

# Aris Paschalidis

MEDICAL STUDENT · UMASS CHAN MEDICAL SCHOOL

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## Education

### University of Massachusetts Chan Medical School

Worcester, MA

M.D. CANDIDATE

Aug. 2022 - Present

### Brown University

Providence, RI

B.S. IN COMPUTATIONAL BIOLOGY

Sep. 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

Sep. 2015 - May 2021

- 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.

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

## nof1gen

December 2018 - March 2019

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

## CAvaccines

March 2020 - October 2021

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

## Selected Honors & Awards

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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

#### 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*. 2023;0(0). doi: 10.1016/j.arth.2023.08.014.

#### 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 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;0(0). doi: 10.1016/j.arth.2023.05.053.

#### 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., PARANJAPPE C. N.

*The American Surgeon*. 2023;0(0). doi: 10.1177/00031348231167397.

#### 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

#### 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

#### 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.