Anthony Almudevar - Curriculum Vitae

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(Updated January 2, 2026)

Contents

Section 1: Employment and Education History

1.1 Employment and Appointments

January 2023 – March 2025
Distinguished Scientist,
Empress Therapeutics, Boston, Massachusetts

April 2022 – December 2022
Statistical Consultant (remote),
Empress Therapeutics, Boston, Massachusetts

October 2021 – March 2022
Biostatistician (remote),
Daiichi-Sankyo Inc, Basking Ridge, New Jersey

January 2022
Professor Emeritus,
Department of Biostatistics and Computational Biology,
University of Rochester Medical Center, Rochester, New York

November 2009 – December 2021
Associate Professor,
Department of Biostatistics and Computational Biology,
University of Rochester Medical Center, Rochester, New York

August 2003 – October 2009
Assistant Professor,
Department of Biostatistics and Computational Biology,
University of Rochester Medical Center, Rochester, New York

July 2001 – June 2003
Assistant Professor,
Department of Mathematics and Statistics,
Acadia University, Wolfville, Nova Scotia, Canada

September 1999 – June 2001
Assistant Professor,
Department of Mathematics and Computing Science,
Saint Mary's University, Halifax, Nova Scotia, Canada

February 1998 - August 1999
Statistician, Workers' Compensation Board, Halifax, Nova Scotia, Canada.
April 1994 - January 1998
Post-Doctoral Fellow,
Department of Mathematics, Statistics and Computer Science (Statistics Division),
Dalhousie University, Halifax, Nova Scotia, Canada.

September 1993 - April 1994
Assistant Professor,
Department of Mathematics, Statistics and Computer Science (Statistics Division),
Dalhousie University, Halifax, Nova Scotia, Canada.

1.2 Education

Doctor of Philosophy (1994) Department of Statistics, University of Toronto, Toronto, Ontario, Canada
Master's Degree (1989) Department of Statistics, University of Toronto, Toronto, Ontario, Canada
Bachelor of Science (1988) Specialization in Statistics, Department of Mathematics, Concordia University, Montreal, Quebec, Canada

1.3 Thesis

Optimal navigation under discrete random disturbances.
Supervisor Prof. Philip McDunnough,

Abstract. Necessary and sufficient conditions for the construction of minimum expected time-to-arrival trajectories under discrete random disturbances are derived. A practical numerical algorithm is developed, and some distributional properties of the arrival times derived. The problem is essentially a generalization of the Fitzwilliam Street crossing problem (E. M. Wilkinson, from Stochastic Geometry, ed. E. F. Harding and D. G. Kendall).

[This thesis resulted in a publication, Almudevar (2001) in *SIAM Journal of Control and Optimization*]

1.4 Scholarships and Awards

- NSERC PGSA, University of Toronto, 1990-1991
- NSERC PGSB, University of Toronto, 1991-1993
- Internal Scholarships from Department of Statistics, University of Toronto
- Rank of 236 (highest 13%), Putnam Competition, Concordia University, 1987

Section 2: Research

2.1 Books

1. **Almudevar** (2022) *Theory of Statistical Inference.* Chapman & Hall/CRC Press (Texts in Statistical Science)
2. *Statistical Modeling for Biological Systems: In Memory of Andrei Yakovlev.* **Anthony Almudevar**, David Oakes and Jack Hall, Editors, Springer (2020)
3. **Almudevar** (2014) *Approximate Iterative Algorithms*. CRC Press/Balkema

In preparation: **Almudevar** (2022) *Structural Inference for Graphical Models*. Chapman & Hall/CRC Press (Monographs on Statistics and Applied Probability)

2.2 Book Chapters

1. **Almudevar A** (2013) Multiple hypothesis testing: a methodological overview. In *Statistical Methods for Microarray Data Analysis (Methods in Molecular Biology),* ed Yakovlev A, Klebanov L, Gaile D. Springer, New York. 37-55.
2. Chen L, **Almudevar A**, Klebanov L (2013) Aggregation effect in microarray data analysis. Statistical Methods for Microarray Data Analysis (Methods in Molecular Biology), ed Yakovlev A, Klebanov L, Gaile D. Springer, New York. 177-191.
3. **Almudevar A** (2016) A functional analytic approach to approximate iterative algorithms. In *Modern Trends in Controlled Stochastic Processes: Theory and Applications, Volume II* (ed. A. Piunovskiy), pp 66-85, Luniver Press
4. **Almudevar A** (2020) Applications of sequential methods in multiple hypothesis testing. In *Statistical Modeling for Biological Systems: In Memory of Andrei Yakovlev,* Almudevar, Oakes and Hall, Editors. Springer, NY
5. Chen L, Klebanov L, Almudevar A, Proschel C (2020) A study of the correlation structure of microarray gene expression data based on mechanistic modeling of cell population kinetics. In *Statistical Modeling for Biological Systems: In Memory of Andrei Yakovlev*, Almudevar, Oakes and Hall, Editors. Springer, NY
6. **Almudevar A** (2021). A Regulatory Principle for Robust Reciprocal-Time Decay of the Adaptive Immune Response In *Modern Trends in Controlled Stochastic Processes: Theory and Applications, Volume III* (ed. A. Piunovskiy and Y. Zhang) Springer Nature

2.3 Peer-Reviewed Publications (By Topic)

Statistical Inference

1. **Almudevar A**, Field C (1999) Estimation of single generation sibling relationships based on DNA markers. *Journal of Agricultural, Biological and Environmental Statistics.* 4:136-165.
2. **Almudevar A** (2000) Exact confidence regions for species assignment based on DNA markers. *The Canadian Journal of Statistics*, 28:81-95.
3. **Almudevar A**, Field C, Robinson J (2000) The density of multivariate M-estimates. *Annals of Statistics*, 28:275-297.
4. **Almudevar A** (2001) A bootstrap assessment of variability in pedigree reconstruction based on DNA markers. *Biometrics.* 57:757-763.
5. **Almudevar A** (2001) Most powerful permutation invariant tests for relatedness hypotheses based on genotypic data. *Biometrics.* 57:1080-1088.
6. **Almudevar A**, Bhattacharya RN, Sastri CCA (2000) Estimating the probability mass of unobserved support in random sampling. *Journal of Statistical Planning and Inference.* 91:91-105.
7. **Almudevar A** (2009) A note on the calculation of N-statistics. *Journal of Bioinformatics and Computational Biology.* 7:895-903.
8. **Almudevar A** (2013) Multiple hypothesis testing: a methodological overview. Statistical Methods for Microarray Data Analysis (Methods in Molecular Biology), ed Yakovlev A, Klebanov L, Gaile D. Springer, New York. 37-55.
9. **Almudevar, A** (2016) Higher order density approximations for solutions to estimating equations. *Journal of Multivariate Analysis*. 143 (2016): 424-439.

