

PROMOTION RECOMMENDATION  
The University of Michigan  
School of Dentistry

Darnell Kaigler, assistant professor of dentistry, School of Dentistry, and assistant professor of biomedical engineering, Medical School and College of Engineering, is recommended for promotion to associate professor of dentistry, with tenure, School of Dentistry, and associate professor of biomedical engineering, without tenure, Medical School and College of Engineering.

Academic Degrees:

MS	2007	University of Michigan
Certificate in Periodontology	2006	University of Michigan
Certificate, Restorative Dentistry	2004	University of Michigan
PhD	2004	University of Michigan
DDS	2002	University of Michigan

Professional Record:

2008 – present	Assistant Professor, Periodontics and Oral Medicine, School of Dentistry, University of Michigan
2008 – present	Assistant Professor, Biomedical Engineering, Medical School and College of Engineering, University of Michigan
2007 - 2008	Assistant Research Scientist, Periodontics and Oral Medicine, School of Dentistry, University of Michigan
2007 – 2008	Clinical Lecturer, Periodontics and Oral Medicine

Summary of Evaluation:

Teaching: Professor Kaigler has a rich background in health education with strong basic science training and clinical experience that makes him a successful teacher integrating basic science into the clinical disciplines. He has an extensive teaching capacity for someone in the early stage of their career. In addition to teaching in the periodontics pre-doctoral and graduate clinics and giving various lectures on periodontology, he participated in the clinical research rotation course and has been the director of the Research Pathways for the 2nd, 3rd and 4th-year dental students (2010-2014). These two latter courses carry a substantial amount of responsibility that extends outside of the classroom, working one-on-one with students and meeting regularly with the other Pathways program directors. Professor Kaigler is the inaugural director of the Research Pathway, fostering its foundation from inception in 2010 to a successful program that engages pre-doctoral students interested in a dental career path with an emphasis on research. His work and dedication in the program have been exemplary and were noted by external reviewers. Professor Kaigler's student and peer assessments are uniformly positive with comments reflecting his interpersonal skills and communication style as being approachable, supportive and allowing students to explore ideas and concepts. He effectively engages students in a one-on-one debate and inquiry discussions to stimulate critical thinking. He has excellent clinical knowledge, is exceptionally efficient and has a knack for building the student's confidence and the patient's confidence in the student.

Professor Kaigler has mentored many undergraduate, pre-doctoral and graduate students both as a research advisor and committee member and has served on two thesis committees for students in the Biomedical Engineering PhD program. Ten students (of his mentored students) have received awards for their work at local, regional and national conferences which is an outstanding testament to Professor Kaigler's teaching and mentorship. His teaching has been recognized by the periodontics residents who selected him as the Clinical Instructor of the Year (2012), and he was a finalist for the 2013 Bud and Linda Tarrson Award (American Academy of Periodontology) which recognizes outstanding early career dental educators. Professor Kaigler is an exceptional and committed teacher with passion and dedication that exemplify the mission of the school and the University of Michigan.

Research: Professor Kaigler's research is in the area of tissue engineering with an emphasis on the use of stem cell therapy for regeneration of craniofacial bone. He is a rare translational researcher who has successfully bridged the gap between basic and clinical studies gaining him a national reputation. He has seventeen peer reviewed publications and five book chapters from his time in rank and is first or senior author on fourteen of these, indicating that Professor Kaigler has established a clear track record of research productivity and focus. His publications are in a number of highly regarded journals and his focus on the clinical translation of his research give his work added potential for high visibility and impact.

Professor Kaigler has been successful in obtaining funding for his research including a prestigious Career Award for Medical Scientists from the Burroughs Wellcome Fund (he was the first dentist to receive this award), an NIH R21, several substantial foundation grants and, most recently, a two-year NIH R56 award, showing strong evidence of both the current state of his research program and its future potential. This two-year R56 award represents a significant endorsement by the funding agency and indicates the National Institute of Dental Craniofacial Research's interest in funding the type of clinical and translational research that Professor Kaigler is pioneering. Professor Kaigler has a defined research focus, which, combined with an innovative variety of funding mechanisms, demonstrates that he will be able to maintain consistent support for his research program including obtaining R01 level funding. Notably, Professor Kaigler is the recipient of several awards distinguishing him as an outstanding dentist-scientist; a second place poster at the Quintessence Meeting, International Symposium of Periodontics and Restorative Dentistry (2010) and the prestigious Sigmund Socransky Young Investigator Award from the American Association of Dental Research.

