Approved by the Regents
May 17, 2007

PROMOTION RECOMMENDATION

The University of Michigan
School of Dentistry

Peter Xiaolong Ma, MS, PhD, associate professor of dentistry, with tenure, School of Dentistry, and associate professor of macromolecular science and engineering, without tenure, and associate professor of biomedical engineering, without tenure, College of Engineering, is recommended for promotion to professor of dentistry, with tenure, School of Dentistry, and professor of macromolecular science and engineering, without tenure, and professor of biomedical engineering, without tenure, College of Engineering.

Academic Degrees:

PhD & MS	1992	Rutgers University
MS	1985	Tsinghua University, Beijing, China
BS	1982	Tsinghua University, Beijing, China

Professional Record:

2002 – present	Associate Professor, University of Michigan, Ann Arbor, MI, Department of Biologic and Materials Sciences, School of Dentistry, Department of Biomedical Engineering, and Macromolecular Science and Engineering, College of Engineering
1996 – 2002	Assistant Professor, University of Michigan, Ann Arbor, MI, Department of Biologic and Materials Sciences, School of Dentistry, Department of Biomedical Engineering, and Macromolecular Science and Engineering, College of Engineering
1993 – 1996	Postdoctoral Research Associate, Massachusetts Institute of Technology, Cambridge, MA, Department of Chemical Engineering
Jan. – June 1993	Research Scientist, Hydromer, Inc., Somerville, NJ, Research & Development
1989 – 1992	Research Assistant, Rutgers University, New Brunswick, NJ, Department of Materials Science and Engineering

Summary of Evaluation

Teaching: Dr. Ma has demonstrated a high level of commitment and success in the area of teaching and educating professional students. He is the course director of Basic Biomaterials 507, Applied Biomaterials 610 and previously Biomaterials 335 for dental students. He also gives a number of lectures in other team-taught courses including those related to tissue engineering for graduate students and advanced undergraduate students. He has consistently scored above average on student and peer evaluations. General comments from students attest to the seriousness with which he approaches teaching and the strong effort he makes to communicate. In Dr. Ma's self-assessments he works diligently and successfully to continue developing and improving his courses based on student and peer feedback. Beyond classroom teaching, Dr. Ma has a deep level of commitment to research advising in his laboratory ranging from visiting professors, postdoctoral fellows, graduate and undergraduate students as well as DDS students. He is an excellent mentor and works conscientiously overseeing and advising on

projects ongoing within his lab. As a testament to the rich educational environment he provides, he recently attracted two National Science Foundation (NSF) fellowship students to work in his lab. Overall, Dr. Ma's teaching efforts are exemplary in the classroom and in the research laboratory. As evidenced in his teaching portfolio and *curriculum vitae* he has demonstrated a sustained record of excellence in teaching.

Research: Dr. Ma has established himself as a national and international leader in the field of tissue engineering as demonstrated by awards he received: 1997 Novartis Award, 2000 Dupont Young Professor, and 2005 Whitaker Foundation Award. He has made important innovative contributions in the development of novel tissue engineering scaffolds and biological delivery systems of signal molecules for regeneration and repair. These include the development of nano-fibrous and complex 3-dimensional scaffolds with designed macro-, micro-, and nano-features. He has 65 original publications, reviews, and book chapters in scholarly international journals. His work is highly cited, his top 15 papers have more than 1000 citations. Recently, he co-edited a textbook in tissue engineering, related to scaffold design "Scaffolding in Tissue Engineering." He is recognized as one of the top faculty at the School of Dentistry in terms of patents (15 either issued or pending), which demonstrates significant translational potential for innovations to affect the field of tissue engineering. Dr. Ma's research laboratory has demonstrated steady and significant growth over the years in the generation of significant research funds from prestigious agencies such as the NIH, NSF, and NASA. He is currently PI on one RO1 from the NIH and has numerous funded projects through other grants where he is a significant Co-I/Co-PI. He is competitive on two pending RO1 applications and a possible DARPA program. It is likely that he will be able to sustain a large lab for a significant period. Dr. Ma has been highly sought after as an invited speaker worldwide and has given over 80 presentations. His record to date and future potential leaves no doubt that he is and will continue to be a leading scientist.

Recent and Significant Publications:

1. Woo, K.M., Chen, V.J., **Ma, P.X.** Nano-fibrous scaffolding architecture selectively enhances protein adsorption contributing to cell attachment. *Journal of Biomedical Materials Research,* 67(2): 531-537, 2003.
2. Chen, V.J., **Ma, P.X.** Nano-fibrous poly (L -lactic acid) scaffolds with interconnected spherical macropores. *Biomaterials*, 25(11): 2065-2073, 2004.
3. Wei, G., Pettway, G.J., McCauley, L.K., **Ma, P.X.** The release profiles and bioactivity of parathyroid hormone from poly(lactic-co-glycolic acid) microspheres. *Biomaterials*, 25(2): 345-352, 2004.
4. Wei, G., **Ma, P.X.** Structure and properties of nano-hydroxyapatite/polymer composite scaffolds for bone tissue engineering. *Biomaterials*, 25(19): 4749-4757, 2004.
5. Liu, X., **Ma, P.X.** Polymeric scaffolds for bone tissue engineering. *Annals of Biomedical Engineering.* 32(3): 477-486, 2004.
6. Zhang, R., **Ma, P.X.** Biomimetic polymer/apatite composite scaffolds for mineralized tissue engineering. *Macromolecular Bioscience,* 4: 100-111, 2004.
7. **Ma, P.X.** Scaffolds for tissue fabrication. *Materials Today,* review feature article, 7(5): 30-40, 2004.
8. Liu, X., Smith, L., Wei, G., Won, Y.J., **Ma, P.X.** Surface Engineering of Nano-fibrous Poly(L-lactic acid) Scaffolds via Self-assembly Technique for Bone Tissue Engineering, *Journal of Biomedical Nanotechnology*, invited original paper, 1(1), 54-60, 2005.
9. Liu, X., Won, Y.J., **Ma, P.X.** Surface modification of interconnected porous scaffolds, *Journal of Biomedical Materials Research.* 74A(1): 84-91, 2005.