Graphical and Network Models

10. **Almudevar A** (2003) A simulated annealing algorithm for maximum likelihood pedigree reconstruction. *Theoretical Population Biology.* 63:63-75.
11. **Almudevar A**, Salzman P (2005) Using a Bayesian posterior density in the design of perturbation experiments. *Proceedings 2005 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology.* 216-222.
12. Salzman P, **Almudevar A** (2006) Using complexity for the estimation of Bayesian networks. *Statistical Applications in Genetics and Molecular Biology.* 5:Article 21.
13. **Almudevar A** (2007) A graphical approach to relatedness inference. *Theoretical Population Biology*. 71:213-229.
14. **Almudevar A** (2007) Efficient coding of labeled graphs. *Proceedings of 2007 IEEE Information Theory Workshop.* 523-528.

15. **Almudevar A** (2009) Selection of statistical thresholds in graphical models. *EURASIP Journal on Bioinformatics and Systems Biology*. 2009:878013.
16. **Almudevar A** (2010) A hypothesis test for equality of Bayesian network models. *EURASIP Journal on Bioinformatics and Systems Biology*. 2010:947564.
17. **Almudevar A**, McCall M, McMurray H, Land H (2011) Fitting Boolean networks from steady state perturbation data. *Statistical Applications in Genetics and Molecular Biology.* 10(1):Article 47.
18. **Almudevar A**, Lacombe J (2012) On the choice of prior density for the Bayesian analysis of pedigree structure. *Theoretical Population Biology*. 81(2):131-143.
19. Tran V, McCall MN, McMurray HR, **Almudevar A** (2013) On the underlying assumptions of threshold Boolean networks as a model for genetic regulatory network behavior. *Frontiers in Genetics.* 4:263.
20. **Almudevar A** (2016) An information theoretic approach to pedigree reconstruction. *Theoretical Population Biology.* 107:52-64.
21. Duttweiler L, Thurston SW, **Almudevar A**. (2023) Spectral Bayesian network theory. *Linear Algebra and its Applications*. 674:282-303.
22. Duttweiler L, **Almudevar A**. (2024) Inference on the eigenvalues of the normalized precision matrix. *Linear Algebra and its Applications*. 703:78-108.

Operations Research and Control Theory

23. **Almudevar A** (2001) A dynamic programming algorithm for the optimal control of piecewise deterministic Markov processes. *SIAM Journal on Control and Optimization.* 40:525-539.
24. Arruda E, DoVal JBR, **Almudevar A** (2004) Stability and optimality of a discrete production and storage model with uncertain demand. *Proceedings of the 43rd IEEE Conference on Decision and Control.* 4:3654–3660.
25. Arruda E, **Almudevar A**, DoVal JBR (2005) Function approximation for a production and storage model under uncertainty. *Proceedings of the IEEE International Conference on Mechatronics and Automation.* 2:665-670.
26. **Almudevar A**, Arruda E (2007) Optimal approximation schedules for iterative algorithms with application to dynamic programming. *Proceedings of the 46th IEEE Conference on Decision and Control.* 4087-4094.
27. **Almudevar A** (2008) Approximate fixed point iteration with an application to infinite-horizon Markov decision processes. *SIAM Journal on Control and Optimization*. 47:2303-2347.
28. Arruda E, Ourique F, **Almudevar A** (2010) Toward an optimized value iteration algorithm for average cost Markov decision processes. *Proceedings of the 49th IEEE Conference on Decision and Control.* 930 - 934.

29. **Almudevar A**, Arruda EF (2012) Optimal approximation schedules for a class of iterative algorithms, with an application to multigrid value iteration. *IEEE Transactions on Automatic Control.* 57(12): 3132-3146.
30. Arruda EF, Ourique F, LaCombe J, **Almudevar A** (2013) Accelerating the convergence of value iteration by using partial transition functions. *European Journal of Operational Research.* 229(1):190-198.
31. Arruda E, Ourique F, **Almudevar A**, Silva R (2013) On cost based algorithm selection for problem solving. *American Journal of Operations Research*, 3(5):431-438.
32. **Almudevar A** (2023). A stochastic contraction mapping theorem. *Systems & Control Letters*. 174, 105482.

Signal Processing, Motion Tracking, Smart Home Applications

33. **Almudevar A**, Leibovici A, Tentler A (2008) Home monitoring using wearable radio frequency transmitters. *Artificial Intelligence in Medicine.* 42(2):109-120.
34. **Almudevar A** (2008) Validation of a home monitoring system based on calibration-free wireless tracking. *Proceedings of the 4th IET International Conference on Intelligent Environments.*1-7.
35. **Almudevar A** (2008) Approximate calibration-free trajectory reconstruction in a wireless network. *IEEE Transactions on Signal Processing*. 56:3081-3088.
36. **Almudevar A**, Lacombe J (2012) An extension of a calibration-free trajectory reconstruction method for wireless networks. *IEEE Transactions on Signal Processing.* 60(10):5588-5592.

Bioinformatics and Computational Biology

37. **Almudevar A**, Klebanov LB, Qiu X, Salzman P, Yakovlev AY (2006) Utility of correlation measures in analysis of gene expression. *NeuroRx.* 3:384-395.
38. McCall M, **Almudevar A** (2011) Affymetrix GeneChip microarray preprocessing for multivariate analyses. *Briefings in Bioinf.* 13(5):536-46.
39. **Almudevar A** (2011) A commentary on some recent methods in sibling group reconstruction based on set coverings. *Optimization Methods and Software*. 26:993-1003.
40. **Almudevar A**, Anderson EC (2012) A new version of PRT software for sibling groups reconstruction with comments regarding several issues in the sibling reconstruction problem. *Molecular Ecology Resources*. 12(1):164-78.
41. Barry CT, D'Souza M, McCall M, Safadjou S, Ryan C, Kashyap R, Marroquin C, Orloff M, **Almudevar A**, Godfrey TE (2012) Micro RNA expression profiles as adjunctive data to assess the risk of hepatocellular carcinoma recurrence after liver transplantation. *Am J Transplant*. 12(2):428-37.
42. Xu Z, **Almudevar A**, Mathews D (2012) Statistical evaluation of improvement in RNA secondary structure prediction. *Nucleic Acids Res*. 40(4):e26.

