Approved by the Regents
May 21, 2020

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF CARDIAC SURGERY

Ming-Sing Si, M.D., assistant professor of cardiac surgery, Department of Cardiac Surgery, Medical School, is recommended for promotion to associate professor of cardiac surgery, with tenure, Department of Cardiac Surgery, Medical School.

Academic Degrees:

M.D.	1999	University of California, Los Angeles
B.S.	1995	University of California, Irvine

Professional Record:

2012 – present	Assistant Professor of Cardiac Surgery, University of Michigan
2009 – 2012	Clinical Assistant Professor of Surgery, University of California, Davis
2009 – 2010	Staff Physician, University of California

Summary of Evaluation:

Teaching: Dr. Si is an active educator and has served as a research and clinical mentor to 14 undergraduate students, seven graduate students, three medical students, nine fellows, and four visiting scholars. He has delivered numerous lectures and seminars, and is well respected as an educator in the field of congenital heart disease. Dr. Si is an expert in aortic valve repair and has trained his faculty colleagues in pediatric cardiac surgery and adult cardiac surgery to perform these procedures, including aortic valve repair and valve-sparing aortic root replacement, in their patients. He has also been invited as a visiting professor and pediatric cardiac surgeon at prominent children's hospitals in China, and has given lectures and taught surgical procedures to faculty and residents at these institutions. Dr. Si's trainees have successfully progressed to full time academic pediatric cardiac surgeons throughout the country and his teaching evaluations demonstrate outstanding performance in this area of his career.

Research: Dr. Si's area of research focuses on Role of SLIT3 in cardiovascular function and disease, vascularization of native and engineered tissues, and regenerative medicine approaches to heart failure. In addition to his clinical work, he leads a research laboratory that is developing novel stem cell and tissue engineering approaches to treating pediatric and adult heart disease. The overarching theme of his research is the role of human thymic mesenchymal stem/stromal cells. Through his research, he has been able to demonstrate a role for thymic cells in promoting neovascularization and decreased scar size in myocardial infarction. Dr. Si also carries out research in mechanical circulatory support in pediatric patients with heart failure. He is a senior author on a case report describing the use of the Berlin Heart Ventricular Assist Device as a long-term bridge to transplantation in single ventricle patients and is well known in the congenital heart community for his work in mechanical assist devices. His research has been funded through the National Institutes of Health, foundations and institutional grants. Dr. Si has published more than 55 peer-reviewed articles, and has been invited to present his research on ten occasions regionally, nationally and internationally. He holds four patents.

Recent and Significant Publications:

Chery J, Huang S, Gong L, Wang S, Yuan Z, Wong J, Lee J, Johnson S, Si MS: Human Neonatal Thymus Mesenchymal Stem/Stromal Cells and Chronic Right Ventricle Pressure Overload Bioengineering (Basel) 6(1): 15, 2019.

Wang S, Huang S, Gong L, Yuan Z, Wong J, Lee J, Si MS: Human Neonatal Thymus Mesenchymal StemCells Promote Neovascularization and Cardiac Regeneration Stem Cells International 2018:8503468: doi: 10.1155/2018/, 2018.

Wang S, Mundada L, Johnson S, Wong J, Witt R, Ohye RG, Si MS: Characterization and angiogenic potential of human neonatal and infant thymus mesenchymal stromal cells Stem Cells Translational Medicine 4(4): 339-350, 2015.

Halaweish A, Ohye RG, Si MS: Berlin Heart Ventricular Assist Device as a Long-Term Bridge to Transplantation in a Fontan Patient with Failing Single Ventricle Pediatric Transplant 19(8): E193-195, 2015.

Witt RG, Raff G, Van Gundy J, Rodgers-Ohlau M, Si MS: Short-term experience of porcine small intestinal submucosa patches in paediatric cardiovascular surgery. *Eur J Cardiothorac Surg*. Jul;44(1):72-6, 2013.

