Kang-Ling Liao

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Research Interests

- Mathematical Biology and Modeling: Cancer Immunoediting, Immunology, G Protein Complex, Pattern Formation in Somitogenesis, Gene Regulation, Ecology, Data Fitting
- Dynamical Systems, Differential Equations, Delay Differential Equations, Bifurcation Theory

Selected Academic Positions

- Assistant Professor — January 2022 – Present
  Department of Mathematics
  University of Manitoba, Canada
- Assistant Professor (Joint appointment) — November 2018 – December 2021
  Department of Mathematics (main department) & Department of Biological Sciences
  University of Manitoba, Canada
- Postdoctoral Research Associate — July 2015 –May 2017
  Department of Biology, The University of North Carolina at Chapel Hill, U.S.A.
  Mentors: Prof. Alan M. Jones (Department of Biology),
  Prof. Timothy C. Elston (Department of Pharmacology)
- Postdoctoral Fellow — June 2012 – July 2015
  Mathematical Biosciences Institute, The Ohio State University, U.S.A.
  Mentors: Prof. Avner Friedman and Prof. Yuan Lou (Department of Mathematics)
  Prof. Xue-Feng Bai (Department of Pathology)

Education

- National Chiao Tung University, Taiwan — March 2012
  (Current: National Yang Ming Chiao Tung University)
  Ph. D., in Applied Mathematics (Advisor: Prof. Chih-Wen Shih)
  Thesis: *Analysis on mathematical models of somitogenesis in zebrafish*
- National Taiwan University, Taiwan — June 2005
  M.S., in Mathematics (Advisor: Prof. Chiun-Chuan Chen)
  Thesis: *Traveling Wavefronts in Cooperative Lotka-Volterra System with Time Delays*
- Fu Jen Catholic University, Taiwan — June 2003
  B.S., in Applied Mathematics

Publications (HQPs are highlighted with *, Correspondence authors are highlighted with underline)

Journal Publications

1. **Kang-Ling Liao,** Xue-Feng Bai, and Avner Friedman, 2023, IL-27 in combination with anti-PD-1 can be anti-cancer or pro-cancer agent, ***Journal of Theoretical Biology***, accepted.
2. **Kang-Ling Liao**, Kenton D. Watt*, and Tom Protin*, 2023, Different mechanisms of CD200-CD200R induce diverse outcomes in cancer treatment, ***Mathematical Biosciences***, 365; 109072.
3. Isam Al-Darabsah*, **Kang-Ling Liao**, and Stéphanie Portet, 2023, A simple in-host model for COVID-19 with treatments: model prediction and calibration, ***Journal of Mathematical Biology***, 10; 86(2): 20.
4. Kenton D. Watt* and **Kang-Ling Liao**, 2022, Combination therapy for cancer with IL-27 and anti-PD-1: A simplified mathematical model, ***Mathematics in Applied Sciences and Engineering***, 3(4), 200-279.
5. Ting-Ying Wu*, Shalini Krishnamoorthi, Kulaporn Boonyaves, Isam Al-Darabsah*, Richalynn Leong, Alan M. Jones, Kimitsune Ishizaki, **Kang-Ling Liao**, and Daisuke Urano, 2022, G protein controls stress readiness by modulating transcriptional and metabolic homeostasis in Arabidopsis thaliana and Marchantia polymorpha, ***Molecular Plant***, 2022 Nov 1: S1674-2052(22)00372-0.
6. **Kang-Ling Liao** and Kenton D. Watt*, 2022, Mathematical modeling and analysis of anti-PD-1 and IFN-gamma synergy in cancer immunotherapy, ***Mathematical Biosciences***, Sep 20; 353: 108911.
7. **Kang-Ling Liao** and Kenton D. Watt*, 2022, Mathematical modeling and analysis of CD200-CD200R in cancer treatment, ***Bulletin of Mathematical Biology***, Jul 6; 84(8): 82.
8. **Kang-Ling Liao**, Wei-Chen Chang*, Jeffrey M. Marcus, and Jenn-Nan Wang, 2021, Mathematical modeling of eyespot pattern formation in butterfly wings, ***Journal of Theoretical Biology***, No. **531**, 110898.
9. Annette Dumas*, **Kang-Ling Liao**, and Ken M. Jeffries, Mathematical modeling of heat shock protein in fish, 2021, ***Mathematical Biosciences***, 108692.
10. **Kang-Ling Liao**, Chih-Wen Shih, and Chi-Jer Yu, 2018, The snapback repellers for chaos in multi-dimensional maps, ***Journal of Computational Dynamics***, No. 5, 81-92.
11. Meral Tunc-Ozdemir, **Kang-Ling Liao**, Timothy Ross-Elliot, Timothy C. Elston, and Alan M. Jones, 2018, Long-distance communication in Arabidopsis involving a self-activating G protein, ***Plant Direct***, No. **2**, e00037.
12. **Kang-Ling Liao**, Charles E. Melvin, Rosangela Sozzani, Roger D. Jones, Timothy C. Elston, and Alan M. Jones, 2017, Dose-duration reciprocity for G protein activation: modulation of kinase to substrate ratio alters cell signaling, ***PLoS ONE***, No. **12(12)**, e0190000.
13. Kuan-Wei Chen*, **Kang-Ling Liao** and Chih-Wen Shih, 2017, The kinetics in mathematical models on segmentation clock genes in zebrafish, ***Journal of Mathematical Biology***, No. **25**, 1-54.
14. Liang Ying, Daisuke Urano, **Kang-Ling Liao**, Tyson L Hedrick, Yajun Gao, Alan M Jones, 2017, A nondestructive method to estimate the chlorophyll content of Arabidopsis seedlings, ***Plant Methods***, No. **13: 26**.

