

Curriculum Vitae

Hongyu Miao

CONTACT INFORMATION

Department of Biostatistics and Data Science
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APPOINTMENT AND EXPERIENCE

- 05/17-present **Director of Data Science Education Program**, Department of Biostatistics and Data Science, School of Public Health, University of Texas Health Science Center at Houston, Texas
- 05/17-present **Director of Center for Biostatistics Collaboration and Data Services**, School of Public Health, University of Texas Health Science Center at Houston, Texas
- 09/15-present **Associate Professor**, Department of Biostatistics and Data Science, School of Public Health, University of Texas Health Science Center at Houston, Texas
- 03/15-08/15 **Associate Professor**, Department of Biostatistics and Computational Biology, University of Rochester School of Medicine and Dentistry, Rochester, New York
- 04/13-09/15 **Associate Director**, Biostatistics, Bioinformatics and Computational Biology Core, Center for AIDS Research, University of Rochester School of Medicine and Dentistry, Rochester, New York
- 09/10-09/15 **Director**, Mathematical Modeling Core, Center for Biodefense Immune Modeling, University of Rochester School of Medicine and Dentistry, Rochester, New York
- 03/09-02/15 **Assistant Professor**, Department of Biostatistics and Computational Biology, University of Rochester School of Medicine and Dentistry, Rochester, New York
- 02/08-03/09 **Research Assistant Professor**, Department of Biostatistics and Computational Biology, University of Rochester School of Medicine and Dentistry, Rochester, New York
- 11/06-02/08 **Postdoctoral Research Associate**, Department of Biostatistics and Computational Biology, University of Rochester School of Medicine and Dentistry, Rochester, New York

RESEARCH INTEREST

- graphical model, time series, neuroimaging, event analysis, decision process
- machine learning, data geometry and multimodality, quantum computation
- connected health, EHR/EMR, omics data, epidemiological study, clinical trial

- mathematical modeling, dynamic system, systems biology

EDUCATION

09/08-03/11 M.S., Biostatistics and Computational Biology, University of Rochester, Rochester, NY, USA
 03/04-03/07 Ph.D., Mechanical Engineering, University of Rochester, Rochester, NY, USA
 09/02-03/04 M.S., Mechanical Engineering, University of Rochester, Rochester, NY, USA
 09/99-06/02 M.S., Engineering Mechanics, Tsinghua University, Beijing, China
 09/95-06/99 B.S., Engineering Mechanics, Tsinghua University, Beijing, China

AWARDS AND HONORS

- Provost's Multidisciplinary Award, University of Rochester, 2008
- David P. Byar Young Investigator Travel Award, ASA Biometrics, 2008
- Full Assistantship for PHD program at University of Rochester, 2002~2006
- Outstanding Student Scholarship, Tsinghua University, 1996-1999

JOURNAL ARTICLE

1. Peng, H.L., Tam, S., Xu, L., Dahlstrom, K.R., Wu, C.F., Fu, S., Zhong, C., Chan, W., Sturgis, E.M., Ramondetta, L., Rong, L., Lairson, D.R., **Miao, H.**, "Age-Structured Population Modeling of HPV-related Cervical Cancer in Texas and US", *Scientific Reports* (in print, 2018)
2. Ahn, H., Suchting, R., Woods, A.J., **Miao, H.**, Green, C., Cho, R., Choi, E., Fillingim, R.B., "Bayesian Analysis of the Effect of Transcranial Direct Current Stimulation on Experimental Pain Sensitivity in Older Adults with Knee Osteoarthritis: Randomized Sham-Controlled Pilot Clinical Study", *Journal of Pain Research* (in print, 2018)
3. Wang, J., Wang, J., **Miao, H.**, Marschollek, M., Wolf, K.H., Lynch, K.A., Gong, Y., "Leveraging Aging in Place Through Sensor-Enhanced In-Home Monitoring", *Studies in Health Technology and Informatics* 250, 19-23 (2018)
4. Ke, R., Yang, H., Zhao, Y., Chen, W., Xue, M., **Miao, H.**, Huang, S., Liu, J., "A Robust AUC Maximization Framework with Simultaneous Outlier Detection and Feature Selection for Positive-Unlabeled Classification", *IEEE Transactions on Neural Networks and Learning Systems* (in print, 2018)
5. Wang, Y., Luo, Y., Wang, M., **Miao, H.**, "Time-invariant biological networks with feedback loops: structural equation models and structural identifiability", *IET Systems Biology*, (in print, 2018)
6. Yu, B., Egbejimi, A., Dharmat, R., Xu, P., Zhao, Z., **Miao, H.**, Chen, R., Wensel, T., Cai, J., Chen, Y., "Photoreceptor outer segments as physiological activator of mTOR in the retinal pigment epithelium", *Science Signaling* 11(532), eaag3315 (2018)
7. Tam, S., Fu, S., Xu, L., Krause, K., Lairson, D.R., **Miao, H.**, Sturgis, E.M., Dahlstrom, K.R., "The Epidemiology of Oral Human Papillomavirus Infection in Healthy Populations: A Systematic Review and Meta-Analysis", *Oral Oncology* 82, 91-99 (2018)
8. Song, J.J., Carey, M., Zhu, H., **Miao, H.**, Idarraga, R., Juan, C., Wu, H., "Identifying the dynamic gene regulatory network during latent HIV-1 reactivation using high-dimensional ordinary differential equations", *International Journal of Computational Biology and*

