Approved by the Regents
May 15, 2014

PROMOTION RECOMMENDATION
The University of Michigan
School of Dentistry

Vesa M. Kaartinen, PhD, associate professor of dentistry, with tenure, School of Dentistry, is recommended for promotion to professor of dentistry, with tenure, School of Dentistry.

Academic Degrees:

PhD	1991	Biochemistry & Molecular Biology, University of Kuopio, Finland
MSc	1986	Biochemistry, University of Kuopio, Finland
BS	1984	Biochemistry, University of Kuopio, Finland

Professional Record:

2009-Present	Associate Professor of Dentistry, with Tenure, Department of Biologic and Materials Sciences, School of Dentistry, University of Michigan, Ann Arbor, MI
2008-2009	Associate Professor of Dentistry, tenure track, Department of Biologic and Materials Sciences, School of Dentistry, University of Michigan, Ann Arbor, MI
2004-2008	Assistant Professor of Pathology and Surgery tenure track, Departments of Pathology and Laboratory Medicine and Surgery, Children's Hospital Los Angeles, Keck School of Medicine, University of Southern California, Los Angeles, CA
2003-2004	Assistant Professor of Surgical Research, Department of Surgery, Children's Hospital Los Angeles, Keck School of Medicine, University of Southern California, Los Angeles, CA
1997-2004	Assistant Professor of Research Pathology, Department of Pathology and Laboratory Medicine, Children's Hospital Los Angeles, Keck School of Medicine, University of Southern California, Los Angeles, CA
1992–1996	Post-doctoral Fellow (Molecular Biology and Mouse Genetics), Department of Pathology and Laboratory Medicine, Children's Hospital Los Angeles, School of Medicine, University of Southern California, Los Angeles (Mentors: Drs. John Groffen and Nora Heisterkamp)

Teaching:

Professor Kaartinen's teaching includes both didactic and laboratory-based teaching. He has engaged students at all levels of education (undergraduate, graduate and post-doctoral). He brings a teaching philosophy of equipping students with learning and critical thinking skills that transcend any particular discipline and he has done well to integrate foundational concepts with new discoveries in science. Since coming to the University of Michigan, he has taught in six dental school courses. From 2009 -2010 he co-directed the D1 course entitled: "Biology of Oral Mucosa and Periodontium." He worked to adjust the amount of lecture materials taught, the depth of explanation and even his accent in order to enhance student comprehension. Beginning in 2011, he organized and directed a new D1 winter course titled:

"Development, Regeneration and Genetics." He offered and encouraged tutoring for students to ensure that key concepts were well understood. Additionally, he lectures in several other courses within the school. The nature of his course participation illustrates that he teaches the subject content at an advanced level and from a point of deep mastery. Professor Kaartinen has excelled at mentoring and advising numerous students and post-doctoral fellows. These include five PhD students, eight post-doctoral fellows, two master's degree students, two undergraduate and two dental students. He has also had three Oral Health Sciences students and two Cellular and Molecular Biology students do research rotations in his lab. This record indicates an exhaustive time commitment across all levels of research advising. His ability to mentor multiple students at different levels within his research lab and his ability to raise each of them towards high-ranking research endeavors demonstrates his role as an enthusiastic, professional and encouraging teacher. He is an outstanding mentor and is regarded with great respect among his peers. His passion and dedication to scientific education enable him to coach students in the use of new techniques and problem solving. His patient and thoughtful instruction puts students at ease and allows them to learn necessary technical skills while simultaneously training them to think critically, write and learn like scientists.

Research: Professor Kaartinen's scholarly activities support one major goal, to understand the molecular basis of congenital birth defects. This work is extremely important in understanding the underlying causes of cleft palate and congenital heart diseases. Professor Kaartinen has a total of 91 peer-reviewed publications in leading scientific journals (21 of these since he came to Michigan in 2008), three book chapters, and numerous abstracts. His papers are exquisite in all aspects of hypothesis testing, rationale, approach, results and conclusions. His research has helped strengthen the developmental biology focus in the Department of Biologic and Materials Sciences and the school. In addition, he has become highly engaged in many Medical School and University-wide programs, such as the Center for Organogenesis. He has articulated a clear vision for his future research directions and how this vision integrates with the environment at the University of Michigan. He sees a relationship between his work and the tissue regeneration themes in the department and school, as well as how understanding the pathogenesis of cleft palate syndrome relates to the clinical mission of the school. Professor Kaartinen is currently the principal investigator of two R01's, one from the National Institute of Dental and Craniofacial Research (NIDCR) and one from the National Heart, Lung and Blood Institute (NHLBI). A pending R01 application titled "Growth factory signaling and palatal fusion" has been submitted to the NIH. Within rank, he has been invited as a speaker at seven national and international conferences. His independence as a researcher has given him recognition for speaking at international meetings. His work in the generation and characterization of transgenic mice is inherently collaborative, thus he is a significant source of scientific knowledge and resources for other principal investigators, post-doctoral fellows and graduate students here at Michigan, nationally and internationally. Professor Kaartinen clearly has significant scientific impact as well as an international reputation in his area of research.

Recent and Significant Publications:

Sridurongrit, S., Larsson, J., Schwartz, R., Ruiz-Lozano, P., Kaartinen, V. Signaling via the Tgf-ß type I receptor Alk5 in heart development. *Dev. Biol.* 322, 208-218, 2008.

Xing, Y., Li, A., Sridurongrit, S., Tiozzo, C., Bellusci, S., Borok, Z., Kaartinen, V., Minoo, P. Signaling via Alk5 controls the ontogeny of lung Clara cells. *Development* 137, 825-833, 2010.

