

PROMOTION RECOMMENDATION  
THE UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL  
DEPARTMENT OF SURGERY

Benjamin Levi, M.D., assistant professor of surgery, Department of Surgery, Medical School, is recommended for promotion to associate professor of surgery, with tenure, Department of Surgery, Medical School.

Academic Degrees:

M.D.	2005	Northwestern Feinberg School of Medicine
B.S.	2001	Washington University in St. Louis

Professional Record:

2014 - present	Assistant Professor of Surgery, University of Michigan
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Summary of Evaluation:

Teaching: Dr. Levi has taught and mentored numerous undergraduate and medical students, residents and fellows in the outpatient clinic, inpatient setting, operating room, and intensive care unit. He has organized and designed the curricula for the Burn Surgery Rotation and the Burn Reconstructive Surgery lecture series and the educational curriculum for the burn and trauma surgery staff. He has been invited to teach clinical burn care at premier institutions across the country. In addition to his extensive teaching and mentoring in the clinic, Dr. Levi has taught and mentored numerous undergraduate, graduate and medical students, residents and fellows, in the laboratory. He serves on dissertation committees for Ph.D. candidates and as a launch team member for junior faculty. He has been extremely creative in implementing novel methods to ensure rigor, productivity, communication and accountability in his laboratory. Dr. Levi has established a routine that allows for several touch points weekly with laboratory members as well as opportunities to discuss challenges. The team meets every Monday to discuss highlights of their weekend followed by a discussion of their plan for the week. This allows for feedback by other team members and coordination between our group and collaborating laboratories. Outside of his laboratory, Dr. Levi has organized a transdisciplinary monthly University of Michigan Molecular Bone meeting with principal investigators, including the Dental School, Biomedical Engineering and Orthopedic Surgery. He has organized and directs a cross-disciplinary Muscle Biology Meeting with members from Molecular and Integrative Physiology, Biomedical Engineering and Internal Medicine. These meetings have been established to promote inter-disciplinary collaboration across campus to allow for improvement in methodologies, trainee education and collaborative projects and funding applications. On a national scale, Dr. Levi organized the first Heterotopic Ossification/ Fibrodysplasia Ossificans Progressiva (FOP) Symposium which brought together clinicians, scientists and patients from across the country to improve our understanding and advance treatment of these challenging processes.

Research: Dr. Levi founded and began directing the Burn, Wound and Regenerative Medicine Laboratory upon the start of his faculty position. He developed a laboratory from scratch and build it into a world renown research endeavor focusing on extremity trauma, stem cell biology and a

rare pediatric genetic disease fibrodysplasia ossificans progressiva (FOP). The work in Dr. Levi's laboratory is original and changed clinical protocols locally and nationally. He has published more than 40 peer-reviewed publications since his appointment, in high impact journals including *Science Translational Medicine* and the *Proceedings of the National Academy of Science*. The models they developed for heterotopic ossification are now the standard in the field. These works have changed the way clinicians and scientists approach trauma induced heterotopic ossification and has led to altering protocols in trauma patients across the country in addition to supporting the initiation of a clinical trial for people living with FOP. Dr. Levi's recent work on muscle fibrosis has characterized the inflammatory response to muscle injury and define the interaction between tissue resident progenitor cells and inflammatory cells and has been well-funded through the National Institutes of Health, the Department of Defense, the International FOP Association, the American College of Surgeons, the Association for Academic Surgery, the Plastic Surgery Foundation and the American Association for the Surgery of Trauma. Dr. Levi has published 122 peer-reviewed articles, and has been invited to present his research on 98 occasions, regionally, nationally and internationally.

Recent and Significant Publications:

Hsieh HHS, Agarwal S, Cholok DJ, Loder SJ, Kaneko K, Huber A, Chung MT, Ranganathan K, Habbouche J, Li J, Butts J, Reimer J, Kaura A, Drake J, Breuler C, Priest CR, Nguyen J, Brownley C, Peterson J, Ozgurel SU, Niknafs YS, Li S, Inagaki M, Scott G, Krebsbach PH, Longaker MT, Westover K, Gray N, Ninomiya-Tsuji J, Mishina Y, Levi B. Coordinating Tissue Regeneration Through Transforming Growth Factor- $\beta$  Activated Kinase 1 Inactivation and Reactivation. *Stem Cells*. Feb 20, 2019.

Agarwal S, Cholok D, Loder S, Li J, Breuler C, Chung MT, Sung HH, Ranganathan K, Habbouche J, Drake J, Peterson J, Priest C, Li S, Mishina Y, Levi B. mTOR inhibition and BMP signaling act synergistically to reduce muscle fibrosis and improve myofiber regeneration. *JCI Insight*. 2016 Dec 8;1(20), 2016.

Agarwal S, Loder SJ, Cholok D, Peterson J, Li J, Breuler C, Cameron Brownley R, Hsin Sung H, Chung M, Kamiya N, Li S, Zhao B, Kaartinen V, Davis TA, Qureshi A, Schipani E, Mishina Y, Levi B. Scleraxis- Lineage Cells Contribute to Ectopic Bone Formation in Muscle and Tendon. *Stem Cells*. Nov, 2016.

