Approved by the Regents
May 18, 2023

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF INTERNAL MEDICINE

Salim Hayek, M.D., assistant professor of internal medicine, Department of Internal Medicine, Medical School, is recommended for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, Medical School.

Academic Degrees:

M.D.	2008	American University of Beirut
B.S.	2004	American University of Beirut

Professional Record:

2018-Present	Assistant Professor, Division of Cardiovascular Medicine, Internal Medicine, University of Michigan

Summary of Evaluation:

Teaching: Dr. Hayek has been dedicated to teaching and mentoring. His contributions as an educator include mentoring, bedside clinical teaching, core curriculum education for fellows-in-training, and peer education through seminars and courses. In the clinical setting, Dr. Hayek teaches medical students, internal medicine residents, and cardiology fellows in the areas of general cardiology, cardio-oncology, and cardiovascular imaging, notably coronary angiography, echocardiography, and computed tomography. In his research laboratory, Dr. Hayek has served as the primary mentor for several individuals at different stages in their careers – from undergraduate students to post-doctoral fellows and clinical trainees. Dr. Hayek regularly gives lectures to practicing physicians throughout the state of Michigan, nationally, and internationally, on various topics for which he is an expert, including Cardio-Oncology, kidney disease, risk prediction, COVID-19, and digital healthcare. He also presents at CME courses such as the University of Michigan Annual Cardiology Update, the Emory Symposium on Coronary Atherosclerosis Prevention and Education (ESCAPE), the American College of Cardiology's "Evolving Practice of Cardiovascular Precision Medicine" course, and the Rush University Cardio-Oncology Symposium.

Research: Dr. Hayek is a bench-to-bedside physician-scientist, with a research interest in deciphering the mechanisms of inflammation underlying the association between kidney and cardiovascular disease, as well as the management of cardiovascular complications of cancer therapies. He has contributed to the research infrastructure of the University of Michigan through the creation of highly valuable clinical cohorts and biobanks such as the Michigan Medicine COVID-19 Cohort (M2C2) and the Bone Marrow Transplantation Cardiovascular Registry (CARE-BMT). The latter has now become the largest multicenter prospective contemporary study on cardiovascular risk factors and outcomes in patients undergoing hematopoietic stem cell transplantation. He is exceptionally well-published with 158 peer-reviewed publications, with 90 while in rank, many in high-impact journals, such as the *New England Journal of Medicine*, the *Journal of the American Society of Nephrology*, the *European Heart Journal*, and the *Journal of*

the American College of Cardiology. He also has four book chapters. Dr. Hayek has demonstrated excellent productivity in his research contributions, as evidenced by his publications and extramural grant support. Since joining the University of Michigan, Dr. Hayek's lab has obtained over $8 million dollars in funding from several National Institutes of Health grants (including two R01s), foundational awards, industry grants, as well as internal University of Michigan support.

Dr. Hayek's reputation as a national leader in his field is evidenced by his membership on numerous editorial teams, including *ACC.org*, *JACC: Cardio-Oncology* and *Kidney International*, and his peer-review service for more than 30 journals including *BMJ*, the *Journal of the American Society of Nephrology*, the *European Heart Journal*, and the *Journal of the American College of Cardiology*, among others. Dr. Hayek's research contributions have also been recognized through numerous national awards and honors, including the American College of Cardiology Douglas P. Zipes Distinguished Young Scientist Award, American Heart Association Samuel Levine Early Career Investigator Award, and the Juanita L. Merchant Early Career Endowment Award.

Recent and Significant Publications:

Heidenreich PA, Bozkurt B, Aguilar D, Allen LA, Byun JJ, Colvin MM, Deswal A, Drazner MH, Dunlay SM, Evers LR, Fang JC, Fedson SE, Fonarow GC, Hayek SS, Hernandez AF, Khazanie P, Kittleson MM, Lee CS, Link MS, Milano CA, Nnacheta LC, Sandhu AT, Stevenson LW, Vardeny O, Vest AR, Yancy CW, "2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: Executive Summary: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines," Circulation. 2022 May 3;145(18):e876-e894. doi: 10.1161/CIR.0000000000001062. Epub 2022 Apr 1. PMID: 35363500.

Vasbinder A, Anderson E, Shadid H, Berlin H, Pan M, Azam TU, Khaleel I, Padalia K, Meloche C, O'Hayer P, Michaud E, Catalan T, Feroze R, Blakely P, Launius C, Huang Y, Zhao L, Ang L, Mikhael M, Mizokami-Stout K, Pennathur S, Kretzler M, Loosen SH, Chalkias A, Tacke F, Giamarellos-Bourboulis EJ, Reiser J, Eugen-Olsen J, Feldman EL, Pop-Busui R, Hayek SS, "Inflammation, Hyperglycemia, and Adverse Outcomes in Individuals With Diabetes Mellitus Hospitalized for COVID-19," *Diabetes Care*: 2022. PM35045184

Hayek SS, Leaf DE, Samman Tahhan A, Raad M, Sharma S, Waikar SS, Sever S, Camacho A, Wang X, Dande RR, Ibrahim NE, Baron RM, Altintas MM, Wei C, Sheikh-Hamad D, Pan JS, Holliday MW Jr, Januzzi JL, Weisbord SD, Quyyumi AA, Reiser J. "Soluble Urokinase Receptor and Acute Kidney Injury," *N Engl J Med* 382(5): 416-426, 2020. PM31995687

