Approved by the Regents
May 18, 2023

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF ANESTHESIOLOGY

Giancarlo Vanini, M.D., assistant professor of anesthesiology, Department of Anesthesiology, Medical School, is recommended for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, Medical School.

Academic Degrees:

M.D.	2000	Universidad de la República, Montevideo, Uruguay

Professional Record:

2018-present	Assistant Professor of Anesthesiology, University of Michigan
2013-2018	Research Assistant Professor of Anesthesiology, University of Michigan
2009-2013	Research Investigator of Anesthesiology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Vanini is an active educator in our department. He contributes to resident orientation by giving yearly lectures on the pharmacology of general anesthetics and has presented his research at our Anesthesiology Grand Rounds. At the institutional level, he has presented at the Brain Research and Neural Network seminars. He is actively involved in the educational activities of the Neuroscience Graduate Program (NGP). He has given lectures, coordinated student-led scientific presentations, and presented at the 2021 NGP Retreat. He co-teaches an annual graduate-level course on Cognitive Neuroscience of Consciousness. This course typically enrolls eight to ten undergraduate and graduate students from neuroscience and psychology and also attracts many faculty from anesthesiology and neurology, clinical and research fellows, students, and staff. At the international level, he lectures annually in a graduate/post-graduate level course on the Neurobiological Basis of Sleep, at the School of Medicine, University of the Republic, Uruguay. He also continues mentoring several undergraduate, graduate, and pre-medical students, post-doctoral fellows, and junior faculty in his laboratory, as well as through collaboration with other University of Michigan faculty. He teaches and guides his mentees in laboratory methodology, study design, data management, and analysis, as well as manuscript and grant writing. His mentees have obtained authorship on several abstracts and research articles, and have received awards and acceptance into medical school and graduate programs within and outside our institution.

Research**:** Dr. Vanini's research focuses on a systems neuroscience approach with a cutting-edge methodology to study the neural circuitry controlling interacting states of sleep, anesthesia, and pain. Specifically, his laboratory focuses on three main lines of investigation addressing critical gaps in knowledge that are relevant to anesthesiology, sleep medicine and neurobiology, consciousness, and pain. His work is at the forefront in these research areas and has significantly advanced the understanding of the role of sleep-wake mechanisms in the control of the anesthetized state, hypothalamic control of sleep-wake states and body temperature, as well as the neurobiology of sleep-pain interactions. In 2016, he established his own neuroscience laboratory here in the Department of Anesthesiology. Additionally, through collaboration with his clinical colleagues, he has a record of publications from human studies with a focus on consciousness mechanisms.

Dr. Vanini was recently awarded an R01 grant to examine the role of the preoptic hypothalamus in sleep-dependent cognition after surgery and general anesthesia. He has additional funding from the National Institutes of Health as well as a collaborative research grant funded by Tryp Therapeutics to study the effect and mechanisms of psychedelics on models of chronic pain. He has authored 35 peer-reviewed publications and given numerous poster and oral presentations at institutional, national, and international events. His work has been published in all the top journals in his field such as *Anesthesiology*, *Sleep*, *Pain*, J*ournal of Neuroscience*, *European Journal of Neuroscience* and *Current Biology*.

Recent and Significant Publications:

Vlisides PE, Li D, McKinney A, Brooks J, Leis AM, Mentz G, Tsodikov A, Zierau M, Ragheb J, Clauw DJ, Avidan MS, Vanini G, Mashour GA, "The effects of intraoperative caffeine on postoperative opioid consumption and related outcomes after laparoscopic surgery: A randomized controlled trial," *Anesth Analg* 133(1): 233-242, 2021. PM33939649

Mashour GA, Palanca BJ, Basner M, Li D, Wang W, Blain-Moraes S, Lin N, Maier K, Muench M, Tarnal V, Vanini G, Ochroch EA, Hogg R, Schwartz M, Maybrier H, Hardie R, Janke E, Golmirzaie G, Picton P, McKinstry-Wu AR, Avidan MS, Kelz MB, "Recovery of consciousness and cognition after general anesthesia in humans," *Elife* 10: 1 - 21, 2021. PM33970101/PMC8163502

