

Last updated: Jul 1<sup>st</sup>, 2024

## Adam L. MacLean, Ph.D.

Assistant Professor  
Department of Quantitative and Computational Biology  
University of Southern California

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### EDUCATION

- 2011 - 2014      **Imperial College London, UK**  
Ph.D. in Systems Biology  
Advisors: Michael P. H. Stumpf, Cristina Lo Celso  
Thesis: “Modelling haematopoietic stem cells in their niche”
- 2009 - 2010      **Imperial College London, UK**  
M.Sc. Bioinformatics and Theoretical Systems Biology, *with distinction*
- 2005 - 2009      **University of Edinburgh, UK**  
B.Sc. Mathematical Physics, *1<sup>st</sup> (first class)*

### POSITIONS AND APPOINTMENTS

- 01/2019 – present      **University of Southern California**  
Assistant Professor  
Department of Quantitative and Computational Biology  
Dornsife College of Arts, Letters and Sciences, Los Angeles, CA
- 2019 - present      Member, Norris Comprehensive Cancer Center, Keck School of Medicine,  
University of Southern California, Los Angeles, CA
- 2020 - present      Member, Eli and Edythe Broad Center for Regenerative Medicine and  
Stem Cell Research, University of Southern California, Los Angeles, CA
- 09/2016 – 12/2018      **University of California, Irvine**  
Assistant Project Scientist (06/18 - 12/18)  
Postdoctoral Scholar (09/16 - 05/18)  
Department of Mathematics, Irvine, CA  
Advisor: Qing Nie
- 01/2015 – 08/2016      **Imperial College London**  
Research Associate, Department of Life Sciences, London, UK  
Advisor: Michael P. H. Stumpf
- 01/2014 – 12/2014      **University of Oxford**  
Research Associate, Mathematical Institute, Oxford, UK  
Advisors: Helen M. Byrne, Heather A. Harrington

### HONORS AND AWARDS

- 2021      NSF CAREER Award  
2021      NIH NIGMS R35 MIRA Award

2017-2018	Thrice awardee of UCI Opportunity Award Grant
2016	Travel Scholarship <i>Stem Cells</i> Copenhagen Biosciences
2013	International media coverage of first publication ( <i>J Roy Soc Interface</i> , 2013) in science news outlets
2012	MIT—Imperial International Collaboration Scholarship
2011	BBSRC PhD Studentship Award, Imperial College London

### Lab trainee honors, awards, and fellowships

2022	Postdoc mentee (Kreger) awarded a Mistletoe Research Fellowship
2021	PhD student (Rommelfanger) received invites for two invited talks at: Southern California Sys Bio Conference 2021, and JuliaCon 2021
2021	UCI Opportunity Award Grant; \$8500 (Kreger, Wu)
2020	NSF GRFP Honorable Mention (Rommelfanger)
2019	UCI Opportunity Award Grant; \$8,500 (Wu)

### PUBLICATIONS

MacLean Lab students/postdocs are underlined.

#### Preprints/Submitted

19. JL Stellmann, AE Zambidis, **AL MacLean**<sup>¶</sup>, DJ Kast<sup>¶</sup> (2024), Exploring Stem Cells: A Hands-On Approach to Elementary STEM Education. *Submitted*.  
<sup>¶</sup>*Corresponding author*
18. J Kreger, JA Mooney, D Shibata, **AL MacLean** (2024), Developmental hematopoietic stem cell variation explains clonal hematopoiesis later in life. *bioRxiv*; 10.1101/2024.03.02.583106.
17. MK Rommelfanger<sup>\*</sup>, M Behrends<sup>\*</sup>, Y Chen, J Martinez, M Bens, L Xiong, KL Rudolph<sup>¶</sup>, **AL MacLean**<sup>¶</sup> (2023), Gene regulatory network inference with popInfer reveals dynamic regulation of hematopoietic stem cell quiescence upon diet restriction and aging. *bioRxiv*; 10.1101/2023.04.18.537360  
<sup>\*</sup>First author, <sup>¶</sup>*Corresponding author*

#### Peer-Reviewed Journal Articles (1/1/2019 - present; since joining USC)

16. AG Baugh, E Gonzalez, VH Narumi, J Kreger, Y Liu, C Rafie, S Castanon, J Jang, LT Kagohara, DP Anastasiadou, J Leatherman, TD Armstrong, I Chan, GS Karagiannis, EM Jaffee, AL MacLean, ET Roussos Torres (2024), Mimicking the breast metastatic microenvironment: characterization of a novel syngeneic model of HER2+ breast cancer. *Clin Exp Metastas*; 10.1007/s10585-024-10289-z.
15. S Chea, J Kreger, ME Lopez-Burks, **AL MacLean**, AD Lander, AL Calof (2024), Gastrulation-stage gene expression in Nipbl<sup>+/-</sup> mouse embryos foreshadows the development of syndromic birth defects. *Science Advances*; 10.1126/sciadv.adl4239.
14. L Xiong<sup>\*</sup>, J Liu<sup>\*</sup>, SY Han, K Koppitch, JJ Guo, MK Rommelfanger, F Gao, IB Hallgrimsdottir, L Pachter, J Kim, **AL MacLean**, AP McMahon (2023), Direct androgen receptor regulation of sexually dimorphic gene expression in the mammalian kidney. *Dev Cell*; 10.1016/j.devcel.2023.08.010.