Thomas, P.S., Kim, J., Nunez, S., Glogauer, M., Kaartinen, V. Neural crest cell-specific deletion of Rac1 results in defective cell-matrix interactions and severe craniofacial and cardiovascular malformations. *Dev. Biol.* 340, 613-625, 2010.

Bogenmann, E., Thomas, P.S., Li, Q., Kim, J., Yang, L.T., Pierchala, B., Kaartinen, V. Generation of mice with a conditional allele for the p75(NTR) neurotrophin receptor gene. *Genesis 49, 862-869*, 2011.

Komatsu, Y., Kaartinen, V., Mishina, Y. Cell cycle arrest in node cells governs ciliogenesis at the node to break left-right symmetry. *Development*. 138, 3915-3920, 2011.

Xi, Q., Wang, Z., Zaromytidou, A.I., Zhang, X.H., Chow-Tsang, L.F., Liu, J.X., Kim, H., Barlas, A., Manova-Todorova, K., Kaartinen, V., Studer, L., Mark, W., Patel, D.J., Massagué, J. A Poised Chromatin Platform for TGF-β Access to Master Regulators. *Cell*, 148, 1511-1524, 2011.

Thomas, P.S., Sridurongrit, S., Ruiz-Lozano, P., Kaartinen, V. Deficient signaling via Alk2 (Acvr1) leads to bicuspid aortic valve development. *PloS One.* 7(4):e35539, 2012.

Le, M., Naridze, R., Morrison, J., Biggs, L.C., Rhea, L., Schutte, B.C., Kaartinen, V., Dunnwald, M. Transforming growth factor Beta 3 is required for excisional wound repair in vivo. *PLoS One* 7(10):e48040, 2012.

Bai, X., Trowbridge, J.J., Riley, E., Lee, J.A., Dibiase, A., Kaartinen, V.M., Orkin, S.H., Zon, L.I. TiF1-gamma plays an essential role in murine hematopoiesis and regulates transcriptional elongation of erythroid genes. *Dev Biol.* 2013, 373, 422-30.

Rubin, N., Darehzereshki, A., Bellusci, S., Kaartinen, V., Lien, C.L. FGF10 signaling enhances epicardial cell expansion during neonatal mouse heart repair. *J Cardiovasc Dis Diagn* 2013, 1:101. doi: 10.4172/jcdd.1000101

Yumoto, K., Thomas, P.S., Lane, J., Matsuzaki, K., Inagaki, M., Ninomiya-Tsuji, J., Scott, G.J., Ray, M.K., Ishii, M., Maxson, R., Mishina, Y., Kaartinen, V. TGF-β-activated kinase 1 (Tak1) mediates agonist-induced Smad activation and linker region phosphorylation in embryonic craniofacial neural crest-derived cells. *J. Biol. Chem.* Apr 1. [Epub ahead of print], 2013.

Service:

Since joining the faculty at the University of Michigan, Professor Kaartinen's service on committees has been exemplary. He has distinguished himself as an excellent citizen and team player, and has contributed a significant amount of service to the school and university, making important service contributions to both the research and teaching arenas. At the school-level, he recently served on the Executive Committee and was an integral member of the Science Foundation team that planned the basic science component of the new curriculum. He now serves on the curriculum assessment committee that evaluates and recommends modifications to the new curriculum. Professor Kaartinen also chairs the Oral Health Sciences PhD preliminary exam committee having administered exams to six PhD students. Most noteworthy, at the university-level, he has served on the UCUCA committee since 2009 and, in his capacity as a member of this committee; he also served on a task force charged by the OVPR to evaluate divesting UCUCA from ULAM, which was implemented last year. He also is engaged in the Cellular

and Molecular Biology and Center for Organogenesis Programs. At the national level he serves as an associate editor for *Frontiers in Craniofacial Biology,* is on the editorial board of *Developmental Biology*, and has served as a reviewer for many NIH study sections and numerous high impact journals.

External Reviewers:

Reviewer (A): "His expertise is best evaluated by the vast amount of scientific papers with over 30000 citations on an h-index of 30 it is clear that he has a significant scientific impact in his field."

Reviewer (B): "Dr. Kaartinen continues to carefully and deliberately add to our understanding of the roles of specific ALKs in signaling and he is recognized internationally as an authority in this area."

Reviewer (C): "Given his outstanding funding and current research projects, he is poised to make significant strides and I wholeheartedly support Dr. Vesa Kaartinen's application for promotion to the rank of Professor at University of Michigan. The Excellent environment at Michigan and Vesa's focus on cardiovascular and craniofacial development seems like an ideal match."

Reviewer (D): "Dr. Kaartinen's other activites demonstrate important contributions to, and hence recognition in his field. He has been an ad hoc reviewer on 5 different NIH panels and he is an American Heart Association reviewer. This type of review activity indicates his recognized importance in his specialized area of research."

Reviewer (E): "His statement on teaching shows that he cares deeply about effectively teaching the dental students the basic knowledge of biology through improvement of teaching techniques."

Summary of Recommendation:

Professor Kaartinen has consistently made outstanding contributions to scholarship, teaching and service to his discipline, his department, the school and to the university. The consistency and strength of his contributions permit a confident prediction of future success. He has clearly demonstrated a commitment to excellence in academics that should be commended and celebrated. I am pleased to recommend Vesa M. Kaartinen, PhD for promotion to professor of dentistry, with tenure, School of Dentistry.

Laurie K. McCauley, DDS, MS, PhD
Dean, School of Dentistry

May 2014