- Drug Design** 11(1/2), 135-153 (2018)
9. Saha, J.M., Liu, H., Hu, P.W., Wu, H., **Miao, H.**, Rice, A.P., "Proteomic profiling of a primary CD4+ T cell model of HIV-1 latency identifies genes whose differential expression correlates with reactivation of latent HIV-1", **AIDS Research and Human Retroviruses** 34(1), 103-110 (2018)
 10. Huang, H., Liu, S., Jean, M., Huang, H., Merkle, M., Hayashi, T., Kong, W., Rodriguez-Sanchez, I., Zhang, X., **Miao, H.**, Que, J., Kobie, J., Bradner, J., Santoso, N., Zhang, W., Zhu, J., "A novel bromodomain inhibitor reverses HIV-1 latency through specific binding with BRD4 to promote Tat and P-TEFb association", **Frontiers in Microbiology** 8(1035), 1-11 (2017)
 11. Lu, N., Li, T., Ke, L., **Miao, H.**, "A Deep Learning Scheme for Motor Imagery Classification based on Restricted Boltzmann Machines", **IEEE Transactions on Neural System and Rehabilitation Engineering** 25(6), 566-576 (2017)
 12. Zhang, G., Liu, Z., Ding, H., **Miao, H.**, Garcia, J., Li, Y.P., "Toll-like receptor 4 mediates Lewis lung carcinoma-induced muscle wasting via coordinate activation of protein degradation pathways", **Scientific Reports** 7: 2273 (2017)
 13. Dong, J., Yao, Z.J., Zhu, M.F., Wang, N.N., Lu, B., Chen, A.F., Lu, A.P., **Miao, H.**, Zeng, W.B., Cao, D.S., "ChemSAR: an online pipelining platform for molecular SAR modeling", **Journal of Cheminformatics** 9(1), 27 (2017)
 14. Wang, Y., **Miao, H.**, "Parameter Identifiability-based Optimal Observation Remedy for Biological Networks", **BMC Systems Biology** 11(1), 53 (2017)
 15. Gui, S., Rice, A.P., Chen, R., Wu, L., Liu, J., **Miao, H.**, "A Scalable Algorithm for Structure Identification of Complex Gene Regulatory Network from Temporal Expression Data", **BMC Bioinformatics** 18(1), 74 (2017)
 16. Lu, N., **Miao, H.**, "Clustering Tree-Structured Data on Manifold", **IEEE Transactions on Pattern Analysis and Machine Intelligence** 38(10), 1956-1968 (2016)
 17. Liu, Z., **Miao, H.**, "Prediction of Protein-RNA Interactions Using Sequence and Structure Descriptors", **Neurocomputing** 206, 28-34 (2016)
 18. Dong, J., Yao, Z.J., Wen, M., Zhu, M.F., Wang, N.N., **Miao, H.**, Lu, A.P., Zeng, W.B., Cao, D.S., "BioTriangle: a web-accessible platform for generating various molecular representations for chemicals; proteins; DNAs/RNAs and their interactions", **Journal of Cheminformatics** 8(1), 1-13 (2016)
 19. Wang, Y., Lu, N., **Miao, H.**, "Structural Identifiability of Cyclic Graphical Models of Biological Networks with Latent Variables", **BMC Systems Biology** 10:41 (2016). DOI: 10.1186/s12918-016-0287-y.
 20. Lu, N., Silva, J., Gu, Y., Wu, H., Gelbard, H., Dewhurst, S., **Miao, H.**, "Capillary Extraction by Detecting Polarity in Circular Profiles", **IET Image Processing** 10(5), 339-348 (2016)
 21. Lu, N., **Miao, H.**, "Structure Constrained Nonnegative Matrix Factorization for Pattern Clustering and Classification", **Neurocomputing** 171, 400-411 (2016)
 22. Huang, H., Santoso, N., Power, D., Simpson, S., Dieringer, M., **Miao, H.**, Gurova, K., Giam, C.Z., Elledge, S., Zhu, J., "FACT Proteins, SUPT16H and SSRP1, are Transcriptional Suppressors of Human Retroviruses (HIV-1/HTLV-1) that Facilitate Viral Latency", **Journal of Biological Chemistry** 290(45), 27297-27310 (2015)
 23. Dong, J., Cao, D.S., **Miao, H.**, Deng, B.C., Yun, Y.H., Wen, M., Wang, N.N., Zeng, W.B., Lu, A.P., Chen, A.F., "ChemDes: An Integrated Web-based Platform for Molecular

