115-138.

## 研討會

1. Chen CH, **Chuang SC**, Lin YS, Cheng MH, Chou LY, Wang CZ. 2021. Discoidin domain receptor 1 mediates the development of intervertebral disk by FoxA/Shh/Gli 1/Pax 1. ORS 2021 Annual Meeting, online. USA
2. **Chuang SC**, Lin YS, Chou LY, Wang CZ, Chen CH. 2020. Discoidin domain receptor 1 regulates the development of intervertebral disc. ORS 2020 annual meeting, Phoenix, AL, USA
3. Chou YS, **Chuang SC**, Chen CH, Ho ML, Chang JK. 2020. The G Protein Couple Estrogen Receptor-1(GPER-1) Regulates Chondrocyte Proliferation in Chondrocyte-Specific Knockout Mice. ORS 2020 annual meeting, Phoenix,AL, USA
4. **Chuang SC**, Shen CF, Ho ML, Chang JK. 2017. The G protein couple estrogen receptor-1(GPER-1) regulates endochondral bone formation in cultured tibia. 63<sup>th</sup> annual meeting of orthopaedic research society (ORS). Poster 1394. San Diego, CA. USA.
5. **Chuang SC**, Tai IC, Ho ML, Chang JK. 2016. Activation of G protein-coupled estrogen receptor-1 (GPER-1) promotes cell proliferation via p-CREB/cAMP/PKA pathway in murine bone marrow

mesenchymal stem cells. 62<sup>th</sup> annual meeting of orthopaedic research society (ORS). Poster 1574. Orlando, FL. USA.

6. **Chuang SC**, Tai IC, Shen CF, Ho ML, Chang JK. 2016. Overexpression COX-2 inhibited osteogenic differentiation in murine bone marrow mesenchymal stem cells. 62<sup>th</sup> annual meeting of orthopaedic research society (ORS). Poster 0714. Orlando, FL. USA.
7. **Chuang SC**, Hsiao PL, Ho ML, Chang JK. 2015. G protein-coupled estrogen receptor-1 (GPER-1) positively regulates cell proliferation via cAMP/PKA pathway in murine bone marrow mesenchymal stem cells. 61<sup>th</sup> annual meeting of orthopaedic research society (ORS). Poster 1447. Las Vegas, NV. USA
8. **Chuang SC**, Tai IC, Chang JK, Ho ML. 2014. Cyclooxygenase-2 negatively regulates osteogenic-differentiation via Foxo 3 $\alpha$ /p27<sup>kip1</sup> in murine bone marrow mesenchymal stem cells. 60<sup>th</sup> annual meeting of orthopaedic research society (ors). Poster 1472. New Orleans, LA. USA.
9. **Chuang SC**, Hsiao PL, Chang LF, Ho ML, Chang JK. 2014. G protein-coupled estrogen receptor-1(GPER-1) negatively regulated osteogenic-differentiation in murine bone marrow mesenchymal stem cells. 60<sup>th</sup> Annual meeting of orthopaedic research society (ORS). Poster 1473. New Orleans, LA. USA.
10. **Chuang SC**, Chang IF, Ho ML, Chang JK. 2013. Simvastatin-stimulated osteogenic effects is related to estrogen receptor in osteogenic lineage cells. 59th Annual meeting of orthopaedic research society (ORS), Poster 1501. San Antonio, TX. USA
11. **Chuang SC**, Tai IC, Chang JK, Ho ML. 2013. Cyclooxygenase-2 contributes to osteogenic-differentiation via p27kip1 in murine bone marrow mesenchymal stem cells. 59th Annual meeting of orthopaedic research society (ORS), Poster 0497. San Antonio, TX. USA
12. **Chuang SC**, Chang LF, Wang GJ, Ho ML, Chang JK. 2012. Estrogen receptor and GRP30 contribute to simvastatin-stimulated osteogenic effects on murine bone marrow mesenchymal stem cells. 58th Annual meeting of orthopaedic research society (ORS). Poster 1501. San Feancisco, CA. USA.
13. **Chuang SC**, Li CJ, Tai IC, Wang GJ, Chang JK, Ho ML. 2012. Cyclooxygenase-2 contributes to osteogenic-differentiation on murine bone marrow mesenchymal stem cells. 58th Annual meeting of orthopaedic research society (ORS). Poster 497. San Feancisco, CA. USA.
14. **Chuang SC**, Li CJ, Chen CH, Wang GJ, Ho ML, Chang JK. 2011. Estrogen receptor contributed to simvastatin-stimulated osteogenic effects on osteogenic lineage cells. 57th Annual meeting of orthopaedic research society (ORS), Poster 2298. Los Angeles, CA. USA
15. Li CJ, **Chuang SC**, Chang JK, Wang GJ, Ho ML. 2011 Constitutively Expressed COX-2 Contributes to the Earlier Stage of Bone Growth in Cultured Calvaria. 57th Annual meeting of orthopaedic research society (ORS). Poster 1689. Los Angeles, CA. USA
16. Chen HT, **Chuang SC**, Huang SC, Lee MJ, Chen CH, Wang GJ, Ho ML, Chang JK. 2011. Suppression of PPAR $\gamma$  enhances osteogenic differentiation and bone formation. 57th Annual meeting of orthopaedic research society (ORS). paper 0140. Los Angeles, CA. USA.
17. **Chuang, S. H.**, Li, C. J., Chen, C. H., Ho, M. L., Chang, J. K., 2010. Estrogen Receptor contributed to simvastatin-stimulated osteogenic effects on osteogenic lineage cells. Short Talk O297. 17<sup>th</sup> Congress of the Asia Pacific Orthopaedic Association. Taipei. Taiwan.

