

## PERSONAL DATA

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Chung-Der Hsiao is Distinguished Professor of Chung Yuan Christian University for Department of Bioscience Technology. He completed the undergraduate and graduate education in National Taiwan University (majored in Fishery Science). For postdoctoral training, he joined Dr. Pung-Pung Hwang's group at ICOB, Academia Sinica, and worked on fish physiology and bioinformatics. By 2007, Chung-Der was recruited by Chung Yuan Christian University and established his own laboratory, where he used the cutting-edge methods to generate many zebrafish disease models like apoptosis, obesity, skin cancer and aging. From 2012, Chung-Der was invited by GeneTex International Corp, Zgenebio Biotech and Taikong Corp as research consultant to initiate several cooperation projects on developing zebrafish antibodies, TALEN/CRISPR genome editing tools, transgenic fish, next generation sequencing technologies as well as Zebrafish behavioral assessment tools. From 2019, Chung-Der was promoted as full professor of Chung Yuan Christian University; and from 2021, Chung-Der was promoted as director of Research Center for Aquatic Toxicology and Pharmacology. Recent studies in Chung-Der's lab focus on using deep learning technology to study animal neuro behavior and cardiac physiology. Chung-Der (*H-index* 36) is author of over 250 high impact journal articles, including *Nature*, *Nature Physics*, *Biomedicine & Pharmacotherapy*, *Environmental pollution*, *Ecotoxicology and Environmental Safety* etc. He is frequently invited to talk at international and local conferences across a diverse range of fields, and has also spoken to school, students and public audiences. His research has strong application potentials and several patents have been issued regarding to use zebrafish as a human disease models like aging, obesity and cancer. ([https://www.researchgate.net/profile/Chung\\_Der\\_Hsiao](https://www.researchgate.net/profile/Chung_Der_Hsiao))

## EDUCATION & EXPERIENCES

### Experience:

Postdoc (2003-2004) Institute of Molecular Biology, Academia Sinica, Taiwan

Distinguished Postdoc (2004-2006) Institute of Cellular and Organismic Biology, Academia Sinica, Taiwan

Visiting scientist (2006/3-2006/12) Institute of Molecular and Cellular Biology (IMCB), A-Star, Singapore

Visiting scientist (2009/7-2009/12) Genome Research Center, Academia Sinica, Taiwan

Assistant professor (2007/8-2013/7) Department of Bioscience Technology, Chung Yuan Christian University, Taiwan

Associate professor (2013/8-2019/7) Department of Bioscience Technology, Chung Yuan Christian University, Taiwan

Professor (2019/7-now) Department of Bioscience Technology, Chung Yuan Christian University, Taiwan

Department of Chemistry, Chung Yuan Christian University, Taiwan

Vice Director (2021/7-now), Center of Nanotechnology, Chung Yuan Christian University, Taiwan

Director (2021/7-now), Research Center for Aquatic Toxicology and Pharmacology,

Chung Yuan Christian University, Taiwan  
Professor (2024/7-now) Distinguished Professor, Chung Yuan Christian University,  
Taiwan

**Academic education:**

Ph.D. (1998-2002) Institute of Fisheries Science, National Taiwan University, Taiwan  
M.Sc. (1995-1998) Institute of Fisheries Science, National Taiwan University, Taiwan  
B.Sc. (1991-1995) Department of Zoology, National Taiwan University, Taiwan

**RESEARCH INTERESTS**

1. Zebrafish genetic mutant screening and gene functional manipulation
2. High efficient plasmid construction by using Gateway recombination
3. High efficient transgenesis in Zebrafish by using Tol2 transposon
4. Conditionally gene expression by using Heat shock and Cre/LoxP system
5. Fluorescent double in situ hybridization and immunostaining
6. Confocal laser scan microscope and cell imaging
7. High resolution histology by using resin section
8. Image-based cytometry analysis of cell cycle deregulation
9. Transcriptomic analysis of gene expression by microarray and deep sequencing
10. TALEN/CRISPR-mediated gene knock out technology
11. Large-scale screening of suitable antibodies for serving Zebrafish community
12. Development of new small animal models suitable for performing drug screening
13. Animal behavioral assessment and new software development

