

PROMOTION RECOMMENDATION  
UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL  
DEPARTMENT OF NEUROSURGERY

Guohua Xi, M.D., associate professor of neurosurgery, with tenure, Department of Neurosurgery, Medical School, is recommended for promotion to professor of neurosurgery, with tenure, Department of Neurosurgery, Medical School.

Academic Degrees:

M.Sc.	1991	Zhijiang Medical University, PR China
M.D.	1985	Zhijiang Medical University, PR China

Professional Record:

2005-present	Associate Professor of Neurosurgery, University of Michigan
2004-2005	Research Associate Professor of Neurosurgery, University of Michigan
2000-2004	Assistant Research Scientist, Department of Neurosurgery, University of Michigan
1998-2000	Research Investigator, Department of Surgery, University of Michigan

Summary of Evaluation:

Teaching: One of the hallmarks of a good scientist is the ability to engender a passion for science in the people he is mentoring. Dr. Xi has trained many researchers including post-doctoral fellows, residents, and medical students and has been extraordinarily generous with researchers working around him in the case of publications. His past post-doctoral fellows, residents, and students all speak very highly of his mentorship. Many of his fellows went back to their own countries and have become researchers in intracerebral hemorrhage reflecting Dr. Xi's ability to instill enthusiasm for his field of interest. Indeed, many of his prior trainees have had very successful careers. For example, Dr. Fengping Huang is now professor and vice chair in the Department of Neurosurgery, Fudan University in Shanghai and Dr. Ye Gong is a professor in the same Department. Dr. Xi's team provides a rich experience in animal modeling of brain injury and disease (including rat, mouse, and pig intracerebral hemorrhage, rat subdural hemorrhage, rat and mouse cerebral ischemia, rat and mouse Parkinson's Disease as well as a variety of glioma models (along with the in-vivo and in-vitro techniques to determine the underlying mechanisms of injury). In his position as associate director of the Crosby Neurosurgical Laboratories, Dr. Xi is involved in the teaching of the residents, post-doctoral fellows and students (medical, undergraduate and postgraduate) that come through the laboratories not just those directly involved in his own projects. He is also involved in teaching junior faculty within the laboratories (there are four junior faculty), particularly in the art of grant writing. Dr. Xi is also involved in teaching investigators from other laboratories within and without the University of Michigan. Dr. Xi is a regular participant and leader of discussions in the weekly teaching conferences in the Crosby Neurosurgical Laboratories and also participates in resident teaching conferences.

Research: Since his arrival at the University of Michigan, Dr. Xi has risen very quickly to become a world leader in the field of brain injury after intracerebral hemorrhage. His work on the role of iron in intracerebral hemorrhage-induced brain injury has had a great impact on the field and his current U01 on using deferoxamine to chelate iron has led to a clinical trial of this agent which is about to enter phase II. This work exemplifies Dr. Xi as a translational scientist with the effects of iron and deferoxamine being examined at the cellular level in vitro, and then in rodent and porcine models of intracerebral hemorrhage in vivo before finally going into clinical trial. This work was initially funded as a R01 examining the mechanisms of iron-induced delayed neurodegeneration and then as the U01. Another major research focus of Dr. Xi has been the role of thrombin, a serine protease that is produced during an intracerebral hemorrhage to stop bleeding. Initial findings indicated that thrombin is involved in inducing brain edema formation after intracerebral hemorrhage, but Dr. Xi had the vision to take these findings as a base to address broader questions of the effects of thrombin activity in the brain. Thus, he has shown that small doses of thrombin may trigger induction of a variety of defense mechanisms (thrombin preconditioning). His thrombin preconditioning work has been funded as a R01 by the NIH and that grant has been renewed twice. He has also found that intracerebral thrombin is a potent stimulator of neurogenesis and is involved in inducing neurogenesis after an intracerebral hemorrhage. This work is funded by the American Heart Association Established Investigator Award.

Dr. Xi's breadth of knowledge in the role of iron and thrombin in brain injury is widely acknowledged. He has given many invited talks around the USA and the world on these subjects. In addition, he has many seminal reviews, edited three books and helped to organize several international conferences. The latter include the first (Ann Arbor) and second (Shanghai) International Conferences on Intracerebral Hemorrhage and a preconditioning workshop (Ann Arbor, 2009) that brought together experts from throughout the country. He is also innovative in animal modeling of brain injury and adds new techniques by which he can study these models. For example, he has collaborated with Tim Schallert, Ph.D., a behavioral psychologist from the University of Texas and an adjunct professor in the Crosby Neurosurgical laboratories, and Dr. Ya Hua, a research associate professor in our laboratory. Together, they have devised behavioral tests to examine therapeutic interventions in rats after intracerebral hemorrhage. He has also developed models of intracerebral hemorrhage in the hippocampus to examine the effects of hemorrhage on specific sets of cells and models of intraventricular hemorrhage to examine this particularly devastating form of brain injury.