13. G Coulis, D Jaime, C Guerrero-Juarez, JM Kastenschmidt, PK Farahat, Q Nguyen, N Pervolarakis, K McLinden, L Thurlow, S Movahedi, J Duarte, A Sorn, E Montoya, I Mozaffar, M Dragan, S Othy, T Joshi, CP Hans, V Kimonis, **AL MacLean**, Q Nie, LM Wallace, SQ Harper, T Mozaffar, MW Hogarth, S Bhattacharya, JK Jaiswal, DR Golann, Q Su, K Kessenbrock, M Stec, MJ Spencer, JR Zamudio, SA Villalta (2022), Single-cell and spatial transcriptomics identify a macrophage population associated with skeletal muscle fibrosis. **Science Advances**; 9: eadd9984. [10.1126/sciadv.add9984](https://doi.org/10.1126/sciadv.add9984).
12. X Wu, R Wollman, **AL MacLean** (2023), Single-cell Ca<sup>2+</sup> parameter inference reveals how transcriptional states inform dynamic cell fates. **J Roy Soc Interface**; 20:20230172. [10.1098/rsif.2023.0172](https://doi.org/10.1098/rsif.2023.0172).
11. J Kreger, ET Roussos Torres<sup>¶</sup>, **AL MacLean**<sup>¶</sup> (2023), Myeloid-derived suppressor cell dynamics control outcomes in the metastatic niche. **Cancer Immunol Res**; 11 (5): 614–628. [10.1158/2326-6066.CIR-22-0617](https://doi.org/10.1158/2326-6066.CIR-22-0617).  
<sup>¶</sup>Corresponding author
10. E Roesch, JG Greener, **AL MacLean**, H Nassar, C Rackauckas, T Holy, M Stumpf (2023), Julia for Biologists. **Nature Methods**; [10.1038/s41592-023-01832-z](https://doi.org/10.1038/s41592-023-01832-z).
9. M Suo, MK Rommelfanger, Y Chen, EM Amro, B Han, Z Chen, K Szafranski, SR Chakkarappan, BO Boehm, **AL MacLean**, KL Rudolph (2022), Age-dependent effects of Irf2bp2 on gene regulation, function, and aging of hematopoietic stem cells in mice, **Blood**; 139(17), [doi.org/10.1182/blood.2021012197](https://doi.org/10.1182/blood.2021012197).
8. D Tatarakis, Z Cang, X Wu, P Sharma, MK Karikomi, **AL MacLean**, Q Nie, TF Schilling (2021), **Cell Reports**; 37(12), 110140.
7. MK Rommelfanger, **AL MacLean** (2021), A single-cell resolved cell-cell communication model explains lineage commitment in hematopoiesis, **Development**; 148(24), dev199779.
6. HM Rando, **AL MacLean**, AJ Lee, S Ray, V Bansal, AN Skelly, E Sell, JJ Dziak, L Shinholster, LD McGowan, MB Guebila, N Wellhausen, S Knyazev, SM Boca, S Capone, Y Qi, Y Park, David Mai, Y Sun, JD Boerckel, C Brueffer, JB Byrd, JP Kamil, J Wang, R Velazquez, GL Szeto, JP Barton, RR Goel, S Mangul, T Lubiana, COVID-19 Review Consortium, A Gitter, CS Greene (2021), Pathogenesis, Symptomatology, and Transmission of SARS-CoV-2 through analysis of Viral Genomics and Structure. **mSystems**; [10.1128/mSystems.00095-21](https://doi.org/10.1128/mSystems.00095-21).
5. R Mitra, **AL MacLean** (2021), RVAgene: Generative modeling of gene expression time series data. **Bioinformatics**, doi: [10.1093/bioinformatics/btab260](https://doi.org/10.1093/bioinformatics/btab260).
4. DR Bergman, MK Karikomi, M Yu, Q Nie<sup>¶</sup>, **AL MacLean**<sup>¶</sup> (2021), Modeling the competing effects of the immune system and EMT on tumor development, **Communications Biology**, doi: [10.1038/s42003-021-02499-y](https://doi.org/10.1038/s42003-021-02499-y).  
<sup>¶</sup>Corresponding author
3. S Wang, ML Drummond, CF Guerrero-Juarez, E Tarapore, **AL MacLean**, AR Stabell, SC Wu, G Gutierrez, BT That, CA Benavente, Q Nie, SX Atwood, (2020) Single cell transcriptomics of human epidermis reveals basal stem cell transition states. **Nat Commun**, doi: [10.1038/s41467-020-18075-7](https://doi.org/10.1038/s41467-020-18075-7).