Agarwal S, Loder S, Brownley C, Cholok D, Mangiavini L, Li J, Breuler C, Sung HH, Li S, Ranganathan K, Peterson J, Tompkins R, Herndon D, Xiao W, Jumlongras D, Olsen BR, Davis TA, Mishina Y, Schipani E, Levi B. Inhibition of Hif1 $\alpha$  prevents both trauma-induced and genetic heterotopic ossification. *Proc Natl Acad Sci U S A*. Jan 19;113(3), 2016.

Peterson JR, De La Rosa S, Oluwatobi E, Cilwa KE, Agarwal S, Buchman SR, Cederna PS, Xi C, Morris MD, Herndon DN, Xiao W, Tompkins RG, Krebsbach PH, Wang SW and Levi B. Treatment of Heterotopic Ossification through Remote ATP Hydrolysis. *Sci Transl Med*. Sep 24;6(255), 2014.

Service: Institutionally, Dr. Levi has served as a member of the Research Advisory Committee and Faculty Recruitment Committee, as a member and lecturer for several T32 awards, including

for Plastic Surgery, Vascular Surgery and the Center for Organogenesis. His laboratory has participated in community service and has been involved in several outreach activities including Bingo at the VA, meal preparation at the Ronald McDonald House and volunteering at the annual Army-Navy wheel chair basketball game. Dr. Levi regularly volunteers for the Hope Clinic which offers care for underserved patients. He has been the associate burn director since 2016, and has helped the Burn Unit received American Burn Association accreditation for pediatric and adult patients. Nationally, he serves on the grant review committee and program committee with the Plastic Surgery Research Council, and on the research advisory board for the American Society of Plastic Surgery. He has served on site study sections for the Department of Defense, the NIH and the Plastic Surgery Foundation. Dr. Levi is editor for *the Journal of Burn Care and Research*, *Hand Clinics of North America*, *Edition on Hand Burns*, and *Burns Open*. He is a reviewer for 13 journals in his field.

External Reviewers:

Reviewer A: “I know of no other academic physician (surgeon, internist, or otherwise) at his level post-training who has accomplished more in each of the four academic metrics of interest: Teaching; Scholarship and Research; Service; and Clinical. Dr. Levi is the ‘quadruple-threat’ standard by which I judge the performance of any academic physician.”

Reviewer B: “The quality and quantity of his work is impressive given that he has been on faculty only for 4-5 years. He is actively involved in both clinical and research activities...Ben is an active participant in the Plastic Surgery Research Council which is of course, the most important research arm for Plastic Surgery in North America and is well recognized across the world.”

Reviewer C: “His position as an editor of the Journal of Burn Care and Research attests to his national reputation in the field of burn surgery...His overall productivity with regard to teaching and scholarly output has been outstanding...Dr. Levi is an exceptional talent.”

Reviewer D: “Dr. Levi is an outstanding example of a successful surgeon-scientist...Dr. Levi is highly respected and well-known in our field of because of his clinical expertise with burn and HO... He has obtained an international reputation as the leading expert on HO.”

Reviewer E: “It is clearly evident that Dr. Levi is a consummate educator and dedicated advocate who has worked tirelessly to improve the training quality and opportunities for learners in the didactic, clinical and research arenas...I believe that Dr. Levi represents the best of what it means to be an academic surgeon.”

Reviewer F: “Benjamin’s achievement, another metric of his success and perhaps more impactful is the quality, focus, quantity and scholarly impact of his work. Without question Dr. Levi’s work achieves highest marks in all of these arenas...Quite simply, Benjamin’s academic achievement far surpasses that of many of his national plastic surgery peers at the Associate Professor with Tenure rank. His work is creative, insightful, and impactful.”

Reviewer G: “I have known Dr. Levi since he was a resident and have watched him mature into a nationally recognized surgeon-scientist. I have seen his work presented and published; and, I can attest to the high quality of his scholarship...Dr. Levi has a national and developing international

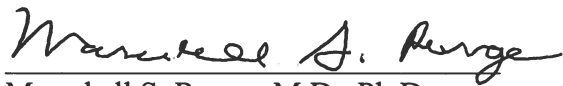
reputation as evidenced by 10 visiting professorships and over 100 invited scientific presentations.”

Reviewer H: “Dr. Levi is well respected both nationally and internationally as an outstanding [junior] researcher and clinician. He takes on complex trauma and burn cases at the University of Michigan and has attracted an outstanding level of funding for his research at this stage in his career.”

Reviewer I: “I have admired his presented work, his skillful role as moderator, and a valuable contributor to discussions...I am very impressed by the quality, focus, and scholarly impact of Dr. Levi’s work...Dr. Levi’s standing is superior to others in his peer group...His publication and funding accomplishments are outstanding.”

Summary of Recommendation:

Dr. Levi has made his mark in the field of burn/wound surgery through his research and clinical advances. He has demonstrated outstanding achievements in all three areas of research, service and teaching. His clinical work is exemplary and extremely impactful to patients undergoing life-changing traumatic events. I am pleased, therefore, to recommend Benjamin Levi, M.D. for promotion to associate professor of surgery, with tenure, Department of Surgery, Medical School.



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

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