15. **Kang-Ling Liao**, Roger D. Jones, Patrick McCarter, Meral Tunc-Ozdemir, James A. Draper*, Timothy C. Elston, David Kramer, and Alan M. Jones, 2017, A shadow detector for photosynthesis efficiency, ***Journal of Theoretical Biology***, No. **414**, 231-244.
16. Avner Friedman and **Kang-Ling Liao**, 2015, The role of the cytokines IL-27 and IL-35 in cancer, ***Mathematical Biosciences and Engineering***, No. **12(6)**, 1203-1217.
17. **Kang-Ling Liao**, Xue-Feng Bai, and Avner Friedman, 2014, Mathematical modeling of Interleukin 35 promoting tumor growth and angiogenesis, ***PLoS ONE***, No. **9(10)**, e110126.
18. **Kang-Ling Liao**, Xue-Feng Bai, and Avner Friedman, 2014, Mathematical modeling of Interleukin-27 induction of anti-tumor T cells response, ***PLoS ONE***, No. **9(3),** e91844.
19. **Kang-Ling Liao** and Yuan Lou, 2013, The effect of time delay in a two-patch model with random dispersal, ***Bulletin of Mathematical Biology***, No. **76**, 335-376.
20. **Kang-Ling Liao**, Xue-Feng Bai, and Avner Friedman, 2013, The role of CD200-CD200R in tumor immune evasion, ***Journal of Theoretical Biology***, No. **328**, 65-76.
21. **Kang-Ling Liao** and Chih-Wen Shih, 2012, A lattice model on somitogenesis of zebrafish*,* ***Discrete and Continuous Dynamical Systems - Series B***, No. **17**, 2789-2814.
22. **Kang-Ling Liao**, Chih-Wen Shih, and Jui-Pin Tseng, 2012, Synchronized oscillations for a mathematical model of segmentation in zebrafish, ***Nonlinearity***, No. **25**, 869-904.
    [**Nonlinearity highly downloaded collection** 2012, selected and certified by the Nonlinearity]
23. **Kang-Ling Liao** and Chih-Wen Shih, 2012, Snapback repellers and homoclinic orbits for multi-dimensional maps, ***Journal of Mathematical Analysis and Applications***, No. **386**, 387-400.

Book chapter

24. **Kang-Ling Liao**, Chih-Wen Shih, and Jui-Pin Tseng, Multidimensional dynamics: From simple to complicated, in Discrete Time Systems, Editor: Mario Alberto $Jord a'n$, Publisher: InTech, April 2011.

Works in Revision

Works in Submission

25. **Kang-Ling Liao,** Adam J. Wieler* and Pedro M. Lopez Gascon*, Mathematical modeling and analysis of cancer treatment with radiation and immune checkpoint inhibitor, 2024, in submission.