**GRANTS AND AWARDS:**

2001 Chien-Tien Hsu's Award Presentation, The Chinese Society of Cell and Molecular Biology  
2001/2002 Outstanding Students Conference Travel Grant, Foundation for the Advancement of Outstanding Scholarship  
2004 Distinguished Postdoctoral Fellowship, Academia Sinica  
2004 Research Travel Grant, Max-Planck-Institute of Molecular Genetics, Germany  
2004 Outstanding Post-Doctor Researchers Conference Travel Grant, Foundation for the Advancement of Outstanding Scholarship  
2006 Visiting Scientist Research Grant, IMCB, A-Star, Singapore  
2009 Visiting Scientist Research Grant, Genome Research Center, Academia Sinica  
2020 Annual subsidies research rewards for colleges and universities  
2021 Annual subsidies research rewards for colleges and universities  
2022 Annual subsidies research rewards for colleges and universities  
2023 Annual subsidies research rewards for colleges and universities

Duration	Title of research project	Supported by
2024/8-2027/7	Construct new clustering methods for analyzing 3D locomotion behaviors in zebrafish and its application (113-2313-B-033-001-MY3)	MOST (PI)
2022/8-2023/7	Automated cardiac physiology measurement in water fleas by using deep learning and its application for cardiotoxicity assessment (111-2313-B-033-001)	MOST (PI)
2022/8-2023/7	Alkaloids-induced cognitive behavioral dysregulation and systematic networks in zebrafish (111-2313-B-034 -005)	MOST (Co-PI)
2022/8-2023/7	Analyze the behavior patterns of zebrafish under single and double stress with fractal dimension and entropy (111-2313-B-153-001)	MOST (Co-PI)

2021/8-2022/7	Cognitive Behavioral and Methylation Network in Tets Mutated Zebrafish (110-2313-B-034-002)	MOST (Co-PI)
2021/8-2022/7	Defining the Role of Resistin in the Pathophysiology of Melanoma (110-2314-B-037-106)	MOST (Co-PI)
2020/8-2021/7	Anxiety-Induced Circadian Dysregulation and Methylation Network in Dnmt3a Mutated Zebrafish (MOST109-2313-B034-003)	MOST (Co-PI)
2020/8-2021/7	Developing Ultramicro-Analytic Tool of Gold Quantification for Monitoring the Whole Life-Cycle Biodegradation of Fluorescent Gold Nanoclusters: from Molecular Modeling, Cell Analysis toward Zebrafish Investigation (109-2221-E033-023)	MOST (Co-PI)
2019/8-2020/7	Application of UVB-induced early biomarkers as screening platform for collagen extract in zebrafish (108-2313-B-034-002)	MOST (Co-PI)
2019/8-2022/7	Generation of leptin gene knockout zebrafish for mechanistic studies on obesity and behavioral abnormality (108-2313-B-033-001-MY3)	MOST (PI)
2018/6-2020/5	Design simple and cost-effective devices for physiology and behavior studies in fish (107-2622-B-033-001-CC2; 108-2622-B-033-001-CC2)	MOST (PI)
2016/8-2019/7	Function assay of proline synthesis genes on aging by using overexpression and knockout approaches (105-2313-B-033-001-MY3)	MOST (PI)
2015/8-2018/7	Using Next-Generation Sequencing Studies the Genetic Variants of Taiwan Familial Breast Cancer Patients and Searches New Genes as Well as to Establish Animal Model to Investigate Carcinogenic Mechanism (104-2314-B-002-106-MY3)	MOST (Co-PI)
2013/8-2016/7	Establish a transgenic zebrafish platform to validate potential oncogene in vivo (102-2311-B-033-001-MY3)	MOST (PI)
2013/8-2014/7	The Role and Function of Leucine-Rich Repeats and Wd Repeat Domain Containing 1 (LRWD1) in Sperm-Tail Formation and Microtubule Construction (102-2314-B-024-001)	MOST (Co-PI)
2013/2-2015/1	Optimization of Talen Technology to Overcome the Technical Bottleneck of Gene Knock-Out in Model Animals (102-2622-B-033-002-CC2)	MOST (PI)
2012/11-2014/10	Screening Cancer-Related Antibodies for Serving Zebrafish Community (101-2622-B-033-001-CC2)	MOST (PI)
2012/8-2013/7	From Chip to Fish: an Integrative Approach for Identifying Novel Agents against Gastrointestinal Stromal Tumor (101-2314-B075-029)	MOST (Co-PI)
2011/11-2012/10	Production and Validation of High Quality Antibodies for Serving Zebrafish Research Community (100-2622-B-033-001-CC3)	MOST (PI)
2010/8-2013/7	Functional Assay of Akt Signaling on Adipogenesis in Zebrafish (99-2320-B-033-001-MY3)	MOST (PI)
2007/12-2009/7	Differentiation Mechanism of Skin and Gill Ionocytes in Fish (96-2321-B-033-002-MY2)	MOST (PI)