2. D Haensel, S Jin, R Cinco, P Sun, Q Nguyen, Z Cang, M Dragan, Y Gong, **AL MacLean**, K Kessenbrock, E Gratton, Q Nie, X Dai, (2020) Defining epidermal basal cell states during skin homeostasis and wound healing using single-cell transcriptomics, *Cell Reports*, doi: [10.1016/j.celrep.2020.02.091](https://doi.org/10.1016/j.celrep.2020.02.091).
  1. S Wang, MK Karikomi, **AL MacLean**<sup>†</sup>, Q Nie<sup>†</sup>, (2019) Cell lineage and communication network inference via optimization for single-cell transcriptomics. *Nucleic Acids Res*, doi: [10.1101/168922](https://doi.org/10.1101/168922).
- <sup>†</sup>Corresponding author

#### Peer-Reviewed Journal Articles (before 1/1/2019; prior to joining USC)

17. P Sharma, **AL MacLean**, L Meinecke, D Clouthier, Q Nie, TF Schilling, (2018) Transcriptomics reveals complex kinetics of dorsal-ventral patterning gene expression in the mandibular arch. *genesis*, dvg.23275.
16. D Haensel, P Sun, **AL MacLean**, X Ma, Y Zhou, MP Stemmler, S Brabletz, G Berx, MV Pliikus, Q Nie, T Brabletz, X Dai, (2018) An *Ovol2-Zeb1* transcriptional circuit regulates epithelial directional migration and proliferation. *EMBO Rep*, 20:e46273.
15. **AL MacLean**<sup>\*</sup>, T Hong<sup>\*</sup>, Q Nie, (2018) Exploring intermediate cell states through the lens of single cells. *Curr Opin Sys Biol*, 9;31-42. doi:[10.1016/j.coisb.2018.02.009](https://doi.org/10.1016/j.coisb.2018.02.009).
14. S Jin, **AL MacLean**, T Peng, Q Nie, (2018) scEpath: Energy landscape-based inference of transition probabilities and cellular trajectories from single-cell transcriptomic data. *Bioinformatics*, doi:[10.1093/bioinformatics/bty058](https://doi.org/10.1093/bioinformatics/bty058).
13. B Lambert<sup>\*</sup>, **AL MacLean**<sup>\*</sup>, AG Fletcher, AN Coombes, MH Little, HM Byrne, (2018) Bayesian inference of agent-based models: a tool for studying kidney branching morphogenesis. *J Math Biol*, doi:[10.1007/s00285-018-1208-z](https://doi.org/10.1007/s00285-018-1208-z).
12. Y Guo, Q Nie, **AL MacLean**, Y Li, J Lei, and S Li, (2017) An agent-based model reveals evolutionary dynamics of inflammation-induced cancer. *Cancer Research*, doi:[10.1158/0008-5472.CAN-17-1662](https://doi.org/10.1158/0008-5472.CAN-17-1662).
11. **AL MacLean**<sup>\*</sup>, MA Smith<sup>\*</sup>, J Liepe, A Sim, R Khorshed, NM Rashidi, N Scherf, A Krinner, I Roeder, C Lo Celso, MPH Stumpf, (2017) Single Cell Phenotyping Reveals Heterogeneity among Haematopoietic Stem Cells Following Infection. *Stem Cells*, 35(11). doi:[10.1002/stem2692](https://doi.org/10.1002/stem2692).
10. T Peng<sup>\*</sup>, L Liu<sup>\*</sup>, **AL MacLean**, CW Wong, W Zhao, Q Nie, (2017) A Mathematical Model of Mechanotransduction Reveals How Mechanical Memory Regulates Mesenchymal Stem Cell Fate Decisions. *BMC Sys Biol*, 11(1). doi:[10.1186/s12918-017-0429-x](https://doi.org/10.1186/s12918-017-0429-x).
9. **AL MacLean**, C Lo Celso, MPH Stumpf, (2016) Stem Cell Population Biology: Insights from Haematopoiesis. *Stem Cells*, 35(1) 80-88. doi:[10.1002/stem.2508](https://doi.org/10.1002/stem.2508).
8. ML Vainieri, AM Blagborough, **AL MacLean**, N Ruivo, HA Fletcher, MPH Stumpf, RE Sinden, C Lo Celso, (2016) Sporozoite-mediated malaria infection causes multiple levels of responses across the haematopoietic hierarchy before anaemia onset. *Open Biology*, doi:[10.1098/rsob.160038](https://doi.org/10.1098/rsob.160038).

