MaryLena Bleile

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Experience

Author: November 2024-November 2027 (contract) — **CRC Press**
Writing a technical book on mathematical synergies in Reinforcement Learning and Causal Inference

Biomarker Statistician: November 2024-November 2025 (contract) — **Sanofi**
Statistical support for clinical trials: Statistical Analysis Plan (SAP), protocol, Key Results Memo (KRM). Collaborating with scientists and presenting management to develop novel methodology. Overseeing a Ph.D student intern for a summer research project.

Postdoctoral Research Fellow: June 2023-November 2024 — **Memorial Sloan-Kettering Cancer Center**
Leveraging AI for Biomarker development, collaborating with physicians and biologists, developing original research.

Doctoral Student: Ph.D conferred May 13 2023 — **Southern Methodist University** and **UT Southwestern Medical AI & Automation lab**
Reinforcement Learning & Bayesian modelling for adaptive radiotherapy

Programming: R, PYTHON, Linux, High-Performance Computing, SAS

Awards

Rising Star in AI: 2025 Young Role Model of the Year Finalist, North America Division — *Women in AI*
Biopharmaceutical Section Award — *American Statistical Association*
NSF/Harshbarger Student Travel Award — *Southern Regional Council of Statistics*
Dean's Award — *SMU Moody School of Graduate Studies*
Poster Competition Award (2020 and 2021) — *Conference of Texas Statisticians*
Statistical Science Department Award — *Southern Methodist University*

Speaking

Relaxing the Markov Conditions on Reinforcement Learning Convergence under Weak Relative Ignorability *2025 Workshop on Causal Inference and Reinforcement Learning, CRC Press/Springer*

Relative Ignorability for Reinforcement Learning Development *Invited, Nxt AI 2025*

Causal Reinforcement Learning for Biomarker Development in Clinical Trials *Invited, BioTechX 2025*

Biomarkers for Neurodegenerative Disorders and Cancers *BioTechX 2024*

Cell State Heterogeneity Drives the Need for Reference scRNA-seq Data When Deconvolving Spatial Transcriptomics *NYU Langone Health (2024)*

A Domain-Oriented Analysis Pipeline for Spatial Transcriptomics with application to Melanoma Data *Columbia University (2023)*

Statistical and Machine Learning Methods for Adaptive Radiotherapy Treatment Plans

Onc.AI (2022)
Memorial Sloan Kettering Cancer Center (2022)

Animal Sacrifice as a Potential Cause of Decelerating Tumor Growth in Late-State Xenograft Experiments *Berry Consulting (2022)*

Selected References

[1] MaryLena Bleile. *Reinforcement Learning and Causal Inference.* CRC Press, Boca Raton, FL, Forthcoming, 2027.

[2] MaryLena Bleile. Relaxing the Markov conditions on Reinforcement Learning convergence via weak relative ignorability. *arXiv preprint arXiv:2504.07722*, 2025.

[3] MaryLena Bleile. The EM algorithm is a special case of value iteration. *Manuscript Submitted to AutoML*, 2025.

[4] **MaryLena Bleile**. Optimizing tumor xenograft experiments using Bayesian linear and nonlinear mixed modelling and Reinforcement Learning. *Dissertation Archives at SMU Scholar*, 2023.

[5] **MaryLena Bleile**, et al. Towards the Optimal Combination of Radiotherapy and Immunotherapy Using Deep Reinforcement Learning. *Medical Physics (online-only edition)*, 2022.

[6] **MaryLena Bleile**. ScSpatialFeaturePlot: A flexible spatial plotting function for 10X Visium data. *R package available at https://github.com/MLenaBleile/ScSpatialFeaturePlot*, 2024.

[7] Xiyu Peng, James Smithy, Mohammad Yosofand, **MaryLena Bleile**, et al. Decoding spatial tissue architecture: A scalable Bayesian topic model for multiplexed imaging analysis. *R package available at https://xiyupeng.github.io/SpaTopic/*, 2024.

[8] David Hein, Weiye Deng, **MaryLena Bleile**, et. al. Racial and ethnic differences in genomic profiling of early-onset colorectal cancer. *Journal of the National Cancer Institute*, 114(5):775–778, 2022.

[9] Samiha Rouf, Casey Moore, Debabrata Saha, Dan Nguyen, **MaryLena Bleile**, Robert Timmerman, Hao Peng, and Steve Jiang. PULSAR effect: Revealing potential synergies in combined radiation therapy and immunotherapy via differential equations. *Journal of Theoretical Biology*, 2024.

[10] Binwei Deng, ... , **MaryLena Bleile**, et. al. Quality control tests of the front-end optical link components for the ATLAS liquid argon calorimeter phase-1 upgrade. *Journal of Instrumentation*, 16(08):P08006, 2021.

[11] Yixun Xing, Casey Moore, Debabrata Saha, Dan Nguyen, **MaryLena Bleile** Xun Jia, Robert Timmerman, Hao Peng, and Steve Jiang. Mathematical modeling of the synergetic effect between radiotherapy and immunotherapy. *Mathematical Biosciences and Engineering*, 2024.

[12] Adam Richie-Halford, ... , **MaryLena Bleile**, et al. An analysis-ready and quality controlled resource for pediatric brain white-matter research. *Scientific Data*, 9(1):1–27, 2022.

Mentoring

Mentor for Undergraduate Students (2023)	*SMU DataFest*
Mentor for Undergraduate Students (2022)	*Southern Regional Conference on Statistics*
Graduate Student Panelist (2022)	*Southern Regional Conference on Statistics*
Teaching Assistant: Introduction to Biostatistics (2022)	*UT Southwestern Medical Center*
Teaching Assistant: Music Theory I (2017)	*Southern Methodist University*

Other Achievements

B.S., B. Mus.: 2015-2019	**Statistical Science, Cello Performance**
Minor: Mathematics	*Southern Methodist University*
	First Class Honours - GPA: 3.9
	Brazilian Jiu-Jitsu:
Gold Medal (Submission only, -115lb; uncontested in -105lb)	*Good Fight NY/NJ 2023 Winter Open*
	Judo:
Gold Medal (-48kg)	*2022 Dallas Open Judo Championships*
Gold Medal (-52 kg; uncontested in -48kg)	*2022 NTX Summer Slam*