43. McCall MN, McMurray H, Land H, **Almudevar A** (2014) On non-detects in qPCR data. *Bioinformatics*. 2014 Aug 15;30(16):2310-6.

44. Xie QY, **Almudevar A**, Whitney-Miller CL, Barry CT, McCall MN (2016) A microRNA biomarker of hepatocellular carcinoma recurrence following liver transplantation accounting for within-patient heterogeneity. BMC Med Genomics. 2016 Apr 8;9:18.

Immunology

45. Pichichero ME, Kaur R, Casey JR, Sabirov A, Khan N, **Almudevar A** (2010) Antibody response to Haemophilus influenzae outer membrane protein D, P6, and OMP26 after nasopharyngeal colonization and acute otitis media in children. *Vaccine*. 28(44):7184-92.

46. Casey JR, Block S, Puthoor P, Hedrick J, **Almudevar A**, Pichichero ME (2011) A simple scoring system to improve clinical assessment of acute otitis media. *Clinical Pediatr*. 50(7):623-9.

47. Pichichero ME, Kaur R, Casey JR, Xu Q, **Almudevar A**, Ochs M (2012) Antibody response to Streptococcus pneumoniae proteins PhtD, LytB, PcpA, PhtE and Ply after nasopharyngeal colonization and acute otitis media in children. *Hum Vaccin Immunother.* 8(6):799-805.

48. Casey JR, Block SL, Hedrick J, **Almudevar A**, Pichichero ME (2012) Comparison of amoxicillin/clavulanic acid high dose with cefdinir in the treatment of acute otitis media. *Drugs*. 72(15):1991-7.

49. Xu Q, **Almudervar A**, Casey JR, Pichichero ME (2012) Nasopharyngeal bacterial interactions in children. *Emerg Infect Dis*. 18(11):1738-45.

50. Pichichero ME, Casey JR, **Almudevar A** (2013) Nonprotective responses to pediatric vaccines occur in children who are otitis prone. *Pediatr Infect Dis J.* 2013 32(11):1163-8.

51. Sharma SK, Roumanes D, **Almudevar A**, Mosmann TR, Pichichero ME (2013) CD4+ T-cell responses among adults and young children in response to Streptococcus pneumoniae and Haemophilus influenzae vaccine candidate protein antigens. *Vaccine*. 31(30):3090-7.

52. Liu K, Kaur R, **Almudevar A**, Pichichero ME (2013) Higher serum levels of interleukin 10 occur at onset of acute otitis media caused by Streptococcus pneumoniae compared to Haemophilus influenzae and Moraxella catarrhalis. *Laryngoscope*. 123(6):1500-1505.

53. Pichichero ME, Casey JR, **Almudevar A** (2013) Reducing the frequency of acute otitis media by individualized care. *Pediatr Infect Dis J*. 32(5):473-8.

54. **Almudevar A** (2014) Nasopharyngeal bacterial interactions in children: Response. *Emerging Infectious Diseases*. 20(2):324-325.

55. Ren D, **Almudevar AL**, Pichichero ME (2015) Synchrony in serum antibody response to conserved proteins of Streptococcus pneumoniae in young children. *Hum Vaccin Immunother*. 1(2):489-97.

56. Ren D, **Almudevar AL**, Murphy TF, Lafontaine ER, Campagnari AA, Luke-Marshall N, Casey JR, Pichichero ME (2015) Serum antibody response to Moraxella catarrhalis proteins

OMP CD, OppA, Msp22, Hag, and PilA2 after nasopharyngeal colonization and acute otitis media in children. *Vaccine*. 2015 Oct 26;33(43):5809-14.

57. Pichichero ME, **Almudevar A** (2016) Serum cytokine biomarkers accurately predict presence of acute otitis media infection and recovery caused by Haemophilus influenzae. *Int J Pediatr Otorhinolaryngol.* 2016 Apr;83:200-4.
58. Pichichero ME, Casey JR, **Almudevar A**, Basha S, Surendran N, Kaur R, Morris M, Livingstone AM, Mosmann TR (2016) Functional immune cell differences associated with low vaccine responses in infants. *J Infect Dis.* 2016 Jun 15;213(12):2014-9.
59. Morris MC, **Almudevar AL**, Casey JR, Pichichero ME (2016) Familial and microbiological contribution to the otitis-prone condition. *Int J Pediatr Otorhinolaryngol.* 2015 Dec;79(12):2174-7.
60. Pichichero ME, **Almudevar A** (2016) Inflammation-associated cytokine analysis identifies presence of respiratory bacterial pathogens in the nasopharynx. *Pathog Dis.* Aug;74(6).
61. Xu Q, Casey JR, **Almudevar A**, Pichichero ME (2017) Correlation of higher antibody levels to pneumococcal proteins with protection from pneumococcal acute otitis media but not protection from nasopharyngeal colonization in young children. *Clin Microbiol Infect.* Jul;23(7):487.e1-487.e6.
62. **Almudevar A**, Pichichero ME (2017) Modeling specific antibody responses to natural immunization to predict a correlate of protection against infection before commencing a clinical vaccine trial. *Hum Vaccin Immunother*. 3;13(10):2316-2321.
63. Ren D, **Almudevar AL**, Murphy TF, Lafontaine ER, Campagnari AA, Luke-Marshall N, Pichichero ME (2017) Serum antibody response to Moraxella catarrhalis proteins in stringently defined otitis prone children. *Vaccine.* 2017 Jul 26.
64. **Almudevar A** (2017) A model for the regulation of follicular dendritic cells predicts invariant reciprocal-time decay of post-vaccine antibody response. *Immunology and Cell Biology.* Oct;95(9):832-842.
65. **Almudevar A,** Pichichero ME (2018) Haemophilus influenzae-protein D specific antibody correlate with protection against acute otitis media in young children. *Vaccine.* Feb 1;36(9):1133-1135.
66. Pichichero M, Kaur R, Scott DA, Gruber WC, Trammel J, **Almudevar A**, Center KJ (2018) Effectiveness of 13-valent pneumococcal conjugate vaccination for protection against acute otitis media caused by Streptococcus pneumoniae in healthy young children: a prospective observational study. *Lancet Child Adolesc Health*. 2018 Aug;2(8):561-568.
67. Pichichero ME, Morris MC, **Almudevar A** (2018) Three innate cytokine biomarkers predict presence of acute otitis media and relevant otopathogens. *Biomark Applic: BMAP-118*.
68. Ren D, Xu Q, **Almudevar A**, Pichichero ME (2019) Impaired proinflammatory response in stringently defined otitis prone children during viral upper respiratory infections. *Clin Infect Dis.* 68(9):1566-1574.
69. **Almudevar A**, Kaur R, Pichichero M (2019) Statistical projection of post-vaccination antibody kinetics between dosing schedules. *Vaccine* Jul 26;37(32):4561-4567.