7. HL Crowell\*, **AL MacLean\***, MPH Stumpf, (2016) Feedback mechanisms control coexistence regions in a stem cell model of acute myeloid leukaemia. *Journal of Theoretical Biology*, 401(1) 43-53. doi:10.1016/j.jtbi.2016.04.002.
6. **AL MacLean\***, P Kirk\*, MPH Stumpf, (2015) Cellular population dynamics control the robustness of the stem cell niche. *Biol Open*, doi:10.1242/bio.013714.
5. P Kirk\*, D Rolando\*, **AL MacLean**, MPH Stumpf, (2015) Conditional Random Matrix Ensembles and the Stability of Dynamical Systems. *New J Phys*, 17(8) 083025. doi:10.1088/1367-2630/17/8/083025.
4. **AL MacLean**, Z Rosen, HM Byrne, HA Harrington, (2015) Parameter-free methods distinguish Wnt pathway models and guide design of experiments. *Proc Natl Acad Sci USA*, 102(9) 2652-57. doi:10.1073/pnas.1416655112.
3. **AL MacLean**, HA Harrington, MPH Stumpf, MDH Hansen, (2014) Epithelial-mesenchymal transition in metastases affects tumor dormancy in a simple mathematical model. *Biomedicines*, 2(4) 384-402. doi:10.3390/biomedicines2040384.
2. **AL MacLean\***, S Filippi\*, MPH Stumpf, (2014) Ecology in the hematopoietic stem cell niche determines the clinical outcome in chronic myeloid leukemia, *Proc Natl Acad Sci USA*, 111(10) 3882-88. doi:10.1073/pnas.1317072111.
1. **AL MacLean**, C Lo Celso, MPH Stumpf, (2013) Population dynamics of normal and leukaemia stem cells in the haematopoietic niche show distinct regimes where leukaemia will be controlled. *J Roy Soc Interface*, doi:10.20120968.

### **Book Chapters, Editorials, Invited News and Views**

- AL MacLean**, KL Rudolph (2024), Hematopoietic stem cell aging by the niche. *Blood*, In press.
- AL MacLean**, (2023), Voices carry. *Nat Chem Biol*, doi.org/10.1038/s41589-022-01238-6.
- AL MacLean**, (2022), Profiling intermediate cell states in high resolution. *Cell Rep Meth*, doi.org/10.1016/j.crmeth.2022.100204.
- AL MacLean**, Q Nie (2021), The diverse landscape of modeling in single-cell biology. *Phys Biol*, doi:10.1088/1478-3975/ac0b7f.
- AL MacLean**, HA Harrington, MPH Stumpf, HM Byrne, (2016) Mathematical and Statistical Techniques for Systems Medicine, in *Systems Medicine: Methods in Molecular Biology*, New York: Springer; 405-40. doi:10.1007/978-1-4939-3283-2\_18.

### **GRANTS AND RESEARCH SUPPORT**

#### **Current Support**

Role: PI

Project/Proposal Title: Computational methods to predict gene regulatory network dynamics and cell state

Source of Support: National Institutes of Health, NIGMS R35 MIRA

Total Amount Awarded: \$2,062,500

Total Award Period Covered: 09/18/2021 – 08/31/2026

Role: PI

Project/Proposal Title: CAREER: Inference of gene regulatory networks and cell dynamics that control stem cell fate

Source of Support: National Science Foundation, Division of Mathematical Sciences: program in Mathematical Biology

Total Amount Awarded: \$571,458

Total Award Period Covered: 03/01/2021 – 02/28/2026

Role: co-PI (with co-PI: K.L. Rudolph, Fritz-Lipmann Institute, Jena, Germany)

Project/Proposal Title: Developmental IGF-signaling activity influencing dynamic trajectories of hematopoietic stem cell subpopulation selection in adult life

Source of Support: National Science Foundation, Division of Molecular and Cellular Biosciences / German Research Foundation (DFG)

Total Amount Requested: \$224,307 (NSF); €596,824 (DFG)

Total Award Period Proposed: 06/15/2024 – 05/31/2027

Role: Co-I

Project/Proposal Title: Targeting myeloid suppression to enhance anti-tumor immunity in breast cancer

Source of Support: National Institutes of Health, NCI R01

Total Amount Awarded: \$2,831,905.00

Total Award Period Covered: 07/21/2023 – 06/30/2028

### ***Past Support***

Role: PI

Project/Proposal Title: Identifying carcinoma risk factors by single-cell data analysis and parameter inference of EMT-mediated tumor dynamics