Mondino A, Hambrecht-Wiedbusch V, Li D, York AK, Pal D, González J, Torterolo P, Mashour GA, Vanini G, "Glutamatergic neurons in the preoptic hypothalamus promote wakefulness, destabilize NREM sleep, suppress REM sleep, and regulate cortical dynamics," *J Neurosci* 41(15): 3462-3478, 2021. PM33664133

Beekly BG, Frankel WC, Berg T, Allen SJ, Garcia-Galiano D, Vanini G, Elias CF, "Dissociated *Pmch* and Cre expression in lactating *Pmch*-Cre BAC transgenic mice," *Front Neuroanat* 14: 60, 2020. PM32982701/PMC7475711

Vanini G, Bassana M, Mast M, Mondino A, Cerda I, Phyle M, Chen V, Colmenero AV, Hambrecht-Wiedbusch VS, Mashour GA, "Activation of preoptic GABAergic or glutamatergic neurons modulates sleep-wake architecture, but not anesthetic state transitions," *Curr Biol* 30(5): 779-787.e4, 2020. PM32084397/PMC7156032

Service: Throughout his career, Dr. Vanini has served at the institutional, national, and international levels. Institutionally, he serves on the Admissions Committee of the Neuroscience Graduate Program. This committee is tasked with the responsibility of reviewing competitive applications and selecting the new cohort of students to be admitted into Neuroscience and the Program in Biomedical Sciences. He created the organizing committee for the first Annual University of Michigan Neuroscience Meeting in 2019. At the national level, he has served as a member on several Sleep Research Society Committees and is currently a member of the Scientific Offerings Committee where he works with his colleagues on the organization of a bi-annual scientific conference on sleep and chronobiology. Dr. Vanini is an active ad hoc reviewer for the disciplines of sleep, pain, and neuroscience journals such as *Sleep*, *Neuroscience*, *Journal of Neuroscience*, *Current Biology*, and *Nature Communications*, and serves on the editorial board of *Sleep Science*, *Frontiers in Neuroscience*, *Sleep and Circadian Rhythms*, and *Sleep Advances*.

External Reviewers:

Reviewer A: "Dr. Vanini has been established as [an] independent investigator in 2016. Since then, he has directed a neuroscience laboratory studying the neural mechanisms that control states of sleep, wakefulness and anesthesia, as well as sleep-pain interactions. His laboratory has been funded by the

NIH through 2 grants, 1 R01 and 1 R21. He now receives funding from a private company (TRYP Therapeutics) and has several R01 grant applications awaiting review, one of which received a great impact score. Together, this evidences his ability to secure extramural funding."

Reviewer B: "Specifically, in the past 4 years he has published 14 papers, 4 of which as first or last author, including 3 papers in medium-high profile journals…which is quite an achievement especially given the unique challenges caused by the pandemic. Dr. Vanini has been able to secure NIH funding including one recently concluded R01 grant (and 2 more under review). Two of these grants aim at exploring the role of the preoptic area in sleep regulation and the link with anesthesia, a major focus of Dr. Vanini's research. This is a 'hot' topic of investigation in the sleep field, pursued by several labs around the world, and Dr. Vanini is considered one of the experts in this area."

Reviewer C: "Dr. Vanini has been deeply involved in undergraduate teaching since his days at the University of Montevideo, and has taken the lead in putting together a course on Cognitive neuroscience and consciousness at U Mich. He has also been an active faculty in ethics courses and in presentations on his main research topic: the relationship between sleep and pain."

Reviewer D: "Based on his outstanding track record, I'd rank Dr. Vanini in the top 5% of all scientists at the same career stage, which again underscores the fact that he is a rising superstar in fields of sleep biology, sedation and anesthesia. There's no doubt that if he maintains his current scientific trajectory, he will be [the] leading force in the field. Although it appears that he's already achieved this goal, and I would consider him far more productive and his research far more impactful than many senior scientists."

Reviewer E: "[Dr. Vanini's] recent work is of very high quality…He is certainly in the top 10%."

Summary of Recommendation:
Dr. Vanini has distinguished himself as an exceptional researcher that is nationally and internationally recognized as a leader in the fields of sleep biology, sedation, and anesthesia. He continues to be highly productive with excellence in teaching, mentorship, as well as service. I am pleased to recommend Giancarlo Vanini, M.D. for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, Medical School.

Marshall S. Runge, MD, PhD
Executive Vice President of Medical Affairs
Dean, Medical School

May 2023