- Descriptor and Fingerprint Computation”, *Journal of Cheminformatics* 7(1): 60 (2015)
24. Liu, Z., Wu, C., **Miao, H.**, Wu, H., “RegNetwork: An Integrated Database of Transcriptional and Post-transcriptional Regulatory Networks in Human and Mouse”, *Database*, doi:10.1093/database/bav095 (2015)
 25. Tong, X., Chen, J., **Miao, H.**, Li, T., Zhang, L., “Development of an Agent-based Model (ABM) to Simulate the Immune System and Integration of a Regression Method to Estimate the Key ABM Parameters by Fitting the Experimental Data”, *PLOS One* 10(11): e0141295 (2015)
 26. Lu, N., Li, T., Pan, J., Ren, X., Feng, Z., **Miao, H.**, “Structure Constrained Semi-Nonnegative Matrix Factorization for EEG-based Motor Imagery Classification”, *Computers in Biology and Medicine* 60, 32-39 (2015)
 27. Power, D., Santoso, N.G., Dieringer, M., Yu, J., Huang, H., Simpson, S., Seth, I., **Miao, H.**, Zhu, J., “IFI44 Suppresses HIV-1 LTR Promoter Activity and Facilitates Its Latency”, *Virology* 481(0), 142-150 (2015)
 28. **Miao, H.**, Wu, H., Xue, H., “Generalized Ordinary Differential Equation Models”, *Journal of the American Statistical Association* 109(508), 1672-1682 (2014)
 29. **Miao, H.**, Sangster, M.Y., Livingstone, A.M., Hilchey, S., Zhang, L., Topham, D.J., Mosmann, T.R., Holden-Wiltse, J., Perelson, A.S., Wu, H., Zand, M.S., “Modeling the Dynamics and Migratory Pathways of Virus-Specific Antibody-Secreting Cell Populations in Primary Influenza Infection”, *PLOS One*, 9(8): e104781 (2014)
 30. Liu, Z., Wu, H., Zhu, J., **Miao, H.**, “Systematic Identification of Transcriptional and Post-Transcriptional Regulatory Relationships during Influenza Virus Infection”, *BMC Bioinformatics* 15(1), 336 (2014)
 31. Wu, H., **Miao, H.**, Xue, H., Topham, D.J., Zand, M., “Quantifying Immune Response to Influenza Virus Infection via Multivariate Nonlinear ODE Models with Partially Observed State Variables and Time-Varying Parameters”, *Statistics in Biosciences*, 1-20, doi: 10.1007/s12561-014-9108-2 (2014)
 32. Sanchez-Lockhart, M., Rojas, A.V., Fettis, M.M., Bauserman, R., Higa, T.R., **Miao, H.**, Waugh, R.E., Miller, J., “T Cell Receptor Signaling Can Directly Enhance the Avidity of CD28 Ligand Binding”, *PLOS One* 9(2), e89263 (2014)
 33. Gu, W., Wu, H., **Miao, H.**, Xue, H., “Parameter Estimation for a Type of Nonlinear Stochastic Models Observed with Error”, *Computational Statistics & Data Analysis* 79(0), 113-119 (2014)
 34. Lu, N., Silva, J., Gu, Y., Gerber, S., Wu, H., Lord, E., Gelbard, H., Dewhurst, S., **Miao, H.**, “Directional Histogram Ratio at Random Probes: A Local Thresholding Criterion for Capillary Images”, *Pattern Recognition* 46(7), 1933-1948 (2013)
 35. Wang, J., Zhang, L., Jing, C., Ye, G., Wu, H., **Miao, H.**, Wu, Y., Zhou, X., “Multi-scale Agent-based Modeling on Melanoma and Its Related Angiogenesis Analysis”, *Theoretical Biology and Medical Modeling* 10:41, (2013)
 36. Xiao, Y., **Miao, H.**, Tang, S., Wu, H., “Modeling Antiretroviral Drug Responses for HIV-1 infected Patients Using Differential Equation Models”, *Advanced Drug Delivery Reviews* 65(7), 940-953 (2013)
 37. Seckler, J., Leioatts, N., **Miao, H.**, Grossfield, A., “The Interplay of Structure and Dynamics: Insights from a Survey of HIV-1 Reverse Transcriptase Crystal Structures”, *Proteins: Structure, Function and Bioinformatics* 81(10), 1792-1801 (2013)
 38. **Miao, H.**, Jin, X., Perelson, A.S., Wu, H., “Evaluation of Multitype Mathematical Models

