Aris **Paschalidis**

Medical Student · UMass Chan Medical School

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Education

University of Massachusetts Chan Medical School
Worcester, MA

M.D. Candidate — *August 2022 - Present*

Brown University
Providence, RI

B.S. in Computational Biology — *September 2017 - May 2021*

- Magna Cum Laude
- Honors Thesis Title: "*coiaf*: Complexity Of Infection Estimation with Allele Frequencies"
- GPA 4.0

Boston University
Boston, MA

Took classes while in high school — *September 2015 - May 2017*

- GPA 3.98

Research

Interests

Health AI · Digital Medicine · Precision Medicine · Predictive Modeling · Bioinformatics · Patient Reported Outcome Measures (PROMs)

Experiences

Duke University School of Medicine
Durham, NC

Department of Orthopaedic Surgery — Li Lab — *August 2024 - Present*

- Investigated how pharmacologic and non-pharmacologic modalities affect peripheral nerve regeneration following injury.
- Developed large language model (LLM) based methods to automate literature reviews.

University of Massachusetts Chan Medical School
Worcester, MA

Program in Digital Medicine — Lin Lab — *June 2023 - Present*

- Developed deep neural network–based methods to estimate age from electrocardiograms (ECGs) and machine learning models to predict the risk of future disease.

Brown University
Providence, RI

Center of Computational Molecular Biology — Bailey Lab — *January 2020 - August 2022*

- Worked as an undergraduate lab member and then as a bioinformatician following graduation.
- Developer for coiaf, a package to estimate the number of malarial strains a patient is infected with
- Developer for MIPTools, a suite of computational tools for molecular inversion probe design, data processing, and analysis.
- Developer for miplicorn, a unified framework for molecular inversion probe (MIP) and amplicon-targeted sequencing analysis following micro haplotyping or variant calling.

Center for Evidence-Based Synthesis — *May 2018 - January 2019*

- Worked with Prof. Schmid to create a package to analyze single-patient (N-of-1) clinical trials.

Massachusetts General Hospital
Boston, MA

Department of Orthopaedic Surgery — *May 2019 - September 2024*

- Worked as a research intern in the trauma department, shadowing doctors and conducting research primarily with Dr. Heng.
- Focused on examining associations between mental health scores and physical function scores of patients who had recently undergone total knee or hip replacements.

Cardiovascular Research Center — *May 2019 - December 2019*

- Worked under the direction of Dr. Das, Dr. Varrias, and Dr. Rodosthenous as a recipient of an American Heart Association summer fellowship.
- Examined associations between micro RNAs, long non-coding RNAs, and heart failure using computational techniques.

Massachusetts Institute of Technology
Cambridge, MA

Operations Research Center — *June 2016 - September 2016*

- Worked with Dr. Bertsimas and Dr. Dunn on regression and classification problems using an approach that derives optimal decision trees by solving an integer optimization problem.

Operations Research Center — *June 2015 - September 2015*

- Worked with Dr. Bertsimas on a regression problem with an application to ophthalmology.

Selected Honors & Awards

2025 **Elected Full Member,** Sigma Xi, The Scientific Research Honor Society
2025 **Scholarship,** New England Hellenic Medical and Dental Society
2025 **Invited Speaker,** Transition to 3rd Year Ceremony
2024 **Scholarship,** New England Hellenic Medical and Dental Society
2024 **Honorable Mention,** Massachusetts Medical Society Research Poster Symposium
2021 **Magna Cum Laude,** Brown University
2021 **Honors,** Computational Biology, Brown University
2019 **Summer Fellowship,** American Heart Association Undergraduate Student Summer Fellowship Award

Leadership & Community Outreach

Student Ambassador — *UMass Chan School of Medicine*
Admissions — *September 2023 - Present*

Alumni Interviewer — *Boston University Academy*
Admissions — *October 2021 - Present*

Interest Group Leader — *UMass Chan Medical School*
Orthopedic Surgery Interest Group — *April 2023 - April 2024*

Volunteer Firefighter & EMT — *Scituate, RI*
Hope & Jackson Fire Company — *Sep. 2020 - Nov. 2021*

Captain — *Brown University*
Ultimate Frisbee B Team — *May 2020 - May 2021*

Publications

Journal Articles

Dynamic Lifetime Risk Prediction of Alzheimer's Disease with Longitudinal Cognitive Assessment Measurements

Ding H., Ye Z., Paschalidis A., Bennett D. A., Au R., Lin H.