## PUBLICATIONS (2020-2024)

### 2024

1. Luong CT, Audira G, Kurnia KA, Hung CH\*, **Hsiao CD\***. Fish 3D locomotion APP (F3LA): a user-friendly computer application package for automatic data calculation and endpoint extraction for novel tank behavior in fish. *Journal of Fish Biology* (**In press**)
2. Kurnia KA, Saputra F, Luong CT, Roldan MJM, Cheng TS\*, **Hsiao CD\***. Performance Comparison for Five Methods Available in ImageJ for Bird Counting and Detection from Video Datasets. *Inventions* (**In press**)
3. Siregar P, Hsieh YC, Audira G, Suryanto ME, Macabeo AP, Vasquez RD, **Hsiao CD\***.

- Toxicity Evaluation of Neonicotinoids to Earthworm (*Eisenia fetida*) Behaviors by a Novel Locomotion Tracking Assay. *Environmental Pollution* (**In press**)
4. Chen HC, Feng WW, Audira G, Kurnia KA, Hung SH, Castillo AL, Roldan MJM, **Hsiao CD\***, Hung CH\*. Evaluation of Sub-Chronic Toxicity of Melamine via Systematic or Oral Delivery in Adult Zebrafish Based on Behavioral Endpoints. *Neurotoxicology* (**In press**)
  5. Audira G, Lee JS, Vasquez RD, Roldan MJM, Lai YH, **Hsiao CD\***. Assessments of Carbon Nanotubes Toxicities in Zebrafish larvae using Multiple Physiological and Molecular Endpoints. *Chemico-Biological Interactions* (**In press**)
  6. Siregar P, L YS, Casuga FP, Huang CY, Chen KHC, Huang JC, Hung CH, Lin YK\*, **Hsiao CD\***, Lin HY\*. Optimization of Laser-Based Method to Conduct Skin Ablation in Zebrafish and Development of Deep Learning-Based Method for Skin Wound-Size Measurement. *Inventions* (**In press**)
  7. Feng WW, Chen HC, Audira G, Suryanto ME, Saputra F, Kurnia KA, Vasquez RD, Casuga FP, Lai YH, **Hsiao CD\***, Hung CH\*. Evaluation of Tacrolimus' Adverse Effects on Zebrafish in Larval and Adult Stages by Using Multiple Physiological and Behavioral Endpoints. *Biology* 13(2): 112.