- for CFSE-labeling Experiment Data”, *Bulletin of Mathematical Biology* 74(2), 300-326 (2012)
39. Henn, A.D., Laski, M., Yang, H., Qiu, X., **Miao, H.**, Barry, C.T., Wu, H., Zand, M., “Functionally Distinct Subpopulations of CpG-Activated Memory B Cells”, *Scientific Reports* 2, (March, 2012)
 40. Li, X., **Miao, H.**, Henn, A., Topham, D., Wu, H., Zand, M., Mosmann, T., “Ki-67 Expression Reveals Strong, Transient Influenza Specific CD4 T Cell Responses after Adult Vaccination”, *Vaccine* 30(31), 4581-4584 (2012)
 41. **Miao, H.**, Xia, X., Perelson, A.S., and Wu H., “On Identifiability of Nonlinear ODE Models with Applications in Viral Dynamics”, *SIAM Review* 53(1), 3-39 (2011).
 42. Wu, H., Kumar, A., **Miao, H.**, Holden-Wiltse, J., Mosmann, T.R., Livingstone, A., Belz, G.T., Perelson, A.S., Zand, M., Topham, D.J., “Modeling of Influenza-specific CD8+ T Cells during the Primary Response Indicates that the Spleen is a Major Source of Effectors”, *Journal of Immunology* 187(9), 4474-4482 (2011)
 43. Liang, H., **Miao, H.**, and Wu, H., “Estimation of Constant and Time-varying Dynamic Parameters of HIV Infection in a Nonlinear Differential Equation Model”, *Annals of Applied Statistics* 4(1), 460-483 (2010)
 44. **Miao, H.**, Hollenbaugh, J., Zand, M., Holden-Wiltse, J., Mosmann, T.R., Perelson, A.S., Wu, H., Topham, D.J., “Quantifying the Early Immune Response and Adaptive Immune Response Kinetics in Mice Infected by Influenza A Virus”, *Journal of Virology* 84(13), 6687-6698 (2010)
 45. Xue, H., **Miao, H.**, and Wu, H., “Sieve Estimation of Constant and Time-varying Coefficients in Nonlinear Ordinary Differential Equation Models by Considering both Numerical Error and Measurement Error”, *Annals of Statistics* 38(4), 2351-2387 (2010)
 46. **Miao, H.**, Dykes, C., Demeter, L.M., and Wu, H., “Differential Equation Modeling of HIV Viral Fitness Experiments: Model Identification, Model Selection, and Multi-model Inference”, *Biometrics* 65(1), 292-300 (2009).
 47. Lee, H. Y., Topham, D. J., Park, S. Y., Hollenbaugh, J., Treanor, J. J., Mosmann, T. R., Jin, X., Ward, B. , **Miao, H.**, Holden-Wiltse, J., Perelson, A. S., Zand, M. S., Wu, H., “Simulation and Prediction of the Adaptive Immune Response to Influenza A Virus Infection”, *Journal of Virology* 83(14), (2009).
 48. Wu, H., Zhu, H., **Miao, H.**, and Perelson, A.S., “Parameter Identifiability and Estimation of HIV/AIDS Dynamic Models,” *Bulletin of Mathematical Biology* 70(3), 785-799 (2008).
 49. **Miao, H.**, and Gracewski, S.M., “Coupled FEM and BEM Code for Simulating Acoustically Excited Bubbles near Deformable Structures”, *Computational Mechanics* 42(1), 95-106 (2008).
 50. **Miao, H.**, Dykes, C., Demeter, L.M., Cavenaugh, J., Parka, S.Y., Perelson, A.S., and Wu H., “Modeling and Estimation of Kinetic Parameters and Replication Fitness of HIV-1 from Flow-Cytometry-based Growth Competition Experiments,” *Bulletin of Mathematical Biology* 70, 1749-1771 (2008).
 51. **Miao, H.**, Gracewski, S.M., and Dalecki, D., “Ultrasonic Excitation of a Bubble inside a Deformable Tube: Implications for Ultrasonically-induced Hemorrhage,” *Journal of the Acoustical Society of America* 124(4), 2374-2384 (2008).
 52. **Miao, H.** and Gracewski, S.M., “Response of an Ultrasonically Excited Bubble near a Fixed Rigid Object,” *Acoustic Research Letters Online* 6(3), 144-150 (2005).

53. Gracewski, S.M., **Miao, H.**, and Dalecki, D., "Ultrasonic Excitation of a Bubble near a Rigid or Deformable Sphere: Implications for Ultrasonically-induced Hemolysis," *Journal of the Acoustical Society of America* 117 (3), 1440-1447 (2005).
54. **Miao, H.**, Zhang, X., and Lu, M. W., "Fit-by-order Collocation Meshless Method," *Engineering Mechanics* (in Chinese) 20(5), 48-52 (2003).

CONFERENCE PAPER

55. Wang, J., Wang, J., **Miao, H.**, Marschollek, M., Wolf, K.H., Lynch, K.A., Gong, Y., "Leveraging Aging in Place through Sensor-enhanced In-home Monitoring", The 16th World Congress on Medical and Health Informatics (MEDINFO) (Xiamen, China, Aug. 2017)
56. Song, J., Carey, M., Zhu, H., **Miao, H.**, Ramirez, J.C., Wu, H., "Identifying the dynamic gene regulatory network during latent HIV-1 reactivation using high-dimensional ordinary differential equations", 2016 International Conference on Intelligent Biology and Medicine (Houston, TX, Dec. 2016)
57. Liu, Z., **Miao, H.**, "Prediction of Protein-RNA Interactions Using Sequence and Structure Descriptors", 17th IFAC Symposium on System Identification, 48(28), 1-6 (Beijing, China, Oct. 2015)
58. Lu, N., **Miao, H.**, "Featured Circular Profile for Vessel Thresholding", CISP-BMEI 2013, vol. 1, 437-442 (Hangzhou, China, Dec. 2013)
59. Wu, H., **Miao, H.**, Warnes, G.R., Wu, C., LeBlanc, A., Dykes, C., Demeter, L.M., "DEDiscover: A Computation and Simulation Tool for HIV Viral Fitness Research", International Conference on BioMedical Engineering and Informatics, vol. 1, 687-694 (Sanya, China, 2008)