Recent and Significant Publications:

- Rajan A, Eubanks E, Edwards S, Aronovich S, Travan S, Rudek I, Wang F, Lanis A, Kaigler D. Optimized cell survival and seeding efficiency for craniofacial tissue engineering using clinical stem cell therapy. *Stem Cells Transl Med.* 2014 Dec;3(12):1495-503.
- Yeasmin S, Ceccarelli J, Vigen M, Carrion B, Putnam AJ, Tarle S, Kaigler D. Stem Cells Derived from Tooth Periodontal Ligament Enhance Functional Angiogenesis by Endothelial Cells. *Tissue Eng Part A* 2014 Apr;20(7-8):1188-96.
- Wang F, Wu Y, Zou O, Wang G, Kaigler D. Clinical outcomes of dental implant therapy in alveolar cleft patients: a systematic review. *Int J Oral Maxillofac Implants.* 2014 Sep-Oct;29(5): 1098-105.

Eubanks E, Tarle SA, Kaigler D. Tooth Storage, Dental Pulp Stem Cell Isolation, and Clinical-Scale Cell Expansion Without Using Animal Serum. *Journal of Endodontics* 2014 May;40(5):62-7.

Mason S, Tarle S, Osibin W, Kinfu Y, Kaigler D. Standardization and Safety of Alveolar Bone Derived Stem Cell Isolation. *J Dent Res* 2014 Jan;93(1):55-61.

Service: Professor Kaigler has been a member of critically important committees at the School of Dentistry, serving on the Vision Implementation Team, Pathways Committee as the director of the Research Pathway, Michigan Center for Oral Health Research Review Subcommittee, Benson Duff Fellowship Award Selection Committee, Bylaws Committee and the International Team for Implantology Scholars Program. These committees all consumed considerable effort and time demonstrating Professor Kaigler's dedication to the school and University of Michigan. He is highly active in the Midwest Society of Periodontology having assumed several leadership positions. He was an ad hoc member of a Department of Defense Study Section and continues to serve as an ad hoc reviewer for multiple biomedical and dental journals. Professor Kaigler has also provided an outstanding amount of service to educational and mentoring groups in the City of Detroit as a founding member of the Legacy Associates Foundation and as a role model for students interested in careers in science, technology and medicine.

External Reviewers:

Reviewer (A): "Darnell impressed me with his ability to instill in his students the desire to learn and to develop originality in their thinking. I found him to be an enthusiastic and inspiring teacher. He established good rapport with his students and supervised several research projects."

Reviewer (B): "Clearly, I believe that Dr. Kaigler has excelled in the University's tripartite missions and his scholarly accomplishments have a solid national and international reputation in his field. His promotion is well deserved and I believe Dr. Kaigler's curriculum vitae compares favorably with the top faculty in Periodontics that have been successfully promoted at several Ivy League and top ranked dental schools in the nation."

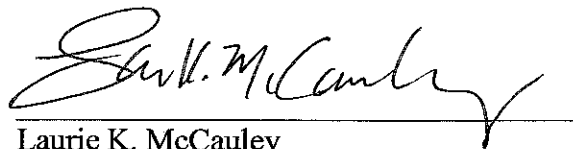
Reviewer (C): "He has accomplished a lot being an excellent researcher, a loyal academic citizen, and a dedicated teacher and mentor. His scholarly work is promising and seems to indicate that he is well onto a path of becoming a leader in the field of oral and craniofacial regeneration in the future."

Reviewer (D): "Indeed, students describe Dr. Kaigler as 'approachable' and 'knowledgeable.' They remark that he 'truly cares' about students and their learning. He has mentored multiple baccalaureate, dental, graduate and postdoctoral students. In my opinion as an associate dean for education, Dr. Kaigler's teaching record demonstrates strong commitments to quality, innovation, impact on students and accountability."

Reviewer (E): "He has made several important contributions to bone biology, translational medicine and dentistry which have important implications in human periodontal disease and craniofacial regeneration. He has successfully conducted three clinical trials, which investigated stem cell therapies for alveolar bone regeneration. These works have provided an important

foundation to develop the clinical protocol using stem cells for human craniofacial and tooth regeneration.”

Summary of Recommendation: Professor Kaigler has a rich background in health education. As a teacher, he possesses excellent skills and is a thoughtful mentor and teacher with a strong commitment to the teaching mission of the school. He values critical thinking and use of evidence to support clinical decisions. He is highly regarded by students and peers as knowledgeable, attentive, innovative and engaging. His strong basic science background and clinical experience have made him successful in integrating basic science with the clinical disciplines. Professor Kaigler demonstrates a strong scholarly focus that is nationally recognized, innovative, independently sustainable and influences the field of oral regenerative medicine. His work has not only been prolific, but also impactful, focusing on craniofacial tissue engineering, bone regeneration, stem cell biology and oral implantology. His research is highly collaborative and successfully bridges the gap between basic and clinical studies. It is with support of the School of Dentistry’s Executive Committee, as well as the Medical School and College of Engineering, that we recommend Darnell Kaigler for promotion to associate professor of dentistry, with tenure, School of Dentistry, and associate professor of biomedical engineering, without tenure, Medical School and College of Engineering.




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Laurie K. McCauley  
Dean, School of Dentistry



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



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David C. Munson, Jr.  
Robert J. Vlasic Dean of Engineering  
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