Source of Support: American Cancer Society, Institutional Research Grant, ACS-IRG

Total Amount Awarded: \$30,000

Total Award Period Covered: 09/01/2019 – 08/31/2020

## **PROFESSIONAL ACTIVITIES**

### **Meeting Organization, Program & Society Committees**

2025	Organizer and committee chair of a two-day conference: "Systems Biology of Single Cells," to be held at UC Irvine on May 8-9, 2025.
2024	Member, Organizing Committee, annual Southern California Systems Biology Conference, to be held at UC Irvine.
2023	Co-organizer (with S. Finley) of one-day conference: 12th annual Southern California Systems Biology Conference at USC.
2021 - 2023	Member, Society for Mathematical Biology (SMB) Publications Committee; Social media publications board
2020 - 2023	Member, Society for Mathematical Biology (SMB) Committee to promote diversity, equity and inclusion (DEI) within mathematical biology.
2022	Host and co-organizer of keynote DEI panel discussions on career paths and graduate education, 14th ECMTB conference, Heidelberg, Germany.

- 2021 Co-organizer (with R. Rockne) of mini-symposium at SMB 2021: Dynamics and networks in single-cell biology, Jun 13-217, 2021, UC Riverside, smb2021.org.
- 2021 Program Committee Member, 3rd International Symposium on Mathematical and Computational Oncology (ISMCO), Oct 11-13 2021, San Diego, CA.
- 2020 Panel Member, “Careers in Bioinformatics,” ASCB annual meeting 2020.
- 2020 Program Committee Member, 2nd International Symposium on Mathematical and Computational Oncology (ISMCO), Oct 8-10 2020, San Diego, CA.
- 2020 Co-organizer (with R. Rockne) of mini-symposium at SMB 2020: Modeling dynamics in single-cell biology, Aug 17-20, 2020, smb2020.org.
- 2019 Co-organizer (with L. Pinello) of two-day conference: “Algorithms and Models for Single-Cell Genomics” funded by the NSF-Simons Center for Multiscale Cell Fate Research, held at the University of California, Irvine, June 6-7, 2019

### **Review & Editorial Panels, External Thesis Committees, Grant & Manuscript Review**

- 2024 External ad-hoc grant review for Genome BC, Vancouver, Canada.
- 2024 Thesis committee chair, PhD thesis of: Daniel Glazar at Moffitt Cancer Center.
- 2023 Grant reviewer (mail review) for NIH NIGMS
- 2023 External grant review for UKRI sLoLa (strategic Longer and Larger) research grants
- 2022-present Associate Editor, *Bulletin of Mathematical Biology*
- 2022 Member of Grant Review Panel, NSF Division of Mathematical Sciences.
- 2022-present External thesis committee member (James Eapen), Van Andel Institute, Grand Rapids, Michigan. PI: Hui Shen.
- 2021 External Reviewer for PhD thesis of: Alexander Browning, Queensland University of Technology, Brisbane, Australia. PI: Matthew Simpson. Thesis written report date: December, 2021.
- 2021 Member of Grant Review Panel, NSF Division of Mathematical Sciences.
- 2021 External Reviewer for PhD thesis of: Zachary DeBruine, Van Andel Institute, Grand Rapids, Michigan. PI: Karsten Melcher. Dissertation defense date: 9/16/2021.
- 2021 Guest Editor of special issue of *Physical Biology*, “Building models in single-cell biology,” co-edited with Q. Nie.
- 2020 Member of Grant Review Panel, Sector Innovation Program SIP-7: research in “single-cell omics”, Genome BC, Vancouver, Canada, Virtual. Panel dates: 7/30/2020.
- 2020 Grant reviewer for C3.ai Digital Transformation Institute call for COVID-19 research, Berkeley, CA

- 2019 Grant reviewer for United Kingdom Research Innovation (UKRI) Future Leaders Fellowships, London, UK
- 2014-present Reviewer for **scientific articles** at: Nature, Cell, PNAS, eLife, Science Advances, Blood, Mol Syst Biol, Nat Chem Biol, Nat Methods, Nat Commun\*\*, Cell Stem Cell, Cell Systems\*\*, Developmental Cell, Cell Reports, Genome Medicine, Bioinformatics\*\*, PLOS Comp Biol\*\*, J Theor Biol\*\*, J Roy Soc Interface\*\*, BMC Biology, BMC Bioinformatics, BMC Systems Biology, Physical Biology, Bull Math Biol.
- \*\* denotes frequent reviewer