Works in Preparation

26. **Kang-Ling Liao**, Kenton D. Watt*, Mathematical modeling for oncolytic virotherapy in cancer immunology, prepare for submission.
27. Suzan Farhang-Sardroodi*, Xiaoyan Deng, Sonia Gazeau, Morgan Craig, Julien Arino**, Kang-Ling Liao,** and Stéphanie Portet, Unveiling the interplay of within-host and between-host dynamics: A multiscale model for disease transmission, prepare for submission.

Ongoing project

28. **Kang-Ling Liao** and Jenn-Nan Wang, Bayesian parameter estimation in cancer immunology modeling, ongoing project.
29. **Kang-Ling Liao** and Kenton D. Watt*, Mathematical modeling and analysis for multiple myeloma treatment, ongoing project.
30. **Kang-Ling Liao,** Adam Wieler*, Mathematical modeling and analysis of cancer treatment with

radiation and immune checkpoint inhibitor.

31. **Kang-Ling Liao** and Chang-Yuan Cheng, Mathematical analysis and modeling for the dynamics of tumor microenvironment in cancer immunotherapy.

Award

- Best Poster Award, SIAM Conference on the Life Sciences 2014. 2014
- Postdoctoral Research Fellowship, 2014
  Mathematical Biosciences Institute, The Ohio State University.
- Postdoctoral Research Abroad Award, National Science Council of Taiwan. 2012

Grant

- 2024 Mitacs Globalink Research Internship Projects Summer 2024
  Mathematical modeling and analysis of cancer immunotherapy
- 2023 Mitacs Globalink Research Internship Projects (supporting one student) Summer 2023
  Mathematical modeling and analysis of cancer immunotherapy
  Intern: Olha V. Kryva (TaRAS Shevchenko National University of Kyiv, Ukraine)
- 2022 Mitacs Globalink Research Internship Projects (supporting two students) Summer 2022
  Mathematical modeling and analysis of cancer immunotherapy
  Intern: Tom Protin (INSA Rennes, France)
- NSERC – EIDM (Co-applicant) May 2021 – May 2023
  One health modelling network for emerging infections (OMNI)
- NSERC Discovery Grant (PI) May 2020- May 2027
  Mathematical analysis and modeling of Notch signaling in zebrafish somitogenesis
- Start-up funds, University of Manitoba November 2018 – November 2024
- Ministry of Science and Technology Grant, Taiwan (PI) December 2017 – July 2018
  Mathematical modeling and analysis of anti-PD-1 combination therapy in cancer immunotherapy

Editor

- Leading editor of the special issue "Optimization and Machine Learning Algorithms for Biological Data Analysis" for the Journal of the Computational and Mathematical Biophysics (CMB)
  2020

Journal Reviewer

- Mathematical Biosciences
- Bulletin of Mathematical Biology
- Journal of Mathematical Biology
- Mathematical Biosciences and Engineering
- Discrete and Continuous Dynamical Systems - Series B (DCDS-B)
- Computational and Applied Mathematics Journal
- IEEE Journal of Biomedical and Health Informatics
- Taiwanese Journal of Mathematics

Membership

- Society for Mathematical Biology

Service

- Department of Mathematics, University of Manitoba, Canada
  - Search Committee for Assistant Professor in Microbiology September 2022 – February 2023
  - Search Committee for the Department Head Position September 2020 – July 2021
  - Core Search Committee for the Indigenous Scholars September 2020 – July 2021
  - Colloquium Organizer August 2020 – January 2022, **July 2022 – Present**
  - Nominating Committee August 2020 – January 2022, **July 2022 - Present**
  - Comprehensive Exam Subcommittee September 2020 – July 2021
  - Undergraduate Studies Committee August 2019 – July 2020
  - Design Comprehensive Exam – ODE portion September 2020, September 2023

Research Leave

- January 2022 – June 2022

Research Visiting

- Department of Mathematics, National Taiwan University December 27, 2023 – January 26, 2024

Mentoring Experience

- University of Manitoba, Canada

  (i) <u>Department of Mathematics - Supervisor</u>

  Post-doctoral researcher
  - Suzan Farhang Sardroodi (OMNI postdoc) February 2022 – December 2024
    Co-supervise with Dr. Julien Arino, Dr. Morgan Craig (Université de Montréal), and Dr. Stéphanie Portet
  - Isam Al-Darabsah (PIMS postdoc) September 2020 – August 2022