Psychometrics and Outcomes Measurement

70. LeBlanc JC, **Almudevar A**, Brooks SJ, Kutcher S (2002) Screening for adolescent depression: comparison of the Kutcher Adolescent Depression Scale with the Beck Depression Inventory. *Journal of Child and Adolescent Psychopharmacology.* 12:113-126.
71. Hislop SJ, Hsu JH, Narins C, Gillespie B, Jain R, Schippert D, **Almudevar A**, Illig KA (2006) Simulator assessment of innate endovascular aptitude vs. empirically correct performance. *Journal of Vascular Surgery*. 43:47-55.
72. Pianosi P, Smith CP, **Almudevar A**, McGrath PJ (2006) Dalhousie Dyspnea scales: pictorial scales to measure dyspnea during induced bronchoconstriction. *Pediatric Pulmonology.* 41: 1182-1187.
73. Adler DH, **Almudevar A**, Gray GE, Allan B, Williamson AL (2012) High level of agreement between clinician-collected and self-collected samples for HPV detection among South African adolescents. *J Pediatr Adolesc Gynecol*. 25(4):280-1.
74. Barry CT, Hah Z, Partin A, Mooney RA, Chuang KH, Augustine A, **Almudevar A**, Cao W, Rubens DJ, Parker KJ (2014) Mouse liver dispersion for the diagnosis of early-stage fatty liver disease: a 70-sample study. *Ultrasound Med Biol.* 40(4):704-13.
75. Sandal S, **Almudevar A**, Parajuli S, Bose A (2015) Comparing 10-yr renal outcomes in deceased donor and living donor liver transplants. *Clin Transplant.* 29(12):1140-7.

Worker's Compensation Administration

76. **Almudevar A** (2006) Using artificial neural networks to predict claim duration in a work injury compensation environment. *Proceedings 2006 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology.* 378-384.
77. Vora RN, Barron BA, **Almudevar A**, Utell MJ (2012) Work-related chronic low back pain-return-to-work outcomes after referral to Interventional pain and spine clinics. *Spine.* 7(20):1282-9.
78. Demian C, Barron B, **Almudevar A** (2018) Effects of the New York State Workers Compensation Board Medical Treatment Guidelines on Return to Work. *J Occup Environ Med.* 2018 Jul;60(7):617-621.

Biomedical Research

79. Langley JM, Marrie T, LeBlanc J, **Almudevar A**, Resch L, Raoult D (2003) Coxiella burnetii seropositivity in parturient women is associated with adverse pregnancy outcomes. *American Journal of Obstetrics and Gynecology*. 189:228-232.
80. Pianosi P, LeBlanc J, **Almudevar A** (2005) Peak oxygen uptake and mortality in children with cystic fibrosis. *Thorax.* 60:50-54.

81. Pianosi P, LeBlanc J, **Almudevar A** (2005) Relationship between FEV1 and peak oxygen uptake in children with cystic fibrosis. *Pediatric Pulmonology.* 40:324-329.

82. Brouxhon S, Konger RL, VanBuskirk J, Sheu T, Ryan J, Erdle B, **Almudevar A**, Breyer RM, Scott G, Pentland AP (2007) Deletion of prostaglandin E2 EP2 receptor protects against ultraviolet (UV) induced carcinogenesis, but increases tumor aggressiveness. *Journal of Investigative Dermatology*. 127:439–446.

83. Anolik JH, Ravikumar R, Barnard J, Owen T, **Almudevar A**, Milner ECB, Miller CH, Dutcher PO, Hadley JA, Sanz I (2008) Anti-tumor necrosis factor therapy in rheumatoid arthritis inhibits memory B lymphocytes via effects on lymphoid GCs and FDC networks. *The Journal of Immunology*. 180:688-692.

84. Bimber BN, Chugh P, Giorgi EE, Kim B, **Almudevar A**, Dewhurst S, O'Connor DH, Lee HY (2009) Nef gene evolution from a single transmitted strain in acute SIV infection. *Retrovirology.* 6:57.

85. Chen W, Melamed ML, Hostetter TH, Bauer C, Raff AC, **Almudevar AL**, Lalonde A, Messing S, Abramowitz MK (2016) Effect of oral sodium bicarbonate on fibroblast growth factor-23 in patients with chronic kidney disease: a pilot study. *BMC Nephrol.* 2016 Aug 5;17(1):114.

86. Patel, S., Shah, L., Dang, N., Tan, X., **Almudevar, A**., & White, P. M. (2020). SIRT3 promotes auditory function in young adult FVB/nJ mice but is dispensable for hearing recovery after noise exposure. *PloS one*, *15*(7), e0235491.