## 2023

8. Luong CT, Farhan A, Vasquez RD, Roldan MJM, Lin YK, Hsu SY, Lin MD, Hsiao CD\*, Hung CH\*. SpiderID\_APP: A User-Friendly APP for Spider Identification in Taiwan Using YOLO-Based Deep Learning Models. *Inventions*. 2023; 8(6):153.
9. Chang WC, Chen MJ, Hsiao CD, Hu RZ, Huang YS, Chen YF, Yang TH, Tsai GY, Chou CW, Chen RS, Chuang YJ, Liu YW\*. 2023. The anti-platelet drug cilostazol enhances heart rate and interrenal steroidogenesis and exerts a scant effect on innate immune responses in zebrafish. *Plos One* 18(10): e0292858.
10. Audira G, Huang JC, Chen KHC, Kurnia KA, Vasquez RD, Roldan MJM, Lai YH, Hsiao CD\*, Yen CY\*. A Comprehensive Painkillers Screening by Assessing Zebrafish Behaviors after Caudal Fin Amputation. *Biomedicine & Pharmacotherapy* 168, 115641.
11. Suryanto ME, Audira G, Roldan MJM, Lai HT, Hsiao CD\*. Color Perspectives in Aquatic Explorations: Unveiling Innate Color Preferences and Psychoactive Responses in Freshwater Crayfish. *Toxics* 11, 838.
12. Suryanto ME, Luong CT, Vasquez RD, Roldan MJM, Hung CH, Ger TR\*, Hsiao CD\*. Using crayfish behavior assay as a simple and sensitive model to evaluate potential adverse effects of water pollution: emphasis on antidepressants. *Ecotoxicology and Environmental Safety* (**In press**)
13. Saputra F, Suryanto ME, Audira G, Luong CT, Hung CH, Roldan MJM, Vasquez RD, Hsiao CD\*. Using DeepLabCut for markerless cardiac physiology and toxicity estimation in water fleas (*Daphnia magna*). *Aquatic Toxicology* (**In press**)
14. Saputra F, Lai YH, Roldan MJM, Alos HC, Aventurado CA, Vasquez RD\*, Hsiao CD\*. Effect of Pyrethroid Pesticide Fenpropathrin on the Cardiac Performance of Zebrafish and the Potential Mechanism of Toxicity. *Biology* 12,1214.
15. Kurnia KA, Lin YT, Farhan A, Malhotra N, Luong CT, Hung CH, Roldan MJM, Tsao CC, Cheng TS\*, Hsiao CD\*. Deep Learning-Based Automatic Duckweed Counting using StarDist and its Application on Measuring Growth Inhibition Potential of Rare Earth Elements as Contaminants of Emerging Concerns. *Toxics*, 11, 680.
16. De Leon MP, Wen FL, Paylaga GJ, Wang YT, Roan HY, Wang CH, Hsiao CD, Lin KH\*, Chen CH\*. Mechanical waves identify the amputation position during wound healing in the amputated zebrafish tailfin. *Nature Physics*, 1-9.
17. Balittan JNl, Luo WJ, Su YW, Yu CY, Wu TY, Chang CA, Jia HW, Lin SR, Hsiao CD\*, Yeh JM\*. Healing Wounds Efficiently with Biomimetic Soft Matter: Injectable Self-Healing Neutral Glycol Chitosan/Dibenzaldehyde-Terminated Poly (ethylene glycol) Hydrogel with Inherent Antibacterial Properties. *ACS Applied Bio Materials* 6: 552-565.

## 2022

18. Audira G, Hsu TW, Chen KHC, Huang JC, Lin MD\*, Ger TR\*, Hsiao CD\*. **2022**. A Fast and Cost-Effective (FACE) Instrument Setting to Construct Focus-Extended Images.