  Master student
  - Kenton D. Watt September 2023 - Present
  - Solomon Mensah January 2023 – Present
    (co- supervise with Dr. Julien Arino, since January 2024)
  - Niloofar Fasaeiyan January 2020 – June 2020
  - Annette Dumas (exchanged Mathematics Master student, ENS Lyon University, France) June 2019 - August 2019

  Undergraduate
  - Kenton D. Watt (including USRA-FoS) June 2020 – August 2023
    Current position: Mathematics (thesis) MSc program, University of Manitoba, start at Fall 2023
  - Adam Wieler (including USRA-NSERC 2023) May 2023 – Present
  - Pedro Lopez Gascon (including USRA-FoS 2023) May 2023 – December 2023
  - Olha V. Kryva (Mitacs Globalink Research Internship project, TaRAS Shevchenko National University of Kyiv, Ukraine) June 2023 – August 2023
  - Tom Protin (Mitacs Globalink Research Internship project, Engineering Master student, INSA Rennes, France) May 2022 – August 2022

- Manisha Seneviratne (Summer undergraduate) June 2020 - July 2020

Department of Mathematics – Advisory Committee

- Ghazale Farjan (PhD of Dr. Julien Arino) June 2023 - Present
- Syeda Atika Batool Naqvi (PhD of Dr. Stéphanie Portet) April 2023 - Present
- Akshay Prameela Kumary (PhD of Dr. Stéphanie Portet) September 2020 – August 2021

Department of Mathematics – Graduate Committee

- Deokro Lee (MSc of Dr. Stéphanie Portet) August 2020

(ii) Department of Biological Sciences - Supervisor

Undergraduate

- Xander Bjornsson (Pre-Honours, Honours, Co-Op undergraduate, USRA-FoS) September 2020-May 2022

  Honours Thesis: Mathematical modeling of cytokine Interleukin-27 in tumor treatment

  Current position: Epidemiology (thesis) MSc program, McGill University, start at Fall 2023
- Elah Zainab Ajene (Pre-Honours undergraduate) October 2021 – January 2022

- Department of Mathematics, National Taiwan University, Taiwan
  - Wei-Chen Chang (Co-supervision of this Ph.D.) July 2019 – August 2020

    Current position: Engineer at TSMC, Taiwan
- Department of Biology, The University of North Carolina at Chapel Hill, U.S.A.

  (i) Mentoring new lab members in fluorescence microscope experiment Fall 2016

  (ii) Mentoring undergraduates in mathematical modeling and data analysis
  - YeonJin Kang (Major in Biology) August 2016 –May 2017
  - James A. Draper (Major in Engineering) July 2015 –June 2016
- Mathematical Biosciences Institute, The Ohio State University, U.S.A.

  Project supervisor, Joint 2014 MBI-CAMBAM-NIMBioS Summer graduate program July 2014

Teaching Experience at University of Manitoba

- Department of Mathematics
  - MXML 4920 - Undergraduate Research Projects-2 Fall 2023

    [Supervising: Adam Wieler and Pedro Lopez Gascon]
  - Math 4920 – Topics in Mathematics 1 Fall 2021

    [The course materials are designed by Kang-Ling Liao]
  - Math 4380 / Math 7380 – Mathematical Biology Winter 2021, Winter 2023
  - Math 3610 – Introduction to Mathematical Modelling Fall 2020, Fall 2021
  - Math 3440 – Ordinary Differential Equations Fall 2020, Fall 2023
  - Math 2160 – Numerical Analysis 1 Fall 2019, Fall 2022, Fall 2023
  - Math 2140 – Modelling Fall 2019
  - Math 2132 – Engineering Mathematical Analysis 2 Winter 2019
  - Math 1520 - Introductory Calculus for Management and Social Sciences Winter 2023
  - Math 1500 – Introduction to Calculus Winter 2020
- Department of Biological Sciences

- Biol 4890 – Special topics of modeling in biology (co-teach with Jay Kormish) Fall 2021
  [The course materials are designed by Kang-Ling Liao]
- Biol 4544 – Advanced Developmental and Cellular Biology (guest lecture) Winter 2020
- Biol 3542 – Developmental Biology (guest lecture)
  Winter 2019, Winter 2020, Fall 2020, Fall 2021
- Biol 2520 – Cell Biology (guest lecture) Winter 2019, Winter 2020