2.4 Invited Talks

1994 - 2010

Some aspects of sampling from distributions with unknown support. - Department of Mathematics and Statistics, Memorial University, St. John's, Newfoundland, Canada, 1994.
Topics in current research. - Department of Statistics and Actuarial Science, University of Western Ontario, London, Ontario, Canada, 2002.
Inference of multiple pedigree relationships based on genotypic data. - Department of Biology. University of Campinas, Campinas, Brazil, 2005.
Approximate fixed point iteration with an application to infinite horizon Markov decision processes. - Faculty of Electrical Engineering and Computation, University of Campinas, Campinas, Brazil, 2005.
A dynamic programming algorithm for the optimal control of piecewise deterministic Markov processes. - Faculty of Electrical Engineering and Computation, University of Campinas, Campinas, Brazil, 2005.
Applications of sequential methods in multiple hypothesis testing. - Statistical Modeling for Biological Systems: A Conference in Memory of Andrei Yakovlev, The University of Rochester Medical Center, Rochester, NY, 2009.
Statistical issues in gene regulatory network reconstruction. - Department of Biostatistics, Bioinformatics, and Biomathematics, Georgetown University, January 22, 2010.
A hypothesis test for equality of Bayesian network models, with an application to gene set analysis. - 28th European Meeting of Statisticians, EMS 2010, Piraeus, Greece, August 17-22, 2010.

2010 - 2015

An information theoretic approach to pedigree reconstruction.

- Workshop on Statistical and Computational Methods for Relatedness and Relationship Inference from Genetic Marker Data. International Centre for Mathematical Sciences (ICMS), University of Edinburgh, September 22-26, 2014.

A functional analytic approach to approximate iterative algorithms.

- Workshop: Modern Trends in Controlled Stochastic Processes: Theory and Applications. University of Liverpool, June 2015

2016 - 2021

Modeling immune response kinetics: from clinical data to cellular process.

- Workshop on "Challenges of Using Diverse Data in Model Development", National Institute of Allergy and Infectious Diseases,
Committee on Applied and Theoretical Statistics. National Academy of Sciences, Washington DC, October 25, 2016.

Models for post vaccination antibody decay.

- Department of Biostatistics, University at Buffalo, Buffalo, NY, September 29, 2016

A functional analytic approach to approximate iterative algorithms.

- IMA and OR Society Conference on Mathematics of Operational Research, Aston University, Birmingham UK, April 20-21, 2017

A functional analytic approach to approximate iterative algorithms.

- SIAM Conference on Control & Its Applications (CT17), Pittsburgh PA, July 10-12, 2017

Approximation methods for the Rice formula, with applications to small sample asymptotics.

- 11th International Conference on Computational and Financial Econometrics (CFE-2017) University of London, London UK. December 16-18, 2017

A model for the regulation of follicular dendritic cells predicts invariant reciprocal-time decay of post-vaccine antibody response

- Workshop: Modern Trends in Controlled Stochastic Processes: Theory and Applications. University of Liverpool, June 2021

2.5 Seminars Given at the University of Rochester (since 2017)

Reproducibility and Statistical Methodology.

- Center for Biomedical Informatics Seminar Series. October 24, 2017

The Historical Foundations of Machine Learning.

- CTSI Analytics Colloquium. November 7, 2017

A model for the regulation of follicular dendritic cells predicts invariant reciprocal-time decay of post-vaccine antibody response.

- Department of Biostatistics and Computational Biology Colloquium Series. March 22, 2018

Evidence of a rapid transition from infant to adult nasopharyngeal microbiome within the first year of life

- The Informatics and Genomics Research (TIGR) Meetings, Genomics Research Center, March 7, 2019

Section 3: Grant Support

3.1 Grants Awarded as Principal or Co-Principal Investigator

NIH/RGH – Subaward 07/01/17 – 06/30/19 *Antibody & cellular immune responses in children after 2 vs 3 doses and pre vs post booster of PCV13 vaccine*
NIH/RGH – Subaward 07/01/15 – 13/31/18 *Immunogenicity of moraxella catarrhalis vaccine candidates in children*
Clinical Translational Science Institute, Novel Biostatistical and Epidemiologic Methodology Program Department of Community and Preventive Medicine University of Rochester Medical Center 07/01/2013 - 07/01/2014 *Predictive Models for Longitudinal Technological Home Monitoring Data*
NIH/RGH – Subaward 03/01/09 – 02/28/12 *NTHi immunity in young children*
Clinical Translational Science Institute, Novel Biostatistical and Epidemiologic Methodology Program Department of Community and Preventive Medicine University of Rochester Medical Center 04/01/2010 – 03/31/2012 *Methodologies for the clinical application of motion data collected in a home monitoring environment*

Edelman-Gardner Foundation 07/01/09 – 07/01/12 *Gene regulatory network models in cancer research*
NIH R21 National Human Genome Research Institute 05/01/2008 – 04/30/2012 *Novel methods of hypothesis testing for pathway recognition in genomic data*
NIH R01 National Institute of General Medical Sciences [Almudevar assumed role of principal investigator in 2008] 04/01/05 – 03/31/10 *Quantitative insight into gene cooperation*
Research Initiatives program of the Workplace Health, Safety and Compensation Commission of Newfoundland and Labrador. For the development of a neural net system for the prediction of work injury claim duration based on injury codes. ($26,000 CAN, 2000-2001)

3.2 Grant Support as Co-Investigator

Moynihan (PI) NIH 07/01/16 – 06/30/19 *Mindfulness Based Stress Reduction for Family Caregivers of Dementia Patients*
3-43348 Topham (PI) NIH 11/01/11 – 10/31/18 *Rochester Viral Respiratory Pathogens Research Center*
Dorsey (PI) NIH 03/01/15 – 06/30/17 *Developing, Evaluating, and Disseminating New Methods and Technologies for Advanced Parkinson Disease Research*

6-21878 Barry (PI) Wilmot Cancer Center 03/01/12 – 02/28/17 *MicroRNA Profiling Of Recurrent Hepatocellular Carcinoma After Liver Transplant*
14.243092-001 Mosmann (PI) NIH/RGH - Renewal 03/01/12 – 02/28/17 *Immune Responses in Otitis Prone Children*
N01-AI-50020 Wu (PI) NIH/NIAID 09/30/05 - 09/29/15 *University of Rochester Center for Biodefense Immune Modeling*
Wu (PI) NIH/University of Maryland 09/13/14 – 08/31/14 *RECOVERY: Collaborative Research: Next-Generation Model Checking and Abstract Interpretation with a Focus on Embedded Control and Systems Biology*
Moynihan (PI) NIH 09/30/09 – 08/31/14 *Mindfulness Based Stress Reduction As An Adjunctive Treatment For Psoriasis*
R01 CA138249-02 Land (PI) NIH/NCI 09/24/08 – 08/31/13 *Gene Networks Essential to Colon Cancer Phenotype*
4222-078-UR Hall (PI) NIH/subcontract with Georgetown University 05/15/08 – 04/30/13