- Inventions 7, 110.
19. Siregar P, Audira G, Castillo AL, Roldand MJM, Suryanto ME, Liu RX, Lin YT\*, Lai YH\*, Hsiao CD\*. Comparison of the psychoactive activity of four primary Areca nut alkaloids in zebrafish by behavioral approach and molecular docking. *Biomedicine & Pharmacotherapy* 155, 113809.
  20. Farhan A, Saputra F, Suryanto ME, Humayun F, Pajimna RMB, Vasquez RD, Roldan MJM, Audira G, Lai HT, Lai YH\*, Hsiao CD\*. OpenBloodFlow: A User-Friendly OpenCV-based Software Package for Blood Flow Velocity and Blood Cell Count Measurement for Fish Embryos. *Biology* 11, 1471.
  21. Lin HC, Saputra F, Audira G, Lai YH, Roldan MJM, Alos HC, Aventurado CA, Vasquez RD, Tsai GJ, Lim KH\*, Hsiao CD\*. Investigating Potential Cardiovascular Toxicity of Two Anti-Leukemia Drugs of Asciminib and Ponatinib in Zebrafish Embryos. *Int. J. Mol. Sci.* 23, 11711.
  22. Abbas K, Raza A, Vasquez RD, Roldan MJM, Malhotra N, Huang JC, Buenafe OEM, Chen KHC, Liang SS\*, Hsiao CD\*. Ractopamine at the center of decades-long scientific and legal disputes: A lesson on benefits, safety issues, and conflicts. *Biomolecules* 12, 1342.
  23. Suryanto ME, Saputra F, Kurnia KA, Vasquez RD, Roldan MJM, Chen KHC, Huang JC, Hsiao CD\*. Using DeepLabCut as Real-Time and Markerless Tool for Cardiac Physiology Assessment in Zebrafish. *Biology* 11, 1243.
  24. Young AYW, Audira G, Saputra F, Alos HC, Aventurado CA, Lai YH, Vasquez RD\*, Hsiao CD\*, Hung CH\*. Toxicity Assessment of an Anti-Cancer Drug of p-Toluene Sulfonamide in Zebrafish Larvae Based on Cardiovascular and Locomotion Activities. *Biomolecules* 12, 1103.
  25. Suryanto ME, Yang CC, Audira G, Vasquez RD, Roldan MJM, Ger TR\*, Hsiao CD\*. Evaluation of Locomotion Complexity in Zebrafish After Exposure to Twenty Antibiotics by Fractal Dimension and Entropy Analysis. *Antibiotics* 11,1059.
  26. Suryanto ME, Vasquez RD, Roldan MJM, Chen KHC, Huang JC, Hsiao CD\*, Tsao CC\*. Establish a High-Throughput Locomotion Tracking Method for Multiple Assessment in Tetrahymena. *Cells.* 11, 2326.
  27. Saputra F†, Farhan A†, Suryanto ME, Kurnia KA, Chen KHC, Vasquez RD, Roldan MJM, Huang JC\*, Lin YK\*, Hsiao CD\*. Automated Cardiac Chamber Size and Cardiac Physiology Measurement in Water Fleas by U-Net and Mask RCNN Convolutional Networks. *Animals* 12, 1670.
  28. Audira G, Suryanto ME, Chen KHC, Vasquez RD, Roldan MJM, Yang CC, Hsiao CD\*, Huang JC\*. Acute and Chronic Effects of Fin Amputation on Behavior Performance of Adult Zebrafish in 3D Locomotion Test Assessed with Fractal Dimension and Entropy Analyses and Their Relationship to Fin Regeneration. *Biology.* 11, 969.
  29. Lin YT, Liu RX, Audira G, Suryanto ME, Roldan MJM, Lee JS\*, Ger TR\*, Hsiao CD\* , Lanthanides Toxicity in Zebrafish Embryos Are Correlated to Their Atomic Number. *Toxics.* 10, 336
  30. Kurnia KA, Sampurna BP, Audira G, Juniardi S, Vasquez RD, Roldan MJM, Tsao CC\*, Hsiao CD\*. Performance Comparison of Five Methods for Tetrahymena Number Counting in the Imagej Platform: Assessing the Built-in Tool and Machine Learning-Based Extension. *IJMS* (accepted)
  31. Chan KY, Yan CCS, Roan HY, Hsu SC, Tseng TL, Hsiao CD, Hsu CP, Chen CH\*. Skin cells undergo asynthetic fission to expand body surfaces in zebrafish. *Nature*, In press