Teaching Experience

- Numerical Analysis (in Chinese), Tamkang University, Taiwan. Fall 2017, Spring 2017
- Computer Programming (in Chinese), Tamkang University, Taiwan. Fall 2017, Spring 2017
- Numerical Method (in Chinese), Tamkang University, Taiwan. Fall 2017
- Calculus (in Chinese), Tamkang University, Taiwan. Fall 2017, Spring 2017
- Linear Algebra, The Ohio State University, U.S.A. Fall 2013
- Precalculus, National Chiao Tung University, Taiwan. Fall 2008

Other Teaching Experience - Teaching Assistant

- Ordinary Differential Equations (I), National Chiao Tung University, Taiwan. Fall 2009
- Linear Algebra, National Chiao Tung University, Taiwan. August 2006 – June 2008, Spring 2008
- Linear Algebra, National Taiwan University, Taiwan. August 2004 – June 2005
- Calculus, National Taiwan University, Taiwan. August 2003 – June 2004
- Calculus, Fu Jen Catholic University, Taiwan. Spring 2002

Teaching Training / Certificate

- CATL online course: Open Educational Resources, Part 1 February 14, 2024
- CATL course: Experiential Learning - Assessing Experiential Learning October 10, 2023
- CATL course: Experiential Learning - Designing Effective Learning Experiences/Reflections, October 3, 2023
- CATL course: Experiential Learning - Preparing Students to Learn Experientially September 26, 2023
- CATL online course: Use Zoom Whiteboard and polling to engage students in online classes, August 31, 2023
- CATL course: Strategies for Maintaining a Respectful Classroom Environment August 15, 2023
- CATL course: Designing and Evaluating Assessment Strategies August 14, 2023
- CATL online course: Delivering Your Online Course - A Package Left at the Door or a Singing Telegram that Sings Back March 23, 2023

Skills in Programming and Software

- Mathematical and Programming Software
  Matlab, Mathematica, Maple, C++, C, R, Fortran, XPP
- Data and Image Analysis
  ImageJ, GraphPad Prism
- 3D printing design
  Tinkercad
- Graphics Editor

Adobe Photoshop, Adobe illustrator

Skills in Biological Experiment

- Fluorescence microscopy
- Basic molecular biology skills

Conference Organizing

- Co-organizer of Minisymposium for The SMB annual meeting, Columbus, OH, USA July 2023
- Organizer of Minisymposium for The 6th International Conference on Computational and Mathematical Population Dynamics, Winnipeg, MB, Canada May 2023
- Local co-organizer for The 6th International Conference on Computational and Mathematical Population Dynamics, Winnipeg, MB, Canada May 2023
- Co-organizer of Minisymposium for The 5th International Conference on Computational and Mathematical Population Dynamics, Florida, U.S.A. May 2019
- Organizer of Minisymposium for the Society for Mathematical Biology 2019 Annual Meeting, Montreal, Canada. July 2019
- Co-organizer of the International Conference on Nonlinear Analysis and its Applications Department of Mathematics, Tamkang University, Taiwan March 2018
- Co-organizer of Workshop for young researchers in mathematical biology Mathematical Biosciences Institute, The Ohio State University, U.S.A. August 2012 - August 2014

Presentations

Invited Talks

- Spring eastern AMS sectional meeting April 2024
  IL-27 in combination with anti-PD-1 can be anti-cancer and pro-cancer agent
- SMB annual meeting, The Ohio State University, USA July 2023
  A simple in-host model for Covid-19 with treatments-model prediction and calibration
- Dynamics Systems in the Life Sciences, The Ohio State University, USA July 2023
  The opposite functions of CD200-CD200R in cancer treatment
- The 6th International Conference on Computational and Mathematical Population Dynamics, May 2023
  The opposite functions and treatment outcomes of CD200-CD200R in cancer
- CAIMS/SCMAI 2022 June 2022
  Analysis on mathematical models of somitogenesis in zebrafish
- Immunology seminar series talk May 2022
  Department of Immunology, University of Manitoba
  Mathematical modeling in cancer immunotherapy
- Online Biomath Seminar Talk May 2022
  Department of Mathematics & Statistics, Texas Tech University, U.S.A.
  Mathematical modeling in cancer immunotherapy
- Virtual SMB annual meeting June 2021
  The role of CD200-CD200R in cancer immunotherapy