Leukocyte-Derived Biomarkers as Predictors of Risk and Progression in AD
UL1 RR024160-1 (Guzick PI)) KL2 RR024136-1 (Guzick PI)) TL1 RR024135-1 (Guzick PI)) (NIH/NCRR) 09/30/06 – 06/30/11 *The University of Rochester's Clinical and Translational Science Institute*
R01 DE017585-04 Sanz (PI) NIH *Identification of Biomarkers in Sjogren's Syndrome*
P01 MH064570-05A1 (Gelbard PI)) NIAID 09/19/06 – 07/31/10 *Novel Adjunctive Therapies for NeuroAIDS*
R01 CA109393-02 O'Dell (PI) NIH/NCI 08/10/06 – 07/31/09 *Quantifying Human Lung Tissue Dose Response Relationship*
R01 GM075299-02 (Yakovlev PI) NIH 04/01/05 – 03/31/09 *Quantitative Insight Into Gene Cooperation*
R01 DC008671-02 Pichichero (PI) NIH 03/01/07 – 02/29/09 *NTHi Immunity in Young Children*
DAMD17-03-1-0009 Federoff (PI) DOD 11/25/02 – 12/24/07

Development and Application of Single Chain Antibodies for PD Therapy
ETAC-04-1021 Leibovici (PI) Alzheimer's Association 11/01/04 – 10/31/07 *Assessment and Monitoring of Non-Cognitive Symptoms of Dementia*
R01 AR 048149 Looney (PI) NIH 05/01/05 – 04/30/06 *Acetabular Bone Loss Following Prosthetic Hip Arthroplasty*
Leibovici (PI) Matsushita Electric Works 09/01/05 – 03/31/06 *Assessment and Monitoring of Non-cognitive Symptoms of Dementia Using Activity Monitors in a Sample of Nursing Home Residents*

3.3 Mentoring and Advisory Roles in NIH Career Awards

Each entry contains the PI, current affiliation of PI, type of award, title of award, role of Almudevar.

PI: Matthew McCall, PhD Postdoctoral Fellow, Department of Biostatistics and Computational Biology K99/R00: Pathway to Independence Award *Statistical Methods for Estimation of Gene Regulatory Networks* Role: Mentor Status: Awarded (2014)
PI: David Adler, M.D., M.P.H. Assistant Professor, Community and Preventive Medicine. K23: Mentored Patient-Oriented Research Career Development Award *Post-Vaccination HPV Genotype Distribution Among HIV-infected and HIV-uninfected Young Women in South Africa* Role: Advisory Committee Status: Awarded (2010)
PI: Peter Salzman, PhD Assistant Professor, Department of Biostatistics and Computational Biology K99/R00: Pathway to Independence Award *Statistical & Computational Tools for Reconstruction of Gene Regulatory Networks* Role: Mentor Status: Awarded (2007)

Section 4: Educational and Mentoring Activities

4.1 Courses Taught

2026 University of Rochester
- BST412 Statistical Inference II (Graduate Level)

2025 University of Rochester
- PM463 Intro Mathematical Statistics Pt 1(Graduate Level)

2021 University of Rochester
- BST512 Inference for Graphical Models (Graduate Level)

2020 University of Rochester
- BST412 Large Sample Theory (Graduate Level)
- BST411 Statistical Inference (Graduate Level)

2019 University of Rochester
- CSC265/465 Intermediate Statistical and Computational Methods (undergraduate/graduate, Dept. Computer Science/Data Science)

2018 University of Rochester
- BST411 Statistical Inference (Graduate Level)
- CSC265/465 Intermediate Statistical and Computational Methods (undergraduate/graduate, Dept. Computer Science/Data Science)
- CSC462 A Computational Introduction to Statistics (graduate, Dept. Computer Science/Data Science)

2017 University of Rochester
- BST411 Statistical Inference (Graduate Level)
- CSC265/465 Intermediate Statistical and Computational Methods (undergraduate/graduate, Dept. Computer Science/Data Science)
- CSC262/462 A Computational Introduction to Statistics (undergraduate/graduate, Dept. Computer Science/Data Science)

2016 University of Rochester
- CSC265/465 Intermediate Statistical and Computational Methods (undergraduate/graduate, Dept. Computer Science/Data Science)
- BST511 Topics in Statistical Inference (High Dimensional Data Analysis) (Graduate Level)
- BST433 Computational Systems Biology (Graduate Level)
- CSC262/462 A Computational Introduction to Statistics (undergraduate/graduate, Dept. Computer Science/Data Science)

2015 University of Rochester
- CSC262/462 A Computational Introduction to Statistics (undergraduate/graduate, Dept. Computer Science/Data Science)

- CSC262/462 A Computational Introduction to Statistics (undergraduate/graduate, Dept. Computer Science/Data Science)

2014 University of Rochester

- BST432 Introduction to Bioinformatics (Graduate Level)
- CSC294 A Computational Introduction to Statistics (undergraduate/graduate, Dept. Computer Science/Data Science)

2013 University of Rochester

- BST463 Introduction to Biostatistics

2006, 2010, 2012 University of Rochester

- BST520 Topics in Bioinformatics (Graduate level)

2003-2005, 2007, 2011 University of Rochester

- BST411 Statistical Inference (Graduate Level)

2009 University of Rochester

- BST497 Seminars in Statistical Literature (Graduate Level)

2002-2003 Acadia University

- Statistics for Business and Behavioural Sciences I
- Regression

2001-2002, Acadia University

- Statistics for Business and Behavioural Sciences II
- Statistics for Life Sciences I, II
- Applied Probability for Science and Engineering I

2000-2001, Saint Mary's University

- Statistics of Business and Behavioural Sciences II)
- Introduction to Mathematical Statistics (2nd, 3rd year)
- Stochastic Processes (3rd, 4th year, with graduate students)
- Calculus for Engineers II (2nd, 3rd year)