## UNIVERSITY SERVICE

- 2021-present Member, Communications and Outreach committee, Department of Quantitative and Computational Biology
- 2020-present Member, Diversity, Equity, and Inclusion task force, Department of Quantitative and Computational Biology
- 2023-2024 Member, Admissions committee for Computational Biology and Bioinformatics PhD program
- 2022-2023 Member, Admissions committee for Computational Biology and Bioinformatics PhD program
- 2021-2022 Member, Admissions committee for Computational Biology and Bioinformatics PhD program
- 2019-2020 Member, Tenure-track Faculty Search Committee, Computational Structural, Synthetic, or Systems Biology, Quantitative and Computational Biology Section
- 2019-2020 Member, Admissions committee for Computational Biology and Bioinformatics PhD program
- 2018-2019 Member, Admissions committee for Computational Biology and Bioinformatics PhD program
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- 2024 Internal grant review, limited submissions
- 2023 Member, committee for Annual Progress Meeting (Jiya Eerdeng), PIBBS, Keck School of Medicine, Advisor: Rong Lu.
- 2023 External Examiner, PhD Qualification Exam committee (James Eapen), VAI Graduate School, Van Andel Institute, Michigan, Advisor: Hui Chen.
- 2023 Member, Thesis committee (Belinda Garana), Chemical Engineering, Viterbi School of Engineering, Advisor: Nicholas Graham
- 2023 Member, Thesis committee (Lynne Chercia), BME, Viterbi School of Engineering, Advisor: Stacey Finley
- 2022 Member, Thesis committee (Holly Huber), BME, Viterbi School of Engineering, Advisor: Stacey Finley
- 2022 Member, Thesis committee (Jiya Eerdeng), PIBBS, Keck School of Medicine, Advisor: Rong Lu
- 2021 Member, PhD Qualification Exam committee (Petar Antovski), BME Program, Viterbi School of Engineering, Advisor: Rong Lu
- 2021 Member, PhD Thesis committee (Ding Li), BME, Viterbi School of Engineering, Advisor: Stacey Finley
- 2021 Member, PhD Qualification Exam committee (Bowen Wang), PIBBS, Keck School of Medicine, Advisor: Rong Lu



2021	Member, PhD Qualification Exam committee (Vardges Tserunyan), BME, Viterbi School of Engineering, Advisor: Stacey Finley
2021	Member, PhD Qualification Exam committee (Raktim Mitra), Department of Quantitative and Computational Biology, Advisor: Remo Rohs
2021	Member, PhD Qualification Exam committee (Belinda Garana), Chem End, Viterbi School of Engineering, Advisor: Nicholas Graham
2021	Member, PhD Qualification Exam committee (Jiya Eerdeng), PIBBS, Keck School of Medicine, Advisor: Rong Lu
2020	Member, PhD Thesis committee (James Joly), Department of Chemical Engineering, Viterbi School of Engineering, Advisor: Nicholas Graham
2020	Member, PhD Thesis committee (Du Jiang), PIBBS, Keck School of Medicine, Advisor: Rong Lu
2019	Member, PhD Qualification Exam (Saket Choudhary), CBB, Biological Sciences, Dornsife, Advisor: Andrew Smith
2019	Member, PhD Qualification Exam committee (Ding Li), BME, Viterbi School of Engineering, Advisor: Stacey Finley
2019	Member, PhD Qualification Exam committee (Ted Tseng), PIBBS, Keck School of Medicine, Advisor: Gage Crump

## TEACHING AND MENTORING

### Courses Taught

#### *Upcoming*

2024-25	QBIO 577: Computational Molecular Biology, <i>Fall 2024</i> Units: 2, Effort: 50% (w. Fudenberg)
2024-25	QBIO 494: Honors Thesis, <i>Spring 2025</i> Units: 2, Effort: 100%
2024-25	QBIO 482: Systems biology: modeling the dynamics of life, <i>Spring 2025</i> Units: 4, Effort: 50% (w. Chiu)

#### *Past*

2023-24	QBIO 494: Honors Thesis, <i>Spring 2024</i> Units: 2, Effort: 100%
2023-24	QBIO 482: Systems biology: modeling the dynamics of life, <i>Spring 2024</i> Units: 4, Effort: 50% (w. Fudenberg)
2022-23	QBIO 494: Honors Thesis, <i>Spring 2023</i> Units: 2, Effort: 100%
2022-23	QBIO 482: Systems biology: modeling the dynamics of life, <i>Spring 2023</i> Units: 4, Effort: 50% (w. Fudenberg)
2022-23	QBIO 577: Computational Molecular Biology, <i>Fall 2022</i> Units: 2, Effort: 50% (w. Fudenberg)
2021-22	QBIO 494: Honors Thesis, <i>Spring 2022</i> Units: 2, Effort: 100%
2021-22	QBIO 481: Structural Bioinformatics, <i>Fall 2021</i>

