

Cardiovascular Surgery

Principal Investigator Yuji Hiramatsu

E-mail.address yuji3@md.tsukuba.ac.jp

URL <http://tsukuba-heart.com/>



Other Faculty Members

Associate Professor Hiroaki Sakamoto: sakamotoh@md.tsukuba.ac.jp

Associate Professor Muneaki Matsubara: matsubaram@md.tsukuba.ac.jp

Associate Professor Hideyuki Kato: hkato@md.tsukuba.ac.jp

Associate Professor Motoo Osaka: m-oosaka@md.tsukuba.ac.jp

Major Scientific Interests of the Group

Most of clinical questions throughout the cardiovascular surgery field would be our scientific interests as shown in the projects below. Among them we are now focusing on AI application onto the management in the intensive care unit, and development of a novel hybrid ventricular assist device.

Projects for Regular Students in Doctoral or Master's Programs

- 1) AI application onto the management in the intensive care unit
- 2) Development of a novel hybrid ventricular assist device
- 3) Elucidation of signal transduction in aneurysmal formation
- 4) Elucidation of hematological deterioration during cardiopulmonary bypass
- 5) Development of vitamin K-reduced functional food
- 6) Development of valve simulation imaging technology
- 7) Regenerative medicine using adipose tissue stem cells

Study Programs for Short Stay Students (one week – one trimester)

- 1) Involvement in above clinical and translational researches
- 2) Observership in OR, ICU or laboratories

Selected Publications

- 1) Yamashiro Y, Thang BQ, Shin SJ, Lino CA, Nakamura T, Kim J, Sugiyama K, Tokunaga C, Sakamoto H, Osaka M, Davis EC, Wagenseil JE, Hiramatsu Y, Yanagisawa H. Role of thrombospondin-1 in mechanotransduction and development of thoracic aortic aneurysm in mouse and humans. *Circ Res.* 2018 Aug 31;123(6):660-672. doi: 10.1161/CIRCRESAHA.118.313105.
- 2) Goto Y, Hiramatsu Y, Ageyama N, Sato S, Mathis BJ, Kitazawa S, Matsubara M, Sakamoto H, Sato Y. Rolipram plus Sivelestat inhibits bone marrow-derived leukocytic lung recruitment after cardiopulmonary bypass in a primate model. *J Artif Organs* 2018 Oct 3. doi: 10.1007/s10047-018-1071-0.
- 3) Yoneyama F, Osaka M, Sato F, Sakamoto H, Hiramatsu Y. Efficacy of two-dimensional perfusion angiography for evaluations after infrapopliteal bypass surgery for critical limb ischemia. *Ann Vasc Dis* 2018 Jun 25; 11: 248-251. doi: 10.3400/avd.hdi.17-00137.
- 4) Tokunaga C, Sakamoto H, Matsushita S, Hyodo K, Hiramatsu Y. A new method for visualizing pulmonary artery microvasculature using synchrotron radiation pulmonary microangiography: the measurement of pulmonary arterial blood flow velocity in the high pulmonary blood flow rat model. *Acta Radiologica* 2018 DOI:

10.1177/0284185118770892 May 2018

- 5) Khanh VC, Zulkifli AF, Tokunaga C, Yamashita T, Hiramatsu Y, Ohneda O. Aging impairs beige adipocyte differentiation of mesenchymal stem cell via the reduced expression of Sirtuin 1. *Biochemical and Biophysical Research Communications* 2018 Apr. DOI: 10.1016/j.bbrc.2018.04.136
- 6) Yoneyama F, Tokunaga C, Kato H, Nakajima T, Mathis BJ, Sakamoto H, Hiramatsu Y. Landiolol Hydrochloride Rapidly Controls Junctional Ectopic Tachycardia after Pediatric Heart Surgery. *Pediatric Critical Care Medicine* 2018 Apr 19. doi: 10.1097/PCC.0000000000001573 2018 Aug;19(8):713-717.
- 7) Vong LB, Bui TQ, Tomita T, Sakamoto H, Hiramatsu Y, Nagasaki Y. Novel angiogenesis therapeutics by redox injectable hydrogel -Regulation of local nitric oxide generation for effective cardiovascular therapy. *Biomaterials* 2018; 167: 143-152. Online 13 March 2018
- 8) Osuka Y, Matsubara M, Hamasaki A, Hiramatsu Y, Ohshima H, Tanaka K. Development of low-volume, high-intensity, aerobic-type interval training for elderly Japanese men: a feasibility study. *European Review of Aging and Physical Activity* 2017 **14**:14 Aug 24 <https://doi.org/10.1186/s11556-017-0184-4>
- 9) Nakajima T, Enomoto Y, Ishigaki M, Hasegawa Y, Tokunaga C, Hiramatsu Y, Sakamoto H. Perioperative anticoagulation management in a patient with antiphospholipid syndrome who underwent aortic valve replacement. *J Card Surg* 2017 Oct; 32(10): 633-635. doi: 10.1111/jocs.13216. Epub 2017 Sep 24.
- 10) Yoneyama F, Tokunaga C, Enomoto Y, Mitomi K, Sakamoto H, Hiramatsu Y. Isolated versus combined valve surgery in elderly patients: A comparison of mid-term results. *Annals of Thoracic and Cardiovascular Surgery* 2017 Jun 20; 23(3): 123-127. doi: 10.5761/atcs.oa.16-00303. Epub 2017 Mar 9.
- 11) Yoneyama F, Matsubara M, Sakamoto H, Hiramatsu Y. Interventricular septal hematoma associated with congenital heart surgery: Case report and literature review. *J Thorac Cardiovasc Surg*, 2016; 153: e55-57.
- 12) Miya K, Matsushita S, Hyodo K, Tokunaga C, Sakamoto H, Mizutani T, Hiramatsu Y. Renal contrast microangiography with synchrotron radiation: a novel method for visualizing structures within nephrons in vivo. *Acta Radiol* 2016 Jul 20. pii: 0284185116658685.
- 13) Fuji S, Matsushita S, Hyodo K, Osaka M, Sakamoto H, Tanioka K, Miyakawa K, Kubota M, Hiramatsu Y, Tokunaga C. Association between endothelial function and micro-vascular remodeling measured by synchrotron radiation pulmonary micro-angiography in pulmonary arterial hypertension. *General Thoracic Cardiovascular Surgery* 2016; 64: 597-603.
- 14) Sakamoto H, Tsukada T, Tokunaga C, Matsubara M, Aikawa S, Enomoto Y, Sato F, Hiramatsu Y. Left ventricular perforation during catheter ablation in a patient with idiopathic thrombocytopenic purpura. *The Heart Surgery Forum* 2015; 18: E240-E241.
- 15) Sakamoto H, Matsushita S, Hyodo K, Tokunaga C, Sato F, Hiramatsu Y. A new technique of in vivo synchrotron radiation coronary microangiography in the rat. *Acta Radiologica* 2015; 56: 1105-1107.
- 16) Sato M, Hiramatsu Y, Matsushita S, Sato S, Watanabe Y, Sakakibara Y. Shrinkage temperature and anti-calcification property of triglycidylamine-crosslinked autologous tissue. *Journal of Artificial Organs* 2014; 17: 265-271.
- 17) Hiramatsu Y. Pulmonary cusp and annular extension technique for reconstruction of right ventricular outflow in tetralogy of Fallot. *The Annals of Thoracic Surgery* 2014; 98: 1850-1852.