Alzheimer's & Dementia. 2025;21(3):e70055. doi: 10.1002/alz.70055.

Blocking the PD-1 Signal Transduction by Occupying the Phosphorylated ITSM Recognition Site of SHP-2

Li W., Mei W., Jiang H., Wang J., Li X., Quan L., Diao Y., Ma Y., Fan S., Xie Z., Gong M., Zhu H., Bi D., Zhang F., Ma L., Zhang J., Gao Y., Paschalidis A., Lin H., Liu F., Liu K., Ye M., Zhao Z., Duan Y., Chen Z., Xu Y., Xiao W., Tao S., Zhu L., Li H.

Science China Life Sciences. 2025;68(1):189–203. doi: 10.1007/s11427-024-2706-2.

Time to Achieve the Minimal Clinically Important Difference in Primary Total Hip Arthroplasty: Comparison of Anterior and Posterior Surgical Approaches

Salimy M. S., Paschalidis A., Dunahoe J. A., Chen A. F., Alpaugh K., Bedair H. S., Melnic C. M.

The Journal of Arthroplasty. 2024;39(9):S314–S321. doi: 10.1016/j.arth.2024.04.038.

Mental Health Effects on the Minimal Clinically Important Difference in Total Joint Arthroplasty

Salimy M. S., Paschalidis A., Dunahoe J. A., Chen A. F., Alpaugh K., Bedair H. S., Melnic C. M.

JAAOS - Journal of the American Academy of Orthopaedic Surgeons. 2024;32(7):e321. doi: 10.5435/jaaos-d-23-00538.

Patients Consistently Report Worse Outcomes Following Revision Total Knee Arthroplasty Compared to Primary Total Knee Arthroplasty

Salimy M. S., Paschalidis A., Dunahoe J. A., Chen A. F., Alpaugh K., Bedair H. S., Melnic C. M.

The Journal of Arthroplasty. 2024;39(2):459–465.e1. doi: 10.1016/j.arth.2023.08.014.

The Not-So-Distant Future or Just Hype? Utilizing Machine Learning to Predict 30-Day Post-Operative Complications in Laparoscopic Colectomy Patients

Velmahos C. S., Paschalidis A., Paranjape C. N.

The American Surgeon. 2023;89(12):5648–5654. doi: 10.1177/00031348231167397.

Patient-Reported Outcomes Following Revision Total Hip Arthroplasty Demonstrate Less Improvement and Significantly Higher Rates of Worsening Compared to Primaries

Salimy M. S., Paschalidis A., Dunahoe J. A., Chen A. F., Alpaugh K., Bedair H. S., Melnic C. M.

The Journal of Arthroplasty. 2023;38(11):2410–2414. doi: 10.1016/j.arth.2023.05.053.

***coiaf*: Directly Estimating Complexity of Infection with Allele Frequencies**

Paschalidis A., Watson O. J., Aydemir O., Verity R., Bailey J. A.

PLOS Computational Biology. 2023;19(6):e1010247. doi: 10.1371/journal.pcbi.1010247.

Patient-Reported Mental Health Score Influences Physical Function After Primary Total Knee Arthroplasty

Melnic C. M., Paschalidis A., Katakam A., Bedair H. S., Heng M., Chen A. F., O'Brien T. M., Sisodia R. C.

The Journal of Arthroplasty. 2021;36(4):1277–1283. doi: 10.1016/j.arth.2020.10.031.

Predictive Models of Mortality for Hospitalized Patients With COVID-19: Retrospective Cohort Study

Wang T., Paschalidis A., Liu Q., Liu Y., Yuan Y., Paschalidis I. C.

JMIR Medical Informatics. 2020;8(10):e21788. doi: 10.2196/21788.

Conference Proceedings

Regression and Classification Using Optimal Decision Trees

Bertsimas D., Dunn J., Paschalidis A.

IEEE MIT Undergraduate Research Technology Conference (URTC). 2017:1–4. doi: 10.1109/urtc.2017.8284195.

Podium Presentations

In Autologous Breast Reconstruction, Machine Learning Models Are Poor Predictors of Post-Surgical Morbidity: A Retrospective Cohort Study on a National Database

Paschalidis A., Velmahos C. S., Giatsidis G.

Plastic Surgery The Meeting; September 27, 2024; San Diego, California.

