

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF ANESTHESIOLOGY

Chad M. Brummett, 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.	2002	Indiana University
B.A.	1998	Indiana University

Professional Record:

2010-present	Assistant Professor of Anesthesiology, University of Michigan
2007-2010	Clinical Lecturer, Department of Anesthesiology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Brummett is an active clinical, didactic, and research educator. Given his high acuity clinical role, he is responsible for teaching residents the management of the most complex pain patients and delivery of advanced therapeutic and diagnostic procedures. His resident and fellow evaluations demonstrate his patient, effective, and well-respected clinical teaching role. From a didactic perspective, Dr. Brummett lectures to trainees at all levels about topics related to anesthesiology and pain. He is also a core member of the anesthesiology intern research rotation. This is the most highly rated intern rotation (based upon resident evaluations) which has been an innovative and unique exposure to peer-reviewed literature and research nationally. He is involved in mentoring one group per year in their practicum, as well as monthly lectures on manuscript preparation. Most importantly, he plays an important role in the didactic teaching and scientific mentorship of students, residents, fellows, and faculty as they conduct pain and clinical anesthesia research. As the chair of the Anesthesia Clinical Research Committee, he reviews all clinical research proposals and provides critical feedback to help improve the quality of the research conducted in the department.

Research: Dr. Brummett is an internationally renowned pain researcher. His early research focused on the efficacy, safety and mechanism of action of dexmedetomidine as an addition to local anesthetics for peripheral nerve blocks. He was the first to describe the concept and published a series of *in vivo* rat studies in the specialties flagship journal, *Anesthesiology*. He was then the senior author of a human trial demonstrating the efficacy of dexmedetomidine in interscalene brachial plexus blocks, thereby taking the concept from bench-to-bedside. He is also the inventor of a patent for the use of perineural dexmedetomidine.

Dr. Brummett is still recognized for his work with regional anesthesia and local anesthetics, he successfully transitioned to clinical research in 2010. He has shown that patients with higher fibromyalgia survey scores are significantly less likely to derive benefit from knee and hip

arthroplasty even when adjusting for other demographic, clinical care variables, and measures of pain, mood and function. This work was first funded through a KL2 award from the University of Michigan CTSA grant, and then subsequently funded through a co-PI R01. Through the same infrastructure afforded by this study, he demonstrated that patients with a fibromyalgia-like phenotype consume more opioids after knee and hip arthroplasty and hysterectomy. This finding led to a new line of research, which was successfully turned into a new co-PI R01 starting in 2015. The aim of this R01 is to use functional MRI and PET scanning to demonstrate the underlying central nervous system mechanisms of decreased opioid responsiveness and increased pain in patients with a more centralized pain phenotype. He has also transitioned this work to help improve the care of spine patients in the chronic pain clinic by considering central nervous system mechanisms when selecting patients for spine interventions/injections. He recently resubmitted a collaborative R01 with a collaborator from the Mayo Clinic on which he is the contact PI.

Dr. Brummett has also made a large contribution to the research infrastructure at the University of Michigan through his work in the Michigan Genomics Initiative (MGI), which started in 2012. This Dean's Office-funded initiative aims to create a repository of DNA, genetic data and clinical health data for future research throughout the University of Michigan and beyond. Dr. Brummett directs the consent and collections efforts throughout the perioperative period at multiple operating room venues. As of the second quarter of 2015, MGI has recruited and obtained blood samples on more than 27,000 patients and is currently at a scale of 10,000 patients recruited per year. Moreover, the MGI team, including the PI from the School of Public Health, has genotyped more than 17,000 of the samples. The samples and data are already being used by a number of investigators at Michigan. Given the new NIH focus on Precision Medicine, Dr. Brummett's efforts in MGI will support research by clinical and basic science researchers throughout the university both in their studies, as well as their grant proposals. Dr. Brummett has lectured nationally and internationally at anesthesiology and pain meetings. He has also been invited as a visiting professor at some of the top anesthesiology departments, including Johns Hopkins, Boston Children's, Mayo Clinic, and Beth Israel Deaconess.

Recent and Significant Publications:

Brummett CM, Hong EK, Janda AM, Amodeo FS, Lydic R: Perineural dexmedetomidine added to ropivacaine for sciatic nerve block in rats prolongs the duration of analgesia by blocking the hyperpolarization-activated cation current. *Anesthesiology* 115:836-843, 2011.

Brummett CM, Hong EK, Janda AM, Amodeo FS, Lydic R: Perineural dexmedetomidine added to ropivacaine for sciatic nerve block in rats prolongs the duration of analgesia by blocking the hyperpolarization-activated cation current. *Anesthesiology* 115:836-843, 2011.

Brummett CM, Janda AM, Schueller CM, Tsodikov A, Morris M, Williams DA, Clauw DJ: Survey criteria for fibromyalgia independently predict increased postoperative opioid consumption after lower extremity joint arthroplasty: A prospective, observational cohort study. *Anesthesiology* 119:1434-1443, 2013.