CONFERENCE AND INVITED PRESENTATION

1. Offor, O.L., Gao, Q., Mellor-Crummey, L., **Miao, H.**, Barnett, B., Vigil, K.J., "Low Hepatitis C Virus Reinfection Rates after Sustained Viral Response in HIV coinfecting patients in Houston, Texas.", IDWeek 2018, San Francisco, CA (submitted, 2018)
2. Lake, J., Feng, H., **Miao, H.**, La, K., Offor, L., Somasunderam, A., Utay, N.S., "Hepatic Steatosis Is Common in Both Lean and Obese Adults with HIV Infection and Associated with Divergent Immuno-Metabolic Profiles", The 9th International Workshop on HIV & Aging, New York, NY (September, 2018)
3. Wang, J., **Miao, H.**, Marschollek, M., Wolf, K.H., Lynch, K., Gong, Y., "Towards Aging in Place: Next Stage of Sensor-enhanced In-home Monitoring", The 14th International Conference on Nursing Informatics, Guadalajara, Mexico (June, 2018)
4. **Miao, H.**, "Revealing Genome-scale Regulatory Landscapes Based on Temporal Gene Expression Profiles", 2nd International Conference on Genomic Medicine, Houston, TX (Feb., 2018)
5. Smith, D., Gao, Q., **Miao, H.**, Gutierrez, O., Martinez, C., Vigil, K.J., Utay, N., Arduino, R.C., "Acute HIV infection (AHI): Trained Service Linkage Workers and 4th Generation Assay Significantly Shorten Time to Antiretroviral Therapy Initiation", IDWeek 2017, San Diego, CA (Oct., 2017)
6. **Miao, H.**, "Statistical Inference of Network Structures in Ultra-high Dimensional Space",

- Data Science Conference, Houston, TX (Oct., 2017)
7. **Miao, H.**, “Machine Learning of Brain Vasculature Change in NeuroAIDS Studies using Two-photon Imaging”, SIAM Houston Imaging Sciences Symposium, Houston, TX (Oct., 2017)
 8. **Miao, H.**, “Sparsity Structure in Statistical Inference of Ultra-high Dimensional Dynamic Graphical Model”, Statistical and Computational Analytics for Big Data, Toronto, Canada (Sep., 2017)
 9. **Miao, H.**, “Structure identification of ultra-high dimensional biological systems from time course data”, Systems Engineering Institute, Xi’an Jiaotong University, ShannXi, China (Jun., 2017)
 10. **Miao, H.**, “Statistical Inference of Genome-wide Regulatory Landscapes from Temporal Gene Expression Data”, Department of Bioinformatics and Computational Biology, MD Anderson, Houston, TX (Mar., 2017)
 11. **Miao, H.**, “Inferring structures of ultra-high dimensional biological systems from time course data: How to handle half a million parameters?”, Department of Mathematics, University of Houston, Houston, TX (Sept., 2016)
 12. **Miao, H.**, “Dynamic modeling and inference for event detection”, ICSA 2016 Symposium, Atlanta, GA (June, 2016)
 13. **Miao, H.**, “Vascular Trees and the Machine Learning Strategy on Manifold”, Delaware Biotechnology Institute, University of Delaware, Newark, DE (Feb., 2016)
 14. **Miao, H.**, “Learning Tree Structures on Manifold”, Houston Area Chapter of the American Statistical Association Meeting, Houston, TX (Oct., 2015)
 15. Power, D., Santoso, N., Yu, J., Dieringer, M., van Twisk, D., Gao, G., Elledge, S., **Miao, H.**, Zhu, J., “TAT-Associated Proteins (TAPs) that Regulate HIV-1 Transcription and Latency”, Strategies for An HIV Cure 2014, Bethesda, MD (Oct., 2014)
 16. **Miao, H.**, “Identifiability of High-dimensional Models”, SIAM Conference on the Life Sciences 2014, Charlotte, NC (Aug., 2014)
 17. **Miao, H.**, “Semi-mechanistic Modeling and its Application in Understanding Immune Cell Migration”, Mathematical Biology and Physiology Seminar, Mathematics Department, Penn State University, PA (Apr., 2014)
 18. **Miao, H.**, “Systematic Identification of Genuine Regulatory Relationships during Influenza Virus Infection”, AMS Fall 2013 Central Sectional Meeting, St. Louis, MO (Oct., 2013)
 19. **Miao, H.**, “Clustering Tree-Structured Data on Manifold”, Joint Statistical Meetings, Montreal, Canada (Aug., 2013)
 20. **Miao, H.**, “Modeling, Identifiability, and Data Analysis of Complex Systems”, 1st Workshop on Viral Dynamics, Frankfurt am Main, Germany (July, 2013)
 21. **Miao, H.**, “Screening Core Pre- and Post-Transcriptional Regulations in Influenza Infection”, SMB Annual Meeting and Conference, Phoenix, Arizona (June, 2013)
 22. **Miao, H.**, “Detecting Genuine Regulatory Relationships among Transcription Factors, miRNAs and Target Genes post Influenza Virus Infection”, AAI Immunology 2013, Honolulu, Hawaii (May, 2013)
 23. **Miao, H.**, “Inferring Pre- and Post-Transcriptional Regulations in Infectious Diseases”, GLBIO, Pittsburgh, Pennsylvania (May, 2013)
 24. **Miao, H.**, “Systems Approaches in Immunological Research“, Xi’an Jiaotong University (Xi’an, China), National Chengdu Center for Drug Safety Evaluation, West China