Service: Dr. Si is active nationally in the Society of Thoracic Surgery Workforce Committee, two Data Safety Monitoring boards, and a committee for the American Society of Transplantation. He is deputy editor of a special edition of Translational Pediatrics, and a member of the editorial board for the Journal of Cardiovascular and Thoracic Surgery and Pediatric Medicine. In 2017 and 2018, he received the Top Performance Award of the Editorial Board for the *Journal of Thoracic and Cardiovascular Surgery*. Dr. Si is a member of the Roadmapping Workshop for the New Organ Alliance, and institutionally serves on the University of Michigan Innovation Council, the C.S. Mott Children's Hospital Stewardship Committee and the Congenital Heart Center Research Leadership Committee.

External Reviewers:

Reviewer A: "…Dr. Si's curriculum vitae is very impressive. He was recently awarded a 4-year K08…for an active practicing congenital heart surgeon, this is a very rare event…Dr. Si appears to be a true triple-threat surgeon-scientist with expertise and excellence in clinical activity, research, and education…After reviewing Dr. Si's curriculum vitae, there is no question in my mind that at the overwhelming majority of institutions he would be considered an excellent candidate to be an Associate Professor with tenure. Certainly, here at [my institution] if Dr. Si were in my department, I would be recommending him for promotion."

Reviewer B: "…Dr. Si's productivity has been recognized by significant grant support…I am very impressed with both the quality and quantity of Dr. Si's scholarly output over his relatively short career…I consider several of Dr. Si's publications to be particularly outstanding. This evaluation applies to publications 26, 55, and 57 on human thymic stem cells and publication 42 on the topic of the Berlin Heart…Dr. Si has selected a particularly and increasingly important topic in our field. These considerations place Dr. Si ahead of the great majority of his peer group in our field…he has been active on the editorial board of the Journal of Thoracic and Cardiovascular Surgery…He has received recognition by the Editor in Chief as a top performer in each of the last 3 years…Dr. Si's

achievements in the areas of scholarship and research, and his service contributions, certainly appear to satisfy the University of Michigan's criteria for promotion to Associate Professor with Tenure."

Reviewer C: "...Ming possesses the rare triumvirate of research, clinical skills, and teaching necessary for true academic success in the field of academic surgery...He holds many grants including a K08 grant, which is simply not commonly seen in our field...His recent publication looking at the use of mesenchymal stem cells and chronic right ventricular pressure overload is particularly outstanding and has many potential immediate uses...I view Ming's standing, in relation to his peers, at the very top. He has a reputation for clinical excellence as well as academic success...His contribution to our field in the area of service is outstanding...He has also served as a mentor to numerous students and fellows that have worked in his laboratory...In summary, I would consider Ming as one of the strongest candidates for promotion to the level of associate professor."

Reviewer D: "...With regard to Dr. Si's works, I am impressed with their quality and focus...Ming has shown a tremendous amount of drive in the area of stem cell research...his stem cell research is clearly the most outstanding...Ming's translational research in this area has the potential to be particularly impactful. He has identified a clear clinical deficiency in our field and is using basic science to develop new answers...Outside of research, Dr. Si has been equally successful in my opinion. His service contributions to the field clearly place him in the top 25% of our field...Education is another area in which Dr. Si excels...in a candid discussion with one of his recent trainees, I received only positive feedback...Dr. Si is clearly well qualified for and deserving of promotion to the rank of Associate Professor."

Reviewer E: "...Dr. Si is quite prominent in national and international transplant meetings and is well respected...Dr. Si's service contributions are exemplary...Dr. Si's most significant scholarly contributions consists of his multiple publications examining the beneficial effects of neonatal thymus mesenchymal stem cells on stressed cardiomyocytes...Dr. Si has demonstrated a strong commitment to education, and he has advised or mentored students ranging from the undergraduate to the graduate and post-doctoral level...Dr. Si is an established clinical pediatric cardiothoracic surgeon with a strong focus and national reputation within the pediatric transplantation and mechanical support community."

Summary of Evaluations:
Dr. Si is an active and skilled congenital cardiothoracic pediatric surgeon, with valvular and circulatory support expertise. He is at the top end of intensive clinical specialization and expertise and his research is on a clear upward trajectory. I am pleased, therefore, to recommend Ming-Sing Si, M.D. for promotion to associate professor of cardiac surgery, with tenure, Department of Cardiac Surgery, Medical School.

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

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