18. Chen, H. T., **Chuang, S. C.**, Huang, S. C., Lee, M. J., Chen, C. H., Wang, G. J., Ho M. L., Chang, J. K. 2010. Suppression of ppar $\gamma$  enhances osteogenic differentiation and bone formation. Poster 011. 17<sup>th</sup> Congress of the Asia Pacific Orthopaedic Association. Taipei. Taiwan.
19. Chang, J. K., **Chuang, S. H.**, Huang, Y. Z., Li, C. J., Chen, C. H., Ho, M. L. 2010. Simvastatin might enhance osteogenesis of osteogenic lineage cells through estrogen receptor. Short talk No. 2010-E276. 7<sup>th</sup> ORS combined meeting. Kyoto. Japan.
20. **Chuang, S.C.**, Huang, Y Z, Li, C J, Chen, C H, Ho M L, Chang J K. 2010. Estrogen receptor antagonist reverses the osteogenic effects of simvastatin on mouse mesenchymal stem cell. 56<sup>th</sup> Annual meeting of orthopaedic research society (ORS). Poster 512. New Orleans, LA. USA.
21. Chen JH, Yang SH, **Chuang SC**. 2007. Earthworm activities in the red soils of Taiwan. International symposium on soil biodiversity and ecology. P. 384-389. Taiwan. (Full paper)
22. **Chuang SC**, Lai WS, Yang CF, Chen JH. 2006. The study of abnormal movement behavior in earthworm *Amyntas gracilis* caused by UV-B radiation. The 8<sup>th</sup> international symposium on earthworm ecology. P. 152. Krakow. Poland.
23. Chen JH, Wu JH, **Chuang SC**. 2006. Nitrogenous waste excretion by earthworms under the mimic situation of drought and following a heavy rain. The 8<sup>th</sup> international symposium on earthworm ecology. P. 67. Krakow, Poland.
24. **Chuang SC, Chen JH**. 2006. The study of crawling behavior, oxygen consumption and oxygen stress in earthworm *Amyntas gracilis* after UV-B exposure. SICB (Society of integrative and comparative biology) 2006 Annual Meeting. P1.4. Orlando. FL. USA.
25. Wu YW, **Chuang SC**, Chen JH. 2004. Earthworms as potential remover for heavy metal cadmium in Taiwan. International symposium on impacts of soil biodiversity on biogeochemical processes in ecosystems & workshop on molecular methods in soil biological and biochemical diversity in terrestrial ecosystems. P41.