## 2021

32. Duan XY, Ma RJ; Hsiao CD, Jiang ZZ, Zhang LY, Zhang Y\*, Liu KC. **2021.**Tripterygium wilfordii multiglycoside-induced hepatotoxicity via inflammation and apoptosis in zebrafish. *Chinese Journal of Natural Medicines* 19, 750-757.
33. Farhan A, Kurnia KA, Saputra F, Chen KHC, Huang JC, Roldan MJM, Lai YH\*, Hsiao CD\*. An OpenCV-Based Approach for Automated Cardiac Rhythm Measurement in Zebrafish from Video Datasets. *Biomolecules* 11(10), 1476.
34. Wu CL, Lin LF, Hsu HC, Huang LF, Hsiao CD, Chou ML\*. *Saussurea involucreata* (Snow

- Lotus) ICE1 and ICE2 Orthologues Involved in Regulating Cold Stress Tolerance in Transgenic Arabidopsis. *IJMS* 22(19), 10850.
35. Abbas K, Saputra F, Suryanto ME, Lai YH, Huang JC, Yu WH, Chen KHC\*, Lin YT\*, Hsiao CD\*. Evaluation of Effects of Ractopamine on Cardiovascular, Respiratory, and Locomotory Physiology in Animal Model Zebrafish Larvae. *Cells* 10(9), 2449.
  36. Malhotra N, Chen KHC, Huang JC, Lai HT, Uapipatanakul B, Roldan MJM, Macabeo APG\*, Ger TR\*, Hsiao CD\*. Physiological Effects of Neonicotinoid Insecticides on Non-Target Aquatic Animals—An Updated Review. *IJMS* 22(17), 9591.
  37. Feng Z, Lin C, Tu L, Su M, Song C, Liu S, Suryanto ME, Hsiao CD\*, Li L\*. An FDA-approved Drug Screening for Compounds that Facilitate Hematopoietic Stem and Progenitor Cells (HSPCs) Expansion in Zebrafish. *Cells* 10(8), 2149.
  38. Kurnia KA, Santoso F, Sampurna BP, Audira G, Huang JC, Chen KHC\*, Hsiao CD\*. TCMacro: A Simple and Robust ImageJ-Based Method for Automated Measurement of Tail Coiling Activity in Zebrafish. *Biomolecules* 11(8), 1133.
  39. Saputra F, Uapipatanakul B, Lee JS, Hung SM, Huang JC, Pang YC, Muñoz JER, Macabeo APG\*, Chen KHC\*, Hsiao CD\*. Co-treatment of Copper Oxide Nanoparticle and Carbofuran Enhances Cardiotoxicity in Zebrafish Embryos. *IJMS* 22(15), 8259.
  40. Du ZC, Xia ZS, Zhang MZ, Wei YT, Malhotra N, Saputra F, Audira G, Roldan MJM, Hsiao CD\*, Hao EW\*, Hou XT\*, Deng JG\*. Sub-lethal Camphor Exposure Triggers Oxidative Stress, Cardiotoxicity and Cardiac Physiology Alterations in Zebrafish Embryos. *Cardiovascular Toxicology* (In press)
  41. Audira G, Lai YH, Huang JC, Chen KHC, Hsiao CD\*. Phenomics Approach to Investigate Behavioral Toxicity of Environmental or Occupational Toxicants in Adult Zebrafish (*Danio rerio*). *Current Protocols in Toxicology* e223, Volume 1 (doi: 10.1002/cpz1.223).
