



Anthony “Tony” Prisco

Started T32 in 2019

Research:

Dr. Prisco is a cardiovascular diseases fellow and engineer with a strong interest in using mathematical modeling to better understand cardiovascular disease, develop better treatments, and improve patient care. Currently, he has two main research foci: computational fluid dynamics and artificial intelligence. He uses computational fluid dynamics to model complex blood flow in heart valves and cardiopulmonary bypass machines. Additionally, he is developing mathematical techniques to predict if valves placed percutaneously will leak following implantation. In cardiopulmonary bypass, he is working on better understanding how patients with multisystem organ failure maintain end-organ oxygenation while on bypass. Finally, he is currently using convolutional neural networks, a type of artificial intelligence, to diagnose subclinical cardiovascular disease in high-risk patients.

Coursework completed:

VPD X001 - 009 Medical Innovation Value Proposition Design; Fall 2019

Conference Presentations:

Submitted to ACC 2021:

As First/Presenting Author--

- Gurevich, S., **Prisco, A.R.**, Mattison, L., Yannopoulos, D., Raveendran, G., Sanchez, J.Z., Iazzo, P.A. "Impact of the Native Aortic Valve on Paravalvular Leak in TAVR Patients" *Journal of the American College of Cardiology* (2021). Volume 77. Supplement 1. P. 988.
- **Prisco, A.R.**, Deakyne, A., Upchurch, W., Kapa, S., Jacobs, D., Iazzo, P.A., Duprez, D. "Deep Learning from Non-Invasive Radial Artery Blood Pressure Waveform Predicts Cardiovascular Disease Events in a Multi-Ethnic Study Cohort: The MESA Study" *Journal of the American College of Cardiology* (2021). Volume 77. Supplement 1. P. 3213.
- Prisco S.Z., Hartweck, L., Goldblum, R., McClellan, M., **Prisco, A.R.**, Thenappan, T., Gardner, M., Prins, K.W. "Glycoprotein 130 Signaling Promotes Right Ventricular Dysfunction in Pulmonary Arterial Hypertension" *Journal of the American College of Cardiology* (2021). Volume 77. Supplement 1. P. 3404.
- Kalra, R., Alexy, T., Bartos, J.A., Elliott A.M., **Prisco, A.R.**, Kosmopoulos, M., Maharaj, V., Garcia, S., Raveendran, G., Yannopoulos, D. "Invasive Evaluation of Left Ventricular Hemodynamics with Veno-Arterial Extracorporeal Membrane Oxygenation" *Circulation* (2021). Volume 144. Supplement 2. A9439-A9439.

Publications: (since starting on the T32 through 2/21/2022)

1. **Prisco, A. R.**, Allen, J., Gutierrez, A., Zanotto, A., Yannopoulos, D., Markowitz, J., & Bartos, J. A. (2020). Kounis Syndrome Leading to Cardiac Arrest After Iodinated Contrast Exposure. *JACC: Case Reports*, 2(4), 626-629.
2. Chivukula VK, Beckman JA, **Prisco AR**, Lin S, Dardas TF, Cheng RK, Farris SD, Smith JW, Mokadam NA, Mahr C, Aliseda A. Small Left Ventricular Size Is an Independent Risk Factor for Ventricular Assist Device Thrombosis. *ASAIO J.* 2019 Feb;65(2):152-159. doi: 10.1097/MAT.0000000000000798. PMID: 29677037

3. **Prisco, A.R.**, Aguado-Sierra, J., Butakoff, C. et al. "Concomitant Respiratory Failure Can Impair Myocardial Oxygenation in Patients with Acute Cardiogenic Shock Supported by VA-ECMO." *Journal of cardiovascular translational research* (2021): 1-10.
4. Prisco, S.Z., Eklund, M., Moutsoglou, D.M., **Prisco, A.R.**, Khoruts, A.E., Weir, K., Thenappan, T., and Prins, K.W. "Intermittent Fasting Enhances Right Ventricular Function in Preclinical Pulmonary Arterial Hypertension." *Journal of the American Heart Association* (2021): e022722.

Publications in process:

- Impact of the Native Aortic Valve on Paravalvular Leak in TAVR Patients (Submitted to *Catheterization and Cardiovascular Interventions*)
- Initial VT Depolarization is faster in Endocardial vs Epicardial locations (Submitted to *JACC: EP*)
- Deep Learning from Non-Invasive Radial Artery Blood Pressure Waveform Predicts Cardiovascular Disease Events in a Multi-Ethnic Study Cohort: the MESA Study (Submitted to *Hypertension*)

Intellectual Property:

Patents:

Holm, M. Ramirez, D. Prisco, A.R., Schaffer, A., Iazzo, P.A. System and Method for Implanting Left Ventricular Assist Devices. USPTO. 63/198,196. Filed December 18, 2020

Prisco, A.R., Kosmopoulos, M., Sebastian, P., Benditt, D. Yannopoulos, D. Classification of the Etiology of Cardiac Arrest. UPTO. Provisional Patent Filed July 13, 2021

Prisco, A.R., Olson, M., Tholakanahalli, V. Computational Method for Localizing the Original of Arrhythmia. USPTO. 63/203,366. Provisional Patent Filed July 20, 2021

Grants:

Title: Reducing the Carbon Footprint of Cardiovascular Disease by Diagnosing Subclinical Pathology using Artificial Intelligence

Source: University of Minnesota Medical School

Role: Principal Investigator

Dates: 4/1/2020 – 4/1/2022

Direct Funds: \$29,540

Title: Advanced Hemodynamic Characterization of COVID19 Patients Supported by Venous-Arterial Extracorporeal Membrane Oxygenation

Source: University of Minnesota Institute of Engineering in Medicine

Role: Principal Investigator

Dates: 5/1/2020 – 4/30/2022

Direct Funds: \$10,000

Title: CardioVascular-COVID

Source: Partnership for Advanced Computing In Europe

Principle Investigator: Jazmin Aguado-Sierra, Ph.D.

Role: Investigator

Dates: 6/1/2020 – 12/31/2020

Direct Funds: 7,800,000 core computing hours

Awards:

University of Minnesota: Anthony Garofalo Prevention Fellowship Award 2021