Anthony Almudevar, PhD

Senior Statistician | Computational Biology, Machine Learning & Causal Modeling | Drug Discovery, Biometrics, and Scientific Leadership | LinkedIn web page: linkedin.com/in/anthony-almudevar-37108994 | See detailed CV at www.anthonyalmudevar.com/cv. | Github: https://github.com/ALMUDEVAR163 | 585-210-5878 | Rochester, NY | contact@anthonyalmudevar.com

Profile

Distinguished quantitative scientist with 30+ years of experience across biostatistics, computational biology, machine learning, and applied mathematics in both academia and biotech. Proven track record developing novel statistical and ML methods, leading complex biological analyses, mentoring junior scientists, and translating ambiguous R&D questions into rigorous quantitative strategies. Recent industry work includes machine learning support for drug discovery at Empress Therapeutics, including a novel Perturb-seq target-identification pipeline. Strong fit for senior statistical science, computational biology, biostatistics, and quantitative R&D leadership roles.

Core Impact:

- 30+ years spanning academic biostatistics, computational biology, and biotech R&D
- Built novel ML and causal modeling methods for drug discovery at Empress Therapeutics
- Created Perturb-seq target-ID pipeline with reported 70% target identification performance
- Led and mentored PhD trainees, postdocs, and junior scientists
- Deep technical fluency across R, Python, C++, TensorFlow, Torch, AWS, Bioconductor, Seurat, Cell Ranger, causal inference, Bayesian networks, survival analysis, and multi-omics analytics
- Developed core statistics curriculum for the University of Rochester's Data Science program.
- ~100 peer-reviewed publications and two advanced applied mathematics/statistics textbooks
- Significant & novel algorithm development in Bayesian network models, Markov decision processes, Boolean networks, Smart Home applications (eg novel signal processing algorithms for RSSI tracking).

Technical Expertise:

- R, Rstudio, C++, Python, TensorFlow, TORCH, Bioconductor, Cloud computing (AWS).
- Significant algorithm and software development: https://github.com/ALMUDEVAR163
- Wide range of data analysis projects: https://www.linkedin.com/in/anthony-almudevar-37108994/details/projects/
- Excellent scientific writing skills (LaTex and WORD).
- Hypothesis testing; design of experiments; linear/nonlinear regression; GLMs; longitudinal models; survival analysis; psychometrics; sensor network data and models. causal inference and Bayesian networks.
- Supervised and unsupervised learning: KNN; random forests; LASSO; PCA and other dimension reduction.
- Computational biology; analysis of microarrays; transcriptomic, proteomic and microbiomic data; perturb-Seq; limma, Cell Ranger, Seurat. Pathway curation resources, experience interrogating and analyzing large multi-omic publicly available data sets.

Distinguished Scientist, Empress Therapeutics/Flagship Pioneering, Boston MA (2022 – 2025)

Machine learning support for drug discovery:

- Created a novel target identification ML pipeline for analysis of Perturb-seq experiments resulting in 70% identification of targets for arbitrary molecules.
- Causal models for drug discovery. Invented and implemented in C++ a novel regularization method for LASSO. This resulted in the expansion of `glinternet` to include multinomial response models with superior predictive outcomes for all supported models.
- Multi-stage estimation of cytokine networks with exogenous inputs based on Markov blankets.
- Batch learning and correction methods based on supervised learning of laboratory metadata.

University of Rochester, Department of Biostatistics & Computational Biology Assistant Professor (2003-2009); Associate Professor (2009–2021); currently Professor Emeritus

Research Grants:

- I have been awarded as Principal Investigator in seven grants, with an approximately 50% success rate as PI, Co-PI or Co-Investigator. See https://www.anthonyalmudevar.com/cv for details.

Selected Leadership & Mentoring:

- Supervision of 2 postdoctoral trainees and 5 PhD theses. Three have faulty appointments, two serve as mathematical statisticians in research institutions. Both postdoctoral trainees were awarded NIH K-awards.

Publications:

- Two textbooks (as single author):
  - Theory of Statistical Inference (2022) Texts in Statistical Science series of CRC Press. See JASA review
  - Approximate Iterative Algorithms (2014) CRC Press
- With D Oakes, J Hall, Statistical Modeling for Biological Systems: In Memory of Andrei Yakovlev (2020) Springer
- Approximately 100 peer-reviewed publications scholar.google.com. Citation indices: h-index = 30; i10-index = 54 (h- $\geq$ 30 or i10- $\in$ (30,60) indicates a significant, established body of work).

Course Development:

- Developed core statistics curriculum for University of Rochester's Data Science program: A Computational Introduction to Statistics; Intermediate Statistical and Computational Methods (undergraduate/graduate).
- Inference for Graphical Models; Computational Systems Biology; Operations Research.

Courses Taught:

- Introductory courses for statistics.
- Advanced statistical inference (PhD core) including statistical inference and large sample inference.
- Specialized courses in probability theory; stochastic processes; machine learning; linear models; bioinformatics; computational systems biology; operations research; inference for graphical models, calculus.
- A complete list of courses taught is available at www.anthonyalmudevar.com/cv.

Invited Seminars:

- International Centre for Mathematical Sciences (ICMS), University of Edinburgh, 2014.
- National Institute of Allergy and Infectious Diseases, Committee on Applied and Theoretical Statistics. National Academy of Sciences, Washington DC, 2016.
- 11th Int'l Conference on Computational and Financial Econometrics (CFE-2017) U. London, 2017.
- Modern Trends in Controlled Stochastic Processes: Theory and Applications. U. Liverpool, 2015, 2021.

Consulting Roles (Recent)

- Statistical Consultant: NIH SBIR Phase II grant proposal, Genlantis Diagnostics Inc. San Diego CA (August 2026).
- Empress Therapeutics/Flagship Pioneering (since March 2025). Methodological R&D in drug target identification.
- WYZANT online tutoring shop (since March 2026).
- Prometric DSST (DANTES Subject Standardized Tests) subject matter expert in statistics and calculus testing evaluation (since May 2026).
- MERCOR AI subject matter expert in mathematics and statistics (since April 2026).

Other Roles

- Daiichi-Sankyo Inc; Biostatistician [Contract Completed]; (2021-2022): Experienced in creating and reviewing TLFs, SAPs and ADaM and SDTM datasets.
- Statistician, Workers' Compensation Board, Halifax, Nova Scotia, Canada (1998-1999): Data analysis in a worker's compensation environment.
- Software Developer, ACOM Computer Systems, Montreal, Quebec, Canada (1984-1992): Hotel back-office software development and training.

Education

- Post-Doctoral Fellow, Department of Mathematics, Statistics & Computer Science, Dalhousie University
- Doctor of Philosophy Department of Statistics, University of Toronto
- Master's Degree Department of Statistics, University of Toronto
- Bachelor of Science Department of Mathematics, Concordia University