Hospital (Chengdu, China), University of Electronic Science and Technology of China (Chengdu, China) (April, 2012)

25. **Miao, H.**, "Will Different Types of Models Give Different Answers? A Case Study in Modeling CFSE Data to Understand Immune Cell Life Cycle", AMS Spring Eastern Sectional Meeting, George Washington University, Washington, DC (March, 2012)
26. **Miao, H.**, "Semi-mechanistic modeling of Two-Scale Immune Cell Kinetics post Influenza A Virus Infection", System Approaches in Immunology, Santa Fe, New Mexico (Jan., 2012)
27. **Miao, H.**, Liang, H., and Wu, H., "Identifiability and Estimation of Time-varying Parameters in ODE Models with Applications in Viral Dynamics", Joint Statistical Meetings, Miami Beach, Florida (Aug., 2011)
28. **Miao, H.**, "Understanding Immune Cell Growth, Loss, Migration and Class-Switching within Multiple Lymphatic Organs post Influenza A Virus Infection", 6th Annual Symposium in Computational Immunology: Systems Biology of Influenza, New Haven, CT (June, 2011)
29. **Miao, H.**, Topham, D., Wu, H., and Zand, M., "CD8+ T Cell Trafficking post Primary Influenza A Virus Infection", 98th Annual Meeting of the American Association of Immunologists, San Francisco, California (May, 2011)
30. **Miao, H.**, "Multilevel modeling of complex system dynamics in immune responses to influenza A virus infection", 4th Annual CEIRS Network Meeting, Rochester, NY (Aug., 2010)
31. **Miao, H.**, "Mathematical modeling in Virology Research", UR Seminars for Virologists, Rochester, NY (Feb., 2010)
32. **Miao, H.**, Dykes, C., Demeter, L.M., and Wu H., "Modeling HIV viral fitness and computing tool development", University of Rochester Developmental Center for AIDS Research 1st World AIDS Day Symposium, Rochester, NY (Dec., 2009).
33. **Miao, H.**, "Computational challenge in biomedical research", URCS Seminars in Systems, Rochester, NY (Oct., 2009)
34. Xue, H., **Miao, H.**, and Wu, H., "Sieve estimation of constant and time-varying coefficients in nonlinear ordinary differential equation models by considering both numerical error and measurement error", Statistical Modeling for Biological Systems: A Conference in Memory of Andrei Yakovlev, Rochester, NY (2009)
35. **Miao, H.**, Dykes, C., Demeter, L.M., and Wu H., "Differential equation modeling of HIV viral fitness experiments: model identification, model selection, and multi-model inference", Joint Statistical Meetings, Denver, CO (2008).
36. Gracewski, S.M. **Miao, H.**, Dalecki, D., "Simulation of an acoustically excited bubble within a compliant vessel," J. Acoust. Soc. Am. 121(5), 3058 (Salt Lake City, UT, 2007).
37. Gracewski, S.M., **Miao, H.**, Dalecki, D., "Vessel damage mechanisms by ultrasound or shock wave pulses," J. Acoust. Soc. Am. 119(5), 3406 (Providence, RI, 2006).
38. Gracewski, S.M., **Miao, H.**, Dalecki, D., Miller, M.W., "Simulation of an acoustically excited bubble near a simulated "cell", J. Acoust. Soc. Am. 115(5), 2561 (NYC, 2004).

RESEARCH GRANT

- **Principal/Co-Principal Investigator**

- ❖ Analysis of Longitudinal Multiscale Data in Immunological Bioinformatics - Feature