	Units: 4, Effort: 50% (w. Sagendorf)
2021-22	BISC 577a: Computational Molecular Biology Lab, <i>Fall 2021</i> Units: 2, Effort: 50% (w. Fudenberg)
2020-21	BISC 577a: Computational Molecular Biology Lab, <i>Fall 2020</i> Units: 2, Effort: 100% (w. Katritch)
2019-20	QBIO 494: Honors Thesis, Spring 2020 Units: 2, Effort: 50% (w. Rohs)
2019-20	BISC 577a: Computational Molecular Biology Lab, Fall 2019 Units: 2; Effort: 50% (w. Katritch)
2018-19	BISC 577a: Computational Molecular Biology Lab, Spring 2019 Units: 2; Effort: 50% (w. Sun)
2017-18	Math 5A: Calculus for the Life Sciences, University of California, Irvine Units: 4; Effort: 100%

### Guest Lectures

2023-24	QBIO 401: Introduction to Computational Analysis of Biological Data
2021-22	CBG 580: Cancer Systems Biology (two lectures)
2022-23	QBIO 401: Introduction to Computational Analysis of Biological Data
2021-22	CBG 580: Cancer Systems Biology (two lectures)
2021-22	QBIO 401: Introduction to Computational Analysis of Biological Data
2021-22	QBIO 493: Quantitative Biology Honors Seminar
2019-20	QBIO 401: Introduction to Computational Analysis of Biological Data
2019-20	BISC 194: Introduction to Research
2018-19	QBIO 105: Introduction to Quantitative Biology Seminar

### TALKS AND SEMINARS

#### Invited Seminars

21. Defense Research Chair seminar, Moffitt Graduate School, **Moffitt Cancer Center**, Tampa, FL. May 2024 (In person)
20. Computational Biology Research Center, **Human Technopole**, Milan, Italy. Apr 2024. (In person)
19. Biomathematics seminar, **North Carolina State University**, Raleigh, NC. Feb 2024. (Virtual)
18. Koch Institute for Integrative Cancer Research, **Massachusetts Institute of Technology**, Boston, MA. Sep 2023. (In person)
17. Department of Integrated Mathematical Oncology, **Moffitt Cancer Center**, Tampa, FL. Feb 2023 (In person)
16. Department of Biomedical Engineering, **University of Florida**, Gainesville, FL. Feb 2023 (In person)
15. Mathematical Institute, **University of Oxford**, Oxford, UK. Oct 2022. (Virtual)

14. Centre for Regenerative Medicine, Institute for Regeneration and Repair, **University of Edinburgh**, Edinburgh, UK. June 2022. (In person)
13. Baskin School of Engineering Applied Mathematics seminar series, **University of California, Santa Cruz**, May 2022. (Virtual)
12. Biostatistics seminar series, **USC**, Apr 2022. (Virtual)
11. Biomathematics seminar series, **University of California, Los Angeles**, Los Angeles, CA. Oct 2021. (Virtual)
10. Department of Mathematics, Mathematical Biology Seminar, **Iowa State University**, Ames, IA. Virtual, Apr, 2021. (Virtual)
9. Center for Computational Biology and Bioinformatics, Huck Institute for the Life Sciences, **Penn State University**, State College, PA. Mar, 2020. (In person)
8. Division of Mathematical Oncology, **City of Hope**, Duarte, CA. Nov, 2019.
7. Center for Bioinformatics and Functional Genomics, Department of Biomedical Sciences, **Cedars-Sinai**, Los Angeles, CA. Sep 2019.
6. Single-Cell Profiling and Engineering Center, **Caltech**, Pasadena, CA. May 2019.
5. Frontiers in Quantitative and Systems Biology Seminar, Biomathematics, **University of California, Los Angeles**, Feb 2019.
4. Department of Mathematics, **University of California, Riverside**, May 2018.
3. Institute for the Biology of Stem Cells, **University of California Santa Cruz**, Apr 2017.
2. Mathematics of Reaction Networks Group, **University of Copenhagen**, Denmark, May 2016.
1. Cancer Bioinformatics Seminar, Wellcome Trust Centre for Human Genetics, **University of Oxford**, Apr 2016.