- Theoretical Biology Seminar — April 2021
  Department of Mathematics, The Penn State University
  Analysis of mathematical models of somite formation in zebrafish
- SMB 2019 Annual Meeting — July 2019
  The University of Montreal
  Mathematical modeling in cancer immunotherapy
- The 5th International Conference on Computational and Mathematical Population Dynamics, May 2019
  Bahia Mar Fort Lauderdale Beach, Florida, U.S.A.
  Data driven modeling of G protein signaling in plant cells
- Department of Mathematics, May 2019
  University of California, Riverside, U.S.A.
  Mathematical application for somite formation and cancer immunotherapy
- 12th AIMS Conference on Dynamical Systems, Differential Equations and Application July 2018
  NCTS Mathematics Division, Taiwan.
  Mathematical modeling of Interleukin-35 promoting tumor growth and angiogenesis
- Departments of Biological Sciences and Mathematics, April 2018
  University of Manitoba, Canada
  Applications of mathematics in biology
- Department of Mathematics, February 2018
  The Ohio State University, U.S.A.
  Applications of mathematics in biology
- Department of Mathematics, February 2018
  Siena College, U.S.A.
  Applications of mathematics in biology
- Department of Applied Mathematics, January 2018
  National Chung Hsing University, Taiwan
  Applications of mathematics in biology
- Department of Mathematics, December 2017
  National Chung Cheng University, Taiwan
  Applications of mathematics in biology
- Department of Mathematics, December 2017
  National Taiwan University, Taiwan
  Applications of mathematics in biology
- ReaDiNet 2017: International Conference on Mathematical Biology October 2017
  National Center for Theoretical Sciences Mathematics Division, Taiwan.
  Mathematical modeling in cancer immunotherapy
- Department of Mathematics, March 2017
  Tamkang University, Taiwan
  Mathematical modeling in cancer immunotherapy

- Department of Mathematical Sciences, February 2017
  University of Arkansas, U.S.A.
  Mathematical Models for cancer immunotherapy
- AMS 2017 Joint Mathematics Meeting, Atlanta, U.S.A. January 2017
  Mathematical modeling of anti-PD-1 and IL-27 synergy in inhibiting tumor growth
- Department of Biology, April 2015
  The University of North Carolina at Chapel Hill, U.S.A.
  Mathematical models for somitogenesis and cancer immunotherapy
- Renimin University of China, China April 2015
  How time delays affect the dynamics of mathematical models in ecology and somitogenesis?
- Institute of Mathematics, Academia Sinica, Taiwan February 2015
  Mathematical modeling for cancer immunotherapy
- Department of Applied Mathematics, February 2015
  National University of Kaohsiung, Taiwan
  Mathematical modeling of anti-PD-1 and IL-27 synergy in inhibiting tumor growth
- Department of Engineering Sciences and Applied Mathematics, January 2015
  Northwestern University, U.S.A.
  A Mathematical model for anti-PD-1 and IL-27 drugs in cancer treatment
- H. Lee Moffitt Cancer Center, Tampa, U.S.A. January 2015
  To what degree anti-PD-1 improves the efficacy of immunotherapeutic drugs?
- Workshop 3: Cancer and the Immune System November 2014
  Mathematical Biosciences Institute, The Ohio State University, U.S.A.
  Mathematical modeling of Interleukin-35 promoting tumor growth and angiogenesis
- The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications
  Madrid, Spain July 2014
  (i) *The role of CD200-CD200R in cancer immunoediting*
  (ii) *Mathematical modeling of Interleukin-27 induction of anti-tumor T cells response*
- The 6th International Symposium on Biomathematics and Ecology: Education and Research
  Marymount University, U.S.A. October 2013
  The role of CD200-CD200R in tumor immune evasion

Contributed Talks

- AMS 2017 Joint Mathematics Meeting, Atlanta, U.S.A. January 2017
  A shadow detector for photosynthesis efficiency
- AMS 2015 Joint Mathematics Meeting, San Antonio, U.S.A. January 2015
  The contradictory experimental results of CD200-CD200R in cancer proliferation
- NCTS International Conference of Nonlinear Dynamics with Application to Biology May 2014
  NCTS Mathematics Division, Taiwan.
  The effect of time delay in a two-patch model with random dispersal
- Taida Institute for Mathematical Sciences, Taiwan May 2014