- Selection, Graphical Models, and Structure Identification, NSF/DMS [1620957](#), \$138,000 (PI, 8.3% effort), 2016-2019
- ❖ Targeting BRD4 and TAT-associated Inhibitory Proteins to Reactivate Latent HIV, NIH/NIAID [1 R21 AI116180-01](#), \$125,000 (Co-PI, 15% effort), 2014-2015
 - ❖ Identification of Interferon Stimulated Genes Regulating Viral Latency, Collaborative Bioinformatics Pilot Award, Center for Integrative Bioinformatics and Experimental Mathematics, University of Rochester, \$50,000 (Co-PI, data collection), 2014-2015
 - ❖ Interaction between Aging and HIV-associated Neurological Disorder, Collaborative Bioinformatics Pilot Award, Center for Integrative Bioinformatics and Experimental Mathematics, University of Rochester, \$42,219 (Co-PI, data collection), 2013-2014
 - ❖ Computational Approaches for HIV Viral Fitness Research, Mentoring Award, University of Rochester Development Center for AIDS Research, \$20,000 (PI, 25% effort), 2008-2009
 - ❖ Computational Approaches for HIV Viral Fitness Research, Provost's Multidisciplinary Awards, University of Rochester, \$70,000 (PI, 25% effort), 2008-2009
- **Subcontract Principal Investigator**
 - ❖ Patient Satisfaction, Retention in HIV Care, and Adherence to ART, NIH/NIMH [5 K23 MH100965-04](#), \$9,072 (subcontract PI, student support), 09/2017-12/2017
 - ❖ Effect of Reducing Nucleotide Exposure on Bone Health, Stanford University/ViiV Healthcare, \$170,796 (subcontract PI, student support), 07/2018-07/2021
 - **Key/Co-Investigator**
 - ❖ Sarcopenia, Muscle and Fat Area and Density as Predictors of Physical Function in Older Adults on Raltegravir Versus PI-based Antiretroviral Therapy, Merk, \$49,161 (10% effort), 2017-2020
 - ❖ Health and Economic Consequences of HPV-related Disease in Texas, MD Anderson Moon Shots Program, \$900,000 (15% effort), 2016-2018
 - ❖ Statistical Methods for ODE Models in AIDS Research, NIH/NIAID [5 R01 AI087135-07](#), \$1,250,000 (10% effort), 2015-2019
 - ❖ A Host Restrictive Network Centering BRD4 in HIV Latency, University of Rochester CFAR Pilot Award, \$35,000 (data collection), 2014-2015
 - ❖ University of Rochester Center for AIDS Research, NIH/NIAID, [5 P30 AI078498-07](#), \$1,151,003 (15% effort), 2013-2015
 - ❖ RNA-Targeted Small Molecules: Connecting Binding Kinetics to Sequence Selectivity (R01), NIH/DHHS/PHS [1 R01 GM100788-01](#), \$1,117,390 (10% effort), 2012-2015
 - ❖ Estimation Methods for Nonlinear ODE Models in AIDS Research (R01), NIH/NIAID [5 R01 AI087135-04](#), \$930,469 (25% effort), 2010-2014
 - ❖ University of Rochester Center for Biodefense Immune Modeling, NIH/NIAID [HHSN272201000055C](#), \$7,993,510 (30% effort), 2010-2015
 - ❖ Novel Adjunctive Therapies for NeuroAIDS, NIH [5 P01 MH064570-10](#), \$1,199,772 (10% effort), 2011-2012
 - ❖ Training in Biostatistics for HIV/AIDS, NIH/NIAID [1 T32 AI083206-01A1](#), \$992,185 (no salary support allowed), 2010-2015

- ❖ B Cells in Health and Disease, UNIV/Emory [S920254](#), \$109,844 (30% effort), 2012-2015

TEACHING EXPERIENCE

2018, Fall	Introduction to Data Science
Instructor	<i>PH1975, Department of Biostatistics and Data Science, UTSPH</i>
2018, Spring	Multivariate Statistics
Instructor	<i>PH1821, Department of Biostatistics, UTSPH</i>
2017, Fall	Introduction to Data Science
Instructor	<i>PH1975, Department of Biostatistics and Data Science, UTSPH</i>
2017, Spring	Multivariate Statistics
Instructor	<i>PH1821, Department of Biostatistics, UTSPH</i>
2016, Fall	Generalized Linear Model
Instructor	<i>PH1916, Department of Biostatistics, UTSPH</i>
2016, Spring	Multivariate Statistics
Instructor	<i>PH1821, Department of Biostatistics, UTSPH</i>
2015, Summer	Modeling, Computing and Statistics in Immunology Research
Instructor	<i>Center for Biodefense Immune Modeling, University of Rochester</i>
2015, Spring	Wet/Dry Lab Rotation (Bioinformatics)
Instructor	<i>BST 496, Department of Biostatistics, University of Rochester</i>
2015, Spring	PHD Readings
Instructor	<i>BST 591, Department of Biostatistics, University of Rochester</i>
2015, Spring	Computational Biology
Instructor	<i>BST 431, Department of Biostatistics, University of Rochester</i>
2013, Fall	Seminar in Statistical Literature
Instructor	<i>BST 497, Department of Biostatistics, University of Rochester</i>
2012, Fall	Introduction to Biostatistics
Instructor	<i>BST 463, Department of Biostatistics, University of Rochester</i>
2012, Summer	Modeling, Computing and Statistics in Immunology Research
Instructor	<i>Center for Biodefense Immune Modeling, University of Rochester</i>
2011, Fall	Introduction to Biostatistics
Instructor	<i>BST 463, Department of Biostatistics, University of Rochester</i>
2011, Spring	Topics in Immunology: <i>Mathematical Immunology</i>
Invited Lecturer	<i>MBI 540, Department of Immunology, University of Rochester</i>
2010, Fall	Advanced Topics in Object Data Analysis: <i>Statistical Image Analysis</i>
Invited Lecturer	<i>BST 550, Department of Biostatistics, University of Rochester</i>
2010, Fall	Introduction to Biostatistics
Instructor	<i>BST 463, Department of Biostatistics, University of Rochester</i>
2010, Spring	Computational Statistics
Instructor	<i>BST 550, Department of Biostatistics, University of Rochester</i>

STUDENT MENTORING

- Jie Zhu, PHD candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2018-present