1999-2000, Saint Mary's University

- Survey of Statistics (1st year)
- Introduction to Probability (2nd, 3rd year)

1998-1999, Dalhousie University

- Advanced Statistical Theory (Graduate Level)
- Introduction to Statistics for Social Work (all levels)
- Introductory Statistics for Sciences and Health Sciences (1st Year)

1997-1998, Dalhousie University

- Advanced Statistical Theory (Graduate Level)

1996-1997, Dalhousie University

- Introductory Statistics for Sciences and Health Sciences (1st Year)
- Probability (Graduate Level)

1995-1996, Dalhousie University

- Introductory Statistics for Sciences and Health Sciences (1st Year)
- Introduction to Probability and Statistics (1st and 2nd Year)
- Probability (3rd and 4th Year)

1994-1995, Dalhousie University

- Introductory Statistics for Sciences and Health Sciences (1st Year)
- Intermediate Statistical Theory (3rd and 4th Year)
- Probability (Graduate Level)

1993-1994, Dalhousie University

- Introductory Statistics for Sciences and Health Sciences (1st Year)
- Statistical Methods for Data Analysis and Inference (2nd Year)
- Stochastic Processes (Graduate Level)

1992-1993, University of Toronto

- Introductory Statistics for Engineers (2nd Year)

1991-1992, University of Toronto

- Operations Research (3rd and 4th Year)

1990-1991, University of Toronto

- Operations Research (3rd and 4th Year)

4.2 Mentoring Roles

PhD Thesis Advisor (2022-2024)
Luke Duttweiler
Department of Biostatistics and Computational Biology

Dr. Duttweiler wrote his thesis on the statistical estimation of graph complexity in the context of Bayesian network estimation. He is currently a Postdoctoral Fellow at T.H. Chan School of Public Health of Harvard University.

CSC899 Master's in Computer Science Research Project (Spring 2019)
Zonglin Li, Jun Liang, Yanzhao Liang

CSC899 Master's in Computer Science Research Project (Fall 2018)
Jiashun Liu

CSC899 Master's in Computer Science Research Project (Fall 2018)
Jiechun Liu, Jiashun Liu

Postdoctoral Supervisor (2010-2015)
Matthew McCall
Department of Biostatistics and Computational Biology

Dr. McCall worked with me primarily in the area of gene regulatory network modeling, and also on biomarker development. He was awarded a K99/R00 NIH Pathways to Independence Award in 2014. He is currently Associate Professor in the Department of Biostatistics and Computational Biology at the University of Rochester. We have coauthored six publications.

PhD Thesis Advisor (2012-2015)
Thanh Van Tran
Department of Biostatistics and Computational Biology

Ms. Van Tran has completed and successfully defended her thesis “Threshold Boolean Network Inference and Experimental Design” in the area of gene regulatory network modeling in 2015. We have one coauthored publication. In 2013 she was awarded a fellowship under the NIH Student Internship Program (SIP) at the National Center for Environmental Health (NCEH). In 2014 she was awarded a fellowship under the National Science Foundation "East Asia and Pacific Summer Institutes for U.S. Graduate Students" (EAPSI) program to fund a summer internship at Monash University, Melbourne, Australia. She was also awarded a travel stipend to present at the 5th International Conference on Systems Biology, Melbourne, Australia (14-18 Sept 2014). She is currently Mathematical Statistician at the U.S. Food and Drug Administration.

Master’s Thesis Advisor (2012-2016)
Ben Chapman, Assistant Professor
Department of Psychiatry,
University of Rochester Medical Center

Dr. Chapman has completed and successfully defended his thesis “A False Discovery Rate Upper Bound for Two-Stage Testing” in 2016.

PhD Thesis Advisor (graduated 2011)
Jason LaCombe

Dr. LaCombe graduated in 2011 with a thesis on the application of information theoretic techniques in graphical modeling and is currently Director of Research and Development (Genetics Division) at Nature Source Improved Plants. LLC, Ithaca NY. We have coauthored four publications.

Supervisor, Summer Internship (2010)
Srujana Reddy Cheguri

I supervised Ms. Cheguri for a summer internship in 2010. At the time she was a master’s degree candidate in bioinformatics at the Rochester Institute of Technology. I trained her in the fundamentals of the analysis of microarray data, gene set analysis (including use of the well- known GSEA application), R programming and literature review. Following the internship, Ms. Cheguri was offered a position as a research technician in the laboratory of Dr. Kenneth Offit, at the Memorial-Sloan Kettering Cancer Centre. After completing her degree, Srujana was the first recipient of the Cristine Meredith Miele Fellowship in Computational Genomics and Bioinformatics.

PhD Thesis Advisor (graduated 2009) Linlin Chen I assumed the role of thesis advisor for Dr. Chen following the sudden death of Dr. Yakovlev in 2008. Her thesis was on correlational structure in microarray gene expression data. She is currently Associate Professor in the School of Mathematical Sciences at the Rochester Institute of Technology. We have coauthored three publications.
Postdoctoral Supervisor (2004-2008) Peter Salzman Dr. Salzman worked with me primarily in gene regulatory network modeling and was awarded a K99/R00 NIH Pathways to Independence Award in 2007. We have coauthored three publications.
PhD Thesis Co-Advisor (with Joao do Val) (graduated 2007) Edilson Arruda Electrical Engineering and Computation, University of Campinas, Campinas Brazil I served as PhD thesis co-advisor with Dr. Joao do Val of the University of Campinas, where Edilson was enrolled as a PhD candidate. His thesis was in the area of functional approximation techniques for Markov decision processes. He graduated in 2007 and is currently Lecturer in Business Analytics/Management Science, Southampton Business School, University of Southampton. We have coauthored 7 publications.