#### Invited talks at international conferences

12. OKO Conference: Mathematical biology from genes to cells to humans, Aug 28-31, 2023, Kyoto University, Japan. (In Person)
11. ICIAM Congress 2023, MS on “Calibration and Validation of Mathematical Models for Biological Systems,” Aug 21-25, Tokyo, Japan (Virtual).
10. “Data-driven multiscale modeling in cancer” minisymposium at the Society for Mathematical Biology annual meeting, The Ohio State University, Jul 17-21, 2023. (In Person)
9. “Computer Algebra Applications in the Life Sciences” Session at the ACA 2023 Meeting, Warsaw, Poland, Jul 17-21, 2023. (Virtual)
8. **Keynote** at BIRS (Banff International Research Station) workshop on “Computational Modelling of Cancer Biology and Treatments”, Banff, Canada, Jan 22-27, 2023. (In Person)
7. ELLIIT (Excellence Center at Linköping—Lund in Information Technology), Workshop on Data-driven modeling and learning for cancer immunotherapy, May 4-6, 2022, Lund University, Skåne, Sweden. (In Person)
6. Society for Mathematical Biology Annual Meeting 2021, CDEV/Methods for Biological Modeling mini-symposium, June 2021. (Virtual)

5. Society for Mathematical Biology Annual Meeting 2019, DevBio subgroup mini-symposium, Montreal, Canada, July 2019.
4. Southern California Systems Biology Annual Conference, Irvine, USA, January 2019.
3. Banff International Research Station workshop on “Mathematical and Statistical Challenges in Bridging Model Development, Parameter Identification and Model Selection in the Biological Sciences”, Banff, Canada, November 2018.
2. Systems Medicine of Leukaemia: StemCellMathLab, Hamburg, Germany, June 2016.
1. Parameter Inference and Identifiability, University of Oxford, Oxford, UK, January 2014.

### **Contributed talks at international conferences**

8. Virtual Cell and Developmental Biology Festival Week, Mar 2024. (Virtual)
7. 12th ECMTB Conference of the SMB/ESMTB, Heidelberg, Germany, September 2022. (In Person)
6. ACM-BCB: Machine Learning Methods for Single-Cell Analysis, Virtual, August 1, 2021. **Awarded “Best talk”** at the meeting session. (Virtual)
5. Society for Mathematical Biology, Annual Meeting 2020, contributed talk as chair of mini-symposium, Aug 2020. (Virtual)
4. 7th Annual Winter q-bio Conference, Oahu, Hawaii, USA, February 2019. (In Person)
3. Cancer as an Evolving and Systemic Disease, Memorial Sloan Kettering Cancer Center, New York, NY, USA, March 2016. (In Person)
2. 25th Annual meeting of MASAMB (Mathematical and Statistical Aspects of Molecular Biology), University of Helsinki, Finland, 2015. (In Person)
1. 22nd Annual meeting of MASAMB (Mathematical and Statistical Aspects of Molecular Biology), Berlin, Germany, 2012. (In Person)

### **Seminars within USC**

7. “A window in” series in the TIME Program of the Norris Cancer Center, Keck USC. Mar 2024
7. CEED (Center for Ecological and Evolutionary Dynamics) Seminar, Nov 2023.
6. Norris Comprehensive Cancer Center Joint TIME-ERC-TACS Retreat, Sep 2023.
5. QCB Departmental Retreat, University of Southern California, Ventura, CA, Nov 2022.
4. USC Stem Cell—Quantitative and Computational Biology Virtual Symposium, University of Southern California, Los Angeles, CA, Jun 2020.
3. Tumor Microenvironment Program Retreat, Norris Comprehensive Cancer Center, Keck School of Medicine, University of Southern California, Los Angeles, CA, Nov 2019.
2. Quantitative and Computational Biology Section Retreat, University of Southern California, Ventura, CA, Nov 2019.
1. Multidisciplinary University Research Initiative (MURI) Kickoff Meeting: Investigating Energy Efficiency, Information Processing and Control Architecture of Microbial Community Interaction Networks, University of Southern California, Los Angeles, CA, Aug 2019.

**OUTREACH ACTIVITIES**

2021 - present	Development of K12 curriculum “QStemCell: quantitative stem cell biology,” in collaboration with D. Kast at USC JEP.
Fall 2023	In-person classroom visit to Weemes elementary school (through Wonderkids program) to present our QStemCell curriculum to 3rd grade
Fall 2022	Deployment of QStemCell curriculum co-developed with USC JEP in person (Norwood Elementary) and on Zoom for the Wonderkids program.
2019 - 2021	Volunteer with Skype a Scientist program, connecting with and teaching classrooms about systems biology internationally.
2014	Co-organizer of “Imagining the Future of Medicine”, held at the Royal Albert Hall (2000 delegates), Apr 21, 2014, London, UK.
2013	Curator of Royal Society Summer Science exhibition “Clever Microbes”, <a href="http://clever-microbes.tumblr.com">clever-microbes.tumblr.com</a> , held at the Royal Society, July 2-7, 2013.
2013	Co-organizer of TEDMEDLive at Imperial College London, held at the Royal Geographical Society (800 delegates), Apr 21, 2013, London, UK.
2011 - 2015	Tutor, Love2Learn, teaching mathematics and STEM core curriculum to UK high school students with refugee status, London, UK.