- Seokhun Kim, MS candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2018-present
- Feng Zhang, PHD candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2018-present
- Jingxiao Chen, PHD candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2018-present
- Charee Robe, MPH candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2018-present
- Chengxue Zhong, MS candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2017-present
- Han Feng, PHD candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2017-present
- Pengwei Zhu, PHD candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2017-present
- Qianmiao Gao, PHD candidate in Biostatistics and Data Science, academic & thesis advisor, UTSPH, 2017-present
- Liang Wu, PHD candidate in Biostatistics and Data Science, academic & thesis advisor, UTSPH, 2017-present
- Sun Hee, MS candidate in Biostatistics and Data Science, academic advisor, UTSPH, 2017-present
- Samantha Tam, MD in Head and Neck Surgery, Practicum Advisor, MD Anderson, 2016-2017
- Cai Wu, PHD candidate in Biostatistics, committee member, UTSPH, 2016-2017
- Mary Akosile, MS candidate in Biostatistics, academic advisor, UTSPH, 2016-2017
- Raven Cunningham, PhD candidate in Behavioral Science, committee member, UTSPH, 2016-2017
- Bilan Liu, PhD candidate in Electrical and Computer Engineering, committee member, University of Rochester, 2015
- Yandi Shen, undergraduate student in the summer research training program, University of Rochester, advisor, 2014
- Sanjukta Bandyopadhyay, MS in Medical Statistics, committee member, University of Rochester, 2014
- Changming Xia, PhD candidate in Statistics, committee chair, University of Rochester, 2014

POSTDOCTORAL TRAINEES

- Ho-Lan Peng, PhD in Biostatistics (UTSPH, co-supervised with Dr. Lairson & Dr. Chan), 2016-present
- Netty Santoso, PhD in Cellular and Molecular Physiology (Johns Hopkins University), 2014-2015
- James Seckler, PhD in Physiology and Biophysics (Case Western Reserve University), 2011-2014
- Ana Rojas, PhD in Physics and Astronomy (Louisiana State University), 2011-2014
- Na Lu, PhD in Control Science and Engineering (Xi'an Jiaotong University, China), 2011-2013

PROFESSIONAL SERVICE

- Editorial Board
 - ❖ Associate Editor, BMC Systems Biology, 2016-present
 - ❖ Lead Guest Editor, Computational and Mathematical Methods in Medicine, 2015
- Professional Committee Board
 - ❖ Secretary, Houston Area Chapter of the American Statistical Association, 2016-present (<http://community.amstat.org/houston/home>)
 - ❖ Co-Chair, Data Science Faculty Search Committee, Department of Biostatistics and Data Science, University of Texas Health Science Center at Houston, 2017-2018
- Grant Review
 - ❖ NIH Panel Review
 - NST-1 Panel, NINDS, 2016-present
 - Neurological Disorders and Stroke (NINDS), 2016
 - ❖ NSF Panel Review
 - DMS, Biomedical Big Data, 2016
 - ❖ Clinical & Translational Science Institute (CTSI) Pilot Projects for Biostatistical and Epidemiological Methodology, 2012-2015
 - ❖ The German Israeli Foundation for Scientific Research and Development, 2015-2016
- Paper Review
 - ❖ Biometrics, BioSystems, BMC Health Services Research, BMC Medical Research Methodology, BMC Systems Biology, Bulletin of Mathematical Biology, Computational Statistics and Data Analysis, Epidemics, EURASIP Journal on Bioinformatics and Systems Biology, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Knowledge and Data Engineering, IEEE Conference on Decision and Control, Journal of Applied Mathematics, Journal of the American Statistical Association, Journal of Biological Systems, Journal of Computational and Graphical Statistics, Journal of Mathematical Biology, Journal of the Royal Society Interface, Journal of Symbolic Computation, Journal of Theoretical Biology, JP Journal of Biostatistics, Mathematical Review, Mathematical Medicine & Biology, Proceedings A of the Royal Society, PLoS Computational Biology, PLoS One, Scientific Reports, Statistics in Medicine, Surveys in Mathematics and its Applications
- Book Review
 - ❖ An Introduction to Stochastic Processes with Applications to Biology (2nd Ed.), by Linda Allen, CRC, 2011
- Conference
 - ❖ Program Committee, *2018 IEEE International Conference on Bioinformatics and Biomedicine* (Dec. 2018, Madrid, Spain)
 - ❖ Program Committee, *2017 IEEE International Conference on Bioinformatics and Biomedicine* (Nov. 2017, Kansas City, MO)
 - ❖ Program Committee, *1st International Workshop on Artificial Immune Systems: Systems & Synthetic Immunology, Computational Immunology & Immune-Inspired Engineering* (July 2015, Taormina, Italy)

- ❖ Invited Reviewer, *2013 American Control Conference* (Jun. 2013, Washington, DC)
- ❖ Session Chair, *2012 Symposium on Modeling Immune Responses from Complex Data* (Jun. 2012, Rochester, NY)
- ❖ Invited Program Committee, *11th International Conference on Artificial Immune Systems* (Aug. 2012, Taormina, Italy)
- ❖ Invited session chair for Joint Statistical Meeting, *Modeling and Testing Using Imaging Data* (Aug. 2011, Miami Beach, Florida)

PROFESSIONAL AFFILIATIONS

- International Society for Computational Biology (2012-present)
- Society for Industrial and Applied Mathematics (2011-present)
- Institute of Mathematical Statistics (2009-present)
- International AIDS Society (2009-present)
- American Statistical Association (2008-present)
- The Society for Mathematical Biology (2008-present)

COMPUTING SKILLS

- **Programming Languages**
C++, Matlab, Julia, R/SAS, Python, Java
- **Productivity Tools**
LaTeX, MS Office, EndNote, Adobe Acrobat, Adobe Illustrator