Time to MCID in Primary THA: Comparison of Anterior and Posterior Surgical Approaches

Salimy M. S., Paschalidis A., Dunahoe J. A., Chen A. F., Alpaugh K., Bedair H. S., Melnic C. M.

American Association of Hip and Knee Surgeons Annual Meeting; November 2, 2023; Grapevine, Texas.

Time to Achieve the Minimal Clinically Important Difference in Primary Total Hip Arthroplasty: Comparison of Anterior and Posterior Surgical Approaches

Salimy M. S., Paschalidis A., Dunahoe J. A., Chen A. F., Alpaugh K., Bedair H. S., Melnic C. M.

New England Orthopedic Society Spring Meeting; June 2, 2023; Brewster, Massachusetts.

Poster Presentations

Metabolic And Non-Pharmacological Modalities Involved In The Growth And Viability Of Peripheral Nerves Following Surgical Repair: A Systematic Review

Shepard R. T., Paschalidis A., Chen D., Li N.

Orthopaedic Research Society Annual Meeting; February 7, 2025; Phoenix, Arizona.

Pre-Matriculation Experiences Minimally Impact the Specialty Interests of First-Year Medical Students

Paschalidis A., McAnena A. P., McClennen T., Shepard R. T., Gala R.

Massachusetts Medical Society; March 22, 2024; Waltham, Massachusetts.

Development of Deep Neural Network Based Methods to Estimate Biological Age from Electrocardiograms

Paschalidis A., Lin H.

UMass Chan Summer Research Program; August 18, 2023; Virtual.

Mental Health Effects on the Minimal Clinically Important Difference in Total Joint Arthroplasty

Salimy M. S., Paschalidis A., Dunahoe J., Chen A. F., O'Brien T., Sisodia R. C., Bedair H. S., Melnic C. M.

American Association of Hip and Knee Surgeons Annual Meeting; November 3, 2022; Grapevine, Texas.

Effects of Mental Health on PROMIS Scores After Primary THA

Paschalidis A., Salimy M. S., Robinson M. G., Chen A. F., Melnic C. M., O'Brien T. M., Bedair H. S., Heng M.

Eastern Orthopedic Association Annual Meeting; October 26, 2022; Naples, Florida.

Complexity of Infection Estimation with Allele Frequencies

Paschalidis A., Watson O. J., Verity R. J., Bailey J. A.

American Society of Tropical Medicine and Hygiene Annual Meeting; November 19, 2021; Virtual.

Physical Function After Primary Total Knee Arthroplasties (TKAs) Stratified by Pre-operative Patient-Reported Mental Health Score

Melnic C. M., Paschalidis A., Katakam A., Bedair H. S., Heng M., Chen A. F., O'Brien T. M., Sisodia R. C.

American Academy of Orthopaedic Surgeons Annual Meeting; August 31, 2021; San Diego, California.

Predictors Of Continuing Improvement After 1st Month Of Crt Implantation In Women With Heart Failure (Hf)

Varrias D., Pujol M., Samala V., Zhao M., Hoz M. Á. A. de la, Paschalidis A., Shah R., Silverman M., Heist K., Singh J., Das S.

Heart Rhythm Society; 2020; Virtual.

Changes in Plasma Extracellular RNAs: Independent Associations with Left and Right Ventricular Reverse Remodeling

Varrias D., Paschalidis A., Michelhaugh S., Das A., Yeri A., Spahillari A., Januzzi J., Shah R., Silverman M., Das S.

Cardiovascular Research Center Retreat; 2019.

Software Projects

coiaf *March 2020 - June 2023*

Methods for estimating malarial complexity of infection—the number of parasite strains an individual is infected with—using allele frequency data from genomic sequencing.

MIPTools *October 2021 - December 2022*

A suite of computational tools for molecular inversion probe design, data processing, and analysis. Initially developed by the Bailey Lab to facilitate genomic surveillance of malaria, the tool has since been generalized for use in other contexts.

miplicorn *August 2021 - December 2022*

A unified analysis framework for molecular inversion probe (MIP) and amplicon-targeted sequencing following micro haplotyping or variant calling. The software includes tools for parsing large variant files, filtering and manipulating data, and performing basic analyses and visualizations.

CAvaccines *March 2020 - October 2021*

A package to examine associations between vaccination rates and the incidence of pertussis in California counties from 2008-2017.

nof1gen *December 2018 - March 2019*

A generalized package for analyzing single-patient (N-of-1) trials with the aim of providing individualized recommendations on which treatment has the highest chance of improving a patient's underlying condition.