

# 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

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

### Boston University

Boston, MA

TOOK CLASSES WHILE IN HIGH SCHOOL

September 2015 - May 2017

- GPA 3.98

## Research Experience

### Brown University

Providence, RI

BIOINFORMATICIAN

June 2021 - August 2022

- Developer for coiaf, a package to estimate the number of malarial strains a patient is infected with, known as the Complexity of Infection (COI).
- Developer for MIPTools, a suite of computational tools used for molecular inversion probe design, data processing, and analysis.
- Developer for mipicorn, a unified framework for molecular inversion probe (MIP) and amplicon-targeted sequencing analysis after micro haplotyping or variant calling. It provides tools for parsing large variant files, filtering and manipulating the data, and basic analyses and visualization.

LAB MEMBER

January 2020 - August 2022

- Developer for coiaf, a package to estimate the number of malarial strains a patient is infected with, known as the Complexity of Infection (COI).

### Massachusetts General Hospital (MGH)

Boston, MA

RESEARCH INTERN

May 2019 - September 2020

- Worked at the Orthopedic 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.

SUMMER FELLOW

May 2019 - December 2019

- Worked at the cardiovascular research center under the direction of Dr. Das, Dr. Varrias, and Dr. Rodosthenous.
- Worked on examining associations between micro RNAs, long non-coding RNAs, and heart failure.

### Brown University

Providence, RI

RESEARCH INTERN

May 2018 - January 2019

- Worked with Prof. Schmid at the Center for Evidence-Based Synthesis.
- Created a package to analyze n-of-1 clinical trials. The package allows users to run normal, binomial, Poisson, or ordinal regressions on the data.

### Massachusetts Institute of Technology

Cambridge, MA

RESEARCH INTERN

June 2016 - September 2016

- Intern at the MIT Operations Research Center.
- 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.

RESEARCH INTERN

June 2015 - September 2015

- Intern at the MIT Operations Research Center.
- Worked with Dr. Dimitris Bertsimas on a regression problem with an application to ophthalmology.

## Software Projects

### MIPTools

October 2021 - Present

A suite of computational tools used for molecular inversion probe design, data processing, and analysis.

### mipicorn

August 2021 - Present

A unified analysis framework for molecular inversion probe (MIP) and amplicon-targeted sequencing analysis after micro haplotyping or variant calling. It provides tools for parsing large variant files, filtering and manipulating the data, and basic analyses and visualization.

## coiaf

March 2020 - Present

Methods for estimating complexity of infection using easily calculated measures from sequence read depth data.

## CAvaccines

March 2020 - October 2021

A package to examine associations between vaccination rates and disease incidence in California counties.

## nof1gen

December 2018 - March 2019

A package for running analyses for N of 1 study trials.

## Leadership & Community Outreach

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### 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

## Selected Honors & Awards

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- 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 **Fellowship**, American Heart Association Undergraduate Student Summer Fellowship Award

## Publications

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### JOURNAL ARTICLES

#### 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*. 2024. 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;0(0). doi: 10.1016/j.arth.2024.04.038.

#### 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.

#### 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;10.5435/JAAOS. doi: 10.5435/jaaos-d-23-00538.

#### 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., PARANJPE 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.

2017 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 2024; 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.

2023 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 2023 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 2025 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.

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

### **The Effects of a Mental Health Diagnosis on Achieving the Minimal Clinically Important Difference in Primary and Revision 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 2021 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 Science; 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.