Fritsch G, Danninger T, Allerberger K, Tsodikov A, Felder TK, Kapeller M, Gerner P, Brummett CM: Dexmedetomidine added to ropivacaine extends the duration of interscalene brachial plexus blocks for elective shoulder surgery when compared to ropivacaine alone: A single-center, prospective, randomized, triple-blind, controlled trial. *Reg Anesth Pain Med* 39:37-47, 2014.

Fritsch G, Danninger T, Allerberger K, Tsodikov A, Felder TK, Kapeller M, Gerner P, Brummett CM: Dexmedetomidine added to ropivacaine extends the duration of interscalene brachial plexus blocks for elective shoulder surgery when compared to ropivacaine alone: A single-center, prospective, randomized, triple-blind, controlled trial. *Reg Anesth Pain Med* 39:37-47, 2014.

Service: Dr. Brummett is recognized for his clinical expertise in a variety of pain conditions, particularly complex regional pain syndrome and centralized pain (fibromyalgia-like) states. As one of ten board certified pain physicians in the Department of Anesthesiology, he is responsible for caring for some of the most complex pain patients both in the outpatient setting and in the hospital. The clinical care he provides includes inpatient and outpatient medical management, assisting with issues of addiction and abuse, regional anesthesia nerve blocks for operative and post-operative care, placement of epidurals for post-operative pain, and fluoroscopic- and ultrasound-guided interventional pain procedures. Dr. Brummett serves a number of administrative roles at the departmental level. He is the director of Clinical Research and the chair of the Anesthesia Clinical Research Committee. This role requires that he spend time reviewing and critiquing clinical research proposals with the goal of improving the quality and success of the efforts in the department. He also runs a research team of 35 full and part-time staff for his NIH-funded studies and the Michigan Genomics Initiative. In recognition of his leadership skills, he was invited to facilitate a lecture entitled "Forming the Team" in the MICH faculty development lecture series on Team Science. The reviews from the attendees were very positive.

The Michigan Genomics Initiative has also led to Dr. Brummett's inclusion in a number of institutional committees. He was one of the first members of the centralized biorepository effort as a member of the Biorepository Pilot Implementation Committee. He was also one of the founding members of and continues to serve on the University of Michigan Biorepository Governance Committee. He is a strong advocate for a centralized biorepository resource in which future investigators can access samples and data collected from the many different clinical studies around the medical center. In the last year, he accepted a large administrative role in the department as the associate chair for faculty affairs. This is a natural role for him given his ability to build teams and foster a positive work environment.

At a national level, he is a member of the Continuing Medical Education Committee of the American Society of Regional Anesthesia and Pain Medicine. This committee reviews and approves all of the content and speakers of the biannual meetings, as well as reviewing and resolving issues with conflicts of interest. It is considered the society's most influential and important committee. As recognition of his contributions to anesthesia and pain research, he was invited to join the editorial board of *Anesthesiology*, the field's most prestigious and highest impact journal. He also serves as a senior editor for one of the field's top sub-specialty pain journals, *Regional Anesthesia and Pain Medicine*.

External Reviewers:

Reviewer A: "Dr. Brummett has made important and highly innovative clinical-translational research contributions in the areas of regional anesthesia, acute and chronic pain management, and perioperative medicine....Dr. Brummett has been a national leader in understanding how changes in central pain processing influence the course of patients coming for major surgery and postoperative rehabilitation. Dr. Brummett is currently one of the nation's leaders in the study of genetics, pain phenotypes, and 'big data' approaches to understanding variability in patients' responses to surgery and interventional pain procedures."

Reviewer B: "I would single out his recent work focused on changes within the CNS related to chronic pain as particularly important to the field and perhaps paradigm shifting."

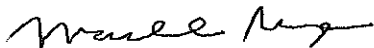
Reviewer C: "I was amazed at how quickly he has grasped the key questions in the rapidly evolving field of chronic pain after peripheral injury, has crystalized a large literature into testable hypotheses, and has developed the ability to present complex topics to a diverse clinical audience in simple but profound ways."

Reviewer D: "Dr. Brummett has certainly become one of the most important research leaders in the field of Anesthesiology and Pain. In an era of increased focus on the transition of acute to chronic persistent pain and the importance of enhanced recovery and the perioperative surgical home concept, this work has the potential to be transformative. As mimicry is a sincere form of flattery, we have emulated much of the University of Michigan work in new clinical pain pathways at my institution....He is likely to continue to be a significant figure in anesthesiology and pain medicine; one who has already contributed substantially to the knowledge and care of patients in pain, but will continue to build a legacy of enduring contributions."

Reviewer E: "His findings and future work are very likely to alter how we approach perioperative pain management in patients at high risk for developing chronic pain....He is easily within the top 2% of all academic pain physicians, when defined by his extensive research contributions and mentorship of numerous physicians-in-training at such an early stage of his career."

Summary of Recommendation:

Dr. Brummett has made a significant impact to the field of anesthesiology through his translational research. I am, therefore, delighted to recommend Chad M. Brummett, M.D. for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, Medical School.



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

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