10. Chen, V.J., **Ma, P.X.** The effect of surface area on the degradation rate of nano-fibrous poly (L-lactic acid) foams, *Biomaterials,* 27(20): 3708-3715, 2006.
11. Wei, G., Jin, Q., Giannobile, W.V., **Ma, P.X.,** Nano-fibrous scaffold for controlled delivery of recombinant human PDGF-BB, *Journal of Controlled Release*, 112(1):103-110, 2006.
12. Chen, V.J., Smith, L.A., **Ma, P.X.** Bone regeneration on computer designed nano-fibrous scaffolds, *Biomaterials,* 27(21): 3973-3979, 2006.
13. Liu, X., Won, Y.J., **Ma, P.X.** Porogen-induced surface modification of nano-fibrous poly (L -lactic acid) scaffolds for bone tissue engineering, *Biomaterials*, 27(21): 3980-3987, 2006.
14. Wei, G., **Ma, P.X.** Macro-porous and nano-fibrous polymer scaffolds and polymer/bone-like apatite composite scaffolds generated by sugar spheres, *Journal of Biomedical Materials Research,* in press 2006.
15. Woo, K.M., Jun, J.H., Chen, V.J., Seo, J., Baek, J.H., Ryoo, H.M., Kim, G.S., Somerman, M.J., **Ma, P.X.** Nano-fibrous scaffolding promotes osteoblast differentiation and biomineralization, *Biomaterials,* in press 2006.

Book

16. **Ma, P.X.,** Elisseeff, J. (Editors) Scaffolding in Tissue Engineering. CRC Press, Boca Raton, FL, 2005.

External Reviewers:

Reviewer (A)

"Dr. Ma has a solid reputation in the scaffold subset of the tissue engineering community. He is usually thought of as an innovator. His good grant funding is a direct measure of how he is perceived in the external community."

Reviewer (B)

"Dr. Ma possesses the requisite talent to bridge technological scientific discovery with the practice of medicine in dentistry and other areas using regenerative medicine. With their increasing productivity in hypothesis driven experimental designs, Dr. Ma's research team will have a great impact on the fields of tissue engineering, controlled release, nanotechnology and biomaterials in the future."

Reviewer (C)

"Peter has published a large number of papers all of which are all very well cited. He has taught several very diverse basic and advanced topics courses and has supervised the research of an extraordinary number of undergraduate and graduate students. His funding record is equally impressive with numerous research grants from federal agencies and industry."

Reviewer (D)

"Dr. Ma's work is marked by innovation and high quality. I have always enjoyed reading Dr. Ma's manuscripts, which are characterized by innovation, thoroughness, insight, and integrity. In listening to his presentations in national conferences, which are always distinguished by clarity and logical progress, I would expect him to be an excellent teacher."

Reviewer (E)

"Almost every year he avails himself to chair conferences and is involved in promoting his focused field of interest to the public. These are marks of a great leader."

Reviewer (F)
"Peter has the quantitative achievements expected of someone at the level of Professor: NIH funding, many peer-reviewed publications and graduate students supervised. He also has a number of patents to his credit, which speaks well to his innovation."

Service: Peter has been actively engaged in service at the school, university, national and international levels. He is currently chair of the Biomaterials Training Program and has served on numerous department committees. He is associated with the Oral Health Science PhD Seminar Committee and a number of interdisciplinary centers and programs within the University including: The Center for Organogenesis; The Center for Craniofacial Regeneration; The Bone Center; The Multipurpose Arthritis and Muscloskeletal Diseases Center; The Tissue Engineering Training Program; and the Center for Biomedical Engineering Research. Additionally he has served on many student advisory committees associated with these programs. The depth of Dr. Ma's service is evident by significant peer review activities for leading scientific journals, grant agencies and for scientific symposia at the national and international level. He is highly involved in the development of scientific meetings in the area of biomaterials and tissue engineering.

Summary of Recommendation:
Dr. Ma has a solid publication and funding record. He has earned national and international recognition. He has demonstrated tremendous depth to his innovative research in biomaterials, specifically relating to tissue engineering and regenerative medicine. Multiple departments throughout the school and university have benefited from his dedicated leadership in the areas of teaching and service. It is predicted that Dr. Ma's standing and growth as a faculty member will continue to grow and flourish given the trajectory of his success in teaching, research and service. He has clearly demonstrated that he has the energy, passion and competitive spirit needed to maintain a long and productive academic career. It is with the support of the Appointments, Promotion and Tenure and Executive Committees of the School of Dentistry and the Executive Committee of the College of Engineering that Dr. Ma is being recommended for promotion to professor of dentistry, with tenure, School of Dentistry, and professor of macromolecular science and engineering, without tenure, and professor of biomedical engineering, without tenure, College of Engineering.

Peter J. Polverini, DDS, DMSc
Dean, School of Dentistry

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

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