4.3 PhD and Master's Degree Committees

Responsibility	**Year of Graduation**	**Student, Supervisor(s)**	**Affiliation**
PhD Thesis Examiner	2017	Salem Ali S. Alyami Jonathan Keith	School of Mathematical Sciences, Monash University, Melbourne Australia
PhD Thesis Committee	2016	Joseph Ciminelli Tanzy Love, Sally Thurston	Biostatistics and Computational Biology, University of Rochester
Chair of PhD Thesis Defense Examination	2016	Yinghan Fu, David Mathews	Department of Biochemistry & Biophysics, University of Rochester
MS Thesis Committee	2015	Daniel Scarfoni Phillip Guo	Department of Computer Science, University of Rochester

Chair of PhD Thesis Defense Examination	2013	Jingping Xing, Helena Temkin-Greener	Public Health Sciences, University of Rochester
Undergraduate Honor's Thesis Committee	2013	Benjaimin Kellman, Mark Noble	Department of Brain and Cognitive Science, Department of Biomedical Genetics, University of Rochester
PhD Thesis Committee	2014	Iris Chen, Hulin Wu	Biostatistics and Computational Biology, University of Rochester
Chair of PhD Thesis Defense Examination	2012	Hyunjoo Cho, Sema Salur	Mathematics, University of Rochester
PhD Thesis Committee	2014	Katie Evans, Sally Thurston/Tanzy Love	Biostatistics and Computational Biology, University of Rochester
PhD Thesis Committee	2013	Tivadar Papai, Henry Kautz	Computer Science, University of Rochester
PhD Thesis Committee	2010	Miranda Lynch, Sally Thurston	Biostatistics and Computational Biology, University of Rochester
PhD Thesis Committee	2010	Arif Ozgun Harmanci, Gaurav Sharma	Electrical and Computer Engineering, University of Rochester
PhD Thesis Committee	2009	Alex Pearson, Derick Peterson	Biostatistics and Computational Biology, University of Rochester
PhD Thesis Committee	2007	Hongyue Wang, Govind Mudholkar	Biostatistics and Computational Biology, Mathematics, University of Rochester
Chair of PhD Thesis Defense Examination	2006	Yinhe Cheng, Mitsunori Ogihara	Computer Science University of Rochester
Reader, Master's Degree Thesis	1997	Heather Merry, Chris Field	Mathematics, Statistics and Computer Science, Dalhousie University
Reader, Master's Degree Thesis	1996	Xiaoming Sheng Chris Field	Mathematics, Statistics and Computer Science, Dalhousie University

Section 5: Editorial and Service Activities

5.1 Committee Work at the University of Rochester (Since 2015)

- I have served on the **Data Science MS Admission Review committee**, in spring 2016, 2018, 2019. This is a significant commitment, involving the review of applications for admission into the Master of Science in Data Science program.
- University Research Award reviewer, **University of Rochester**, 2017.
- Member of **CTSI Analytics Cluster advisory group**, 2017-2018.
- **PhD Qualifying Exam committee**, 2014-2020 inclusive. Responsibilities include collecting questions from faculty; compiling and typesetting exams; organizing grading; and reporting results to the department faculty.
- Concentration in Bioinformatics and Computational Biology in our Ph.D. program **Curriculum committee** 2015-2017.

5.2 External Review Committees

- **Natural Sciences and Engineering Research Council of Canada (NSERC)** Scholarships and Fellowships Selection Committee (computing and mathematical sciences section). Three-year appointment (2001-2003). This committee awards postgraduate scholarships and postdoctoral fellowships. The responsibility of members is to review 100-150 applications, then to attend a meeting at which scores are assigned to the applications after a presentation by the reviewing member. NSERC is the principal external source of funding for scientific, mathematical and engineering research in Canada, serving approximately the same role as the National Science Foundation (NSF) in the United States.
- **Grant Proposal Review Panel: NIH**, "Genetic and Genomic Analysis of Xenopus" teleconference study section, Jan 27, 2010.
- **Grant Proposal Review Panel: NSF**, "Advancing Theory in Biology", panel meeting June 2-3, 2010.
- 2011 **Grant Proposal Review Panel: AAAS**, Life Sciences Discovery Fund, Washington State.
- 2012 **Grant Proposal Review Panel: AAAS**, Life Sciences Discovery Fund, Washington State.
- 2012 **Netherlands Organization for Scientific Research** (NWO) Free Competition.

5.3 Editorial Appointments

- Editorial Board, **Scientific Reports.**

5.4 Journal and Conference Reviewer

Year	Journal/Conference
1994	• Canadian Journal of Statistics
1998	• Statistical Science Journal
2002	• Canadian Journal of Statistics
2004	• Bioinformatics • 43rd IEEE Conference on Decision and Control • Journal of Theoretical Biology
2005	• Bioinformatics • Journal of Multivariate Analysis • 44th IEEE Conference on Decision and Control & European Control Conference • 2005 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology
2006	• Molecular Ecology • Heredity • 2006 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology
2007	• 46rd IEEE Conference on Decision and Control • Environmental Entemology • Neurobiology of Aging • Gerontechnology
2008	• 16th Mediterranean Conference on Control and Automation, Ajaccio, France • 47rd IEEE Conference on Decision and Control • Molecular Ecology • Pharmacogenomics
2009	• Bioinformatics • BioSystems • Molecular Ecology • SIAM Journal on Control and Optimization • Medical & Biological Engineering & Computing • Conservation Genetics Resources
2010	• Bioinformatics

	• Theoretical Population Biology • Neurology (2 reviews) • Conservation Genetics Resources • Biology Direct (3 reviews) • BMC Bioinformatics
2011	• Journal of Surgical Oncology • 2011 American Control Conference • Bioinformatics • IEEE Conference on Decision and Control and European Control Conference, • IEEE Transactions on Automatic Control • Theoretical Population Biology • Biology Direct • Artificial Intelligence in Medicine
2012	• Clinical Pediatrics • Biology Direct • Artificial Intelligence in Medicine • IEEE Transactions on Signal Processing • Bioinformatics • Heredity
2013	• IEEE Transactions on Signal Processing • Bioinformatics • Heredity • Molecular Ecology Resources • Journal of Economic Entomology • Biology Direct • ISRN Biomathematics • Journal of Economic Entomology
2014	• Bioinformatics • Biology Direct • Molecular Ecology Resources • Annals of Statistics • Biological Conservation • Clinical Pediatrics
2015	• Theoretical Population Biology • BMC Pediatrics • Clinical Pediatrics • Heredity • Bioinformatics
2016	• Biometrics • Theoretical Population Biology
2017	• SIAM Journal of Control and Optimization
2018	• IEEE Transactions on Automatic Control

2019	• Scientific Reports
2020	• Scientific Reports • RAIRO - Operations Research.
2021	• Bioinformatics