The roles of CD200-CD200R and Interleukin-27 in cancer immunoediting

- The 6th International Congress of Chinese Mathematicians July 2013
  Taida Institute of Mathematical Sciences, Taiwan
  The dynamics for kinetic model of segmentation clock genes in zebrafish
- SIAM Conference on Applications of Dynamical Systems, Snowbird, U.S.A. May 2013
  The relation between two-cell model and N-Cell model on somitogenesis of zebrafish
- Mathematical Conference and Annual Meeting of the Taiwan Mathematical Society December 2011
  Chung Yuan Christian University, Taiwan
  Synchronized oscillations in a mathematical model of segmentation in zebrafish
- NCTS Workshop on Dynamical Systems May 2011
  National Center for Theoretical Sciences Mathematics Division, Taiwan.
  The dynamics for segmentation clock gene of zebrafish.
- 2nd Japan-Taiwan Joint Workshop for Graduate Students, Meiji University, Japan February 2011
  Synchronized oscillation for segmentation clock gene of zebrafish

Departmental Talks

- NTU Mathematics Special Seminar, Department of Mathematics, National Taiwan University, Taiwan
  (i) The opposite functions of CD200-CD200R in cancer treatment - I January 2024
  (ii) The opposite functions of CD200-CD200R in cancer treatment - II January 2024
- Applied and Computational Mathematics Seminar Series, University of Manitoba, Canada
  (i) Analysis on Mathematical Models of Somitogenesis in Zebrafish February 2019
  (ii) Mathematical Modeling in Cancer Immunotherapy March 2019
- Postdoc Seminar, Mathematical Biosciences Institute, The Ohio State University, U.S.A.
  (i) The functions of Interleukins in tumor microenvironment November 2014
  (*ii) The roles of CD200-CD200R and IL-12 cytokine family in cancer immunoediting* February 2014
  (iii) Analysis on mathematical models of somitogenesis in zebrafish February 2013

Posters

- 30th Annual Plant Molecular Biology Retreat, Wrightsville, U.S.A. September 2016
  How AtRGS1 expression level affects endocytosis in plant cells?
- Phosphorylation & G-protein mediated signaling networks (Gordon Research Conference) June 2016
  University of New England. U.S.A.
  Fluctuation detection by a receptor-like regulator of G signaling complex
- 29th Annual Plant Molecular Biology Retreat, Asheville, U.S.A. September 2015
  How plant cells sort through noise to detect signal: dynamics of photosynthate sensing by the heterotrimeric G protein pathway?
- SIAM Conference on the Life Sciences 2014, Charlotte, USA August 2014
  The role of CD200-CD200R in cancer suppression and promotion
  [Poster Award by SIAM Conference on the Life Sciences 2014]
- Math Biology: Looking at the Future (MBI's 10th Anniversary Meeting) September 2012
  Mathematical Biosciences Institute, The Ohio State University, U.S.A.

From two-cell model to N-cell model of somitogenesis in zebrafish

- NCTS Workshop on Dynamical Systems May 2012
  National Center for Theoretical Sciences Mathematics Division, Taiwan.
  The dynamics for two-cell model and N-cell model of somitogenesis in zebrafish
- SIAM Conference on Applications of Dynamical Systems, Snowbird, U.S.A. May 2011
  From synchronous oscillations to oscillation-arrested for segmentation clock gene of zebrafish

Conference/Seminar (attendance)

- MfPH Workshop on Endemic COVID-19, on-line January 2022
- Within-host modelling seminar, on-line (hosted by Jane Heffernan) Winter 2022, Winter 2021
- Biomedical mathematics online colloquium, KAIST 2022 Winter
- The One Society Network (OSN) online seminar 2022 Winter

Other Research Experience

- Mathematical Biosciences Institute, The Ohio State University, U.S.A.
  Mentor: Prof. Avner Friedman (on cancer immunoediting modeling)
  Prof. Yuan Lou (on mathematical models in spatial ecology) September - October 2012
- The University of Kansas, U.S.A
  Mentor: Prof. Weishi Liu (on geometric singular perturbation theorem) July 2009