  42. Li P, Zhang M, Xie D, Zhang X, Zhang S, Gao F, Wang Y, Hsiao CD, Li X\*, Liu K\*. Characterization and bioactivities of phospholipids from squid viscera and gonads using ultra-performance liquid chromatography-Q-exactive orbitrap/mass spectrometry-based lipidomics and zebrafish models. *Food & Function* (In press)
  43. Malhotra N, Audira G, Castillo AL, Siregar P, Ruallo JMS, Roldan MJM, Chen JR, Lee JS\*, Ger TR\*, Hsiao CD\*. An Update Report on the Biosafety and Potential Toxicity of Fullerene-Based Nanomaterials toward Aquatic Animals. *Oxidative Medicine and Cellular Longevity* (Article ID 7995223)
  44. Saputra F, Lai YH, Fernandez RAT, Macabeo APG, Lai HT\*, Huang JC\*, Hsiao CD\*. Acute and Sub-Chronic Exposure to Artificial Sweeteners at the Highest Environmentally Relevant Concentration Induce Less Cardiovascular Physiology Alterations in Zebrafish Larvae. *Biology* 10(6), 548.
  45. Audira G, Siregar P, Chen KHC, Roldan MJM, Huang JC\*, Lai HT\*, Hsiao CD\*. Interspecies Behavioral Variability of Medaka Fish Assessed by Comparative Phenomics. *IJMS* 22(11), 5686.
  46. Siregar P, Audira G, Feng LY, Lee JH, Santoso F, Yu WH, Lai YH, Li JH\*, Lin YT\*, Chen JR, Hsiao CD\*. Pharmaceutical Assessment Suggests Locomotion Hyperactivity in Zebrafish Triggered by Arecoline Might be Associated with Multiple Muscarinic Acetylcholine Receptors Activation. *Toxins* 13(4), 259.
  47. Suryanto ME, Audira G, Uapipatanakul B, Hussain A, Saputra F, Siregar P, Chen KHC\*, Hsiao CD\*. Antidepressant screening demonstrated non-monotonic responses to amitriptyline, amoxapine, and sertraline in locomotor activity assay in larval zebrafish. *Cells* 10(4), 738.
  48. Audira G, Lee JS, Siregar P, Malhotra N, Roldan MJM, Huang JC, Chen KHC, Hsu HS, Hsu YC, Ger TR, Hsiao CD\*. Comparison of the Chronic Toxicities of Graphene and Graphene Oxide toward Adult Zebrafish by Using Biochemical and Phenomic Approaches. *Environmental Pollution* (In press).
  49. Siregar P, Suryanto ME, Chen KHC, Huang JC, Chen HM, Kurnia KA, Santoso F, Hussain A, Bui TNH, Saputra F, Audira G, Roldan MJM, Fernandez RA, Macabeo APG\*, Lai HT\*, Hsiao CD\*. Exploiting the freshwater shrimp *Neocaridina denticulata* as