#### Recent and Significant Publications:

Okauchi M, Hua Y, Keep RF, Moregenstern LB, Schallert T, Xi G: Deferoxamine treatment for intracerebral hemorrhage in aged rats: therapeutic time window and optimal duration. *Stroke* 41:375-382, 2010.

He Y, Hua Y, Liu W, Hu H, Keep RF, Xi G: Effects of cerebral ischemia on neuronal hemoglobin. *J Cereb Blood Flow Metab* 29:596-605, 2009.

Lee JY, Sagher O, Keep RF, Hua Y, Xi G: Comparison of experimental rat models of early brain injury after subarachnoid hemorrhage. *Neurosurgery* 65:331-343, 2009.

Yang S, Song S, Hua Y, Nakamura T, Keep RF, Xi G: Role of thrombin in neurogenesis after intracerebral hemorrhage. *Stroke* 39:2079-2084, 2008.

Xi G, Keep RF, Hoff JT: Mechanisms of brain injury after intracerebral hemorrhage. *Lancet Neurology* 5:53-63, 2006.

Service: Dr. Xi serves as associate director of the Crosby Neurosurgical Laboratories, helping to manage a laboratory with six full-time research faculty and one clinical faculty, a total workforce of thirty and an annual budget of \$2.5 million. Outside the University, he serves as associate editor for *Translational Stroke Research* and is on the editorial board of *Journal of Cerebral Blood Flow & Metabolism*. He was on the editorial board of *Molecular Neurodegeneration* (an e-journal) until 2008. He reviews papers for a wide range of top quality journals. He has also acted as an organizer of stroke conferences held in Ann Arbor (2005) and Shanghai (2007) and a Preconditioning Workshop in 2009 which gathered together experts from throughout the United States. Dr Xi's expertise has also been recognized by the NIH and the American Heart Association (AHA). He currently serves on NIH and AHA study sections. He is a permanent member of the ANIE study section at NIH and he has served as reviewer for the AHA/Bugher Foundation, an extremely prestigious AHA award.

External Review:

Reviewer A: "...Dr. Xi has been acknowledged as a leader in the areas of thrombin-induced tolerance, brain edema pathogenesis, and mechanisms of brain injury after intracerebral hemorrhage....Dr. Xi is an indispensable colleague who contributes significantly to the current and future success of your department in neurosurgical research. Indeed, he has put your department on the map for brain edema and hemorrhagic stroke research."

Reviewer B: "Based on Dr. Xi's innovative approach to research, his quality of research and his contributions to the field, I would rate him in the top 3% nationally among outstanding individuals in the field."

Reviewer C: "His lab continues to produce a whole new generation of neurotrauma scientists and physicians. His echo is extremely broad. Not only is his science showing us the way. But Guohua's cadre of trainees have now permeated the field and amplified our fundamental discoveries, as we all search for cures and treatments in stroke and CNS injury."

Reviewer D: "He is clearly one of the world leaders in the field of intracerebral haemorrhage [sic]....He has held and currently holds over 12 million dollars worth of research funding from prestigious sources."

Reviewer E: "Dr. Xi's credentials are outstanding. He has gathered an exceptional number of scientific and professional accolades...He has published numerous high profile, high impact refereed publications in prestigious scientific journals..."

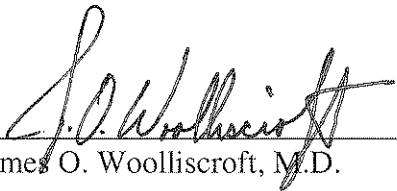
Reviewer F: "He is one of the leaders if not the leader in the study of experimental brain hemorrhage....His scientific contributions to the field of experimental brain hemorrhage are among the best in the field and equaled by virtually no other investigator in this particular field."

Reviewer G: “There is no doubt that Dr. Xi is an internationally recognized expert in this field of intracerebral hemorrhage.”

Reviewer H: “...Dr. Xi is a leader in hemorrhagic studies in the world...Guohua has been involved in journal review for some years and served many top line journals...Guohua is a great teacher and has trained many visiting fellows, residents, and students...I firmly believe Dr. Xi is qualified for the full professor position in your department.”

Summary of Recommendation:

Dr. Xi has gained international recognition for his expertise in the biology of thrombin and the role of that serine protease in a variety of diseases including intracerebral hemorrhage, stroke, and brain tumor, and for his work on iron-induced brain damage in cerebral hemorrhage. His career in research is exciting because he is passionate about his work and has the ability to stimulate similar passion in his trainees. He was named associate director of the Crosby Neurosurgical Laboratories in 2002 and became the Richard C. Schneider Research Professor of Neurosurgery in 2009 as a reflection of his endeavors and his importance to the Department of Neurosurgery and the University of Michigan. I enthusiastically recommend that he be promoted to professor, with tenure, in the Department of Neurosurgery.



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James O. Woolliscroft, M.D.

Dean

*Lyle C. Roll Professor of Medicine*

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