Azam TU, Shadid HR, Blakely P, O'Hayer P, Berlin H, Pan M, Zhao P, Zhao L, Pennathur S, Pop-Busui R, Altintas I, Tingleff J, Stauning MA, Andersen O, Adami ME, Solomonidi N, Tsilika M, Tober-Lau P, Arnaoutoglou E, Keitel V, Tacke F, Chalkias A, Loosen SH, Giamarellos-Bourboulis EJ, Eugen-Olsen J, Reiser J, Hayek SS, "International Study of Inflammation in COVID-19.: Soluble Urokinase Receptor (SuPAR) in COVID-19-Related AKI," *J Am Soc Nephrol* 31(11): 2725-2735, 2020. PM32963090 /PMC7608953

Hayek SS, Landsittel DP, Wei C, Zeier M, Yu ASL, Torres VE, Roth S, Pao CS, Reiser J, "Soluble Urokinase Plasminogen Activator Receptor and Decline in Kidney Function in Autosomal Dominant Polycystic Kidney Disease," *J Am Soc Nephrol*: 2019. PM31171572

Service: Dr. Hayek has a strong record of service. He is a superb clinician who provides patient care in the ambulatory clinic and inpatient cardiology services settings. In addition to his busy clinical schedule, he is an active member of the American Heart Association, the American College of Physicians, and the American College of Cardiology. He serves on numerous committees with the American College of Cardiology (ACC) and American Heart Association (AHA), including the ACC Innovation Section, the Cardio-Oncology section, and the American Heart Association Cardio-Oncology Committee. Institutionally, Dr. Hayek serves as the medical director of the University of Michigan's Frankel Cardiovascular Center Clinics, the largest multi-disciplinary cardiovascular center in the Michigan Medicine health system. Under his leadership, and through a data-driven approach, his team devised workflows that allowed Frankel Cardiovascular Center Clinics to operate at maximal efficiency despite the constraints of the pandemic. His efforts have had a major impact on improving the quality, timeliness, and value of care. He also co-directed the Michigan Medicine post-COVID-19 clinic that managed hundreds of patients suffering from sequelae of COVID-19.

External Reviewers

Reviewer A: "…Dr. Hayek's work has significant impact in the field of Nephrology, in addition to his tremendous contributions to his Cardiology field…his research work led to improvement of our knowledge in areas such as prevention of cardiovascular diseases, risk prediction, heart failure, coronary artery disease… He is clearly a leader in his field and renowned scientist and clinician. It is evident that he is one of the most productive researchers, as evident by the large number of his publications and grants."

Reviewer B: "His seminal NEJM paper in 2015 was pivotal in identifying suPAR as a marker of accelerated kidney function decline…He is the PI on two active NIH R01 grants as well as a co-I on several other federal and industry awards. He holds 3 patents…has an international profile serving on several grant review panels…has given >40 invited lectures locally, national[ly] and internationally and is an Associate Editor for Kidney International Reports, ACC.org and the Journal of Thrombosis and Thrombolysis. He has taught and mentored >20 trainees at various career stages."

Reviewer C: "As a researcher, Salim has demonstrated continued productivity, innovation and the ability to broaden his scope of investigation into exciting new areas. He has built a thriving translational research laboratory and also serves as the Medical Director of the Frankel Cardiovascular Center Clinics – the largest ambulatory care clinic at the University of Michigan system. Salim is an outstanding physician scientist who has made seminal discoveries in the field. He is an internationally known expert in the field of suPAR biology."

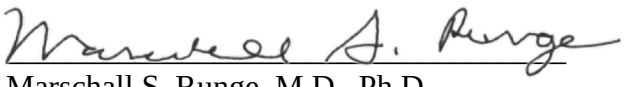
Reviewer D: "Getting to the bottom line, I very strongly believe that Dr. Hayek fully deserves promotion and tenure. I n my career I have been asked to write similar letters for clinician scientists at the same career stage at universities that could be considered peer institutions to Michigan. I would go so far as to say that Dr. Hayek's record in research is the strongest I have seen for a faculty member at his career stage."

Reviewer E: "Dr. Hayek's resume speaks for itself. While early in his career, he has already contributed significantly to academic medicine with an impressive body of work…While his contributions to science and academic medicine are numerous, his most impactful scientific work to date is his identification of soluble urokinase plasminogen activator receptor (suPAR) as an immune mediator of kidney injury, a therapeutic target, and the missing link between kidney and cardiovascular disease…Dr. Hayek is leading the first-in-man clinical trial targeting suPAR as a strategy to prevent kidney injury in patients with Covid-19. The success of the trial has

implications that extend beyond Covid-19, opening the way for the design of new therapeutics which could impact millions of people across the world…Dr. Hayek exemplifies the consummate physician-scientist and distinguishes himself amongst the top 1% in his rank."

Summary of Recommendation:

Dr. Hayek has made substantive and meaningful contributions to the field in his research work. He is an outstanding physician-scientist who studies inflammation as the common link between kidney and cardiovascular disease, the development of evidence-based strategies for the prevention and management of cardiovascular complications of cancer therapy, and has published on patterns and management of COVID-19 infected patients, with additional contributions to teaching and service. He is a valued member of our faculty. Therefore, I am pleased to recommend Salim Hayek, M.D. for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President for Medical Affairs
Dean, Medical School

May 2023