aquatic invertebrate model to evaluate non-targeted pesticide induced toxicity by investigating physiologic and biochemical parameters. *Antioxidants* 10(3), 391.

50. Gao M, Xing C, Jiang X, Xu L, Li P\*, Hsiao CD. Highly selective fluorescence detection of Cu<sup>2+</sup> based on Schiff base functionalized Periodic Mesoiporous Organosilicas. *Luminescence* (In press).
51. Zhang F, Han L, Wang J, Shu M, Liu K, Zhang Y, Hsiao CD, Tian Q\*, He Q\*. Clozapine Induced Developmental and Cardiac Toxicity on Zebrafish Embryos by Elevating Oxidative Stress. *Cardiovasc Toxicol.* (In press)
52. Kurnia KA, Saputra F, Roldan MJM, Castillo AL, Huang JC, Chen KHC\*, Lai HT\*, Hsiao CD\*. Measurement of Multiple Cardiac Performance Endpoints in Daphnia and
53. Zebrafish by Kymograph. *Inventions*, 6(1), 8.

## 2020

54. Wang J, Liu K, Mo C, Oleksandr MH, Zhang Y, Chen JR, Hsiao CD\*, Zhu Q\*, He Q\*. 2020. Nano-titanium nitride causes developmental toxicity in zebrafish through oxidative stress. *DRUG AND CHEMICAL TOXICOLOGY* (In press)
55. Lai YH#, Audira G#, Liang ST, Siregar P, Suryanto ME, Lin HC, Villalobos O, Villaflores OB, Hao E\*, Lim KH\*, Hsiao CD\*. Duplicated dnmt3aa and dnmt3ab DNA Methyltransferase Genes Play Essential and Non-Overlapped Functions on Modulating Behavioral Control in Zebrafish. *Genes* 11(11), 1322
56. Robea MA, Jijie R, Nicoara M, Plavan G, Ciobica AS\*, Solcan C, Audira G, Hsiao CD\*, Strungaru SA\*. Vitamin C Attenuates Oxidative Stress and Behavioural Abnormalities Triggered by Fipronil and Pyriproxyfen Insecticide Chronic Exposure on Zebrafish Juvenile. *Antioxidants* 9(10):944.
57. Audira G, Nguyen TNA, Bui TNH, Malhotra N, Siregar P, Villalobos O, Villaflores OB, Ger TR, Huang JC, Chen KH\*, Hsiao CD\*. Evaluation of the Adverse Effects of Chronic Exposure of Donepezil (An Acetylcholinesterase Inhibitor) in Adult Zebrafish by Behavioral and
58. Biochemical Assessments. *Biomolecules* 10(9):1340.
59. Malhotra N, Hsu HS, Liang ST, Roldan MJM, Lee JS\*, Ger TR\*, Hsiao CD\*. An Updated Review of Toxicity Effect of the Rare Earth Elements (REEs) on Aquatic Organisms. *Animals* 10(9):1663.
60. Santoso F, Krylov VV, Castillo AL, Saputra F, Chen HM, Lai HT\*, Hsiao CD\*. Cardiovascular Performance Measurement in Water Fleas by Utilizing High-speed Videography and ImageJ Software and Its Application for Pesticide Toxicity Assessment. *Animals* 10(9):1587.
61. Santoso F, Farhan A, Castillo AL, Malhotra N, Saputra F, Kurnia KA, Chen KHC, Huang JC\*, Chen JR\*, Hsiao CD\*. An Overview of Methods for Cardiac Rhythm Detection in Zebrafish. *Biomedicines* 8(9):329.
62. Hussain A, Audira G, Malhotra N, Uapipatanakul B, Chen JR, Lai YH, Huang JC, Chen KHC \*, Lai HT\*, Hsiao CD\*. Multiple Screening of Pesticides Toxicity in Zebrafish and Daphnia Based on Locomotor Activity Alterations. *Biomolecules* 10(9), 1224.
63. Hsiao CD, Wu HH, Malhotra N, Liu YC, Wu YH, Lin YN, Saputra F, Santoso F, Chen KHC\*.
64. Expression and Purification of Recombinant GHK Tripeptides able to Protect against Acute Cardiotoxicity from Exposure to Waterborne-Copper in Zebrafish. *Biomolecules* 10(9):1202.
65. Malhotra N, Villaflores OB, Audira G, Siregar P, Lee JS\*, Ger TR\*, Hsiao CD\*. Toxicity Studies on Graphene-based Nanomaterials in Aquatic Organisms: Current Understanding. *Molecules* 25(16): 3618.
66. Siregar P, Juniardi S, Audira G, Lai YH, Huang JC, Chen KHC \*, Chen JR\*, Hsiao CD\*. Method Standardization for Conducting Innate Color Preference Study in Different Zebrafish Strains. *Biomedicines* 8(8):271.
67. Audira G, Siregar P, Strungaru SA, Huang JC\*, Hsiao CD\*. Which Zebrafish Strains Are More Suitable to Perform Behavioral Studies ? A Comprehensive Comparison by Phenomic Approach. *Biology* 9(8):200.

68. Audira G, Siregar P, Chen JR, Lai YH, Huang JC, Hsiao CD\*. Systematical Exploration of the Common Solvent Toxicity at Whole Organism Level by Behavioral Phenomics in Adult Zebrafish. *Environmental Pollution* (In press).
69. Malhotra N, Lee JS, Liman RAD, Ruallo JMS, Villaflores OB, Ger TR\*, Hsiao CD\*. Potential Toxicity of Iron Oxide Magnetic Nanoparticles: A Review. *Molecules* 25(14), 3159.
70. Chen RY, Bui TNH, Audira G, Lou B\*, Lin MD\*, Hsiao CD\*. Meta-transcriptomic Analysis of RNAseq Data Reveals Pacu and Loach Fish with Unusually High Levels of Myoglobin Expression in Skeletal Muscles. *Animals* 10, 1130.
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